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*of* MISSISSIPPI

**GASB STATEMENT NO. 67 REPORT**

**FOR THE**

**PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI**

**PREPARED AS OF JUNE 30, 2015**





# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

November 13, 2015

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, 2015.

The annual actuarial valuation used as a basis for much of the information presented in this report was performed as of June 30, 2015. 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.

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Board of Trustees  
November 13, 2015  
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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,

A handwritten signature in blue ink, appearing to read 'Edward Macdonald', written in a cursive style.

Edward A. Macdonald, ASA, FCA, MAAA  
President

A handwritten signature in blue ink, appearing to read 'Edward J. Koebel', written in a cursive style.

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

A handwritten signature in blue ink, appearing to read 'Jonathan T. Craven', written in a cursive style.

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

EAM/EJK/JTC:mjn



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**REPORT OF THE ANNUAL GASB STATEMENT NO. 67  
REQUIRED INFORMATION FOR THE  
PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI  
PREPARED AS OF JUNE 30, 2015**

**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, 2015 (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, 2015. The results of that valuation were detailed in a report dated October 21, 2015.

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 General Obligation 20-year Municipal Bond Index published monthly by the Board of Governors of the Federal Reserve System. We have determined that a discount rate of 7.75 percent meets 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, 2015 actuarial valuation date.

### Membership

	Number
Inactive Members Or Their Beneficiaries Currently Receiving Benefits	96,338
Inactive Members Entitled To But Not Yet Receiving Benefits	137,026
Active Members	<u>157,215</u>
Total	390,579

**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, 2015 is presented in the following table (\$ thousands).

	<b>Fiscal Year Ending June 30, 2015</b>
Total Pension Liability	\$40,364,584
Fiduciary Net Position	<u>24,906,556</u>
Net Pension Liability	\$15,458,028
Ratio of Fiduciary Net Position to Total Pension Liability	61.70%

**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 are outlined in Schedule C. The total pension liability was determined by an actuarial valuation as of June 30, 2015, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00 percent
Salary increases	3.75 – 19.00 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 Table projected with Scale BB to 2016 with males rates set forward one year.

The actuarial assumptions used in the June 30, 2015 valuation were based on the results of an actuarial experience study for the period July 1, 2010 to June 30, 2014. The experience report is dated May 4, 2015.

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	34.00%	5.20%
International Equity	19.00	5.00
Emerging Markets Equity	8.00	5.45
Fixed Income	20.00	0.25
Real Assets	10.00	4.00
Private Equity	8.00	6.15
Cash	<u>1.00</u>	(0.50)
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% 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	\$20,375,097	\$15,458,028	\$11,377,780



**Paragraph 31(c):** June 30, 2015 is the actuarial valuation date upon which the TPL is based. An expected TPL is determined as of June 30, 2015 using standard roll forward techniques. The roll forward calculation adds the annual normal cost (also called service cost), subtract the actual benefit payment and refunds for the plan year and then applies the expected investment rate of return using the SEIR as of June 30, 2014. We compare this amount to the actual TPL as of June 30, 2015 using the old SEIR to reflect the experience gain or loss for the year. The difference in the actual TPL as of June 30, 2015 between the two investment return assumptions represents the assumption change. These procedures are shown in the following table.

<b>TPL Roll-forward (\$ in thousands)</b>	
(a) Interest Rate (SEIR) as of June 30, 2014	8.00 %
(b) TPL as of June 30, 2014	\$37,015,288
(c) Entry Age Normal Cost for the period July 1, 2014 - June 30, 2015	673,626
(d) Actual Benefit Payments and Refunds for the period July 1, 2014 - June 30, 2015	2,338,596
(e) Expected TPL as of June 30, 2015 = [(b) x 1.08] + (c) - [(d) x 1.04]	\$38,217,997
(f) Actual TPL as of June 30, 2015 - Old Assumptions (8.00%)	\$38,543,348
(g) Experience (Gain)/Loss = (f) – (e)	325,351
(h) Actual TPL as of June 30, 2015 - New Assumptions (7.75%)	\$40,364,584
(i) Assumption Change = (h) – (f)	1,821,236
(j) Interest Rate (SEIR) as of June 30, 2015	7.75%



### **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.*** In 2015 and later, 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. In 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. In 2015, assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience. Finally, the price inflation and investment rate of return assumptions were changed from 3.50% to 3.00% and 8.00% to 7.75%, respectively.

***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. 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	32.2 years
Asset valuation method	5-year smoothed market
Price Inflation	3.50 percent
Salary increase	4.25 percent to 19.50 percent, including inflation
Investment rate of return	8.00 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
<b>Total pension liability</b>										
Service Cost	\$681,778	\$673,626								
Interest	2,754,573	2,867,679								
Benefit changes	0	0								
Difference between expected and actual experience	257,464	325,351								
Changes of assumptions	0	1,821,236								
Benefit payments	(2,099,843)	(2,219,240)								
Refunds of contributions	(121,532)	(119,356)								
<b>Net change in total pension liability</b>	<u>1,472,440</u>	<u>3,349,296</u>								
<b>Total pension liability - beginning</b>	<u>35,542,848</u>	<u>37,015,288</u>								
<b>Total pension liability - ending (a)</b>	<u><u>\$37,015,288</u></u>	<u><u>\$40,364,584</u></u>								
<b>Plan net position</b>										
Contributions - employer	\$969,674	\$996,478								
Contributions - member	549,528	557,909								
Net investment income	3,905,728	827,666								
Benefit payments	(2,099,843)	(2,219,240)								
Administrative expense	(12,837)	(13,523)								
Refunds of contributions	(121,532)	(119,356)								
Other	(510)	(497)								
<b>Net change in plan net position</b>	<u>3,190,208</u>	<u>29,437</u>								
<b>Plan net position - beginning</b>	<u>21,686,911</u>	<u>24,877,119</u>								
<b>Plan net position - ending (b)</b>	<u><u>\$24,877,119</u></u>	<u><u>\$24,906,556</u></u>								
<b>Net pension liability - ending (a) - (b)</b>	<u><u>\$12,138,169</u></u>	<u><u>\$15,458,028</u></u>								



**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								
Plan net position	<u>24,877,119</u>	<u>24,906,556</u>								
Net pension liability	<u>\$12,138,169</u>	<u>\$15,458,028</u>								
Ratio of plan net position to total pension liability	67.21%	61.70%								
Covered-employee payroll	\$5,834,687	\$5,904,827								
Net pension liability as a percentage of covered-employee payroll	208.03%	261.79%								



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

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Actuarially determined employer contribution	\$930,010	\$921,872	\$835,321	\$735,022	\$687,016	\$699,824	\$657,048	\$636,546	\$621,497	\$514,525
Actual employer contributions	<u>996,478</u>	<u>969,674</u>	<u>881,847</u>	<u>768,914</u>	<u>723,836</u>	<u>731,544</u>	<u>713,569</u>	<u>683,189</u>	<u>610,888</u>	<u>557,831</u>
Annual contribution deficiency (excess)	<u>(\$66,468)</u>	<u>(\$47,802)</u>	<u>(\$46,526)</u>	<u>(\$33,892)</u>	<u>(\$36,820)</u>	<u>(\$31,720)</u>	<u>(\$56,521)</u>	<u>(\$46,643)</u>	<u>\$10,609</u>	<u>(\$43,306)</u>
Covered-employee payroll	\$5,904,827	\$5,834,687	\$5,823,578	\$5,857,789	\$5,684,624	\$5,763,556	\$5,831,864	\$5,544,705	\$5,196,295	\$4,971,974
Actual contributions as a percentage of covered-employee payroll	16.88%	16.62%	15.14%	13.13%	12.73%	12.69%	12.24%	12.32%	11.76%	11.22%



## **SCHEDULE B**

### **SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS**

The following summary presents the main benefit and contribution provisions of the System in effect Public Employees' Retirement System of Mississippi, as interpreted in preparing the actuarial valuation.

#### **DEFINITIONS**

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



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

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

Fiscal Date From	Fiscal Date To	Employer Rate	Maximum Covered Earnings	Employee Rate	Maximum Covered Earnings
2/1/53	6/30/58	2.50%	\$6,000	4.00%	\$4,800*
7/1/58	6/30/60	2.50	9,000	4.00	7,800*
7/1/60	6/30/66	2.50	15,000	4.00	13,800*
7/1/66	6/30/68	3.00	15,000	4.50	13,800*
7/1/68	3/31/71	4.50	15,000	4.50	15,000
4/1/71	6/30/73	4.50	35,000	4.50	35,000
7/1/73	6/30/76	5.85	35,000	5.00	35,000
7/1/76	6/30/77	7.00	35,000	5.00	35,000
7/1/77	6/30/78	7.50	35,000	5.50	35,000
7/1/78	6/30/80	8.00	35,000	5.50	35,000
7/1/80	6/30/81	8.00	53,000	5.50	53,000
7/1/81	12/31/83	8.75	53,000	6.00	53,000
1/1/84	6/30/88	8.75	63,000	6.00	63,000
7/1/88	6/30/89	8.75	75,600	6.00	75,600
7/1/89	12/31/89	8.75	75,600	6.50	75,600
1/1/90	6/30/91	9.75	75,600	6.50	75,600
7/1/91	6/30/92	9.75	75,600	7.25	75,600
7/1/92	6/30/02	9.75	125,000	7.25	125,000
7/1/02	6/30/05	9.75	150,000	7.25	150,000
7/1/05	6/30/06	10.75	150,000	7.25	150,000
7/1/06	6/30/07	11.30	150,000	7.25	150,000
7/1/07	6/30/08	11.85	150,000	7.25	150,000
7/1/08	6/30/09	11.85	230,000	7.25	230,000
7/1/09	6/30/10	12.00	245,000	7.25	245,000
7/1/10	6/30/11	12.00	245,000	9.00	245,000
7/1/11	12/31/11	12.00	245,000	9.00	245,000
1/1/12	6/30/12	12.93	245,000	9.00	245,000
7/1/12	6/30/13	14.26	250,000	9.00	250,000
7/1/13	6/30/14	15.75	255,000	9.00	255,000
7/1/14	6/30/15	15.75	260,000	9.00	260,000
7/1/15	6/30/16	15.75	265,000	9.00	265,000

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



## BENEFITS

### Superannuation Retirement

#### Condition for Retirement

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

#### Amount of Allowance

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

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

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



## Disability Retirement

### Condition for Retirement

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

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

### Amount of Allowance

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

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

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

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

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



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

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

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

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

### **Accidental Disability Retirement**

Condition for Retirement

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

Amount of Allowance

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

### **Accidental Death Benefit**

Condition for Benefit

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

Amount of Allowance

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



## **Ordinary Death Benefit**

### **Condition for Benefit**

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

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

### **Amount of Allowance**

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

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

## **Return of Contributions**

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

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

Interest is currently credited to the member's account at 3.5% per annum.

## **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).

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

Annual Rates of						
Age	Withdrawal and Vesting*		Death**		Disability**	
	Male	Female	Male	Female	Male	Female
20	23.00%	28.00%	0.0159%	0.0054%	0.012%	0.011%
25	16.00	16.50	0.0346	0.0058	0.017	0.014
30	10.00	10.50	0.0318	0.0073	0.020	0.018
35	7.50	8.00	0.0337	0.0096	0.044	0.022
40	6.25	6.50	0.0390	0.0132	0.120	0.090
45	5.75	5.50	0.0513	0.0220	0.240	0.160
50	5.75	5.50	0.0859	0.0369	0.320	0.230
55	5.75	5.50	0.1466	0.0557	0.520	0.400
60	5.75	5.50	0.2391	0.0805	0.520	0.400
65	5.75	5.50	0.4076	0.1214	0.200	0.150
70	5.75	5.50	0.6921	0.2043	0.200	0.150
74	5.75	5.50	1.0147	0.3098	0.200	0.150

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

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

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

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



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

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

PAYROLL GROWTH: 3.75% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.23% of payroll.

TIMING OF DECREMENTS AND PAY INCREASES: Middle of Year.

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

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

UNUSED SICK LEAVE: 0.50 years at retirement.

MILITARY SERVICE: 0.25 years at retirement.



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

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

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

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

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

ASSET VALUATION METHOD: Market Value.



## 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 System, the benchmarks that will be used to measure progress in achieving those goals, and the methods and assumptions that will be employed to develop the benchmarks.

The 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 75 percent in 2042, 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, 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) and the Supplemental Legislative Retirement Plan (SLRP) set under this policy as revised October 23, 2012, will be 15.75 percent and 7.40 percent, respectively, 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**

Plan Year Beginning June 30	Projected Covered Employee Payroll			Projected Contributions							Plan Year Ending 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)	
2015	\$6,254,239,869	\$0	\$6,254,239,869	9.00%	2.13%	13.62%	\$562,881,588	\$985,042,779	\$0	\$1,547,924,367	2016
2016	5,816,355,208	672,418,656	6,488,773,864	9.00	2.13	13.62	523,471,969	916,075,945	91,583,421	1,531,131,335	2017
2017	5,473,307,467	1,258,795,417	6,732,102,884	9.00	2.13	13.62	492,597,672	862,045,926	171,447,936	1,526,091,534	2018
2018	5,153,848,540	1,830,708,202	6,984,556,742	9.00	2.13	13.62	463,846,369	811,731,145	249,342,457	1,524,919,971	2019
2019	4,846,286,311	2,400,191,309	7,246,477,620	9.00	2.13	13.62	436,165,768	763,290,094	326,906,056	1,526,361,918	2020
2020	4,550,262,554	2,967,957,977	7,518,220,531	9.00	2.13	13.62	409,523,630	716,666,352	404,235,876	1,530,425,858	2021
2021	4,263,226,314	3,536,927,487	7,800,153,801	9.00	2.13	13.62	383,690,368	671,458,144	481,729,524	1,536,878,036	2022
2022	3,982,245,125	4,110,414,443	8,092,659,568	9.00	2.13	13.62	358,402,061	627,203,607	559,838,447	1,545,444,115	2023
2023	3,706,266,963	4,689,867,339	8,396,134,302	9.00	2.13	13.62	333,564,027	583,737,047	638,759,932	1,556,061,006	2024
2024	3,443,830,284	5,267,159,054	8,710,989,338	9.00	2.13	13.62	309,944,726	542,403,270	717,387,063	1,569,735,059	2025
2029	2,300,869,894	8,170,608,696	10,471,478,590	9.00	2.13	13.62	207,078,290	362,387,008	1,112,836,904	1,682,302,202	2030
2034	1,389,564,986	11,198,197,392	12,587,762,378	9.00	2.13	13.62	125,060,849	218,856,485	1,525,194,485	1,869,111,819	2035
2039	735,532,429	14,396,214,278	15,131,746,707	9.00	2.13	13.62	66,197,919	115,846,358	1,960,764,385	2,142,808,662	2040
2044	349,191,448	17,840,678,327	18,189,869,775	9.00	2.13	13.62	31,427,230	54,997,653	2,429,900,388	2,516,325,271	2045
2049	98,383,383	21,767,655,537	21,866,038,920	9.00	2.13	0.00	8,854,504	2,095,566	0	10,950,070	2050
2054	20,669,205	26,264,491,931	26,285,161,136	9.00	2.13	0.00	1,860,228	440,254	0	2,300,482	2055
2059	3,579,468	31,593,807,623	31,597,387,091	9.00	2.13	0.00	322,152	76,243	0	398,395	2060
2064	468,582	37,982,744,298	37,983,212,880	9.00	2.13	0.00	42,172	9,981	0	52,153	2065
2069	9,067	45,659,603,752	45,659,612,819	9.00	2.13	0.00	816	193	0	1,009	2070
2074	7	54,887,411,687	54,887,411,694	9.00	2.13	0.00	1	0	0	1	2075
2079	0	65,980,146,928	65,980,146,928	9.00	2.13	0.00	0	0	0	0	2080
2084	0	79,314,721,795	79,314,721,795	9.00	2.13	0.00	0	0	0	0	2085
2089	0	95,344,211,651	95,344,211,651	9.00	2.13	0.00	0	0	0	0	2090
2094	0	114,613,258,292	114,613,258,292	9.00	2.13	0.00	0	0	0	0	2095
2099	0	137,776,575,512	137,776,575,512	9.00	2.13	0.00	0	0	0	0	2100



**Projection of Fiduciary Net Position (FNP)**

<b>Plan Year Beginning June 30</b>	<b>Projected Beginning FNP (a)</b>	<b>Projected Total Contributions (b)</b>	<b>Projected Benefit Payments (c)</b>	<b>Projected Administrative Expenses (d)</b>	<b>Projected Investment Earnings (e)</b>	<b>Projected Ending FNP (f) = (a) + (b) - (c) - (d) + (e)</b>	<b>Plan Year Ending June 30</b>
2015	\$24,906,556,000	\$1,547,924,367	\$2,495,510,923	\$14,384,752	\$1,893,677,231	\$25,838,261,923	2016
2016	25,838,261,923	1,531,131,335	2,597,839,880	13,377,617	1,961,392,890	26,719,568,651	2017
2017	26,719,568,651	1,526,091,534	2,709,330,006	12,588,607	2,025,292,885	27,549,034,457	2018
2018	27,549,034,457	1,524,919,971	2,807,299,667	11,853,852	2,085,834,384	28,340,635,293	2019
2019	28,340,635,293	1,526,361,918	2,903,524,978	11,146,459	2,143,606,024	29,095,931,799	2020
2020	29,095,931,799	1,530,425,858	2,993,117,118	10,465,604	2,198,915,016	29,821,689,951	2021
2021	29,821,689,951	1,536,878,036	3,096,501,316	9,805,421	2,251,500,346	30,503,761,596	2022
2022	30,503,761,596	1,545,444,115	3,196,871,876	9,159,164	2,300,894,427	31,144,069,098	2023
2023	31,144,069,098	1,556,061,006	3,318,463,538	8,524,414	2,346,322,361	31,719,464,513	2024
2024	31,719,464,513	1,569,735,059	3,439,214,685	7,920,810	2,386,866,641	32,228,930,718	2025
2029	33,660,486,938	1,682,302,202	3,974,695,578	5,292,001	2,521,313,714	33,884,115,275	2030
2034	34,405,091,747	1,869,111,819	4,357,549,890	3,195,999	2,571,645,305	34,485,102,982	2035
2039	35,009,918,552	2,142,808,662	4,477,378,511	1,691,725	2,624,427,728	35,298,084,706	2040
2044	37,834,524,960	2,516,325,271	4,280,252,579	803,140	2,865,068,324	38,934,862,836	2045
2049	46,072,591,094	10,950,070	3,859,961,929	226,282	3,424,250,929	45,647,603,882	2050
2054	44,891,112,321	2,300,482	3,241,288,173	47,539	3,355,890,494	45,007,967,585	2055
2059	47,136,095,426	398,395	2,536,707,129	8,233	3,556,598,935	48,156,377,394	2060
2064	54,670,854,653	52,153	1,839,769,291	1,078	4,167,032,318	56,998,168,755	2065
2069	69,721,167,109	1,009	1,205,367,511	21	5,357,554,009	73,873,354,595	2070
2074	95,186,742,595	1	687,393,838	0	7,350,833,043	101,850,181,801	2075
2079	134,973,991,607	0	324,924,969	0	10,448,128,436	145,097,195,074	2080
2084	194,594,231,327	0	120,095,208	0	15,076,486,070	209,550,622,189	2085
2089	282,137,947,541	0	32,988,427	0	21,864,436,484	303,969,395,598	2090
2094	409,652,890,880	0	6,832,612	0	31,747,839,220	441,393,897,488	2095
2099	594,955,222,551	0	1,325,243	0	46,108,979,353	641,062,876,661	2100