Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

PERS
of MISSISSIPPI

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

Prepared as of June 30, 2018

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

October 9, 2018

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

Ladies and Gentlemen:

Presented in this report are the results of the annual actuarial valuation of the Public Employees' Retirement System (PERS) of Mississippi. The purpose of the valuation was to measure the System's funding progress and to determine the unfunded actuarial accrued liability amortization period beginning July 1, 2018. The results may not be applicable for other purposes.

The date of the valuation was June 30, 2018.

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

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

Since the previous valuation, the PERS Board of Trustees approved an increase in the employer contribution rate from 15.75% to 17.40% for the fiscal year beginning July 1, 2019. The Board also adopted a new funding policy which sets the funding goals, objectives and metrics for possible changes in the contribution rate for future valuations.

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

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

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144
Phone (678) 388-1700 • Fax (678) 388-1730
www.CavMacConsulting.com
Offices in Kennesaw, GA • Bellevue, NE

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

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

Respectfully submitted,

Edward A. Macdonald, ASA, FCA, MAAA
President

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

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

EAM/EJK/JTC:mjn

SS:\2018\Mississippi PERS\Valuation\PERS 06302018 Valuation Report FINAL.docx

TABLE OF CONTENTS

REPORT ON THE ANNUAL VALUATION OF THE PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI PREPARED AS OF JUNE 30, 2018

SECTION I – SUMMARY OF PRINCIPAL RESULTS

1. This report, prepared as of June 30, 2018, presents the results of the annual actuarial valuation of the System. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below. The current valuation and reported benefit amounts reflect any benefit increases granted to retirees as of July 1, 2018.

VALUATION DATE	June 30, 2018	June 30, 2017
Active members included in valuation		
Number	150,687	152,382
Annual compensation	$ 5,999,230,701	$ 6,038,228,708
Retirees		
Number	104,973	102,260
Annual allowances	$ 2,500,750,392	$ 2,374,747,017
Assets		
Market related actuarial value	$ 27,455,702,000	$ 26,364,446,000
Market value	$ 27,763,190,000	$ 26,543,097,000
Unfunded actuarial accrued liability	$ 16,940,458,907	$ 16,802,044,997
Funded Ratio	61.8%	61.1%
For the Fiscal Year Ending	**June 30, 2020**	**June 30, 2019**
Employer contribution rate		
Normal Cost*	1.45%	1.47%
Accrued liability	15.95	14.28
Total	17.40%	15.75%
Anticipated accrued liability payment period	30.9 years	38.4 years
Unfunded actuarial accrued liability based on market value of assets	$ 16,632,970,907	$ 16,623,393,997
Funded Ratio	62.5%	61.5%
Payment Period	29.7 years	37.4 years

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

2. The employer contribution rate, or Fixed Contribution Rate (FCR), of 17.40% of annual compensation for the fiscal year ending June 30, 2020 was approved by the PERS Board of Trustees at the June, 2018 Board meeting. The new funding policy for the System was adopted by the Board at the same meeting and sets the funding goals, objectives and metrics for possible changes to the FCR for prospective fiscal years.
3. The valuation balance sheet showing the results of the valuation is provided in Section III.
4. Comments on the valuation results are given in Section IV, comments on the experience and actuarial gains and losses during the valuation year are provided in Section V and the rates of contribution payable by employers are provided in Section VI.
5. Schedule A of this report presents the development of the actuarial value of assets. The estimated investment return for the plan year ending June 30, 2018 on an actuarial value of assets basis was 9.16%, compared to the assumed rate of return for the period of 7.75%.
6. Schedule B details the actuarial assumptions and methods employed. There have been no changes since the previous valuation.
7. Schedule C gives a summary of the benefit and contribution provisions of the plan. There have been no changes since the previous valuation.
8. The funded ratio shown in the Summary of Principal Results, is the ratio of actuarial value of assets to the actuarial accrued liability. The funded status would be different based on the market value of assets. The funded ratio is an indication of progress in funding the promised benefits. Since the ratio is less than 100%, there is a need for additional contributions toward the payment of the unfunded accrued liability. In addition, this funded ratio does not have any relationship to measuring the sufficiency if the plan had to settle its liabilities.
9. The table on the following page provides a ten-year history of some pertinent figures.

Public Employees' Retirement System of Mississippi

Comparative Schedule

	Active Members				Retired Lives				Valuation Results ($ millions)		
Valuation Date June 30	Number	Payroll ($ millions)	Average Salary	% increase from previous year	Number	Active/ Retired Ratio	Annual Benefits ($ millions)	Benefits as % of Payroll	Accrued Liability	Valuation Assets	UAAL
2009	167,122	$ 5,832	$ 34,896	4.3%	76,143	2.2%	$ 1,395.9	23.9%	$ 30,595	$ 20,598	$ 9,997
2010	164,896	5,764	34,953	0.2	79,168	2.1	1,498.7	26.0	31,400	20,143	11,257
2011	161,676	5,685	35,161	0.6	83,115	1.9	1,627.8	28.6	32,654	20,315	12,339
2012	162,311	5,858	36,090	2.6	86,829	1.9	1,752.6	29.9	34,493	19,993	14,500
2013	161,744	5,824	36,005	(0.2)	90,214	1.8	1,874.7	32.2	35,543	20,491	15,052
2014	161,360	5,835	36,159	0.4	93,504	1.7	1,998.3	34.2	37,015	22,570	14,445
2015	157,215	5,905	37,559	3.9	96,338	1.6	2,116.3	35.8	40,364	24,387	15,977
2016	154,104	6,023	39,081	4.1	99,483	1.5	2,249.0	37.3	41,997	25,185	16,812
2017	152,382	6,038	39,626	1.4	102,260	1.5	2,374.7	39.3	43,166	26,364	16,802
2018	150,687	5,999	39,813	0.5	104,973	1.4	2,500.8	41.7	44,396	27,456	16,940

SECTION II – MEMBERSHIP DATA

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System's office. The following tables summarize the membership of the System as of June 30, 2018 upon which the valuation was based. Detailed tabulations of the data are given in Schedule D.

Active Members

				Group Averages		
Employers	Number of Employers	Number	Payroll	Salary	Age	Service
State Agencies	107	27,383	$1,052,316,036	$38,430	45.3	10.7
State Universities	9	17,599	974,095,619	55,349	43.4	9.7
Public Schools	143	60,952	2,247,353,584	36,871	44.6	10.7
Community/Junior Colleges	15	6,076	294,536,010	48,475	46.8	11.6
Counties	82	13,741	493,219,572	35,894	47.4	9.8
Municipalities	242	16,168	587,108,289	36,313	44.1	10.0
Other Political Subdivisions	260	8,768	350,601,591	39,986	44.3	8.6
Total in PERS	858	150,687	$5,999,230,701	$39,813	44.8	10.3

The total number of active members includes 78,715 vested members and 71,972 non-vested members.

Retired Lives

			Group Averages	
Type of Benefit Payment	No.	Annual Benefits	Benefit	Age
Retirement	87,277	$2,182,146,868	$25,003	70.8
Disability	6,506	123,723,411	19,017	63.0
Survivor	11,190	194,880,113	17,416	68.8
Total in PERS	104,973	$2,500,750,392	$23,823	70.1

Deferred Vested/Inactive Lives

Type of Member	No.	Deferred Benefits	Outstanding Refunds
Deferred Vested - Benefit Provided	14,735	$ 113,779,014	N/A
Deferred Vested – Missing Benefit	642	N/A	$ 22,889,159
Vested – Pending Retirements	1,201	35,625,006	N/A
Inactive	52,763	N/A	249,061,679
Total in PERS	69,341	$ 149,404,020	$ 271,950,838

For the liability in this valuation, deferred vested participants with benefits provided are valued assuming a retirement age of 60 for Tiers 1, 2, and 3 and age 65 for Tier 4. There are 1,201 records determined to be possible “pending retirements” based on the provided member status; these records are valued by assuming immediate benefit commencement. Deferred vested participants with missing benefits and inactive members are valued by multiplying account balances by 2.0 to estimate liabilities and interest in the future.

SECTION III – VALUATION BALANCE SHEET

The following valuation balance sheet shows the assets and liabilities of the retirement system as of the current valuation date of June 30, 2018 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2017. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date. The development of the actuarial value of assets is presented in Schedule A.

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

	JUNE 30, 2018	June 30, 2017
ASSETS		
Current actuarial value of assets:		
Annuity Savings Account	$ 5,570,523,721	$ 5,534,402,571
Annuity Reserve	6,002,374,792	5,633,635,871
Employers' Accumulation Account	15,882,803,487	15,196,407,558
Total current assets	$ 27,455,702,000	$ 26,364,446,000
Future member contributions to Annuity Savings Account	$ 3,544,920,132	$ 3,574,185,383
Prospective contributions to Employer's Accumulation Account		
Normal contributions	$ 480,533,618	$ 492,443,319
Unfunded actuarial accrued liability contributions	16,940,458,907	16,802,044,997
Total prospective contributions	$ 17,420,992,525	$ 17,294,488,316
Total assets	$ 48,421,614,657	$ 47,233,119,699
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	$ 27,874,364,974	$ 26,686,957,952
Present value of benefits payable on account of active members	18,667,047,476	18,755,519,024
Present value of benefits payable on account of inactive members for service rendered before the valuation date	1,880,202,207	1,790,642,723
Total liabilities	$ 48,421,614,657	$ 47,233,119,699

BREAKDOWN OF TOTAL AND ACCRUED LIABILITIES
AS OF JUNE 30, 2018

		Total Liability		Accrued Liability
Active Members				
Retirement	$	15,493,825,279	$	13,441,729,049
Death		172,457,533		118,442,185
Disability		479,306,546		297,834,787
Termination		2,521,458,118		783,587,705
Total	$	18,667,047,476	$	14,641,593,726
Retirees				
Retirement	$	24,829,863,070	$	24,829,863,070
Survivor		1,786,824,221		1,786,824,221
Disability		1,257,677,683		1,257,677,683
Total	$	27,874,364,974	$	27,874,364,974
Deferred Vested Members		1,382,078,849		1,382,078,849
Inactive Members		498,123,358		498,123,358
Total Actuarial Values	$	48,421,614,657	$	44,396,160,907
Actuarial Value of Assets				27,455,702,000
Unfunded Actuarial Accrued Liability			$	16,940,458,907

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

SECTION IV – COMMENTS ON VALUATION

The valuation balance sheet gives the following information with respect to the funds of the System as of June 30, 2018.

Total Assets

The Annuity Savings Account is the fund to which are credited contributions made by members together with interest thereon. When a member retires, the amount of his or her accumulated contributions is transferred from the Annuity Savings Account to the Annuity Reserve. The Employer's Accumulation Account is the fund to which are credited employer contributions and investment income, and from which are paid all employer-provided benefits under the plan. The assets credited to the Annuity Savings Account as of the valuation date, which represent the accumulated contributions of members to that date, amounted to $5,570,523,721. The assets credited to the Annuity Reserve were $6,002,374,792 and the assets credited to the Employer's Accumulation Account totaled $15,882,803,487. Current actuarial assets as of the valuation date equaled the sum of these three funds, $27,455,702,000. Future member contributions to the Annuity Savings Account were valued to be $3,544,920,132. Prospective contributions to the Employer's Accumulation Account were calculated to be $17,420,992,525 of which $480,533,618 is attributable to service rendered after the valuation date (normal contributions) and $16,940,458,907 is attributable to service rendered before the valuation date (unfunded actuarial accrued liability contributions).

Therefore, the balance sheet shows the present value of current and future assets of the System to be $48,421,614,657 as of June 30, 2018.

Total Liabilities

The present value of benefits payable on account of presently retired members and beneficiaries totaled $27,874,364,974 as of the valuation date. The present value of future benefit payments on behalf of active members amounted to $18,667,047,476. In addition, the present value of benefits for inactive members, due to service rendered before the valuation date, was calculated to be $1,880,202,207.

Therefore, the balance sheet shows the present value for all prospective benefit payments under the System to be $48,421,614,657 as of June 30, 2018.

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

Section 25-11-123(c) requires that the State contribute a certain percentage of the annual compensation of members to cover the normal contributions and a certain percentage to cover the accrued liability contributions of the System. These individual contribution percentages are established in accordance with an actuarial valuation. The PERS Board of Trustees increased the employer contribution rate from 15.75% to 17.40% of annual compensation effective for the fiscal year ending June 30, 2020. Since the amortization period is calculated on an open basis, the amortization period for the June 30, 2018 valuation is 30.9 years, compared to 38.4 years for the last valuation.

The primary reasons for the decrease in the amortization period was the increase in the Fixed Contribution Rate (FCR), the gain due to investment earnings on an actuarial value of assets basis better than expected (9.16% vs. 7.75%) and salary increases less than expected. These gains were partially offset by a loss due to withdrawals from employment.

See Section VI for a reconciliation of the amortization periods from last year to this year and see Schedule E for a complete analysis of the Financial Experience.

SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain/(loss) for the year ended June 30, 2018 and for the previous valuation is shown below.

		2018 Results $ millions	2017 Results $ millions
(1)	UAAL* as of beginning of year	$ 16,802.0	$ 16,812.4
(2)	Total Normal cost from last valuation	652.0	700.3
(3)	Total Employee and Employer Contributions	1,589.0	1,589.2
(4)	Interest accrual: [[(1) + (2)] x .0775] - [(3) x .03875]	1,291.2	1,295.7
(5)	Expected UAAL before changes: (1) + (2) – (3) + (4)	17,156.2	17,219.2
(6)	Change due to plan amendments	0.0	0.0
(7)	Change due to new actuarial assumptions or methods	0.0	24.1
(8)	Expected UAAL after changes: (5) + (6) + (7)	$ 17,156.2	$ 17,243.3
(9)	Actual UAAL as of end of year	$ 16,940.5	$ 16,802.0
(10)	Gain/(loss): (8) – (9)	$ 215.7	$ 441.3
(11)	Gain/(loss) as percent of actuarial accrued liabilities at start of year	0.5%	1.1%

*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2013	(1.2)%
2014	2.6
2015	1.4
2016	(1.4)
2017	1.1
2018	0.5

SECTION VI – REQUIRED CONTRIBUTION RATES

1. The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Retirement System. The following table shows the rates of contribution payable by employers as determined from the present valuation for the 2019/2020 fiscal year and a comparison to the previous valuation results.

Contribution for	2019/2020 Fiscal Year	2018/2019 Fiscal Year
Normal Cost:		
Service retirement benefits	8.80%	8.75%
Disability benefits	0.42	0.42
Survivor benefits	0.13	0.13
Total	9.35%	9.30%
Member Contributions:	9.00%	9.00%
Less future refunds	(0.87)	(0.94)
Available for benefits	8.13%	8.06%
Employer Normal Cost	1.22%	1.24%
Administrative Expense Load	0.23%	0.23%
Unfunded Actuarial Accrued Liabilities (30.9 years level % of payroll amortization*)	15.95%	14.28%
Total Computed Employer Contribution Rate	17.40%	15.75%

*Amortization period a year ago was 38.4 years.

The Board has adopted a Fixed Contribution Rate (FCR) of 17.40% of annual compensation for the fiscal year ending June 30, 2020 and set the amortization period to open-ended. Thirty-year projections are completed after the valuation to determine if an increase or decrease in the employer contribution rate is warranted according to the metrics set forth in the funding policy. Please see Schedule F for the current funding policy.

2. The components of the change in the computed unfunded actuarial accrued liability amortization period from 38.4 years to 30.9 years are as follows:

Previously Reported Period	38.4 years
Change due to:	
Normal amortization	(1.0)
Actuarial experience	2.4
Assumption/Method changes	0.0
Plan amendments	0.0
Contribution change	(8.9)
Computed Period	30.9 years

3. One of the metrics in the new Funding Policy, as shown in Schedule F, is to calculate the Actuarially Determined Contribution (ADC) based on the principle elements of the Amortization Method disclosed in the Funding Policy. The ratio of the ADC to the fixed contribution rate (ADC/FCR) as set by this Funding Policy will be tested each valuation. The calculation of this basis for the past two valuations is shown below:

Funding Policy ADC Metric Test		
Valuation Date June 30	**2018**	**2017**
Actuarially Determined Contribution (ADC) rate		
Normal Cost*	1.45%	1.47%
Accrued liability	16.17	15.93
Total	17.62%	17.40%
Ratio of ADC to FCR	101.26%	100.00%
Funding Policy Metric Status	Yellow	Green
Anticipated accrued liability payment period	30.0 years	30.0 years

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

SECTION VIII – SUPPLEMENTAL DISCLOSURE INFORMATION

1. The following supplemental disclosure information is provided for informational purposes only. One such item is a distribution of the number of employees by type of membership, as follows:

NUMBER OF ACTIVE AND RETIRED PARTICIPANTS
AS OF JUNE 30, 2018

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	104,973
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	69,341
Active Participants	150,687
Total	325,001

1. Another such item is the schedule of funding progress as shown below. As can be seen in column 3 of the table above, the funded ratio decreased from 2009 to 2013. Since then the funded ratio increased significantly in 2014, remained level through 2016, and has increased this year and last year due to the investment return and other gains. In addition, the unfunded actuarial accrued liability as a percentage of payroll, shown in column 6, decreased for the 2017 valuation after increasing for much of the last 10-year period but increased again for the 2018 valuation due to a decline in the annual covered payroll.

SCHEDULE OF FUNDING PROGRESS
($ Thousands)

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Funded Ratio (1)/(2)	(4) Unfunded AAL (2) – (1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4)/(5)
06/30/09*#	$20,597,581	$30,594,546	67.3%	$9,996,965	$5,831,864	171.4%
06/30/10*	20,143,426	31,399,988	64.2	11,256,562	5,763,556	195.3
06/30/11#	20,315,165	32,654,465	62.2	12,339,300	5,684,624	217.1
06/30/12	19,992,797	34,492,873	58.0	14,500,076	5,857,789	247.5
06/30/13#	20,490,555	35,542,848	57.7	15,052,293	5,823,578	258.5
06/30/14	22,569,940	37,015,288	61.0	14,445,348	5,834,687	247.6
06/30/15#	24,387,161	40,364,584	60.4	15,977,423	5,904,827	270.6
06/30/16*#	25,185,078	41,997,513	60.0	16,812,435	6,022,533	279.2
06/30/17#	26,364,446	43,166,491	61.1	16,802,045	6,038,229	278.3
06/30/18	27,455,702	44,396,161	61.8	16,940,459	5,999,231	282.4

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

Solvency Tests
($ in Thousands)

Valuation Date	Actuarial Accrued Liabilities for: (1) Accumulated Employee Contributions Including Allocated Investment Earnings	(2) Retirees and Beneficiaries Currently Receiving Benefits	(3) Active and Inactive Members Employer Financed Portion	Net Assets Available for Benefits	Portions of Accrued Liabilities Covered by Assets: (1)	(2)	(3)
6/30/09	$4,235,466	$15,665,712	$10,693,368	$20,597,581	100.0%	100.0%	6.5%
6/30/10	4,266,621	16,763,455	10,369,912	20,143,426	100.0	94.7	0.0
6/30/11	4,356,556	18,001,718	10,296,191	20,315,165	100.0	88.7	0.0
6/30/12	4,463,252	19,547,367	10,482,254	19,992,797	100.0	79.4	0.0
6/30/13	5,053,888	20,789,551	9,699,409	20,490,555	100.0	74.3	0.0
6/30/14	5,277,944	22,033,588	9,703,756	22,569,940	100.0	78.5	0.0
6/30/15	5,379,226	24,012,624	10,972,734	24,387,161	100.0	79.2	0.0
6/30/16	5,468,859	25,390,774	11,137,880	25,185,078	100.0	77.7	0.0
6/30/17	5,534,403	26,686,958	10,945,130	26,364,446	100.0	78.1	0.0
6/30/18	5,570,524	27,874,365	10,951,272	27,455,702	100.0	78.5	0.0

As can be seen from the table above, the PERS plan assets currently covers 100% of the active member contribution account balances as of the valuation date but only covers about 79% of the retiree liability. This ratio has increased for the last two valuations. However, there remains zero assets to cover any employer financed active liabilities.

Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Active Members Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
2009	866	167,122	$5,831,863,534	$34,896	4.3%
2010	868	164,896	5,763,556,195	34,953	0.2
2011	872	161,676	5,684,624,214	35,161	0.6
2012	870	162,311	5,857,789,376	36,090	2.6
2013	873	161,744	5,823,577,978	36,005	(0.2)
2014	871	161,360	5,834,686,655	36,159	0.4
2015	868	157,215	5,904,827,181	37,559	3.9
2016	862	154,104	6,022,532,933	39,081	4.1
2017	861	152,382	6,038,228,708	39,626	1.4
2018	858	150,687	5,999,230,701	39,813	0.5

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

	Fiscal Year Ended June 30									
Item	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Beginning of Year	73,540	76,143	79,168	83,115	86,829	90,214	93,504	96,338	99,483	102,260
Added	4,965	5,747	6,566	6,569	6,276	6,159	5,907	6,548	6,219	5,985
Removed	(2,362)	(2,722)	(2,619)	(2,855)	(2,891)	(2,869)	(3,073)	(3,403)	(3,442)	(3,272)
End of Year	76,143	79,168	83,115	86,829	90,214	93,504	96,338	99,483	102,260	104,973

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

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

Year Ending	2012	2013	2014	2015	2016	2017	2018
Beginning of Year	$1,627,813,430	$1,752,606,759	$1,874,720,385	$1,998,322,954	$2,116,322,652	$2,249,044,704	$2,374,747,017
Added	125,378,708	120,592,399	120,190,296	117,113,206	132,970,248	123,938,697	121,870,115
Removed	(45,787,704)	(47,237,330)	(48,955,768)	(55,158,128)	(59,603,335)	(62,470,173)	(64,186,324)
Benefit increase due to annual COLA	45,202,325	48,758,557	52,368,041	56,044,620	59,355,139	64,233,789	68,319,584
Benefit increase due to plan amendments	0	0	0	0	0	0	0
End of Year	$1,752,606,759	$1,874,720,385	$1,998,322,954	$2,116,322,652	$2,249,044,704	$2,374,747,017	$2,500,750,392

Schedule of Average Benefit Payments

	Years of Credited Service								
	0-9	10-14	15-19	20-24	25	26-29	30	31+	TOTAL
July 1, 2017 to June 30, 2018									
Average Monthly Benefit	$485.22	$722.11	$1,057.13	$1,767.43	$2,023.90	$2,173.95	$2,533.72	$3,178.78	$1,676.34
Average Final Salary	$32,660	$37,608	$39,878	$49,009	$52,289	$52,205	$57,261	$60,427	$46,987
Number of Active Retirants	672	933	849	1,047	348	1,080	192	864	5,985
July 1, 2016 to June 30, 2017									
Average Monthly Benefit	$475.88	$727.37	$1,013.30	$1,655.71	$1,947.82	$2,105.82	$2,446.29	$3,092.75	$1,632.44
Average Final Salary	$31,990	$37,033	$39,332	$47,400	$49,568	$50,461	$55,156	$59,849	$45,739
Number of Active Retirants	732	938	859	1,014	369	1,174	190	943	6,219
July 1, 2015 to June 30, 2016									
Average Monthly Benefit	$512.05	$701.11	$1,053.82	$1,638.19	$1,878.66	$2,117.88	$2,400.11	$3,196.32	$1,665.54
Average Final Salary	$31,771	$34,459	$39,422	$45,571	$46,533	$50,536	$52,472	$59,306	$44,872
Number of Active Retirants	751	997	874	1,048	402	1,204	234	1,038	6,548
July 1, 2014 to June 30, 2015									
Average Monthly Benefit	$458.27	$688.17	$977.30	$1,346.27	$1,833.91	$1,989.13	$2,217.36	$2,898.93	$1,600.68
Average Final Salary	$29,781	$33,585	$37,938	$40,770	$46,461	$48,614	$50,908	$57,019	$43,642
Number of Active Retirants	599	898	774	693	494	1,072	230	1,147	5,907
July 1, 2013 to June 30, 2014									
Average Monthly Benefit	$465.38	$712.04	$998.80	$1,383.89	$1,871.16	$1,992.51	$2,283.20	$2,954.14	$1,585.88
Average Final Salary	$31,044	$35,356	$37,962	$40,947	$47,490	$48,732	$51,456	$57,022	$43,744
Number of Active Retirants	751	945	815	663	505	1,146	232	1,102	6,159

Schedule of Average Benefit Payments

	Years of Credited Service								
	0-9	10-14	15-19	20-24	25	26-29	30	31+	TOTAL
July 1, 2012 to June 30, 2013									
Average Monthly Benefit	$442.04	$694.71	$963.61	$1,421.74	$1,924.91	$2,016.94	$2,187.80	$2,931.36	$1,563.58
Average Final Salary	$30,487	$34,404	$36,876	$41,550	$47,768	$48,862	$49,470	$56,341	$43,082
Number of Active Retirants	915	901	740	758	496	1,121	224	1,121	6,276
July 1, 2011 to June 30, 2012									
Average Monthly Benefit	$436.84	$655.76	$984.40	$1,325.25	$1,823.47	$1,956.67	$2,283.30	$2,938.26	$1,560.13
Average Final Salary	$29,120	$32,872	$37,561	$40,246	$46,050	$47,965	$51,720	$56,263	$42,606
Number of Active Retirants	1,007	867	779	736	501	1,138	260	1,281	6,569
July 1, 2010 to June 30, 2011									
Average Monthly Benefit	$455.16	$637.24	$974.84	$1,347.49	$1,791.74	$1,996.32	$2,176.08	$2,910.64	$1,578.82
Average Final Salary	$29,000	$31,063	$36,095	$39,613	$45,296	$48,620	$49,084	$55,608	$42,106
Number of Active Retirants	1,084	808	741	743	456	1,050	245	1,439	6,566
July 1, 2009 to June 30, 2010									
Average Monthly Benefit	$371.48	$620.46	$905.46	$1,239.55	$1,717.84	$1,897.84	$2,174.78	$2,833.34	$1,473.47
Average Final Salary	$26,406	$30,890	$33,781	$37,426	$43,924	$46,537	$49,426	$54,049	$40,044
Number of Active Retirants	985	773	641	627	428	867	237	1,189	5,747
July 1, 2008 to June 30, 2009									
Average Monthly Benefit	$378.56	$581.94	$874.55	$1,314.05	$1,672.61	$1,865.25	$2,115.68	$2,821.82	$1,432.54
Average Final Salary	$26,309	$29,481	$32,707	$37,865	$42,352	$45,058	$47,003	$53,867	$38,968
Number of Active Retirants	895	669	572	535	378	732	223	961	4,965

SCHEDULE A

Development of Actuarial Value of Assets
($ thousands)

	Valuation Date June 30:	2017	2018	2019	2020	2021	2022
A.	Actuarial Value Beginning of Year	$25,185,078	$26,364,446				
B.	Market Value End of Year	26,543,097	27,763,190				
C.	Market Value Beginning of Year	24,135,016	26,543,097				
D.	Cash Flow						
	D1. Contributions	1,589,150	1,588,970				
	D2. Other Revenue	0	0				
	D3. Benefit Payments	(2,477,914)	(2,609,415)				
	D4. Refunds	(113,707)	(124,306)				
	D5. Administrative Expenses	(17,056)	(16,264)				
	D6. Investment Expenses	(94,072)	(103,669)				
	D7. Net	(1,113,599)	(1,264,684)				
E.	Investment Income						
	E1. Market Total: B.-C.-D7.	3,521,680	2,484,777				
	E2. Assumed Rate	7.75%	7.75%				
	E3. Amount for Immediate Recognition	1,925,029	2,115,770				
	E4. Amount for Phased-In Recognition	1,596,651	369,007				
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: 0.20*E4.	319,330	73,801				
	F2. First Prior Year	(352,976)	319,330	73,801			
	F3. Second Prior Year	(239,758)	(352,976)	319,330	73,801		
	F4. Third Prior Year	439,773	(239,758)	(352,976)	319,330	73,801	
	F5. Fourth Prior Year	201,569	439,773	(239,758)	(352,976)	319,330	73,805
	F6. Total Recognized Investment Gain	367,938	240,170	(199,603)	40,155	393,131	73,805
G.	Actuarial Value End of Year:						
	A.+D7.+E3.+F6.	$26,364,446	$27,455,702				
H.	Difference Between Market & Actuarial Values	$(178,651)	$(307,488)	$(507,091)	$(466,936)	$(73,805)	$0

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

		Asset Summary June 30, 2018 ($ in Thousands)		
		Market Value	**Book Value**	**Actuarial Value**
1.	Assets at June 30, 2017	$26,543,097	$21,203,632	$26,364,446
2.	Contributions and Misc. Revenue	1,588,970	1,588,970	1,588,970
3.	Investment Increment	2,484,777	2,446,787	2,355,940
4.	Benefit Payments	(2,609,415)	(2,609,415)	(2,609,415)
5.	Refunds	(124,306)	(124,306)	(124,306)
6.	Expenses	(119,933)	(119,933)	(119,933)
7.	Assets at June 30, 2018 (1) + (2) + (3) + (4) + (5) + (6)	$27,763,190	$22,385,735	$27,455,702
8.	Investment Return	9.59%	11.89%	9.16%

SCHEDULE B

STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS

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

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

	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:

		Annual Rates of	
Service	Merit & Seniority	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 110% 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: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value.

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

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

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

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

SCHEDULE C

SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS

The following summary presents the main benefit and contribution provisions of the System in effect July 1, 2018, 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
7/1/18	6/30/19	15.75	275,000	9.00	275,000

*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 D

DETAILED TABULATIONS OF THE DATA

RECONCILIATION OF DATA RECEIVED FROM PERS

Reconciliation of Data received from PERS	Active File			Pensioner File			Total
	Active	Inactive NonVested	Inactive Vested	Retirees	Disableds	Survivors	
From PERS	153,767	50,995	14,897	87,199	6,498	11,323	324,679
Return to Active Status							
Deceased		(1)	(3)			(1)	(5)
Certain Period Ended						(132)	(132)
Added Back			48	78	8		134
Pay less than $100	(1,128)	1,041	61				(26)
Not Contributing	(1,952)	1,480	362				(110)
Balance = 0		(748)					(748)
Status Change		(4)	4				
In Retiree Status			(31)				(31)
In Disabled Status			(13)				(13)
Pending Retirees			1,201				1,201
Suspended Beneficiaries			52				52
For Valuation	150,687	52,763	16,578	87,277	6,506	11,190	325,001

SCHEDULE D

STATUS RECONCILIATION FROM 2017 TO 2018

Reconciliation of Data from Last Year to This Year	Actives	Retirees	Disableds	Survivors	Inactives: Vested	Inactives: Non-Vested	Total
As of June 30, 2017	152,382	84,825	6,485	10,950	16,682	50,170	321,494
Retirement	(3,073)	4,922	(2)		(1,847)		
Disabled	(171)	(5)	276		(94)	(6)	
Death with Survivor	(79)	(499)	(51)	710	(21)		60
Terminated Vested	(3,273)			(52)	3,350	(25)	
Terminated Non-Vested	(7,902)					7,902	
Return to Active Service	2,915	(74)	(3)		(765)	(2,073)	
Refunded	(5,247)				(500)	(2,458)	(8,205)
Death No Survivor	(56)	(1,895)	(200)	(411)	(9)	(57)	(2,628)
Benefit Ended				(99)	(68)		(167)
Removed/Cleanup	(10)			(16)	(151)	(3,551)	(3,728)
New	15,201						15,201
Pickups		3	1	76	1	2,861	2,942
As of June 30, 2018	150,687	87,277	6,506	11,190	16,578	52,763	325,001

SCHEDULE D

Retirants & Beneficiaries as of June 30, 2018
Tabulated by Year of Retirement

Year of Retirement Ending June 30	No.	Total Annual Benefits, excluding COLA	COLA	Total Annual Benefits	Average Monthly Total Benefit
2018	5,085	$108,761,985	$53,454	$108,815,439	$1,783
2017	5,413	110,235,078	1,156,062	111,391,140	1,715
2016	5,555	115,981,147	4,635,325	120,616,472	1,809
2015	5,135	103,741,283	7,448,112	111,189,395	1,804
2014	5,621	112,149,143	11,674,177	123,823,320	1,836
2013	5,375	106,647,951	14,749,827	121,397,778	1,882
2012	5,639	112,111,110	19,154,267	131,265,377	1,940
2011	5,563	111,878,068	23,148,506	135,026,574	2,023
2010	4,771	90,538,006	21,762,030	112,300,036	1,962
2009	3,967	74,381,391	20,630,959	95,012,350	1,996
2008	4,291	80,461,648	25,134,381	105,596,029	2,051
2007	4,010	72,798,138	25,486,287	98,284,425	2,042
2006	3,984	68,602,504	26,657,080	95,259,584	1,993
2005	3,662	64,600,791	27,775,771	92,376,562	2,102
2004	3,808	65,695,821	31,175,277	96,871,098	2,120
2003	3,411	58,843,648	30,382,328	89,225,976	2,180
2002	3,434	55,641,708	31,192,894	86,834,602	2,107
2001	3,255	54,210,365	32,831,650	87,042,015	2,228
2000	2,547	40,884,752	26,820,626	67,705,378	2,215
1999	2,182	33,233,522	23,500,159	56,733,681	2,167
1998	2,213	32,456,199	24,442,507	56,898,706	2,143
1997	2,138	30,077,795	24,348,891	54,426,686	2,121
1996	2,095	29,765,162	25,689,223	55,454,385	2,206
1995	1,648	21,295,422	19,534,219	40,829,641	2,065
1994	1,541	19,006,888	18,303,813	37,310,701	2,018
1993	1,601	21,091,290	21,937,634	43,028,924	2,240
1992	1,696	21,902,189	23,910,253	45,812,442	2,251
1991	949	11,466,307	13,457,544	24,923,851	2,189
1990	992	10,277,443	12,642,598	22,920,041	1,925
1989	363	3,182,805	4,040,374	7,223,179	1,658
1988	511	4,924,508	6,640,798	11,565,306	1,886
1987	673	7,014,238	10,408,769	17,423,007	2,157
1986	454	4,390,560	6,580,992	10,971,552	2,014
1985	267	2,307,543	3,607,272	5,914,815	1,846
1984	224	1,688,200	2,733,051	4,421,251	1,645
1983 & Prior	900	5,068,727	9,789,947	14,858,674	1,376
Totals	104,973	$1,867,313,335	$633,437,057	$2,500,750,392	$1,985

SCHEDULE D

Schedule of Retired Members by Type of Benefit

Benefits Payable June 30, 2018

Amount of Monthly Benefit**	Number of Rets.	Ret. Type 1*	Ret. Type 2*	Ret. Type 3*
$1-$500	22,260	16,653	986	4,621
501-1,000	20,992	15,761	2,166	3,065
1,001-1,500	18,648	15,432	1,611	1,605
1,501-2,000	15,238	13,546	888	804
2,001-2,500	11,155	10,232	444	479
2,501-3,000	6,653	6,218	212	223
3,001-3,500	4,127	3,868	90	169
3,501-4,000	2,251	2,111	54	86
4,001-4,500	1,376	1,296	32	48
4,501-5,000	732	691	10	31
Over 5,000	1,541	1,469	13	59
Totals	104,973	87,277	6,506	11,190

*Type of Retirement
1 – Retirement for Age & Service
2 – Disability Retirement
3 – Survivor Payment

**Reflects reduced benefit

SCHEDULE D

Schedule of Retired Members by Option

Benefits Payable June 30, 2018

Amount of Monthly Benefit**	Number of Rets.	Life	Option 1	Option 2	Option 3	Option 4	Option 4A	Option 4B	Option 4C*	Option 5	PLSO 1 Year*	PLSO 2 Years*	PLSO 3 Years*
$1-$500	22,260	16,251	736	2,697	163	132	468	1,753	169	60	586	479	2,284
501-1,000	20,992	14,675	682	2,806	172	185	907	1,486	782	79	790	568	1,968
1,001-1,500	18,648	11,860	684	3,027	191	247	1,153	1,401	972	85	750	682	2,766
1,501-2,000	15,238	9,426	465	2,505	120	267	1,156	1,262	431	37	645	709	3,254
2,001-2,500	11,155	6,718	282	1,874	75	185	1,071	928	123	22	708	627	2,634
2,501-3,000	6,653	3,986	151	1,104	40	136	630	590	48	16	521	416	1,452
3,001-3,500	4,127	2,452	94	678	24	95	426	351	19	7	401	269	813
3,501-4,000	2,251	1,339	52	398	12	46	235	169	10	0	225	147	385
4,001-4,500	1,376	773	23	248	6	38	184	104	3	0	139	85	259
4,501-5,000	732	409	9	144	2	13	102	53	2	0	65	34	137
Over 5,000	1,541	740	19	366	7	56	232	121	3	0	124	70	236
Totals	104,973	68,629	3,197	15,847	812	1,400	6,564	8,218	2,562	306	4,954	4,086	16,188

Option Selected

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

*Included in other options
** Reflects reduced benefit

SCHEDULE D

Retirant and Beneficiary Information June 30, 2018
Tabulated by Attained Ages

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20					326	$1,656,127	326	$1,656,127
20 – 24					136	788,321	136	788,321
25 – 29					77	707,331	77	707,331
30 – 34			9	125,461	118	1,347,581	127	1,473,042
35 – 39			56	884,328	174	1,835,576	230	2,719,904
40 – 44	9	188,822	161	2,797,008	235	2,458,351	405	5,444,181
45 – 49	554	14,635,721	363	7,186,240	375	4,683,311	1,292	26,505,272
50 – 54	2,504	70,149,883	704	14,565,914	472	5,439,243	3,680	90,155,040
55 – 59	5,609	169,818,965	1,093	21,766,962	742	10,236,356	7,444	201,822,283
60 – 64	13,908	360,007,559	1,417	27,939,782	1,025	16,609,392	16,350	404,556,733
65 – 69	20,798	513,153,366	1,224	22,204,265	1,346	23,762,535	23,368	559,120,166
70 – 74	18,174	449,496,020	797	15,048,087	1,504	28,897,842	20,475	493,441,949
75 – 79	12,123	291,911,098	384	6,634,438	1,523	29,961,342	14,030	328,506,878
80 – 84	7,286	170,769,327	217	3,399,767	1,384	30,675,280	8,887	204,844,374
85 – 89	4,051	94,410,183	58	838,892	1,086	22,042,059	5,195	117,291,134
90 – 94	1,799	38,329,061	18	274,385	511	10,656,384	2,328	49,259,830
95	137	2,979,313	1	14,232	47	1,096,024	185	4,089,569
96	83	1,715,595	2	30,578	43	903,517	128	2,649,690
97	91	1,978,447	2	13,072	25	398,200	118	2,389,719
98	55	898,810			22	437,386	77	1,336,196
99	25	474,887			5	81,462	30	556,349
100 & Over	71	1,229,811			14	206,493	85	1,436,304
Totals	87,277	$2,182,146,868	6,506	$123,723,411	11,190	$194,880,113	104,973	$2,500,750,392

Average Age: 70.1 years
Average Age at Retirement: 59.3 years
Average Age at Death: 79.4 years
Average Years Since Retirement: 11.7 years

SCHEDULE D

Total Active Members as of June 30, 2018
Tabulated by Attained Ages and Years of Service

Attained Age	Completed Years of Service							
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	>= 30	Total
20 & under	270							270
Total Pay	4,797,012							4,797,012
Avg. Pay	17,767							17,767
21 to 24	5,762	46						5,808
Total Pay	154,659,783	1,350,311						156,010,094
Avg. Pay	26,841	29,355						26,861
25 to 29	11,679	2,493	50					14,222
Total Pay	370,948,744	96,274,068	1,803,600					469,026,412
Avg. Pay	31,762	38,618	36,072					32,979
30 to 34	7,680	6,465	2,244	40				16,429
Total Pay	245,811,566	270,088,847	99,566,835	1,665,303				617,132,551
Avg. Pay	32,007	41,777	44,370	41,633				37,564
35 to 39	6,521	4,661	6,059	1,971	34			19,246
Total Pay	203,787,932	192,446,399	285,064,880	99,049,956	1,430,558			781,779,725
Avg. Pay	31,251	41,289	47,048	50,254	42,075			40,620
40 to 44	5,535	3,711	4,055	4,698	1,543	25		19,567
Total Pay	174,573,387	147,245,896	183,681,077	246,389,959	82,935,659	1,136,465		835,962,443
Avg. Pay	31,540	39,678	45,297	52,446	53,750	45,459		42,723
45 to 49	5,061	3,606	3,759	3,675	4,024	1,195	23	21,343
Total Pay	157,405,131	138,304,086	160,298,972	179,056,999	221,753,726	68,945,497	1,233,342	926,997,753
Avg. Pay	31,102	38,354	42,644	48,723	55,108	57,695	53,624	43,433
50 to 54	4,166	2,975	3,164	2,993	2,797	2,071	580	18,746
Total Pay	130,812,950	107,808,011	122,876,305	131,828,464	141,289,038	116,734,693	32,979,608	784,329,069
Avg. Pay	31,400	36,238	38,836	44,046	50,514	56,366	56,861	41,840
55 to 59	3,582	2,758	2,891	3,056	2,732	1,657	1,218	17,894
Total Pay	112,019,240	94,355,923	110,379,403	128,171,958	122,900,676	84,582,909	69,769,225	722,179,334
Avg. Pay	31,273	34,212	38,180	41,941	44,986	51,046	57,282	40,359
60 to 64	2,094	1,982	1,984	1,681	1,538	1,134	1,038	11,451
Total Pay	61,859,468	70,116,628	75,231,343	71,582,440	71,070,738	55,849,353	63,900,379	469,610,349
Avg. Pay	29,541	35,377	37,919	42,583	46,210	49,250	61,561	41,010
65 to 69	786	762	700	529	410	288	359	3,834
Total Pay	21,721,816	24,432,118	28,153,735	23,001,321	20,618,334	15,695,323	26,474,185	160,096,832
Avg. Pay	27,636	32,063	40,220	43,481	50,289	54,498	73,744	41,757
70 & over	395	335	347	273	196	115	216	1,877
Total Pay	9,062,915	8,815,981	12,054,879	10,657,986	8,950,921	6,036,273	15,730,172	71,309,127
Avg. Pay	22,944	26,316	34,740	39,040	45,668	52,489	72,825	37,991
Total	53,531	29,794	25,253	18,916	13,274	6,485	3,434	150,687
Total Pay	1,647,459,944	1,151,238,268	1,079,111,029	891,404,386	670,949,650	348,980,513	210,086,911	5,999,230,701
Avg. Pay	30,776	38,640	42,732	47,124	50,546	53,813	61,178	39,813

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

Age: 44.8 years
Service: 10.3 years
Entry Age: 35 years
Annual Pay: $39,813

SCHDULE E

ANALYSIS OF FINANCIAL EXPERIENCE

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

Type of Activity	$ Gain (or Loss) For Year Ending 6/30/18	$ Gain (or Loss) For Year Ending 6/30/17
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	$ 85.1	$ 47.8
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	1.4	0.0
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	0.1	(1.3)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(165.6)	(137.3)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	236.4	239.1
New Members. Additional unfunded accrued liability will produce a loss.	(60.8)	(91.4)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	254.0	286.6
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	20.4	97.0
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	(155.3)	0.8
Gain (or Loss) During Year From Financial Experience	$ 215.7	$ 441.3
Non-Recurring Items. Adjustments for plan amendments, software changes, assumption changes, or method changes.	0.0	(24.1)
Composite Gain (or Loss) During Year	$ 215.7	$ 417.2

SCHEDULE F

FUNDING POLICY OF THE PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI

The purpose of the funding policy is to state the overall funding goals and objectives for the Public Employees' Retirement System of Mississippi (PERS), and to document both the metrics that will be used to measure progress toward achieving those goals, and the methods and assumptions employed to develop the metrics.

The employer contribution rate for PERS will be set based on the metrics, assumptions and methods outlined in Section II and III of this policy.

Section I - Funding Goals and Objectives

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

- Preservation of the defined benefit structure for providing lifetime benefits to the PERS membership,
- Contribution rate stability as a percentage of payroll (Fixed Contribution Rate – FCR),
- Maintain an increasing trend in the funded ratio over the projection period with an ultimate goal of being 100% funded,
- Require clear reporting and risk analysis of the metrics by the actuary as outlined in Section II of this policy using a "Signal Light" approach to assist the Board in determining whether increases or decreases are needed in the employer contribution rate, and
- Ensure benefit improvements are funded through increases in contribution requirements in accordance with Article 14, S 272A, of the Mississippi Constitution.

Section II – Metrics

To track progress in achieving the outlined funding goals and objectives and to assist the Board in making a determination whether an increase or decrease in the employer contribution rate for PERS should be considered, certain metrics will be measured annually in conjunction with information provided in the actuarial valuation and projection report. As part of the annual valuation and projection reports, each metric will be calculated and assigned a "Signal Light" with the following definitions:

Status	Definition
Green	Plan passes metric and PERS' funding goals and objectives are achieved
Yellow	Plan passes metric but a warning is issued that negative experience may lead to failing status
Red	Plan fails metric and PERS must consider contribution increases

If any one of the metrics are in the Red Signal Light status in conjunction with the annual valuation report (presented in October) and the projection report (presented in December), the actuary will determine and recommend to the Board an employer contribution rate increase to consider that is sufficient enough to get all three metrics back into the Green Signal Light status. The employer contribution rate increase would be effective for the July 1st, 18 months following the completion of the projection report (e.g. if the projection report in 2019 deems an increase to be considered, then it would be effective for July 1, 2021).

SCHEDULE F

The following metrics will be measured:

- Funded Ratio – defined as the actuarial value of assets divided by the actuarial accrued liability. One of the funding goals is to have an increasing funded ratio over the projection period with an ultimate goal of having a 100% funded ratio. The Board sets the Signal Light definition as follows:

Status	Definition
Green	Funded Ratio above 80% in 2047
Yellow	Funded Ratio between 65% and 80% in 2047
Red	Funded Ratio below 65% in 2047

- Cash flow as a percentage of assets – defined as the difference between total contributions coming into the trust and the benefit payments made to retirees and beneficiaries going out of the trust as a percentage of beginning year market value of assets. Over the projection period, this percentage will fluctuate from year to year so for Signal Light testing, the net cash flow percentage over the entire projection period will be tested. The Board sets the Signal Light definition as follows:

Status	Definition
Green	Net Cash Flow Percentage above negative 6.00% (-6.00%) during the projection period
Yellow	Net Cash Flow Percentage between negative 6.00% (-6.00%) and negative 7.75% (-7.75%) during the projection period
Red	Net Cash Flow Percentage below negative 7.75% (-7.75%) during the projection period

- Actuarially Determined Contribution (ADC) – defined as the contribution requirement determined by the actuary using a contribution allocation procedure based on the principal elements disclosed in Section III of this funding policy:

    1. Actuarial Cost Method
    2. Asset Smoothing Method
    3. Amortization Method

SCHEDULE F

The calculation of the ADC will be determined during the actuarial valuation and not during the projection report. The ratio of the ADC to the fixed contribution rate (ADC/FCR) as set by this Funding Policy will be tested. The Board sets the Signal Light definition as follows:

Status	Definition
Green	ADC ratio at or below 100% of fixed contribution rate at valuation date
Yellow	ADC ratio between 100% and 110% of fixed contribution rate at valuation date
Red	ADC ratio above 110% of fixed contribution rate at valuation date

Section III – Assumptions and Methods

Each year, the actuary will perform an actuarial valuation and projection report for funding purposes. During the process, the actuary shall calculate all the metrics listed in Section II of this Funding Policy and PERS' Signal Light status for each metric. The following three major components of a funding valuation will be used:

- **Actuarial Cost Method** – This component determines the attribution method upon which the cost/liability of the retirement benefits are allocated to a given period, defining the normal cost or annual accrual rate associated with projected benefits. The Entry Age Normal Cost Method (EAN) is to be used for determination of the normal cost rate and the actuarial accrued liability for purposes of calculating the Actuarial Determined Contribution (ADC).

- **Asset Valuation Method** – This component dictates the method by which the asset value, used in the determination of the Unfunded Actuarial Accrued Liability (UAAL) and Funded Ratio, is determined. The asset valuation method to be used shall be a five-year smoothed market value of assets. The difference between the actual market value investment returns and the expected market investment returns is recognized equally over a five-year period.

- **Amortization Method** – This component prescribes, in terms of duration and pattern, the systematic manner in which the difference between the accrued liability and the actuarial value of assets is reduced. For purposes of calculating the ADC metric, the following amortization method assumptions are used**:**

    1. Once established for any component of the UAAL, the amortization period for that component will be closed and will decrease by one year annually.
    2. The amortization payment will be determined on a level percentage of pay basis.
    3. The length of the amortization periods will be as follows:
        a. Existing UAAL on June 30, 2018 – 30 years.
        b. Annual future actuarial experience gains and losses, assumption changes or benefit enhancements or reductions – 25 years from the date of the valuation.
    4. If any future annual actuarial valuation indicates that PERS has a negative UAAL, the ADC shall be set equal to the Normal Cost.

SCHEDULE F

- **Actuarial Assumptions** – The actuarial assumptions are used to develop the annual and projected actuarial metrics, as well as the ADC rates. The actuarial assumptions are derived and proposed by the actuary and adopted by the PERS' Board in conformity with the *Actuarial Standards of Practice*. The actuarial assumptions for this funding policy were developed using the experience for the four-year period ending June 30, 2016 (State of Mississippi Retirement Systems Experience Investigation for the Four-Year Period Ending June 30, 2016). The long-term investment return assumption adopted by the PERS' Board in conjunction with the Experience Investigation is 7.75%.

Section IV – Governance Policy/Process

Below is a list of specific actuarial and funding related studies, the frequency at which they should be commissioned by the Board and additional responsibilities related to each:

- **Actuarial Valuation (performed annually in October)** – The Board is responsible for the review of PERS' annual actuarial valuation report, which provides the annual funded ratio and the calculation of the ADC.

- **Projection Report (performed annually in December)** – The Board is responsible for the review of PERS' 30-year projection report, which will include the actuarial metrics and Signal Light status for each metric over a 30-year period.

- **Experience Analysis (performed every two years on a rolling four year basis and presented in April)** – The Board is responsible for ensuring that an experience analysis is performed as prescribed, review of the results of the study, and approving the actuarial assumptions and methodologies to be used for all actuarial purposes relating to the defined benefit pension plan.

- **Actuarial Audit (performed at least every five years)** – The Board is responsible for the review of an audit report performed by a new actuarial firm to provide a critique of the reasonableness of the actuarial methods and assumptions in use and the resulting actuarially computed liabilities and contribution rates.

- **Funding Policy Review (performed at least annually)** – The Board is responsible for the periodic review of this policy, but at least annually following the Projection Report and biennially following the Experience Analysis.

Section V - Glossary of Funding Policy Terms

- **Actuarial Accrued Liability (AAL):** The AAL is the value at a particular point in time of all past normal costs. This is the amount of assets the plan would have today if the current plan provisions, actuarial assumptions, and participant data had always been in effect, contributions equal to the normal cost had been made, and all actuarial assumptions had been met.

- **Actuarial Cost Method:** The actuarial cost method allocates a portion of the total cost (present value of benefits) to each year of service, both past service and future service.

- **Actuarial Determined Contribution (ADC):** The potential payment to the plan as determined by the actuary using a contribution allocation procedure which, if contributed consistently and combined with investment earnings, would be sufficient to pay promised benefits in full over the long-term. The ADC may or may not be the amount actually paid by the plan sponsor or other contributing entity.

- **Asset Values**:

  - **Actuarial Value of Assets (AVA):** The AVA is the market value of assets less the deferred investment gains or losses not yet recognized by the asset smoothing method.

  - **Market Value of Assets (MVA):** The MVA is the fair value of assets of the plan as reported in the plan's audited financial statements.

SCHEDULE F

- **Entry Age Normal Actuarial Cost Method (EAN):** The EAN actuarial cost method is a funding method that calculates the normal cost as a level percentage of pay or level dollar amount over the working lifetime of the plan's members.
- **Funded Ratio:** The funded ratio is the ratio of the plan assets to the plan's actuarial accrued liabilities.
    - **Actuarial Value Funded Ratio:** is the ratio of the AVA to the AAL.
- **Normal Cost**: The normal cost is the cost allocated under the actuarial cost method to each year of active member service.
- **Present Value of Benefits (PVB) or total cost:** The PVB is the value at a particular point in time of all projected future benefit payments for current plan members. The future benefit payments and the value of those payments are determined using actuarial assumptions regarding future events. Examples of these assumptions are estimates of retirement and termination patterns, salary increases, investment returns, etc.
- **Surplus:** A surplus refers to the positive difference, if any, between the AVA and the AAL.
- **Unfunded Actuarial Accrued Liability (UAAL):** The UAAL is the portion of the AAL that is not currently covered by the AVA. It is the positive difference between the AAL and the AVA.
- **Valuation Date:** The valuation date is the annual date upon which an actuarial valuation is performed; meaning that the trust assets and liabilities of the plan are valued as of that date. PERS' annual valuation date is June 30th.