



#630
January 7, 2019

Report to the Mississippi Legislature

2018 Update on Financial Soundness of the Public Employees' Retirement System

PEER
MISSISSIPPI
Joint Legislative Committee on Performance
Evaluation and Expenditure Review

PEER: The Mississippi Legislature's Oversight Agency

The Mississippi Legislature created the Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER Committee) by statute in 1973. A joint committee, the PEER Committee is composed of seven members of the House of Representatives appointed by the Speaker and seven members of the Senate appointed by the Lieutenant Governor. Appointments are made for four-year terms, with one Senator and one Representative appointed from each of the U.S. Congressional Districts and three at-large members appointed from each house. Committee officers are elected by the membership, with officers alternating annually between the two houses. All Committee actions by statute require a majority vote of four Representatives and four Senators voting in the affirmative.

Mississippi's constitution gives the Legislature broad power to conduct examinations and investigations. PEER is authorized by law to review any public entity, including contractors supported in whole or in part by public funds, and to address any issues that may require legislative action. PEER has statutory access to all state and local records and has subpoena power to compel testimony or the production of documents.

PEER provides a variety of services to the Legislature, including program evaluations, economy and efficiency reviews, financial audits, limited scope evaluations, fiscal notes, special investigations, briefings to individual legislators, testimony, and other governmental research and assistance. The Committee identifies inefficiency or ineffectiveness or a failure to accomplish legislative objectives, and makes recommendations for redefinition, redirection, redistribution and/or restructuring of Mississippi government. As directed by and subject to the prior approval of the PEER Committee, the Committee's professional staff executes audit and evaluation projects obtaining information and developing options for consideration by the Committee. The PEER Committee releases reports to the Legislature, Governor, Lieutenant Governor, and the agency examined.

The Committee assigns top priority to written requests from individual legislators and legislative committees. The Committee also considers PEER staff proposals and written requests from state officials and others.

PEER Committee
Post Office Box 1204
Jackson, MS 39215-1204

(Tel.) 601-359-1226
(Fax) 601-359-1420
(Website) www.peer.ms.gov

The Mississippi Legislature

Joint Committee on Performance Evaluation and Expenditure Review

PEER Committee

SENATORS
LYDIA CHASSANIOL
Vice Chair
KEVIN BLACKWELL
Secretary
TERRY C. BURTON
VIDET CARMICHAEL
THOMAS GOLLOTT
GARY JACKSON
SAMPSON JACKSON II



REPRESENTATIVES
BECKY CURRIE
Chair
TIMMY LADNER
RICHARD BENNETT
STEVE HORNE
MARGARET ELLIS ROGERS
RAY ROGERS
PERCY W. WATSON

TELEPHONE:
(601) 359-1226

FAX:
(601) 359-1420

Post Office Box 1204
Jackson, Mississippi 39215-1204

James A. Barber
Executive Director

www.peer.ms.gov

OFFICES:
Woolfolk Building, Suite 301-A
501 North West Street
Jackson, Mississippi 39201

January 7, 2019

Honorable Phil Bryant, Governor
Honorable Tate Reeves, Lieutenant Governor
Honorable Philip Gunn, Speaker of the House
Members of the Mississippi State Legislature

On January 7, 2019, the PEER Committee authorized release of the report titled ***2018 Update on Financial Soundness of the Public Employees' Retirement System.***

A handwritten signature in black ink, reading "Videt Carmichael".

Senator Videt Carmichael, Chair

This report does not recommend increased funding or additional staff.

Table of Contents

Letter of Transmittal	i
Report Highlights	v
Introduction	1
Authority, Scope, and Purpose.....	1
Method	1
Background	2
Overview of the Public Employees' Retirement System.....	2
Composition and Role of the PERS Board of Trustees.....	3
Update on Financial Soundness of the Public Employees' Retirement System.....	5
Actuarial Soundness and Sustainability.....	5
Risk Management and Investment Management.....	13
PERS Board's New Funding Policy.....	18
What is a funding policy, and does the PERS Board employ one?.....	18
What are the goals and objectives of the new funding policy, and how do they differ from the 2012 policy?.....	19
What changes were made to the metrics used to evaluate the status and progress of the system? ..	20
Appendix A: PERS Investment Management Fees, FY 2018 & FY 2017	28
Appendix B: PERS Payroll Growth for FY 2013-FY 2018	30
Appendix C: PERS New Funding Policy	31
Agency Response	36

Exhibits

Exhibit 1: Public Employees’ Retirement System Plan Salary Growth (by Source) for the Years Ended June 30, 2018, and June 30, 2017..... 8

Exhibit 2: PERS Active and Retiree Members for FY 2008 through FY 2018 (in Thousands)..... 10

Exhibit 3: PERS Funding Policy Metric Results as of June 30, 2018 12

Exhibit 4: Comparison of PERS Investment Performance to Peer Group of Public Pension Plans With Assets of More Than \$10 Billion..... 15

Exhibit 5: PERS FY 2018 Actual Asset Allocation Compared to Allocation Model as of June 30, 2017 16

Exhibit 6: PERS Funding Policy “Signal Light” Levels and Definitions 21

Exhibit 7: PERS Funding Ratio Signal Light Definitions for Funded Ratio 22

Exhibit 8: PERS Funding Ratio Signal Light Definitions for Cash Flow as a Percentage of Assets 24

Exhibit 9: PERS Funding Ratio Signal Light Definitions for Actuarially Determined Contribution..25

2018 Update on Financial Soundness of the Public Employees' Retirement System

CONCLUSION: "Financial soundness" should be defined not as a point-in-time comparison of assets and liabilities, but as a multifaceted construct involving an understanding of the role of actuarial soundness in judging financial health, a broadly defined view of affordability that encompasses sustainability in consideration of all relevant environmental conditions, and an understanding of the role of risk and investment management in the long-term financial health of the system.

Background:

The Public Employees' Retirement System of Mississippi (PERS) is a defined benefits retirement plan for a majority of the employees (and/or their beneficiaries) of state agencies, counties, cities, colleges and universities, public school districts, and other participating political subdivisions. State law requires PEER to report annually to the Legislature on the financial soundness of PERS.

In addition to the PERS plan, Mississippi's public retirement system consists of five other retirement plans (or programs) that provide retirement allowances and other benefits to segments of Mississippi public employees.

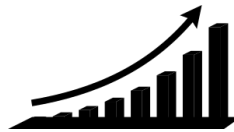
The system is under the administration of the 10-member PERS Board of Trustees, which has a primary responsibility of ensuring adequate funding of the plans it administers. One means of accomplishing this task is by setting contribution rates for employers participating in the plans. For assistance in setting these rates, the PERS Board receives actuarial reports annually and works with independent actuarial advisers to develop comprehensive models that are used to project the financial position of the various plans. These models include such components as investment return assumptions, wage inflation assumptions, retirement tables, and retiree mortality tables.

Each of these components must work in concert with the others for the plan to maintain financial soundness. Underperformance in any one area can cause additional stress on other components of the plan and can lead to underperformance of the plan as a whole.

In addition to annual actuarial valuation and projection reports, the PERS Board biennially reviews the actual experiences of the various plans to expected experience for reasonableness, and adjusts, as necessary, the assumptions used.

This report provides a concise overview of where the PERS plan currently stands financially and reviews the new funding policy implemented by the PERS Board in June 2018.

PERS Investment Returns



According to the PERS investment consultants, the plan's investment performance for FY 2018 was a return on investments of 9.48%, which is above the current actuarial model's target investment return of 7.75%. This return placed the plan above the median return for its peer group (plans having greater than \$10 billion in assets) of 8.89%. Additionally, PERS investment performance has exceeded its peer group median for each of the past three-, five-, and 10-year periods (ranking in the top 14% for each period). Over the past 10 years, the PERS investment return on assets averaged 7.45%. Historically, PERS investment returns have averaged 6.28% over the past 20 years, 7.84% over the past 25 years, and 8.55% over the past 30 years.

FY 2018
investment
manager fees
\$104.8 million,
0.37% of total
assets

FY 2017
investment
manager fees
\$95.6 million,
0.36% of total
assets

Funding Ratio

June 30, 2018, funding ratio: 61.8%

- Increase from 61.1% at end of FY 2017
- Projected 2047 funding ratio of 95.8%

Primarily due to the future increase in the employer contribution rate (effective July 1, 2019), the plan has a projected future funding ratio of 95.8% by 2047, which compares favorably to the assessment metrics in the plan's new funding policy.

Active Members to Retirees

The ratio of active members to retired members in the PERS plan decreased approximately 36% over the past 10 years.

- FY 2018 ratio: 1.40 active employees for each retired member
- FY 2008 ratio: 2.20 active employees for each retired member

The declining ratio is attributable to a decrease in the number of active members and an increase in the number of retired members.

This decrease results in funding future pension obligations over the payroll of fewer active members. However, the PERS active member to retired member ratio of 1.46:1 at the end of FY 2017 was above the average ratio for other pension plans across the nation.



The PERS actuarial model currently assumes a 3.25% increase in annual payroll.

- FY 2018 payroll decreased 0.65% compared to FY 2017 payroll.
- 5-year average annual payroll increase: 0.60%
- 10-year average annual payroll increase: 0.81%

According to the PERS actuary, payroll growth (either through increases in existing salaries or through the creation of new positions) that is less than expected can cause upward pressure on the amortization period attributed to the unfunded actuarial accrued liability (UAAL). However, the upward pressure on the unfunded actuarial accrued liability may be partially or totally offset due to the decrease in the amount of future liabilities resulting from a lower payroll amount than assumed in the actuarial model.

Highlights of the New Funding Policy

In June 2018, the PERS Board adopted a new funding policy with the following objective:

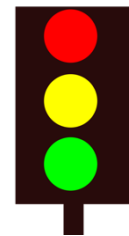
The objective in requiring employer and member contributions to PERS is to accumulate sufficient assets during a member's employment to fully finance the benefits a member will receive in retirement.

To accomplish this objective, the board outlined several goals in the funding policy:

- Preserve the defined benefits structure for providing lifetime benefits to the PERS membership,
- Pursue contribution rate stability,
- Maintain an increasing trend in the funded ratio over the projection period with a target of being 100% funded, and
- Require clear reporting and risk analysis by the plan's actuary using a signal light approach.

Included in the new funding policy are three metrics to track the plan's progress in achieving the goals and objectives outlined by the PERS Board (funding ratio, cash flow as percentage of assets, and actuarially determined contribution)* and a course of action should any of the metrics fall below certain thresholds. The new metrics will be evaluated through a "signal light" approach (green indicating goals and objectives achieved, yellow warning that future negative actions may lead to a failure in goals and objectives, and red suggesting the PERS Board must consider changes to employer contribution rate).

*The actuarially determined contribution is a calculation of the potential contribution rate necessary to allow the PERS plan to reach its funding goals within a 30-year period under the prescribed methods outlined in the board's funding policy.



SUGGESTS THE BOARD MUST CONSIDER CHANGES TO EMPLOYER RATE

WARNS THAT FUTURE NEGATIVE ACTIONS MAY LEAD TO FAILING GOALS

INDICATES GOALS AND OBJECTIVES HAVE BEEN ACHIEVED

Current Status

Funding Ratio

Cash Flow as a Percentage of Assets

Actuarially Determined Contribution

Increase in Employer Contribution Rate

In consideration of results from an annually calculated actuarial valuation under the new funding policy the PERS board raised the employer contribution rate percentage to 17.40% of annual compensation, an increase of 1.65% (effective July 1, 2019). Under the prior measurement system, a rate increase would also have been needed.

2018 Update on Financial Soundness of the Public Employees' Retirement System

Introduction

Authority, Scope, and Purpose

MISS. CODE ANN. Section 25-11-101 (1972) directs the PEER Committee to

...have performed random actuarial evaluations, as necessary, of the funds and expenses of the Public Employees' Retirement System and to make annual reports to the Legislature on the financial soundness of the system.

The PEER Committee, under its authority found in MISS. CODE ANN. Sections 5-3-51 et seq. (1972), reviewed the financial condition of the Public Employees' Retirement System of Mississippi (PERS). Actuarial evaluations authorized by Section 25-11-101 are discretionary.

This 2018 report includes an update on the financial performance of the system and projected funding levels and the PERS Board's adoption of a new funding policy for the system.

Method

To conduct this assessment, PEER

- reviewed financial reports of the Public Employees' Retirement System;
- reviewed actuarial reports and projections and experience studies prepared for the Public Employees' Retirement System;
- reviewed investment assessments prepared for the Public Employees' Retirement System; and
- interviewed personnel of the Public Employees' Retirement System.

Background

Like all other states in the country, Mississippi provides a retirement system for public employees, and, as is the case in most states, an agency of state government that is responsible for the investment and administration of the benefit payment process oversees the plan.

This chapter will present

- an overview of the Public Employees' Retirement System; and
- the composition and responsibilities of the PERS Board of Trustees.

Overview of the Public Employees' Retirement System

Under MISS. CODE ANN. Section 25-11-101 (1972), the Legislature established a retirement system to provide retirement allowances and other benefits for officers and employees in the state's service and their beneficiaries. The Board of Trustees of the Public Employees' Retirement System of Mississippi is responsible for the administration of the system.

Mississippi's retirement systems (hereinafter collectively referred to as "system") currently consist of seven types of plans, or programs:

- The Public Employees' Retirement System of Mississippi (PERS) is a defined benefits¹ retirement plan for state agencies, counties, cities, school districts, and other participating political subdivisions.
- The Mississippi Highway Safety Patrol Retirement System (MHSPRS) is a defined benefits retirement plan designed exclusively for Mississippi Highway Safety Patrol sworn officers.
- The Mississippi Government Employees' Deferred Compensation Plan and Trust (MDC) is an IRS Section 457(b)² voluntary government employees' deferred compensation plan.³
- Municipal Retirement Systems (MRS) are retirement plans established by 17 municipalities prior to the establishment of PERS whose membership was later closed; the administration and members of the plans were transferred to PERS in 1987.

¹Defined benefit plans, the most prevalent type of plan used by public employers, pay retired employees, or their beneficiaries, a defined amount through a calculation based on the plan's benefits and the employee's salary and years of service.

²Plans eligible under IRS Section 457(b) allow employees of sponsoring organizations (state and local governments and some nongovernmental entities) to defer income taxation on up to \$18,500 of retirement contributions (for calendar year 2018). Catch-up provisions allow an additional \$6,000 in tax deferrals or up to \$24,500.

³MDC is sponsored by the State of Mississippi and administered by the PERS Board. The PERS Board contracts with Empower Retirement (the nation's second-largest retirement services company (as of May 2018)) as a third-party administrator to perform recordkeeping and administrative functions.

- The Supplemental Legislative Retirement Plan (SLRP) is a separate plan designed to provide additional benefits to members of the Legislature and the President of the Senate. It is funded by employee and employer contributions in addition to contributions to the PERS plan.
- The Optional Retirement Plan (ORP) is a 401(a)-defined contribution plan⁴ that certain teaching and administrative faculty at the state's universities can elect to join in lieu of becoming members of PERS.
- The PERS Board also offers an optional retiree Medicare supplemental insurance program, the premiums of which are paid by the individuals who participate.⁵

All assets, proceeds, and income of the system as defined herein are held in trust (as provided for in MISSISSIPPI CONSTITUTION OF 1890, Section 272A) for the exclusive purpose of providing benefit payments and refunds and providing for the system's administrative expenses. Assets of the system, excluding the MDC and ORP, are invested collectively at the direction of the PERS Board of Trustees and its advisers. Assets of each member of the MDC and ORP are invested at the direction of the member.

Composition and Role of the PERS Board of Trustees

The system described herein is under the administration of the 10-member PERS Board of Trustees established in MISS. CODE ANN. Section 25-11-15 (1972). In addition to administrative oversight provided by the PERS Board and staff, the MHSPRS is governed by its own administrative board.

Composition of the PERS Board of Trustees

The current membership of the PERS Board consists of

- the State Treasurer,
- one gubernatorial representative,
- two state employees,
- one municipal employee,
- one county employee,
- one Institutions of Higher Learning (IHL) employee,
- one public school/junior college employee, and
- two retiree members of the PERS system.

With the exception of the State Treasurer and Governor's appointees, all trustees are elected by the various constituency employee groups they represent (i.e., state municipal, county,

⁴The ORP is a defined contribution plan that has fixed employee and employer contributions. These contributions are the sole financial requirement of the employer.

⁵Authorization for this offering is granted under MISS. CODE ANN. § 25-11-141 (1972).

institutions of higher learning, public schools, and junior colleges, as well as retirees).

In addition to those members, state law provides for four legislative designees (two each from the Mississippi Senate and House) to attend PERS Board meetings.

The PERS Board establishes policies and procedures for the administration of the system in accordance with the laws governing the various benefit plans. This includes adopting rules and regulations necessary to implement those laws and comply with federal regulations.

Role of the PERS Board of Trustees

A primary responsibility of the PERS Board is to ensure adequate funding of the plans it administers. One means of accomplishing this task is by setting contribution rates for employers participating in the plans. For assistance setting these rates, the PERS Board receives actuarial reports annually and works with its actuarial consultants to develop comprehensive models to project the financial position of the various plans. These models include such factors as investment return assumptions, wage inflation assumptions, retirement tables, and retiree mortality tables.

For FY 2018 the PERS Board continued its contractual relationship with Cavanaugh Macdonald Consulting, LLC, a nationwide actuarial and health-care consulting firm that works with state and municipal retirement systems in 24 states, the District of Columbia, and Puerto Rico.⁶

In addition to annual actuarial valuation and projection reports, the PERS Board biennially reviews the experiences of the various plans to expected experience for reasonableness, and adjusts, as necessary, the assumptions used.

The PERS Board also contracts with an investment consultant to conduct asset-liability studies, provide quarterly performance reports and economic updates, and assist the PERS Board and staff in establishing the system's asset allocation policy and selecting investment management firms. The PERS Board contracts with Callan, LLC, one of the nation's largest independently owned investment consulting firms.⁷

PERS Board members have a fiduciary duty to manage and invest the funds of the various plans for the exclusive benefit of the members and beneficiaries in the manner provided by law. MISS. CODE ANN. Section 25-11-121 (1972) provides guidelines and limitations on the types of assets the PERS Board may use as investments for the PERS plan.

⁶The PERS Board released an RFP for actuarial consulting services on October 2, 2017. The PERS Board voted in its April 2018 meeting to execute a new five-year contract with Cavanaugh Macdonald Consulting, LLC, effective July 1, 2018.

⁷This contract was most recently renewed in April of 2018 for a five-year term.

Update on Financial Soundness of the Public Employees' Retirement System

“Financial soundness” should be defined not as a point-in-time comparison of assets and liabilities but as a multifaceted construct involving an understanding of the role of actuarial soundness in judging financial health, a broadly defined view of affordability that encompasses sustainability in consideration of all relevant environmental conditions, and an understanding of the role of risk and investment management in the long-term financial health of the system.

The Public Employees' Retirement System Board has adopted and implemented policies and procedures that allow it to address the major areas that contribute to the plan's financial well-being and to carry out its fiduciary responsibilities to its active members and retirees. These policies and procedures fall into the following areas:

- actuarial soundness and sustainability, and
- risk and investment management.

This chapter will discuss each of these areas, highlight relevant activity and changes to PERS for the past fiscal year, and discuss future projections.

Actuarial Soundness and Sustainability

“Actuarial soundness” and “sustainability” are two of the major components of financial soundness. The focus of these two concepts should be to establish a system and actuarial assumption models that can be upheld and defended in view of all relevant environmental conditions, including contractual obligations involved and the potential economic consequences of abrogating those obligations.

Actuarial Soundness

The PERS Board, with assistance from its staff and other contractual advisers, endeavors to maintain the actuarial soundness of the plan by monitoring all components used in the PERS actuarial model. Among all continued analysis, the areas of wage inflation and active-member and retiree-member assumptions may require particular attention.

The PERS Board, in consultation with its actuaries, develops an actuarial model based on such assumptions as projected investment returns, payroll increases, inflation, retirement ages, mortality rates, marriage rates, and accrued leave to project the system's future assets and liabilities. Although the PERS Board sets plan assumptions based on biennial experience studies, the plan's actual experience (i.e., investment returns or mortality rates) is a product of environmental and demographic factors.

Variances in the actual experience of the plan compared to the model's assumptions have an impact on the plan's financial condition. Therefore, the PERS Board, with assistance from its staff and other contractual advisers, endeavors to maintain the

actuarial soundness of the plan by monitoring all components used in the PERS actuarial model through quarterly updates on the performance of the system's assets and annual actuarial updates in conjunction with annual projections and biennial experience reports.

Differences Between Actual and Assumed Wage Inflation

Over the past five- and 10-year periods, the PERS actual average annual payroll increase has continued to remain below the actuarial model's projected rate of salary increase (currently assumed at 3.25%). Although the PERS Board adopted changes based on its most recent experience studies (as of June 30, 2012; June 30, 2014; and June 30, 2016), which help PERS actuarial assumptions align more closely with actual experience, continued analysis of variation between actual and assumed is warranted.

The wage inflation assumption is the estimate of the amount that PERS members' wages will increase annually in future years. This rate affects the projected amount of funds that are to be contributed annually for investments to meet future plan liabilities and the calculation of the amount of future plan liabilities. The PERS system receives employee and employer contributions⁸ from seven sources:

- state agencies,
- state universities,
- public school districts,
- community and junior colleges,
- counties,
- municipalities, and
- other political subdivisions (e.g., water or sewer utility districts).

The wage inflation assumption is composed of the impact of inflation and the real rate of wage inflation, which seek to account for the overall increases in the value of labor over time. Currently these components are 3% and 0.25%, respectively. Wage inflation figures can be affected both by changes in payments to an individual (e.g., salary increases resulting from pay or merit raises) and the payments to the total number of individuals (e.g., growing or shrinking workforces).

For more information on the numbers of active employees currently participating in PERS, see pages 9-10.

As a result of the most recent experience study, ending June 30, 2016, the PERS Board adopted changes that reduced the plan's wage inflation rate from 3.75% to 3.25% annually.⁹

⁸The current rate each employee and his or her employer must contribute to PERS is 9% and 15.75% of the employee's total salary, respectively.

⁹Over the past 10-year period, the PERS Board's actuarial assumptions included an assumed growth rate of 4.25% for the period between FY 2008 and FY 2014, an assumed rate growth rate of 3.75% for FY 2015 and FY 2016, and an assumed growth rate of 3.25% for FY 2017 and FY 2018.

For the past five fiscal year period (FY 2014 through FY 2018) and 10 fiscal year period (FY 2009 through FY 2018), the PERS average annual payroll increase fell below the projected 3.25% annual rate of salary increase. For the past 10 fiscal years, the average annual payroll increase was 0.81%, and during the past five fiscal years the average annual payroll increase was 0.60%. The rates of annual payroll increase compare unfavorably to figures for fiscal year 2017, which were 1.55% and 0.61% for the 10- and five-year periods, respectively.

Exhibit 1, page 8, presents total payroll reported to PERS for fiscal years 2017 and 2018. As this exhibit indicates, for FY 2018 alone PERS experienced salary retraction of 0.65%, attributable to decreases in total payroll in state agencies, public schools, community/junior colleges, and other political subdivisions and to increases in total payroll in state universities, counties, and municipalities. Also illustrated in Exhibit 1, salaries of employees of state agencies, which represented approximately 18% of PERS-covered salaries, experienced a decrease of 3.84% for FY 2018. Appendix B, page 30, lists the PERS payroll growth for fiscal years 2013 through 2018.

As reported in *An Update on the Financial Soundness of the Mississippi Public Employees' Retirement System and Related Legal Issues: 2014* (PEER Report #591, January 5, 2015), PERS actuaries stated that payroll growth (either through increases in existing salaries or through the creation of new positions) that is less than expected can cause upward pressure on the amortization period attributed to the unfunded actuarial accrued liability (UAAL), which occurs when a pension system's current actuarial value of assets is less than the present value of benefits earned by retirees, inactive members, and current employees as of the valuation date.¹⁰ However, the upward pressure on the unfunded actuarial accrued liability may be partially or totally offset due to the decrease in the amount of future liabilities resulting from a lower payroll amount than assumed in the actuarial model.

In addition, the November 2018 edition of the Public Fund Survey¹¹ from the National Association of State Retirement Administrators states that when a plan's payroll grows at a rate less than expected, the base amount of funds used to amortize the plan's unfunded liability is smaller, meaning that the cost of amortizing the unfunded liability is larger.¹² This is due to the fact that only part of the amount contributed to the PERS plan each year goes to the accrual of employee benefits. This component is called the normal cost.¹³ The remainder of the contributions, which are not designated for the accrual of specific member future benefits, are held in the trust and utilized by the PERS plan to begin paying off the plan's UAAL.

¹⁰UAAL takes into consideration the expected investment return of present assets but does not consider future employee or employer contributions.

¹¹<https://www.nasra.org/publicfundsurvey>.

¹²The Public Fund Survey is an online compendium of key characteristics of 121 of the nation's largest public retirement systems.

¹³Normal cost is the annual cost of providing retirement benefits for services performed by current members. This is a shared responsibility between the member and employer.

**Exhibit 1: Public Employees' Retirement System Plan Salary Growth (by Source)
for the Years Ended June 30, 2018, and June 30, 2017**

Salary Source	Total Payroll		Increase (Decrease)	Percentage Change
	FY 2018	FY 2017		
State Agencies	\$1,052,316,036	\$1,094,365,643	\$ (42,049,607)	(3.84%)
State Universities	974,095,619	963,343,669	10,751,950	1.12%
Public Schools	2,247,353,584	2,264,501,603	(17,148,019)	(0.76%)
Community & Junior Colleges	294,536,010	296,503,962	(1,967,952)	(0.66%)
Counties	493,219,572	480,693,802	12,525,770	2.61%
Municipalities	587,108,289	583,092,494	4,015,795	0.69%
Other Political Subdivisions	350,601,591	355,727,535	(5,125,944)	(1.44%)
Total	\$5,999,230,701	\$6,038,228,708	\$ (38,998,007)	(0.65%)

SOURCE: PEER analysis of the *Report on the Annual Valuation of the Public Employees' Retirement System of Mississippi as of June 30, 2018*.

For example, for FY 2018, total contributions were 24.75% of covered payroll (9% employee contribution and 15.75% employer contribution). The normal cost for FY 2018 was 10.45% (9% employee and 1.45% employer). The remainder of the employer contribution, 14.30%, is added to the assets of the plan for use in paying down the plan's UAAL. Thus for FY 2018, for every dollar of covered payroll, the PERS plan received approximately 14.3 cents to be invested to help pay down the plan's UAAL. When the plan experiences less salary growth than anticipated, the 14.3 cents per dollar, not included in normal cost, is not deposited into the PERS trust assets and is not able to grow at the assumed rate of 7.75% annually. Over a 30-year period, assuming all other assumptions are met, this 14.3 cents would grow to \$1.34, an increase of 839%.

Although the PERS Board has made changes to the actuarial assumptions in the past, continued analysis, particularly as it relates to the wage inflation assumption, between actual and assumed is warranted. This is made more evident when PERS experience is compared to the average experience of plans in the Public Fund Survey. The survey's November 2018 report indicates that the median experience for plans its surveys, for FY 2017, was a positive change in annual payroll of 2.77% as compared to the PERS FY 2017 increase of 0.26%. In addition, the survey indicates

that the median annual payroll change has been above 2% for the past three fiscal years, FY 2015–FY 2017.

Active and Retired Employee Assumptions

From FY 2008 through FY 2018, the ratio of active members to retired members decreased by approximately 36%, driven by the increasing number of retirees and the decreasing number of active members. This decrease results in funding future pension obligations over the payroll of fewer active members.

The PERS plan, and all other plans administered by the PERS Board, have three types of members: active, inactive, and retired.

Active PERS members are current employees who are contributing to the plan through monthly withholding from pay. As noted previously, employee contributions represent an important revenue stream to the plan. As they continue to work, active members accrue service credits that will be used in calculating their annual payment when they become eligible to receive retirement benefits. The plan accounts for the cost of these accruals (the normal costs¹⁴) and funds them on a yearly basis through both employee and employer contributions.

Retired PERS members are individuals who are no longer working in a PERS-covered position and have begun receiving payments based on their retirement calculations. Inactive members are members of PERS who are no longer working in any PERS-covered position and have not retired or received a refund of contributions. An inactive member retains his or her membership and the right to future benefits, either as a refund of contributions and interest or, if vested, as a deferred retirement benefit. The spouse and dependent children of a vested inactive member may be eligible for certain survivor benefits.

Each type of member is considered within the actuarial model of the plans; however, because liabilities associated with inactive members account for only 1.03% of the overall PERS plan's present value of future benefits, active and retired members and the ratio between them are of primary importance. As shown in Exhibit 2, page 10, the ratio of active members to retired members in the PERS plan decreased from 2.20:1 in FY 2008 to 1.40:1 in FY 2018, or approximately 36%. The declining ratio is attributable to a decrease in the number of active members and an increase in the number of retired members. This decrease results in funding future pension obligations over the payroll of fewer active members, a factor made more important because contributions from active members and their employers comprise approximately 45% of PERS revenues (as of FY 2018).

¹⁴Since 2013, PERS has included an estimated budgeted administrative expense of 0.23% of payroll in the normal cost calculation.

Exhibit 2: PERS System Active and Retiree Members for FY 2008 through FY 2018 (in Thousands)*

Member Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Active	167	168	166	162	163	162	162	158	155	153	151
Retiree	76	79	82	86	90	93	96	99	102	105	108
Ratio	2.20:1	2.13:1	2.02:1	1.88:1	1.81:1	1.74:1	1.69:1	1.60:1	1.52:1	1.46:1	1.40:1

*Calculations are based on rounding to the nearest hundredth.

SOURCE: Public Employees' Retirement System of Mississippi.

Although the PERS ratio of active members to retired members has declined over the past 10 fiscal years, the PERS active member to retired member ratio of 1.46:1 at the end of FY 2017 was above the average ratio for other pension plans across the nation. According to the November 2018 Public Fund Survey, when examining the membership of the pension plans tracked by the database, the overall active to retiree ratio is 1.38:1 as of the end of FY 2017, the most recent nationwide information available. This indicates that PERS has a higher ratio of members paying into the plan compared to retirees than the average pension plan in the United States.

In addition, the Public Fund Survey observed that a lower ratio of active members to retired members results in funding future obligations over a smaller payroll base, although a declining active member to retired member ratio does not automatically pose an actuarial or financial problem. However, when combined with an unfunded liability, a low or declining ratio of actives to retirees can cause fiscal distress for a pension system provider.

With a maturing plan,¹⁵ increasing retirements are expected, and the model attempts to account for these changes. Although the PERS ratio of active members to retirees is above the national average, the PERS experience differs from the average plan of the Public Fund Survey database. PERS active membership has continued to decline, whereas the national average plan's membership has grown over the past three fiscal years. As such, continued analysis of the assumptions for active and retired members is warranted.

As with all the actuarial model's assumptions, the assumptions for active and retired members are evaluated every two years during the PERS Board's biennial experience studies. The PERS Board will receive the results of its most recent biennial experience study during its April 2019 board meeting.

¹⁵According to Zacks Investment Research, a maturing pension plan is a plan where the number of employees and retirees is approaching equality.

Sustainability

The PERS Board, in consideration of results from an annually calculated actuarial valuation under the new funding policy, raised the employer contribution rate percentage to 17.40% of annual compensation, an increase of 1.65%. The new funding policy defines several goals and objectives for the PERS plan, including the maintenance of an increasing trend in the plan's funded ratio (over the projection period) with the target of a 100% funding level by 2047.

The PERS Board developed and implemented a new funding policy during fiscal year 2018 that became effective immediately. The new funding policy defines several goals and objectives for the PERS plan, including contribution rate stability and the maintenance of an increasing trend in the plan's funded ratio (over the projection period) with the target of a 100% funding level by 2047. Included in the policy are three metrics that will be utilized to track the plan's progress in achieving the funding goals and objectives set by the board and a course of action should any of these metrics fall below certain thresholds. These new metrics will be evaluated through the use of a "signal light" approach (green indicating goals and objectives achieved; yellow representing a warning that future negative actions may lead to a failure of the goals and objectives; and red suggesting that the PERS Board must consider making changes to the employer contribution rate).

For more information on the new funding policy (including its goals, objectives, and assessment metrics), see p. 19.

The PERS Board implemented a change to the employer contribution rate at its June 2018 meeting. The amount of this increase was calculated using the parameters established under the plan's new funding policy.

The new rate increased the employer contribution rate percentage from the existing 15.75% of annual compensation to a rate of 17.40%. This change raised the employer contribution rate 1.65%, the first change in the rate since FY 2014.¹⁶

Under the PERS former funding policy, as a result of the projection report (as of June 30, 2017), contingency steps would have required the PERS Board to consider making changes to the employer contribution rate as well.¹⁷

Based on the results of the evaluation metrics in the funding policy, as of June 30, 2018, the plan has two metrics at green signal light status (funded ratio and cash flow as a percentage of assets) and one metric at yellow status (actuarially determined contribution). Exhibit 3, page 12, illustrates the status of these three metrics as assessed through the annual valuation and projection report as of June 30, 2018.

¹⁶For the five fiscal years prior to the implementation of the former funding policy in FY 2014 (FY 2009 through FY 2013), the employer contribution rate changed in three of the five years and rose from 11.85% to 14.26%.

¹⁷The former funding policy included language requiring the plan actuary to calculate a new rate that would be sufficient to generate a plan funding ratio of 85% in FY 2042 if the funding level of the plan is projected to be less than 60% in FY 2042 or if the funding ratio is projected to be less than 75% following two consecutive annual actuarial valuations.

These results satisfy the guidelines placed on the plan by the board's new funding policy. While these results do not require the board to take any action at this time, the board should continue to assess the performance of the plan.

Exhibit 3: PERS Funding Policy Metric Results as of June 30, 2018

Metric	Result
Funded Ratio (in FY 2047)	95.8%
Cash Flow as a Percentage of Assets	-5.54%
Actuarially Determined Contribution	101.26%

SOURCE: *Report on Thirty-Year Projections of the Mississippi Retirement Systems, Prepared as of June 30, 2018.*

According to projections as of June 30, 2017, the plan's funding ratio was projected to be 70.1% by FY 2042, as compared to 62.6% as reported for FY 2016. These results triggered the contingency steps built into the existing funding policy, and Cavanaugh Macdonald's calculation produced a recommended rate for employer contribution of 17.65% (a rate higher than the adopted 17.40%).

As of June 30, 2018, the PERS anticipated accrued liability payment period¹⁸ was 30.9 years, a decrease from 38.4 years as of June 30, 2017. The PERS Board's independent actuarial adviser attributes the decrease primarily to the adoption of a higher employer contribution rate, which will take effect July 1, 2019.

However, the impact of the aforementioned factors to shorten the anticipated accrued liability payment period was partially reduced by the actual experience of the PERS plan for FY 2018. In total, the actual experience of the plan lengthened the accrued liability payment period by approximately 2.4 years. This figure of 2.4 years is the amalgamation of elements that both increase and decrease the length of the plan's anticipated accrued liability payment period. Elements that increased the payment period include a lower than expected wage inflation experience for the plan and a greater than expected reduction in the number of active members.

Elements that contributed to a reduction in the anticipated accrued liability payment period include the current year realization of investment gains from three of the past five fiscal years in the actuarial valuation of assets.¹⁹ By using the accepted practice of "smoothing," PERS recognizes actuarial investment gains and losses over a five-year period. This allows the calculation of the anticipated accrued liability payment period and

¹⁸The anticipated accrued liability payment period is the estimated length of time under current actuarial assumptions that is required to pay the unfunded actuarial accrued liability. An unfunded actuarial accrued liability occurs when the total of present value of future benefits associated with prior years' service and the present value of future administrative costs is greater than the actuarial present value of the system's current assets.

¹⁹The actuarial value of PERS investments is calculated on a five-year smoothing average in which gains and losses are recognized over five years.

the accrued liability funding percentage to be based on a five-year period rather than on a one-year period, reducing the chance of large fluctuations in these figures. In FY 2018, actuarially smoothed investment returns were approximately \$240 million higher than the actuarially projected returns for FY 2014 through FY 2018.

Risk Management and Investment Management

Risk management and investment management should provide a long-term framework for the system that will control the plan's long-term risk environment and allow it a reasonable opportunity to collect or earn sufficient assets to meet its benefit obligations.

Risk management and investment management represent the other major contributing factors of financial soundness. These concepts are utilized to provide a long-term framework for the system that will manage the plan's long-term risk environment in ways that allow it a reasonable opportunity to collect or earn sufficient assets to meet its benefit obligations.

Risk Management

As of June 30, 2018, the PERS funding ratio was 61.8%, an increase from 61.1% as of June 30, 2017. Primarily due to the future increase in the employer contribution rate, the PERS plan has a projected future funding ratio of 95.8% as of 2047, which compares favorably to the assessment metrics outlined in the plan's new funding policy.

To determine the funding ratio, or funding level, of a plan, the current value of all projected future obligations of the plan (such as future pension payments) is calculated. In other words, the cost of all of the plan's future obligations is calculated in today's dollars. The total of the current value of future obligations is compared to the plan's assets on hand today and a funding ratio (the funding level) is derived.

The calculation of a plan's funding level is an accounting measure that quantifies the plan's ability to meet its projected future obligations, based on service already performed, with assets currently available. However, this measure, like most accounting measures, assesses the plan in a conservative manner and does not take into account such items as future investment gains and losses and/or loss of contributions from employees and participating employers. This measure also does not reflect the ability of the plan to meet its current obligations.

For FY 2018 the actuarial value of assets in PERS increased in relation to the actuarial value of its liabilities—from 61.1% in FY 2017 to 61.8% in FY 2018. The relationship between these two valuations strengthened because actual experience varied from expected experience regarding investment returns, salary increases, and service retirements.²⁰ The actuarial gain on investments for FY 2018 was 9.16%, which represents the actuarial smoothing of gains and losses for the period of FY 2014 through FY 2018.

²⁰Service retirements are the result of active members that move to retired member status (and start drawing benefits) based on years of service or age and not as a result of a disability retirement.

According to projections prepared by the fund's actuary, as of June 30, 2018, the plan's funding ratio was projected to be 81.4% by 2042, as compared to 70.1% reported in the FY 2017 projection reports. The increase in the future funding level is due to the increase in the employer contribution rate (beginning July 1, 2019) and the better than expected investment returns. These gains in the projected funding level were reduced by other demographic experiences of the plan, primarily the reduction in the number of active employees.

For more information on the impact of lower numbers of active employees, see pages 9-11.

For any projected funding level information to be accurate, all actuarial assumptions must be met exactly for all fiscal years forecasted. As past performance indicates, this mark can be missed on both the high and low side, creating variability from the model.

Investment Management

For fiscal year 2018, the PERS plan's combined investment portfolio experienced a return of 9.48%, and the market value of the system's assets was approximately \$28.1 billion.

Having realized a return of approximately 9.48% in the PERS plan's combined investment portfolio, the market value of assets grew from approximately \$26.9 billion to \$28.1 billion during FY 2018, an increase of approximately \$1.2 billion.

As presented in Exhibit 4, page 15, according to investment consultants Callan LLC, PERS investment performance for FY 2018 was above the current actuarial model's target investment return of 7.75% and placed it above the median return for its peer group²¹ of 8.89%. Additionally, PERS investment performance has exceeded its peer group median for each of the past three-, five-, and 10-year periods (ranking in the top 14% for each period).

Over the past 10 years, the PERS investment return on assets averaged 7.45%. Investment returns ranged from -19.4% during FY 2009 to 25.4% during FY 2011. Historically, PERS investment returns have averaged 6.28% over the past 20 years, 7.84% over the past 25 years, and 8.55% over the past 30 years.

²¹The PERS peer group is composed of other nationally based very large pension plans (plans having greater than \$10 billion in assets).

Exhibit 4: Comparison of PERS Investment Performance to Peer Group of Public Pension Plans with Assets of More Than \$10 Billion

Category	FY 2018	3-Year Return	5-Year Return	10-Year Return
PERS Return	9.48%	8.38%	9.32%	7.45%
Peer Group Median (midpoint)	8.89%	7.56%	8.71%	6.82%
PERS Percentile Rank	28*	14*	14	14
25th Percentile*	9.51%	7.97%	9.12%	7.08%
10th Percentile*	9.96%	8.43%	9.43%	7.63%

*Percentile of 28 means PERS outperformed 72% of peer group funds; 25th percentile means these returns were greater than 75% of peer group funds; 10th percentile means these returns were greater than 90% of peer group funds.

SOURCE: Callan Investment Performance Review as of June 30, 2018.

According to the November 2018 Public Fund Survey, the median public pension annualized investment 10-year return for the period ending December 31, 2017, was 5.9% and the 25-year return was 8.1%.²² PERS investment returns have exceeded the median for other public pension plans for the past 10-year period but have trailed during the past 25-year period. The volatility of the recent years' returns reinforces the principle of viewing investment returns over a long period and comparing long-term returns to investment return goals rather than focusing on a single year's returns or returns over a short period.

The PERS projected investment rate of return of 7.75% is higher than some other state and local pensions' projected investment rate of return.²³ Additionally, the November 2018 Public Fund Survey indicated overall projected investment rates of return have trended downward over approximately the past 15 years, with the median projected investment rate of return now at 7.38%.

Because investment returns are the largest piece of a pension's funding source, when actual returns fall below projections, over time the plan must rely on other sources (contributions) to provide for the difference, which could lead to decreases in the plan's assets. The PERS Board and its independent actuarial adviser plan to continue to monitor the investment return assumption in future years in an effort to ensure that the investment return assumption accurately reflects market conditions and the system's investment allocation model. The PERS Board will receive information on this area during the results of its most recent biennial experience study, which will be presented during its April 2019 board meeting.

²²At the time of publication of this report, the Public Fund Survey for the period ending June 30, 2018, had not been released.

²³In conjunction with the June 2014 experience study, the PERS Board reduced the investment return assumption from 8% to 7.75%. This adjustment reflects a decrease in the price inflation assumption from 3.50% to 3% and an increase from 4.50% to 4.75% for the real rate of return.

Asset Allocation Model

For fiscal year 2018 the PERS Board of Trustees continued to adhere to the asset allocation model adopted in June 2015. This model continues to set investment-level targets for the PERS investment portfolio.

The PERS independent investment consultant periodically performs an asset/liability allocation study that considers projected future liabilities of the system, expected risk, returns of various asset classes, and statutory investment restrictions. For fiscal year 2018 the PERS Board continued to adhere to the overall asset allocation model adopted in June 2015. The asset allocation model determines the mix of asset classes in which PERS will invest and the overall weight of each asset class within the portfolio as a whole.

The PERS Board of Trustees and PERS staff use this model to mitigate investment risk through diversification and to establish risk and rate of return expectations for the adopted target asset allocation mix. On a quarterly basis, the PERS Board and its staff, in consultation with its investment advisers, review the performance of each investment manager relative to the asset class's target performance level.

Exhibit 5 presents the actual FY 2018 investment allocation compared to the model.

Exhibit 5: PERS FY 2018 Actual Asset Allocation Compared to Allocation Model as of June 30, 2017

Year	U.S. Equity	Non-U.S. Equity	Debt Investments	Real Estate	Private Equity	Global Equity	Cash
Model	27%	22%	20%	10%	8%	12%	1%
FY 2018	27%	22%	20%	10%	8%	12%	1%

SOURCE: Callan LLC.

As presented in Exhibit 5, PERS assets are being invested in accordance with the asset allocation model. However, the percentages in Exhibit 5 are approximate, meaning that, while not exact, the allocation of PERS assets is very close to its target. Instances in which current investment levels do not agree with the model do not automatically constitute a cause for alarm or present the need for an immediate change in investment levels. The investment model represents targeted investment levels designed to prevent the investment portfolio from becoming too heavily weighted in a certain investment type. Market conditions may, at times, cause a prudent manager to call for slight departures from target goals. For these reasons, the PERS Board monitors investment performance, strategies, and weights throughout the year and manages the investment portfolio based on input from professional money managers, advisers, and its professional staff.

The PERS Board's decision to utilize numerous investment managers minimizes investment risk, as it prevents a large portion of plan assets being under the management of any one investment manager. For FY 2018 the PERS Board paid asset-management fees to 53 investment managers (including three that were terminated and three that were hired during FY 2018). PERS paid \$104.8 million to investment managers on PERS plan assets of \$28.1 billion, a combined investment management expense rate of 0.37% (the expense rate for the fiscal year ended June 30, 2017, was 0.36%).

As of June 30, 2018, Loomis Sayles & Company, LP, a manager in the core plus fixed-income sector, had the most assets under management as a percentage of the total portfolio by any one active investment manager²⁴ with 3.55% (approximately \$1 billion of the PERS plan's \$28.1 billion in assets).

For more information on investment management fees and assets under management, see Appendix A, pages 28-29.

²⁴Active investment management refers to a portfolio management strategy by which the manager uses various investment research, models, and systems to select the fund's specific investments with the goal of outperforming the fund investment's benchmark index (the market).

PERS Board's New Funding Policy

During its June 2018 meeting, the PERS Board approved a new funding policy for the Public Employees' Retirement System Plan (PERS).

This chapter examines the following:

- What is a funding policy, and does the PERS Board employ one?
- What are the goals and objectives of the new funding policy, and how do they differ from the 2012 policy?
- What changes were made to the metrics used to evaluate the status and progress of the system?

What is a funding policy, and does the PERS Board employ one?

The PERS Board, in its new funding policy, asserts that the purpose of its 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.”

According to the National Association of State Retirement Administrators, a pension plan funding policy determines how much should be contributed each year by the employers and active participants of a pension plan to provide for the secure funding of benefits in a systematic fashion.

The board's funding policy has undergone several iterations, with the most recent version being approved during the board's June 2018 meeting (see Appendix C, pages 31–36, for a copy of the funding policy). The PERS Board developed its new funding policy in response to several factors, including the results of the plan's most recent experience study (as of June 30, 2016); the results of an independent actuarial audit; the 2017 projection report (as of June 30, 2017); and the activation of contingency steps for prospective action within its existing funding policy relating to the performance of the plan

The PERS Board's new policy reframes the system's overall goals and objectives, adds two new assessment metrics (see the following section for more information) that “provide a more holistic view of the status of the System,” and tweaks components of the system's amortization method.

What are the goals and objectives of the new funding policy, and how do they differ from the 2012 policy?

The primary changes to the goals of the new funding policy include the board seeking to maintain an increasing trend in the funded ratio over the projection period, with an ultimate goal of being 100% funded, and adjustments to the metrics used to assess the performance of the plan.

The funding of a pension system's benefits comes from two distinct sources, the contributions made by its employers and its active members and gains made from the investing of plan assets. Regarding the contributions received by the plan, PERS's new funding policy, implemented during its June 2018 meeting, states:

The objective in requiring employer and member contributions to PERS is to accumulate sufficient assets during a member's employment to fully finance the benefits a member will receive in retirement.

To accomplish these objectives, the funding policy outlines goals that the board will strive to meet. Many of these goals closely mirror existing goals in the board's immediately preceding funding policy (adopted in October 2012). The new policy's goals include the following:

- preservation of the defined benefit structure for providing lifetime benefits to the PERS membership;
- contribution rate stability as a percentage of payroll;²⁵
- maintenance of an increasing trend in the funded ratio over the projection period with an ultimate goal of being 100% funded;
- requiring 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
- ensuring benefit improvements are funded through increases in contribution requirements in accordance with Article 14, 272A, of the MISSISSIPPI CONSTITUTION of 1890.

The two primary changes in the goals of the funding policy concern the definition of the target for the system's future funding level, and what is needed to assess the progress the plan has made in reaching its goals.

The funding policy adopted by the PERS Board in October 2012 had a goal of maintaining an increasing ratio of system assets to accrued liabilities and to reach a targeted future funding goal of a minimum 80% funding ratio in FY 2042. The new funding policy has updated this goal and now targets an increasing funding ratio with the goal of a 100% funding ratio in the future.

For more information on the metric used to assess this goal, see the following section.

²⁵A fixed contribution rate (FCR).

Regarding this change in funding goal, the PERS Board has stated:

While the previous policy set an 80% funding goal for 2042, the overall target and objective of any pre-funded retirement plan²⁶ should be to achieve a funded ratio of 100%. Furthermore, changing the goal to 100% and/or seeking funding accordingly places the System on an improved financial footing and better prepares it for any potential downturns in the future.

The goal of 100% funding is supported through recommendations from the board's actuary and several sources, including the 2013 report *Pension Funding: A Guide for Elected Officials*, released by a pension funding task force composed of 11 industry entities.²⁷

As indicated in the quote from the PERS Board, the PERS plan is a prefunded pension plan. This means that the PERS Board, in consultation with the plan's actuaries, annually requests sufficient contributions to fund that year's accrual of future benefits. As such, the PERS plan theoretically should remain at a 100% funding ratio unless the plan experiences events outside the parameters assumed in the actuarial model (i.e., retroactive changes to plan benefits without subsequent funding, variation between real and assumed asset growth, or lower than projected salary growth).

The other major change of the new funding policy centers around the methods the PERS Board will use to assess the performance of the plan. The new plan utilizes a targeted funding ratio, at a specific point in time, like the 2012 funding policy, but also adds two new metrics. In addition to the new metrics, all metric (new and existing) are moved from a simple pass/fail dynamic to a tiered approach that evaluates the plan's results regarding predefined channels.

What changes were made to the metrics used to evaluate the status and progress of the system?

The PERS Board's new funding policy added two additional metrics that will be used in assessing the health of the plan (cash flow as a percentage of assets and the actuarially determined contribution) and moved the assessment of each metric from a simple pass/fail dynamic to a tiered approach.

As discussed in the preceding section, the new PERS funding policy expanded the metrics that the plan's actuaries are required to calculate annually. The results of these calculations will be compared to predefined channels, the results of which will be utilized by the board to make decisions about the employer contribution rate for the plan. According to the board, it chose to

²⁶A prefunded pension plan is a pension plan that is funded concurrently with the accrual of benefits for its members, through the calculation of the normal cost.

²⁷The Pension Funding Task Force included the National Governors Association; National Conference of State Legislatures; Council of State Governments; National Association of Counties; National League of Cities; U.S. Conference of Mayors; International City/County Management Association; National Council on Teacher Retirement; National Association of State Auditors, Comptrollers and Treasurers; Government Finance Officers Association; and the National Association of State Retirement Administrators.

expand the funding policy to include multiple metrics for the following reason:

The new metrics incorporated in the revised funding policy afford the board a more granular gauge of the need for action based on System performance, changing demographics, and actuarial experience.

These metrics will be tracked through a new tiered method called the “Signal Light” approach, in which each level of the predefined metric tranches is assigned a color and a definition (Exhibit 6).

Exhibit 6: PERS Funding Policy “Signal Light” Levels and 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.

SOURCE: PERS Board of Trustees Standard Operating Procedures Manual.

According to the PERS board, it chose to include the new Signal Light approach for the following reason:

The “Signal Light” approach used in the new funding policy was recommended by the actuary to provide the board a clearer and more comprehensive picture of the sustainability of PERS.

The values assigned to each level of the various signal lights were approved by the board after consultation with its actuaries and evaluation of the plan through use of the plan’s financial modeling system.

The new funding policy (like its most recent predecessor) also includes a provision that serves as a safety net for the plan. If any one of the metrics is in red signal light status in conjunction with the annual valuation report and the projection report, the actuary will determine and recommend to the board for its consideration an employer contribution rate increase that is sufficient to get all three metrics back into green signal light status.²⁸

²⁸Any resulting contribution rate increase would be effective for July 1, 18 months following the completion of the associated projection report. The delay allows the state, counties, municipalities, and political subdivisions ample time to incorporate the increase into their operating budgets.

The new funding plan will be tracking the following metrics:

- funded ratio,
- cash flow as a percentage of assets, and
- actuarially determined contribution.

Funded Ratio

The funded ratio is the actuarial value of assets divided by the actuarial accrued liability.²⁹ For the year ended June 30, 2018, the plan's projected funded ratio for FY 2047 is 95.8%, which places the plan in the green signal light status.

The calculation of a plan's funding level is an accounting measure that quantifies the plan's ability to meet its projected future obligations, based on service already performed, with assets currently available.

The PERS Board explained its reasoning for selecting this metric to help evaluate the progress performance of the PERS plan:

Given that the projected funded ratio was the major metric used in benchmarking the plan under the prior funding policy (and coupled with the fact that it is a key metric used by all systems), the board thought continuing the review of the projected funded ratio each year was important.

This metric uses information from the 30-year projection reports developed by the plan's actuaries to assess the plan's funding level at a defined point in the future (for now, FY 2047).

Exhibit 7 presents the funding policy's defined channels for the funded ratio signal lights.

Exhibit 7: PERS Funding Ratio Signal Light Definitions for Funded Ratio

Funded ratio above 80% in 2047
Funded ratio between 65% and 80% in 2047
Funded ratio below 65% in 2047

SOURCE: PERS Board of Trustees Standard Operating Procedures Manual.

For the year ended June 30, 2018, the projected funding ratio in FY 2047 is 95.8%, placing the PERS system in the green signal light channel.

As noted on page 19, one of the policy's new goals is to maintain an increasing trend in the funded ratio over the projection period with an ultimate goal of being 100% funded. However, the use of a 100% funded ratio can be seen differently when used as a target of financial health versus a goal of a pension's funding policy.

²⁹The actuarial accrued liability is the total of the present value of future benefits associated with prior years' service.

As Exhibit 7, page 22, indicates, the plan’s performance corresponds to the green signal light status when the results of the projection report show the funded ratio to be above 80% (the funding goal of the previous plan).

Even with the assignment of being 80% funded as the threshold for a green status, there is no industry statement or requirement for a pension plan’s funding level to be at 80% to be defined as “healthy.” Neither the Governmental Accounting Standards Board³⁰ or the American Academy of Actuaries uses an 80% funded ratio to define a plan as financially healthy.

Cash Flow as a Percentage of Assets

Cash flow as a percentage of assets is the difference between total contributions (employee and employer) and benefit payments as a percentage of total market value of plan assets at the beginning of the fiscal year. For the year ended June 30, 2018, the plan’s lowest cash flow as a percentage of assets was -5.54%, which places the plan in the green signal light status.

The PERS funding policy defines “cash flow as a percentage of assets” as the difference between total contributions coming into the trust and the benefit payments made to retirees and beneficiaries withdrawn from the trust as a percentage of beginning year market value of assets. The formula for cash flow as a percentage of assets also can be defined as follows:

$$\frac{\text{Total Annual Contributions} - \text{Benefit Payments}^{31}}{\text{Beginning of Year Market Value of Assets}}$$

For example, finding the cash flow as a percentage of assets for fiscal year 2018 (in thousands) is calculated as follows:

$$\frac{(1,588,970 - 2,733,721)}{26,543,097} = -4.31$$

PERS testing of cash flow as a percentage of assets is not only a point in time comparison for the current fiscal year, but it also will be evaluated over the entirety of the period reviewed during the actuary’s 30-year projection report, with the lowest current or projected cash flow as a percentage of assets used as the metric result.

According to the board, this metric was selected to help evaluate the progress performance of the PERS plan for the following reason:

The actuaries anticipate that PERS, as a mature retirement system, will experience negative cash flow; however, if the amount of negative cash flow as a percentage of the plan’s assets becomes excessive, it may be a warning sign that the plan needs additional funding. Monitoring our projected cash flow in this manner is a focus of the board and is especially

³⁰The Governmental Accounting Standards Board is an independent organization that establishes standards of accounting and financial reporting for state and local governments in the United States.

³¹For purposes of this calculation benefit payments includes any refunds made to inactive members.

important for mature retirement systems like PERS that is expecting more retirees in the years ahead.

Exhibit 8 presents the funding policy's defined channels for the cash flow as a percentage of assets signal lights.

Exhibit 8: PERS Funding Ratio Signal Light Definitions for Cash Flow as a Percentage of Assets

Net Cash Flow Percentage above -6.00% during the projection period

Net Cash Flow Percentage between -6.00% and -7.75% during the projection period

Net Cash Flow Percentage below -7.75% during the projection period

SOURCE: PERS Board of Trustees Standard Operating Procedures Manual.

As discussed on page 23, PERS assessment of the cash flow as a percentage of assets evaluates the metric over the life of the projection period established in PERS most recent projection report (as of June 30, 2018). For the length of the projection period, the lowest cash flow rate is -5.54%, in FY 2031, which places the PERS plan in the green signal light status for this metric. This means that although the PERS plan will continue to pay out more in benefit payments than it receives in employee and employer contributions, the difference between these two figures, in the opinion of the plan's actuary, does not rise to a level that is unhealthy for the plan.

The Public Fund Survey also provides data on cash flow as a percentage of assets. According to the November 2018 report, nearly all systems in the survey had a negative cash flow, and the median cash flow as a percentage of assets for plans in its survey, as of FY 2017, was -2.8%.³² While this can be compared to the PERS result of -4.15%, it must also be noted that this is not a direct comparison. As discussed on page 23, PERS cash flow as a percentage of assets metric is not a point in time comparison (like the Public Fund Survey) but a measure over its full projection period, and the Public Fund Survey metric accounts for administrative expense, while the PERS metric excludes administrative expenses from the calculation.

Actuarially Determined Contribution

The actuarially determined contribution measure is a comparison between the current employer contribution rate (FCR) and the actuarially determined contribution (a measure of the potential contribution rate necessary to allow the PERS plan to reach its funding goals within a 30-year period under methods outlined in the board's funding policy. For the year ended June 30, 2018, the plan's actuarially determined contribution ratio for FY 2047 is 101.26%, which places the plan in the yellow signal light status.

The PERS funding policy defines the actuarially determined contribution (ADC) as the potential payment to the plan as

³²The Public Fund Survey cash flow as a percentage of assets figure also includes administrative expenses within plan outflows in its methodology.

determined by the actuary based on the following principal elements disclosed in the funding policy:

- actuarial cost method,
- asset valuation method, and
- amortization method.

For more information on these elements, see PERS funding policy in Appendix C, pages 31–36.

The purpose of the ADC is to provide a measure of the potential contribution rate necessary to allow the PERS plan to reach its funding goals within a 30-year period under the prescribed methods outlined in the board’s funding policy.

The calculation for the ADC will be done during the actuarial valuation (typically released during the board’s August meeting). The ratio of the ADC to the fixed contribution rate, as set by the funding policy will be tested. The results of this calculation will be compared to the signal light levels described in Exhibit 9.

Exhibit 9: PERS Funding Ratio Signal Light Definitions for Actuarially Determined Contribution

ADC ratio at or below 100% of fixed contribution rate at valuation date

ADC ratio between 100% and 110% of fixed contribution rate at valuation date

ADC ratio above 110% of fixed contribution rate at valuation date

SOURCE: PERS Board of Trustees’ Standard Operating Procedures Manual.

For the fiscal year ended June 30, 2018, PERS ADC ratio was 101.26%, placing it in yellow signal light status.³³ This indicates that while the fixed contribution rate set by the board (currently 17.40%) is smaller than the actuarially determined contribution, the difference between these two figures, in the opinion of the plan’s actuary, is still within a range that requires no current action by the board.

Under the 2012 funding policy, the employer contribution rate was fixed at 15.75% of annual payroll. To maintain this level of contribution within the model, the actuaries had to account for asset volatility by adjusting the amortization period of the unfunded actuarially accrued liability (see page 12 for more information). Under this policy, the amortization period for the UAAL grew to 38.4 years during the valuation report for the fiscal year ended June 30, 2017. These results, in conjunction with other factors, such as a move within the actuarial community to utilize more conservative policies (amortization periods reduced from 25–30 years to 20–25 years), led PERS actuarial consultants to recommend a rate increase.

³³The ADC ratio is calculated by dividing the ADC calculated during the actuarial valuation for the year ended June 30, 2018, (17.62%) by the fixed contribution rate set by the PERS Board (currently at 17.40%).

Under MISS. CODE ANN. § 25-11-123, the PERS Board is given the authority to determine, biennially, the employee and employer contribution rate that will be paid on members' earned compensation, and as such, has the ability to make changes to these rates. However, because Mississippi is a "California Rule" state³⁴ (once a retirement benefit is vested, it cannot be taken away), any changes to the employee contribution rate would require the provision of comparable benefits to plan members, which would require the changes to state law by the Legislature.

To keep the plan from undergoing annual adjustments in the employer contribution rate, as experienced prior to the 2012 funding policy, the board has adopted a fixed contribution rate (17.40%) and will compare it annually to the ADC using the metrics described in Exhibit 9, page 25.

If the actuarially determined contribution measure (ADC divided by the FCR) remains in the green metric, and all the other plan's actuarial assumptions are met, the PERS plan's unfunded liability will be paid off in 30 years, placing the plan in a much better financial position. However, because the ADC metric is currently in the yellow status, it is projected that the PERS plan will take longer to pay off its unfunded liability. For the fiscal year ended June 30, 2018, the plan's projected UAAL payment period is 30.9 years.

Amortization Method Assumptions for the Actuarial Determined Contribution

A plan's amortization period is the length of time necessary for a plan's unfunded liabilities to be paid if all actuarial assumptions are met over that period. Under PERS prior funding policy, the amortization period fluctuated, which was not an uncommon practice among plans. Under this prior approach, the system's unfunded liability as of June 30, 2017, was \$16.8 billion with an amortization period of 38.4 years.

Since the development of the funding policy in 2012, the actuarial community has moved to recommending that pension plans utilize more conservative approaches to account for a pension's unfunded liability. To help align the plan with these more conservative recommendations, the PERS Board, as advised by its actuarial consultants, adopted a layered amortization³⁵ for use in calculating the actuarial determined contribution. This method differs from the model used under the funding policy adopted during 2012.

Under this new layered amortization approach, the board has elected to amortize the plan's existing unfunded actuarial accrued liability balance (as of June 30, 2018) over a closed³⁶ 30-year

³⁴See *Attorney General's Opinion to Robertson*, February 22, 2010.

³⁵Layered amortization is the amortization of components of the UAAL over a separate fixed period as they emerge.

³⁶A closed amortization period is a type of amortization period utilized by pension plans that results in the full amortization of specific items within a finite (or predefined) period (i.e., a traditional 30-year mortgage on a home).

amortization period and any future changes to the unfunded balance (i.e., actuarial gains/losses, assumption changes, and plan changes) over a closed 25-year amortization period. These amortization assumption methods pertain to the calculation for the ADC only.

Actuaries must have a component of the funding model that can be adjusted to account for asset changes. The PERS Board, in attempting to maintain its goal of a stable contribution rate (17.40% as of July 1, 2019), has elected to continue using the plan's amortization period as this variable. As discussed previously, on page 12, the PERS plan's projected UAAL payment period, as of June 30, 2018, is 30.9 years.

Because the new amortization assumptions apply to the calculation of the ADC only, it is possible for the projected payment period of the plan to extend past the 30-year target included in the ADC calculation. To help ensure that the plan's projected payment period does not deviate too far from these assumptions, the board's funding policy includes a metric that requires the comparison of the plan's fixed contribution rate to the ADC annually.

For more information about this metric, see pages 24-26.

Appendix A: PERS Investment Management Fees, FY 2018 & FY 2017

CLASS	MANAGER	FY 18 (thousands)	FY 17 (thousands)
U.S. Equity	ARTISAN PARTNERS (LARGE CAP GROWTH)	2,348	2,469
U.S. Equity	BOSTON COMPANY (MID CAP)	2,532	2,743
U.S. Equity	DIMENSIONAL FUND ADVISORS (SMALL CAP VALUE)	1,534	1,704
U.S. Equity	EAGLE CAPITAL (LARGE CAP CORE)	6,380	5,874
U.S. Equity	NORTHERN TRUST (LARGE CAP VALUE - PASSIVE) — Hired Q2 FY 2018	23	-
U.S. Equity	NORTHERN TRUST (S&P 500 - PASSIVE)	198	268
U.S. Equity	RIVERBRIDGE (SMALL CAP GROWTH)	2,745	3,162
U.S. Equity	STATE STREET GLOBAL ADVISORS (LARGE CAP VALUE - PASSIVE) — Terminated Q2 FY 2018	63	102
U.S. Equity	WEDGEWOOD PARTNERS (LARGE CAP GROWTH)	2,208	2,254
U.S. Equity	WELLINGTON (MID CAP VALUE)	2,276	2,438
U.S. Equity	WELLINGTON (SMALL CAP CORE)	2,871	2,266
Non-U.S. Equity	ARROWSTREET CAPITAL (ALL COUNTRIES X-US)	3,423	2,990
Non-U.S. Equity	BAILLIE GIFFORD (ALL COUNTRIES X-US)	2,854	2,555
Non-U.S. Equity	BLACKROCK HEDGED EAFE (DEVELOPED MARKETS - PASSIVE) — Terminated Q2 FY 2018	298	762
Non-U.S. Equity	FIDELITY INSTITUTIONAL ASSET MANAGEMENT	2,163	1,829
Non-U.S. Equity	FISHER INVESTMENTS (EMERGING MARKETS) - Hired Q4 FY 2016	3,982	2,725
Non-U.S. Equity	LAZARD ASSET MANAGEMENT (EMERGING MARKETS)	2,381	2,599
Non-U.S. Equity	MARATHON (ALL COUNTRIES X-US) — Hired Q4 FY 2016	3,621	2,062
Non-U.S. Equity	MONDRIAN (SMALL CAP DEVELOPED MARKETS)	2,192	1,849
Non-U.S. Equity	NEW STAR — Terminated Q3 FY 2016	-	88
Non-U.S. Equity	NORTHERN TRUST EAFE (DEVELOPED MARKETS - PASSIVE) — Hired Q2 FY 2018	113	-
Debt Investments	ABERDEEN — Terminated Q3 FY 2017	-	492
Debt Investments	ALLIANCEBERNSTEIN (GLOBAL FIXED INCOME)	1,570	1,463
Debt Investments	BLACKROCK (CORE - PASSIVE) — Terminated Q2 FY 2018	91	191
Debt Investments	LOOMIS SAYLES (CORE PLUS)	1,684	1,580
Debt Investments	MANULIFE (CORE) — Hired Q3 FY 2017	788	242
Debt Investments	NORTHERN TRUST (CORE - PASSIVE) — Hired Q2 FY 2018	58	-
Debt Investments	PACIFIC INVESTMENT MANAGEMENT CO. (CORE)	789	738
Debt Investments	PACIFIC INVESTMENT MANAGEMENT CO. (GLOBAL)	1,616	1,524
Debt Investments	PRUDENTIAL (CORE PLUS)	1,342	1,277
Debt Investments	WELLINGTON (EMERGING MARKETS)	2,524	2,386

CLASS	MANAGER	FY 18 (thousands)	FY 17 (thousands)
Real Estate	AEW PARTNERS VI, LP	212	303
Real Estate	AEW PARTNERS VII, LP	237	400
Real Estate	AEW PARTNERS VIII, LP	400	363
Real Estate	AG CORE PLUS FUND II LP	29	25
Real Estate	AG CORE PLUS FUND III LP	151	301
Real Estate	AG CORE PLUS FUND IV LP	375	428
Real Estate	CENTERSQUARE — Hired Q4 FY 2017	873	68
Real Estate	COHEN & STEERS	1,237	1,252
Real Estate	DEUTSCHE ASSET MGMT — Terminated Q4 FY 2017	-	876
Real Estate	HANCOCK TIMBER FUND	1,126	1,171
Real Estate	HEITMAN VALUE PARTNERS II LP	8	2
Real Estate	HEITMAN VALUE PARTNERS III LP	355	293
Real Estate	INVESCO VALUE ADD FUND IV LP	453	324
Real Estate	JP MORGAN STRATEGIC PROPERTY FUND	4,814	3,988
Real Estate	PRINCIPAL GLOBAL INVESTORS	5,064	4,734
Real Estate	TA REALTY ASSOCIATES FUND X LP	597	992
Real Estate	TA REALTY ASSOCIATES FUND XI LP	550	425
Real Estate	UBS TRUMBULL PROPERTY FUND	3,265	3,643
Real Estate	UBS TRUMBULL PROPERTY GROWTH & INCOME FUND	1,769	1,650
Real Estate	WESTBROOK X LP	499	558
Private Equity	GROSVENOR & PATHWAY CAPITAL MAN - PRIVATE EQUITY	13,090	12,388
Global Equity	ACADIAN	3,176	2,638
Global Equity	EPOCH	4,392	3,086
Global Equity	HARDING LOEVNER	3,420	2,761
Global Equity	LONGVIEW PARTNERS	4,018	2,289
		104,777	95,590

SOURCE: PERS CAFR, Fiscal Years 2018 and 2017.

Appendix B: PERS Payroll Growth for FY 2013–FY 2018

							Percentage Change
	Payroll for the Fiscal Year Ending June 30						Fiscal Years
Employer Group	2013	2014	2015	2016	2017	2018	2013–2018
State Agencies	\$ 1,113,271,357	\$ 1,100,393,122	\$ 1,090,118,458	\$ 1,099,584,186	\$ 1,094,365,643	\$ 1,052,316,036	-5.48%
State Universities	\$ 868,183,113	\$ 917,826,885	\$ 928,826,800	\$ 965,647,659	\$ 963,343,669	\$ 974,095,619	12.20%
Public Schools	\$ 2,196,453,153	\$ 2,173,388,716	\$ 2,237,050,354	\$ 2,281,800,861	\$ 2,264,501,603	\$ 2,247,353,584	2.32%
Community/Jr. Colleges	\$ 290,146,471	\$ 290,065,961	\$ 286,804,447	\$ 295,021,260	\$ 296,503,962	\$ 294,536,010	1.51%
Counties	\$ 442,782,098	\$ 449,055,561	\$ 455,989,117	\$ 462,827,688	\$ 480,693,802	\$ 493,219,572	11.39%
Municipalities	\$ 555,811,830	\$ 559,174,715	\$ 567,478,696	\$ 570,531,026	\$ 583,092,494	\$ 587,108,289	5.63%
Other Political Subdivisions	\$ 356,929,956	\$ 344,781,695	\$ 338,559,309	\$ 347,120,253	\$ 355,727,535	\$ 350,601,591	-1.77%
Total Payroll Reported to PERS	\$ 5,823,577,978	\$ 5,834,686,655	\$ 5,904,827,181	\$ 6,022,532,933	\$ 6,038,228,708	\$ 5,999,230,701	3.02%
Actuarial Assumed Rate of PERS Plan Salary Growth	*	4.25%	3.75%	3.75%	3.25%	3.25%	
Actual Rate of PERS Plan Salary Growth	*	0.19%	1.20%	1.99%	0.26%	-0.65%	

*2013 payroll data is for baseline comparisons only.

SOURCE: PERS annual valuations for years ending June 30, 2013, through June 30, 2018.

Appendix C: PERS New Funding Policy

Funding Policy for PERS

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.

I. Funding Goals and Objectives

The objective in requiring employer and member contributions to PERS is to accumulate sufficient assets during a member's 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.

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).

The following metrics will be measured:

- Funded Ratio** – Funded Ratio is 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 percent 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** – Cash flow as a percentage of assets is 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)** – ADC is 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

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

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:
 - I. Once established for any component of the UAAL, the amortization period for that component will be closed and will decrease by one year annually.
 - II. The amortization payment will be determined on a level percentage of pay basis.
 - III. 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.
 - IV. If any future annual actuarial valuation indicates that PERS has a negative UAAL, the ADC shall be set equal to the Normal Cost.
- **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 percent.

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

- **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 30.

Source: § 25-11-119(8) and (9) | **Effective/Revised:** 10/24/2006, 10/23/2012, 4/22/2014, 2/28/2017, 6/26/2018

SOURCE: PERS.

Agency Response



Providing Benefits for Life

January 17, 2019

Mr. James Barber
Executive Director
Joint Committee on Performance Evaluation and Expenditure Review
Woolfolk Building, Suite 301-A
501 North West St.
Jackson, MS 39201

Dear Mr. Barber:

Thank you for the opportunity to review the draft of the PEER Report titled *2018 Update on Financial Soundness of the Public Employees' Retirement System (PERS)*. As noted in the Report, the PERS Board of Trustees has adopted and implemented procedures and policies (including a revised funding policy) that allow it to address the major areas that contribute to the plan's financial well-being and to carry out its fiduciary responsibilities to its members and retirees. PERS is committed to handling the funds entrusted to us responsibly because we understand how significantly our work affects families across the state of Mississippi.

In the spirit of prudence, the PERS Board and staff routinely review the current funding and future projections for each of the retirement plans we administer. PERS will continue to monitor the overall soundness of the retirement plans and work diligently in the best interest of the System.

We acknowledge and appreciate the effort you and your staff expended in compiling this report, and we respect the professional manner in which the review was conducted. Please contact me at 601-359-2241 if you need further information. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "H. Ray Higgins, Jr.", is positioned above the printed name.

H. Ray Higgins, Jr.
Executive Director

cc: PERS Board of Trustees

H. Ray Higgins, Jr.
Executive Director

Board of Trustees:

Kelly Breland
*State Employees
Chair*

Brian Rutledge
*Institutions of
Higher Learning
Vice Chair*

Bill Benson
*County
Employees*

Lee Childress
*Public Schools,
Community/Jr. Colleges*

George Dale
Retirees

Lynn Fitch
State Treasurer

Chris Howard
State Employees

Kimberly Hanna
*Municipal
Employees*

Randy D. McCoy
Retirees

Drew Snyder
*Gubernatorial
Appointee*

PEER Committee Staff

James A. Barber, Executive Director

Legal and Reapportionment

Ted Booth, General Counsel
Ben Collins
Barton Norfleet

Administration

Alicia Russell-Gilbert
Deborah Hardy
Gale Taylor

Quality Assurance and Reporting

Tracy Bobo
Kelly Saxton

Performance Evaluation

Lonnie Edgar, Principal Analyst
David Pray, Principal Analyst
Jennifer Sebren, Principal Analyst
Kim Cummins
Matthew Dry
Samuel Hearn
Matthew Holmes
Taylor Mullins
Sarah Williamson
Julie Winkeljohn
Ray Wright

Performance Accountability

Linda Triplett, Director
Kirby Arinder
Debra Monroe-Lax
Meri Clare Steelman

