Board of Trustees Meeting Agenda

Wednesday, October 23, 2024
1:00 P.M.

I. Call to Order *(Mr. Kelly Breland, Chair)*
- **A. Invocation**
- **B. Pledge of Allegiance**
- **C. Approval of Agenda**
- **D. Approval of Minutes** – *August 28, 2024*

II. Report of Administrative Committee *(Mr. Bill Benson)*
- **A. 2025 Board & Committee Meetings Schedule**
- **B. PERS State Representative Election Results**
- **C. Actuarial Valuation and Projection**
- **D. Additional Independent Actuarial Assessments**
- **E. Other**

III. Report of Defined Contribution Committee *(Dr. Brian Rutledge)*
- **A. Other**

IV. Report of Investment Committee *(Dr. Randy McCoy)*
- **A. Other**

V. Report of Legislative Committee *(Mr. George Dale)*
- **A. 2025 Legislative Initiatives**
- **B. Other**

VI. FY 2025 Municipal COLA Certification for Tupelo

VII. Retiree Insurance Advisory Committee
- **A. New Members Appointments**

VIII. Disability Appeals Committee

IX. Staff Reports
- **A. Retiree Report**
- **B. Investment Report**

X. Adjourn

PERS of MISSISSIPPI

Board of Trustees Meeting Agenda

Wednesday, August 28, 2024
1:00 P.M.

A. **Call to Order** *(Mr. Kelly Breland, Chair)*
   - A. **Invocation**
   - B. **Pledge of Allegiance**
   - C. **Approval of Agenda**
   - D. **Approval of Minutes –** *June 26, 2024*
   - E. **Employee of the Quarter-** *October-December 2024*

B. **Report of Administrative Committee** *(Mr. Bill Benson)*
   - A. **Approval of FY 2026 Final Administrative Budget Request**
   - B. **PERS State Representative Election Results-Unexpired Term**
   - C. **PERS State Representative Election-Full Term**
   - D. **Regulation 34:** ***Reemployment after Retirement***
   - E. **Other**

C. **Report of Defined Contribution Committee** *(Dr. Brian Rutledge)*
   - A. **Annual Investment Policy Reviews**
     - **MDC**
     - **ORP**
   - B. **Other**

D. **Report of Investment Committee** *(Dr. Randy McCoy)*
   - A. **Annual PERS Investments Policy Review**
   - B. **Other**

E. **Report of Legislative Committee** *(Mr. George Dale)*
   - A. **Other**

F. **Retiree Insurance Advisory Committee**
   - A. **Approval of Medicare Supplement Open Enrollment and Premium Rate Increase**

G. **Staff Reports**
   - A. **Retiree Report**
   - B. **Investment Report**

H. **Staff and Trustee Continuing Education**
   - A. **NCTR 102nd Conference; October 5-9, 2024; Atlanta, GA**

I. **Adjourn**

The Public Employees' Retirement System of Mississippi (PERS) Board of Trustees met Wednesday, August 28, 2024, at 429 Mississippi Street, Jackson, MS 39201. This meeting was duly announced to the public Monday, August 19, 2024, at 10:02 a.m., on the Public Meetings Notice website of the Mississippi Department of Finance and Administration, as well as was posted in the PERS lobby, on the PERS website, and on the PERS YouTube Channel.

BOARD MEMBER ATTENDEES
In Person: Board Chair Mr. Kelly Breland, Mr. Bill Benson, Mr. George Dale, Mr. Chris Graham, Ms. Kimberly Hanna, Dr. Randy McCoy, Dr. Brian Rutledge, Dr. Jay Smith and State Deputy Treasurer Brian Wilson representing State Treasurer David McRae.
Via Teleconference: None.
Absent: None.
Current Board Vacancies: One of Two State Employee Representatives.

LEGISLATIVE LIAISON ATTENDEES
Absent: Senator David Blount, Representative Karl Oliver, and Senator Daniel Sparks.
Via Teleconference: None.

STAFF ATTENDEES
In Person: Executive Director Ray Higgins; Counsel and Policy Advisor Davetta Lee; Chief Investment Officer Charles Nielsen; Member and Employer Services Deputy Director Mason Frantom; Deputy Director Administrative Services Melanie Estridge; Jason Clark and David DeGuire, Investments; Cindy Byars, Christy Smith, and Yatorsha Griffin, Accounting; Chief Technology Officer Mike Lowry; Billy Means, Information Technology; Benefit Payments Program Administrator Susan Lyon; Member Account Support Program Administrator Chris Hudson; Employer Reporting Program Administrator Alisa Evans; Charlene Bilbo, Tarvus Jenkins, Althea Holmes, Sherita Tripp, Patsy Ramsey, and Nellie Jones, Document Services; and Communications Director Shelley Powers.

GUEST ATTENDEES
In Person: Assistant Attorney General Caroline Johnson; Ray Wright, Mississippi Joint Legislative Committee on Performance Evaluation; Ed Koebel, Cavanaugh Macdonald; Emily Tschiffely, Corbin Standford, and Lee Pittman, Legislative Budget Office; Kristen Williams and Tyrece Sayles, Jackson State University; Allan Cooper and Wendey Brown, Mississippi Department of Finance and Administration; Mike Larsen, Mississippi Retired Public Employees' Association; and Shannon Dyse, Mississippi Deferred Compensation.

CALL TO ORDER
Board Chair Breland called the meeting to order at 1 p.m.

INVOCATION
Breland gave the invocation.

PLEDGE OF ALLEGIANCE
Breland led the Pledge of Allegiance.

AGENDA
- **Motion:** To approve the meeting agenda.
    - **Made by:** Dale.
    - **Seconded by:** Rutledge.
    - **Discussion:** None.
    - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
    - **Voting against:** None.
    - **Absent:** None.
    - **Duly Passed.**

MINUTES
- **Motion:** To approve the minutes of the June 26, 2024, PERS Board of Trustees' meeting.
    - **Made by:** Benson.
    - **Seconded by:** Graham.
    - **Discussion:** None.
    - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
    - **Voting against:** None.
    - **Absent:** None.

- **Duly Passed.**

EMPLOYEE OF THE QUARTER
Breland presented the Employee of the Quarter for October 2024 through December 2024 to Jones.

REPORT OF THE ADMINISTRATIVE COMMITTEE
Committee Chair Benson reported that the Administrative Committee met the morning of August 28, 2024. Benson also brought before the Board the following items for consideration, as approved by the committee.

Approval of FY 2026 Initial Administrative Budget Request
Benson presented the Board with the FY 2026 Administrative Budget Request and asked for final adoption.

- **Motion:** To approve final adoption of the FY 2026 Administrative Budget Request of $20,968,462.
  - **Made by:** Benson.
  - **Seconded by:** Hanna.
  - **Discussion:** None.
  - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
  - **Voting against:** None.
  - **Absent:** None.
  - **Duly Passed.**

(Addendum A – FY 2026 Final Administrative Budget Request)

PERS State Representative Election Results-Unexpired Term
Benson presented the committee with results from the election for the state employees' representative to fill the unexpired term left vacant upon the retirement of Chris Howard. The term runs through June 2026. Benson reported that a run-off election has been scheduled for this election between Terrance Yarbrough, Mississippi Department of Transportation deputy administrator human resources, and Allan Cooper, Mississippi Department of Finance and Administration budget officer, as neither candidate received a majority of the votes. The vote counts were as follows:

Terrance D. Yarbrough	Mississippi Department of Transportation, deputy administrator, human resources	494 votes
Allan D. Cooper	Mississippi Department of Finance and Administration, budget officer	399 votes
Dr. William J. Ashley	Mississippi Department of Employment Security, executive director	386 votes
Dr. Daniel E. Myers	Mississippi State Hospital, program specialist iv	136 votes
Rodney J. Burch, Jr.	Mississippi Department of Public Safety, Capitol Police, lieutenant	120 votes
Gregory W. Ramsey	Mississippi Department of Transportation, deputy director, financial management	118 votes

- **Motion:** To certify the election results to fill the state employees' representative unexpired term that runs through June 2026 and approve the runoff election for the same position.
  - **Made by:** Benson.
  - **Seconded by:** McCoy.
  - **Discussion:** None.
  - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
  - **Voting against:** None.
  - **Absent:** None.
  - **Duly Passed.**

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(Addendum B – Election Results)

PERS State Representative Election-Full Term
Benson presented the committee with results of the campaign to seek candidates for the state employee representative full term that runs from January 2025 to December 2030. Benson reported that the only candidate who applied/qualified for the election was incumbent Kelly Breland, who, by running unopposed, won the election.

- **Motion:** To approve Kelly Breland as the sole candidate to apply/qualify for the state employee representative election for the term running from January 2025 to December 2030 and, thereby, maintaining his seat on the Board of Trustees due to running unopposed.
  - **Made by:** Benson.
  - **Seconded by:** Rutledge.

- **Discussion:** None.
- **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
- **Voting against:** None.
- **Absent:** None.
- **Duly Passed.**

Regulation 34: Reemployment After Retirement
Benson presented the Board with committee-recommended changes to Regulation 34 for final adoption. The amendments would incorporate the critical-teacher-shortage-reemployment changes from House Bill 765 as passed during the 2024 Legislative session. The amendment would be effective July 1, 2024.

- **Motion:** To approve for final adoption committee recommendation to amend Regulation 34 to incorporate the critical-teacher-shortage-reemployment changes from House Bill 765 as passed during the 2024 Legislative session, effective July 1, 2024.
  - **Made by:** Benson.
  - **Seconded by:** Hanna.
  - **Discussion:** None.
  - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
  - **Voting against:** None.
  - **Absent:** None.
  - **Duly Passed.**

(Addendum C – Regulation 34 Amendments)

REPORT OF THE DEFINED CONTRIBUTION COMMITTEE
Committee Chair Rutledge reported that the Defined Contribution Committee met the morning of August 27, 2024, and heard a market update and performance review from Callan, as well as an annual review of the Mississippi Deferred Compensation program and one miscellaneous update from TIAA. Rutledge also presented the following items for Board consideration.

Annual Investment Policy Reviews
Rutledge presented the Mississippi Deferred Compensation Plan (MDC) and the Optional Retirement Plan (ORP) Annual Investment Policy Statements Reviews (IPSs). He advised that the IPSs were being presented by staff for customary annual review and approval with no substantive changes recommended.

- **Motion:** To approve revisions to the Mississippi Deferred Compensation Plan Investment Policy and Optional Retirement Plan Investment Policy as recommended by staff.
  - **Made by:** Rutledge.
  - **Seconded by:** Smith.
  - **Discussion:** None.
  - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
  - **Voting against:** None.
  - **Absent:** None.
  - **Duly Passed.**

(Addendum D –MDC Policy Updates)

(Addendum E –ORP Policy Updates)

REPORT OF THE INVESTMENT COMMITTEE
Committee Chair McCoy reported that the Investment Committee met the morning of August 27, 2024, and heard a market update and performance review from Callan on FY 2024. During this presentation, McCoy said Callan reported that PERS had an end-of-fiscal-year return on investments of 10.78 percent, which was better than 73 percent of all public pension plans with $10 billion plus in assets. McCoy reported that the committee also heard an update from Callan on the system's Capital Market Assumptions and Asset Allocation, which showed PERS has a good asset mix for meeting funding goals. McCoy also reported that the committee heard updates from DFA, Riverbridge, and Wellington domestic small cap managers and heard various miscellaneous updates regarding J.P. Morgan, Wellington, and Baillie Gifford. Finally, McCoy presented the following item for Board consideration.

Annual PERS Investments Policy Review

McCoy presented the PERS Investment Policy Review (IPS). He advised that the IPS was being presented by staff for customary annual review and approval with minor edits.

- **Motion:** To approve revisions to the PERS Investment Policy Statement as recommended by staff.
  - **Made by:** McCoy.
  - **Seconded by:** Dale.
  - **Discussion:** None.
  - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
  - **Voting against:** None.
  - **Absent:** None.
  - **Duly Passed.**

(Addendum F – PERS Investment Policy)

REPORT OF THE LEGISLATIVE COMMITTEE
Dale reported that the Legislative Committee met the morning of August 28, 2024, and held a lengthy and good discussion on upcoming legislation for the 2025 Legislative session. No committee action was taken, but Dale commented that the discussion, which will be continued at the October meeting, included good input from PERS' legislative liaisons.

RETIREE INSURANCE ADVISORY COMMITTEE
Higgins presented the Board with a Medicare supplement open enrollment and 10 percent premium rate increase for approval for the PERS-sponsored Retiree Medical Insurance Plan. He said plan sponsor, Transamerica, requested either adopting a 10 percent increase in premiums or changing benefits for members. In response, the Retiree Insurance Advisory Committee voted and recommended to the Board maintaining current benefits and adopting the rate increase.

- **Motion:** To approve the Medicare supplement open enrollment and 10 percent premium rate increase for the PERS-sponsored Retiree Medical Insurance Plan, as recommended.
  - **Made by:** Benson.
  - **Seconded by:** Graham.
  - **Discussion:** Breland sought clarification on why PERS offered this insurance. Staff explained that not all PERS members are eligible for the state plan and that the third-party insurance allows for a Medicare supplement offering.
  - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
  - **Voting against:** None.
  - **Absent:** None.
  - **Duly Passed.**

(Addendum G – RIAC Open Enrollment)

RETIREE REPORT
Higgins presented the Retiree Report for the Board's approval.

- **Motion:** To approve the Retiree Report.
  - **Made by:** Hanna.
  - **Seconded by:** Rutledge.
  - **Discussion:** None.
  - **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
  - **Voting against:** None.
  - **Absent:** None.
  - **Duly Passed.**

(Addendum H - Retiree Report)

INVESTMENT REPORT
Higgins presented the Investment Report. He requested board approval of this report, as well as of all trades and transactions performed by the PERS Investments division since the June 26, 2024, board meeting.

- **Motion:** To approve the Investment Report, as well as all trades and transactions performed by the PERS Investments division since the June 26, 2024, board meeting.

- **Made by:** McCoy.
- **Seconded by:** Benson.
- **Discussion:** None.
- **Voting for:** Benson, Breland, Dale, Graham, Hanna, McCoy, Rutledge, Smith, and Wilson.
- **Voting against:** None.
- **Absent:** None.
- **Duly Passed.**

(Addendum I - Investment Report)

STAFF AND TRUSTEE CONTINUING EDUCATION
Higgins advised the Board on upcoming staff and trustee continuing education opportunities.

ADJOURN
Breland called the meeting adjourned at 1:17 p.m.

Respectfully Submitted,

H. Ray Higgins, Jr. *Executive Director* Public Employees' Retirement System	Mr. Kelly Breland *Chair* PERS Board of Trustees

HRH

PERS Board & Committee Schedules | 2025

Board & Committee Meetings | 2025 Schedule

Board meetings held fourth Wednesday of February, April, June, August, and October and third Wednesday of December.

February 25 *Tuesday*	Defined Contribution & Investment Committee Meetings
February 26 *Wednesday*	Board Meeting & Other Committee Meetings
April 22 *Tuesday*	Defined Contribution & Investment Committee Meetings
April 23 *Wednesday*	Board Meeting & Other Committee Meetings
June 24 *Tuesday*	Defined Contribution & Investment Committee Meetings
June 25 *Wednesday*	Board Meeting & Other Committee Meetings
August 26 *Tuesday*	Defined Contribution & Investment Committee Meetings
August 27 *Wednesday*	Board Meeting & Other Committee Meetings
October 21 *Tuesday*	Defined Contribution & Investment Committee Meetings
October 22 *Wednesday*	Board Meeting & Other Committee Meetings
December 16 *Tuesday*	Defined Contribution & Investment Committee Meetings
December 17 *Wednesday*	Board Meeting & Other Committee Meetings

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Investment Committee Presentations | 2025 Schedule

Meetings held only when investment finalists' presentations become necessary.
Held the Tuesday two weeks prior to the board meeting, contingent/subject to Board discretion and availability.

Tuesday, February 11
Tuesday, April 8
Tuesday, June 10
Tuesday, August 12
Tuesday, October 7
Tuesday, December 2

Claims Committee Presentations | 2025 Schedule

Meetings held only when claims hearings become necessary.
*Held the fourth Tuesday of every other month that are **not** board meeting months.*

Tuesday, January 28
Tuesday, March 25
Tuesday, May 27
Tuesday, July 22
Tuesday, September 23
Tuesday, November 25

October 17, 2024

Public Employees Retirement System of Mississippi
429 Mississippi Street
Jackson, MS 39201

Dear Davetta Lee:

The attached report contains the results from the election for the 2024 PERS of MS State Employee Representative Runoff Election for the Public Employees Retirement System of Mississippi.

Thank you. It has been a pleasure working with you.

Sincerely yours,

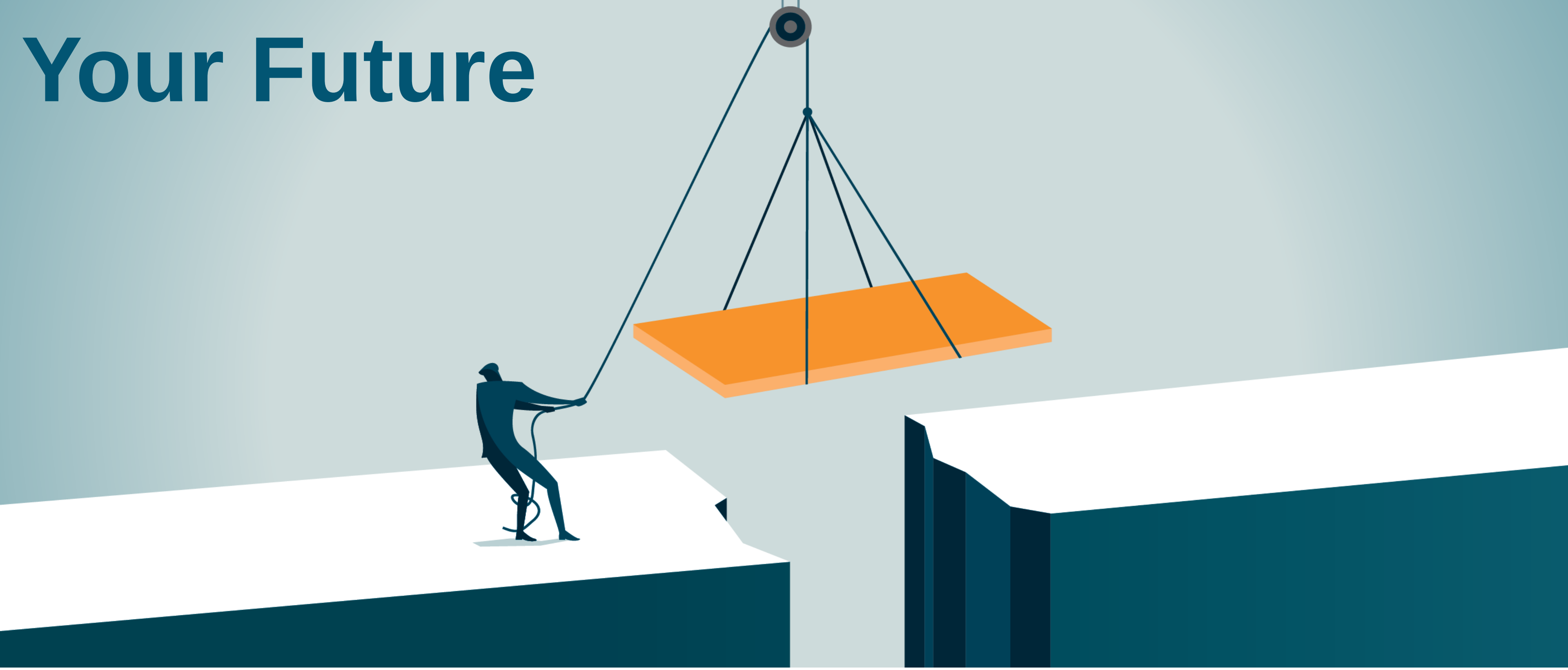
Chris Backert
CEO
YesElections

Results

Race	Candidate/Choice	Votes
State Employee Representative Runoff	Terrance D. Yarbrough	1,071
	Allan D. Cooper	973

NAVIGATING

Your Future



Mississippi PERS Valuation and Projection Results as of June 30, 2024

CavMac
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PERS Changes Since Last Year

- **Fixed Contribution Rate (FCR) phasing-in to 19.90% of payroll**
  - Passed by Legislature in 2024 Session
  - For the past few fiscal years, the employer fixed contribution rate has been 17.40% of payroll
  - Beginning July 1, 2024, the employer contribution rate is expected to increase on a phase-in basis based on the following schedule:

Fiscal Year Ending	Statutory Contribution Rate*
June 30, 2025	17.90%
June 30, 2026	18.40%
June 30, 2027	18.90%
June 30, 2028	19.40%
June 30, 2029+	19.90%

* Since Statutory Contribution Rate is not in Funding Policy, we will continue to refer to this as the FCR

  - An additional $110 million was contributed by the State that is included in the valuation and projection results.

PERS Valuation Key Findings

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- **Net Market Value of Return for the 2024 FYE was approximately 10.4% (assuming mid-year cash flow)**
  - Last year was around 7.4% (assuming mid-year cash flow)
  - On an actuarial value basis, the return was 7.3% (last year was 6.9%) due to 5-year smoothing method

- **Funded Ratio went from 56.1% to 55.9%**

- **Amortization period using phased-in FCR of 19.90% of payroll is 44.9 years**
  - Last year was 32.2 years using an FCR of 22.40% of annual compensation
  - Increase mainly due to the change in the phased-in FCR to 19.90% of annual compensation (Board adopted rate was 22.40%)

- **Actuarially Determined Contribution (ADC) is 25.92% using funding policy methods**
  - ADC/FCR ratio is 130.3% using an FCR of 19.90%
  - Last year ratio was 112.4% using an FCR of 22.40%

PERS Projections Key Findings

- ## Short-Term Projection

Valuation Year	UAAL ($ in Millions)	Funded Ratio	Cash Flow %	ADC/FCR Ratio*
2024	$26,498	55.9%	(4.7)%	130.3%
2025	$26,611	56.6%	(4.8)%	133.1%
2026	$28,059	55.1%	(4.9)%	141.0%
2027	$28,368	55.5%	(5.0)%	144.2%
2028	$28,643	55.8%	(5.1)%	147.3%
2029	$29,096	55.8%	(5.3)%	151.3%

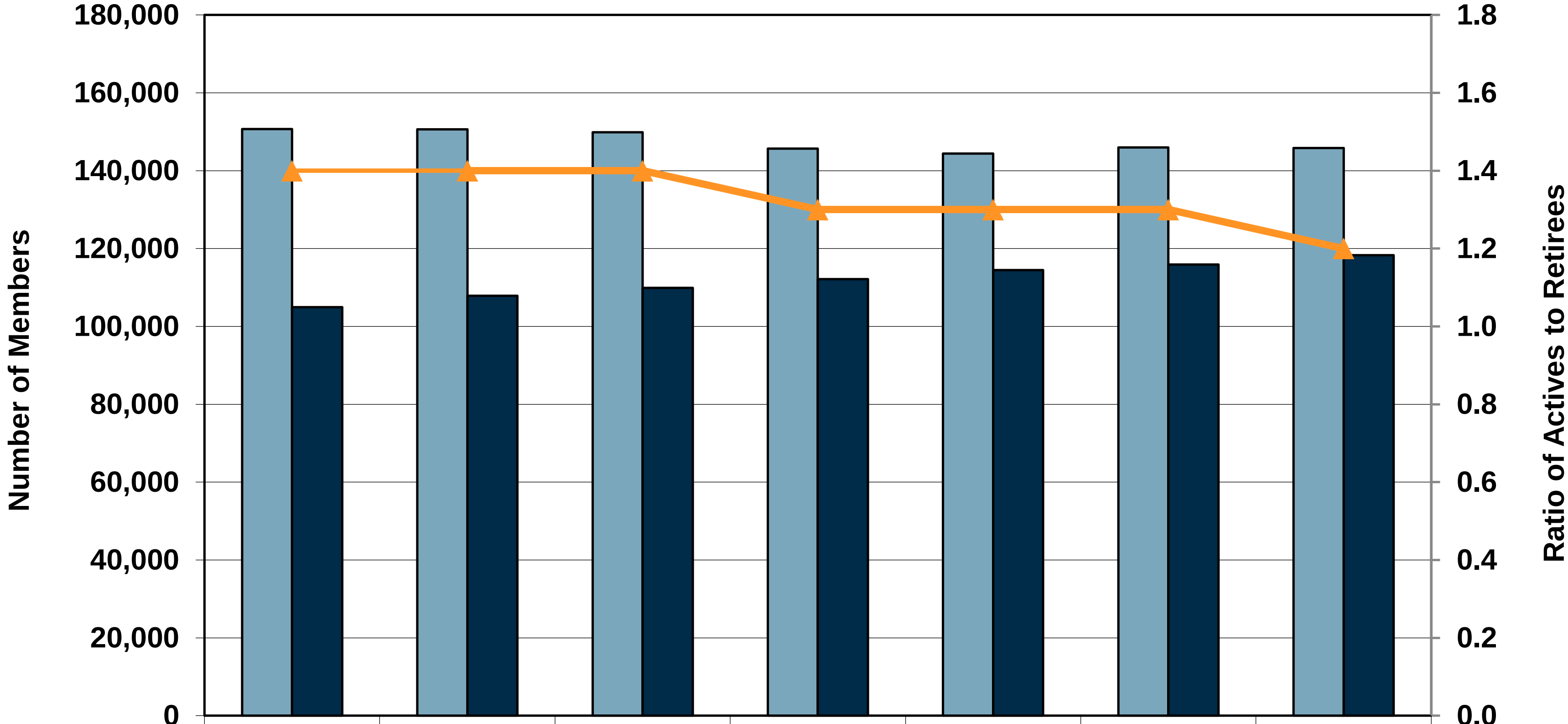
- ## Long-Term Projection

Metric	2024 Baseline Projection	2024 Status
Funding Ratio in 2047	53.7%	Red
Cash Flow as a Percentage of Assets	(6.3)%	Yellow
ADC/FCR Ratio from 2024 Valuation*	130.3%	Red
ADC/FCR Ratio from 2025 Valuation*	133.1%	Red

* These ratios are based on the FCR of 19.90% of annual compensation but cash flow utilizes the phase-in of the adopted contribution schedule.

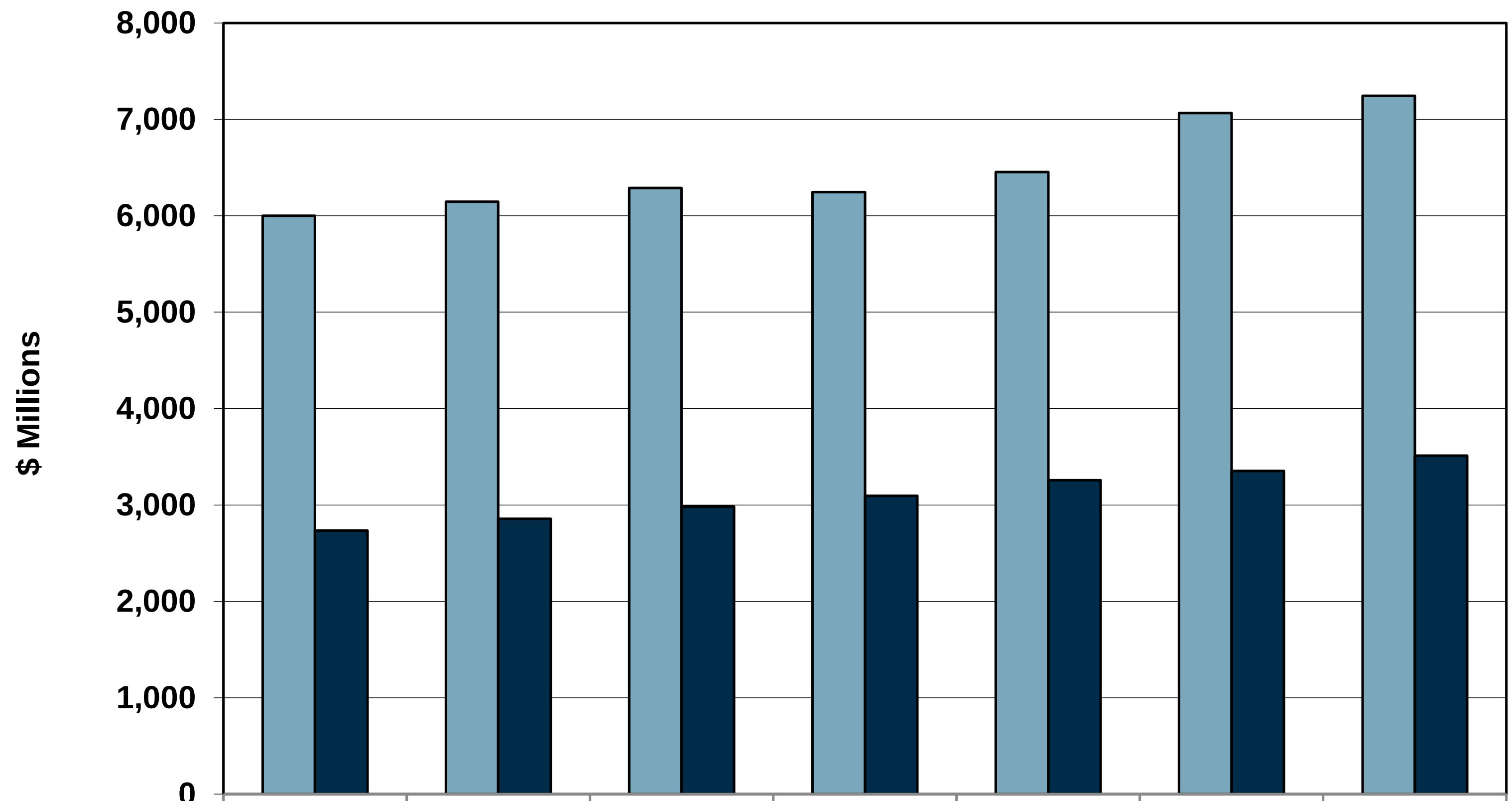
PERS Valuation Results

PERS Census Data – June 30



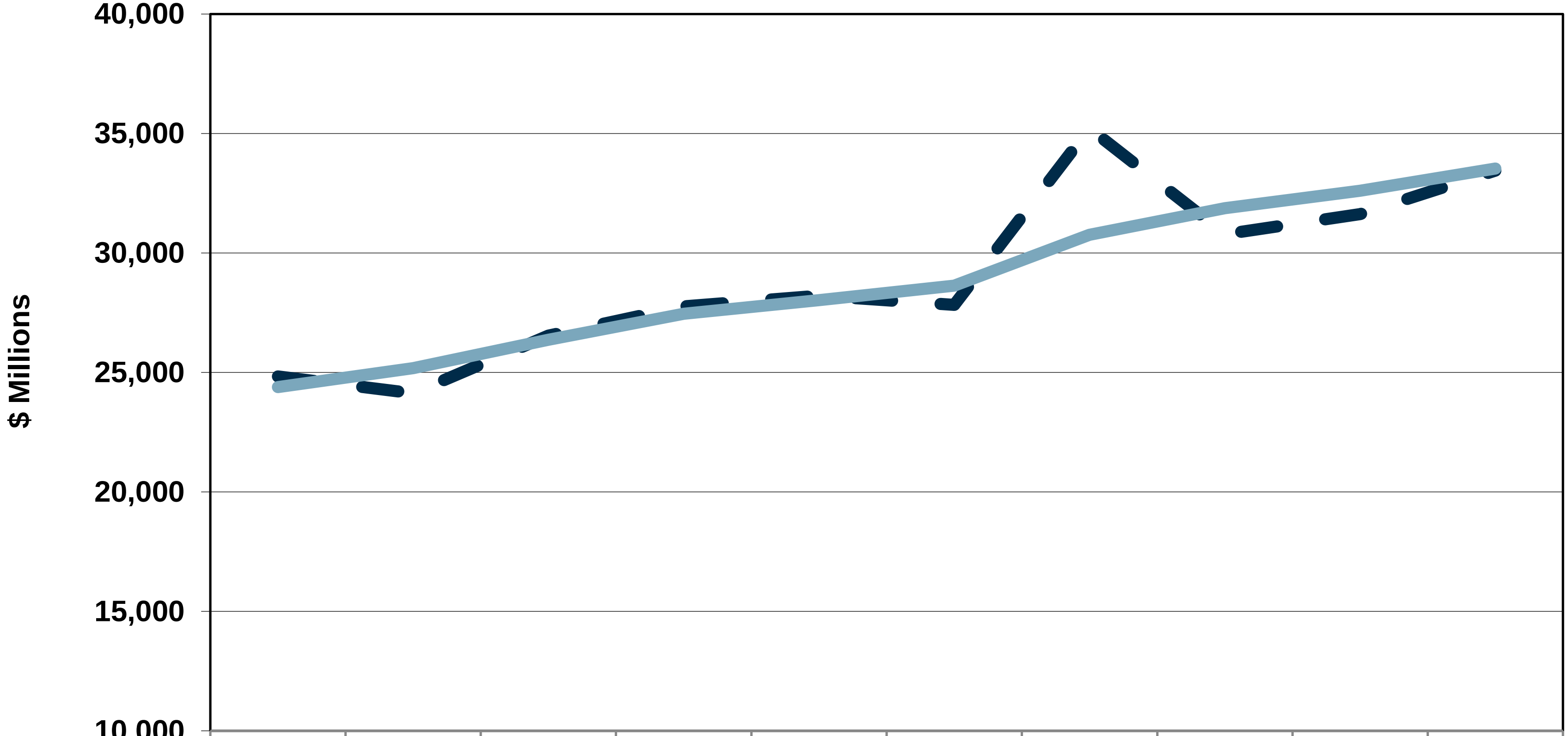
	2018	2019	2020	2021	2022	2023	2024
Actives	150,687	150,651	149,855	145,673	144,416	145,985	145,836
Retirees	104,973	107,844	109,881	112,158	114,462	115,890	118,321
Ratio	1.4	1.4	1.4	1.3	1.3	1.3	1.2

PERS Census Data – June 30



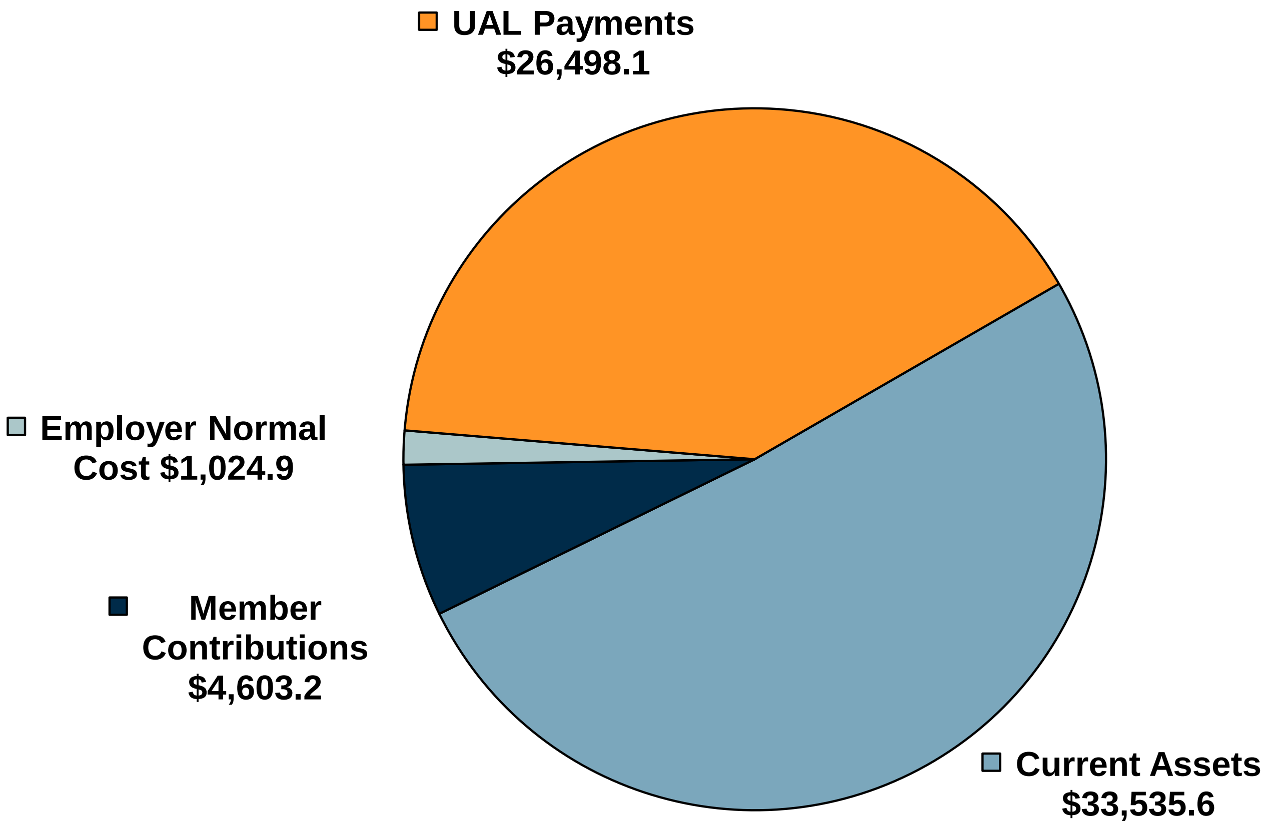
	2018	2019	2020	2021	2022	2023	2024
Payroll	5,999	6,145	6,287	6,246	6,455	7,065	7,246
Actual Benefit Payments	2,734	2,855	2,983	3,096	3,256	3,353	3,513

History of PERS Asset Values



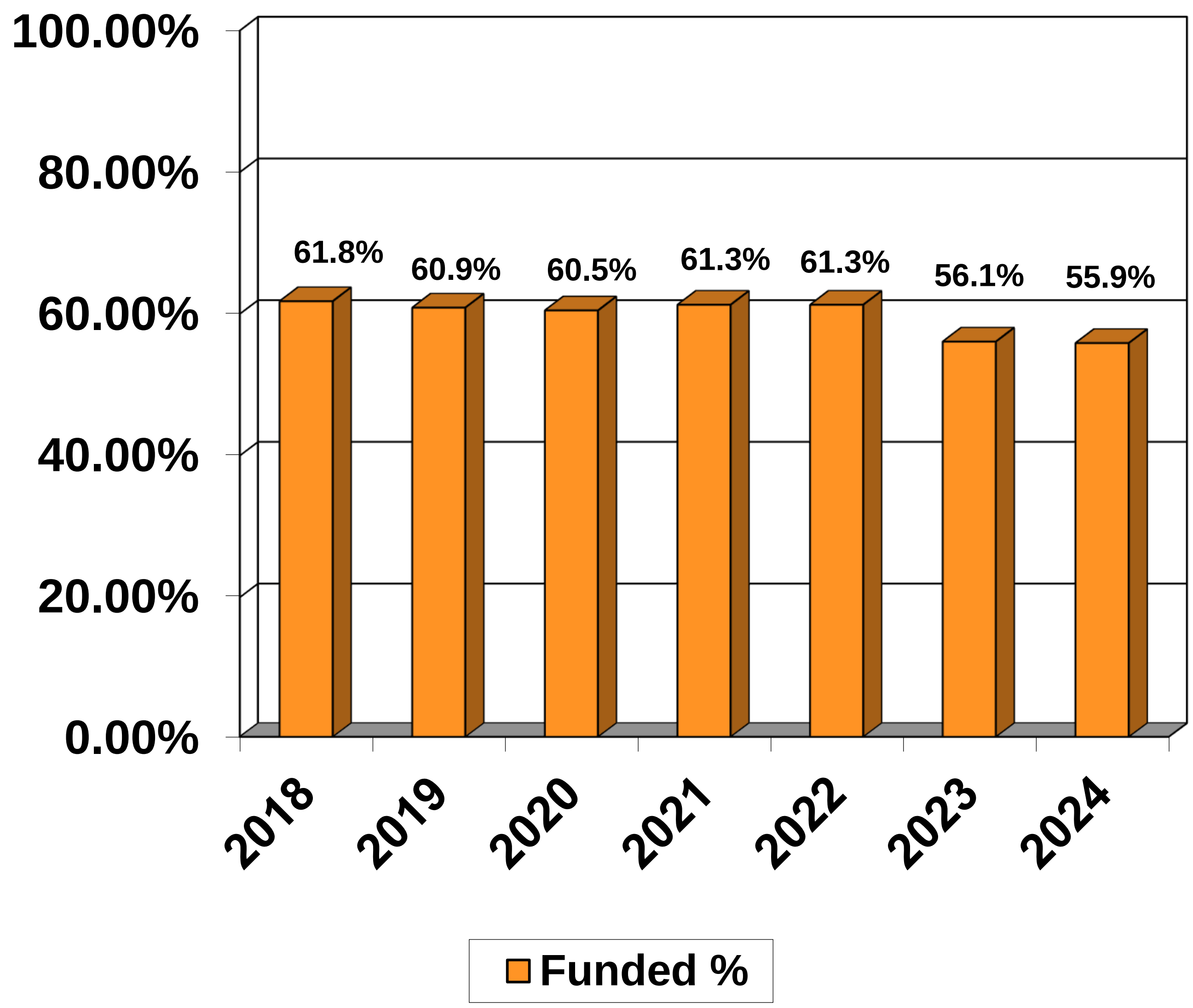
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Market	24,839	24,135	26,543	27,763	28,207	27,827	35,217	30,791	31,622	33,450
Actuarial	24,387	25,185	26,364	27,456	28,025	28,629	30,768	31,873	32,606	33,536

PERS Financing of Retirement Benefit Promises
($ millions)

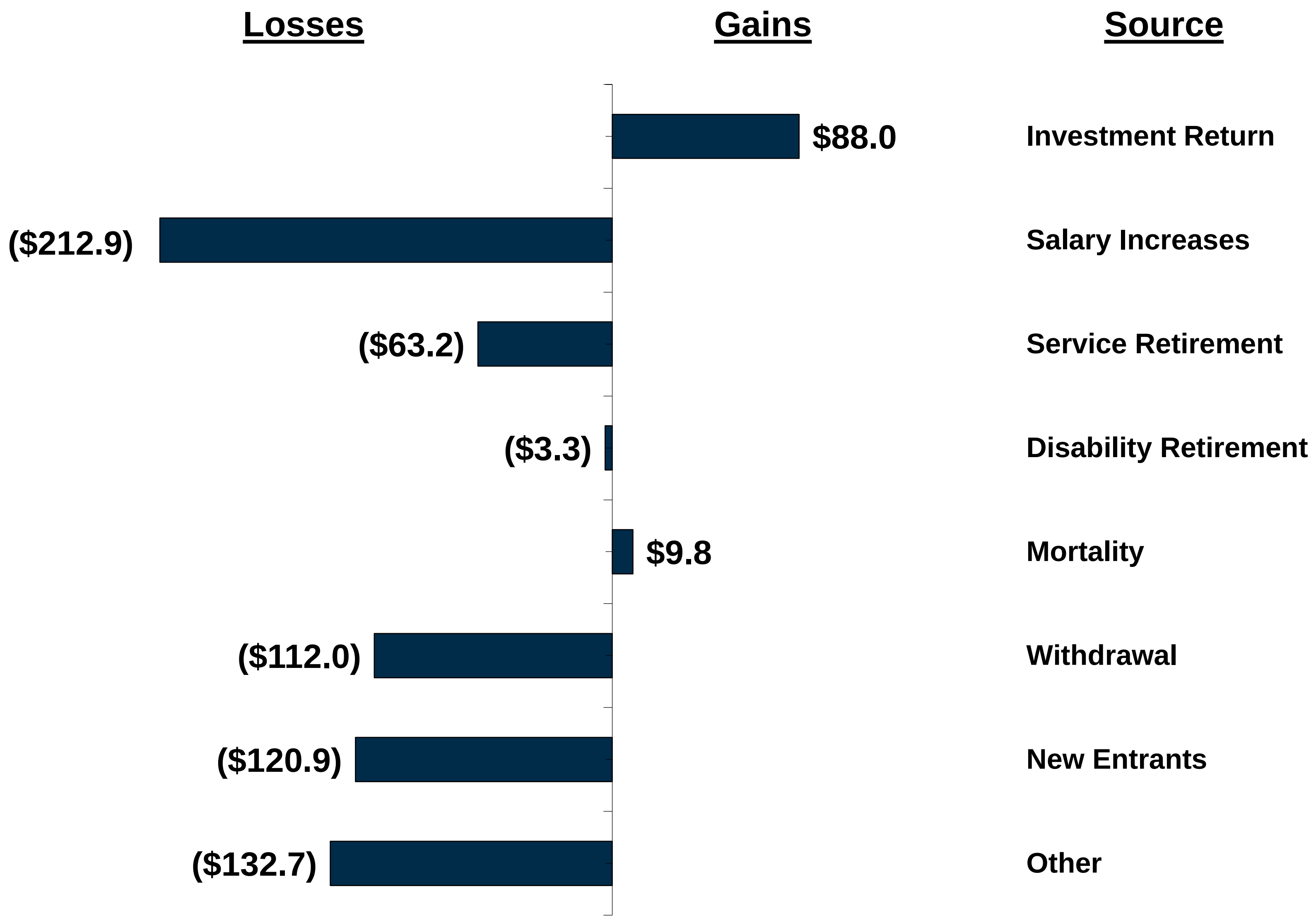


Total - $65,661.8

PERS Funded Ratio



PERS Actuarial Gain/Loss Analysis
($ millions)



PERS Allocation of Fixed Contribution Rate

Valuation Year	Member Rate	Employer Rate			Total Rate
		Normal*	UAL	Total	
2020	9.00%	1.34%	16.06%	17.40%	26.40%
2021	9.00%	1.77%	15.63%	17.40%	26.40%
2022	9.00%	1.60%	15.80%	17.40%	26.40%
2023	9.00%	2.62%	19.78%	22.40%	31.40%
2024	9.00%	2.57%	17.33%	19.90%	28.90%

* Budgeted administrative expenses is included in the normal cost of the contribution rates.

Actuarially Determined Contribution (ADC) - UAAL Portion

($ in thousands)

CavMac Actuarial Consulting Services

Date Established	Original UAAL Balance	Remaining UAAL Balance	Remaining Amortization Period	Amortization Payment
June 30, 2018	$16,940,459	$17,879,676	24 years	$1,192,200
June 30, 2019	784,879	791,331	20 years	59,005
June 30, 2020	524,319	528,690	21 years	38,220
June 30, 2021	506,599	509,805	22 years	35,808
June 30, 2022	561,966	564,969	23 years	38,630
June 30, 2023	5,309,730	5,323,698	24 years	354,979
June 30, 2024	899,931	899,931	25 years	58,611
Total		$26,498,100		$1,777,453
Estimated Payroll				$7,611,848
UAAL Amortization Contribution Rate				23.35%

Actuarially Determined Contribution (ADC)

Valuation Year	2023	2024
Employer Normal Cost	2.62%	2.57%
Actuarial Accrued liability	22.55%	23.35%
Total ADC	25.17%	25.92%
ADC/FCR Ratio*	112.4%	130.3%
Metric Status	**Red**	**Red**

* The FCR was 22.40% in 2023 and 19.90% in 2024

PERS Projections

PERS Projection Results
($ in thousands)

- Baseline Results at 7.00% (Phased-In to 19.90% Rate)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAL	$26,498,100	$29,096,171	$31,426,966	$35,787,973	$36,758,119	$37,698,010
Normal Cost Rate	2.57%	2.70%	2.84%	3.05%	3.12%	3.26%
UAL Rate	15.33%	17.20%	17.06%	16.85%	16.78%	16.64%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	55.9%	55.8%	55.4%	53.6%	53.7%	55.8%
Amortization Period	45 years	52 years	50 years	39 years	36 years	27 years
ADC	25.92%	30.11%	34.80%	47.84%	51.92%	27.80%
ADC/FCR Ratio	130.3%	151.3%	174.9%	240.4%	260.9%	139.7%
Cash Flow Percentage	(4.7)%	(5.3)%	(6.1)%	(6.0)%	(5.6)%	(4.5)%

- Under the current baseline projection, the funded ratio is 53.7% in 2047

30-Year Projection of Funded Ratio
Based on June 30, 2024 Valuation Results - PERS

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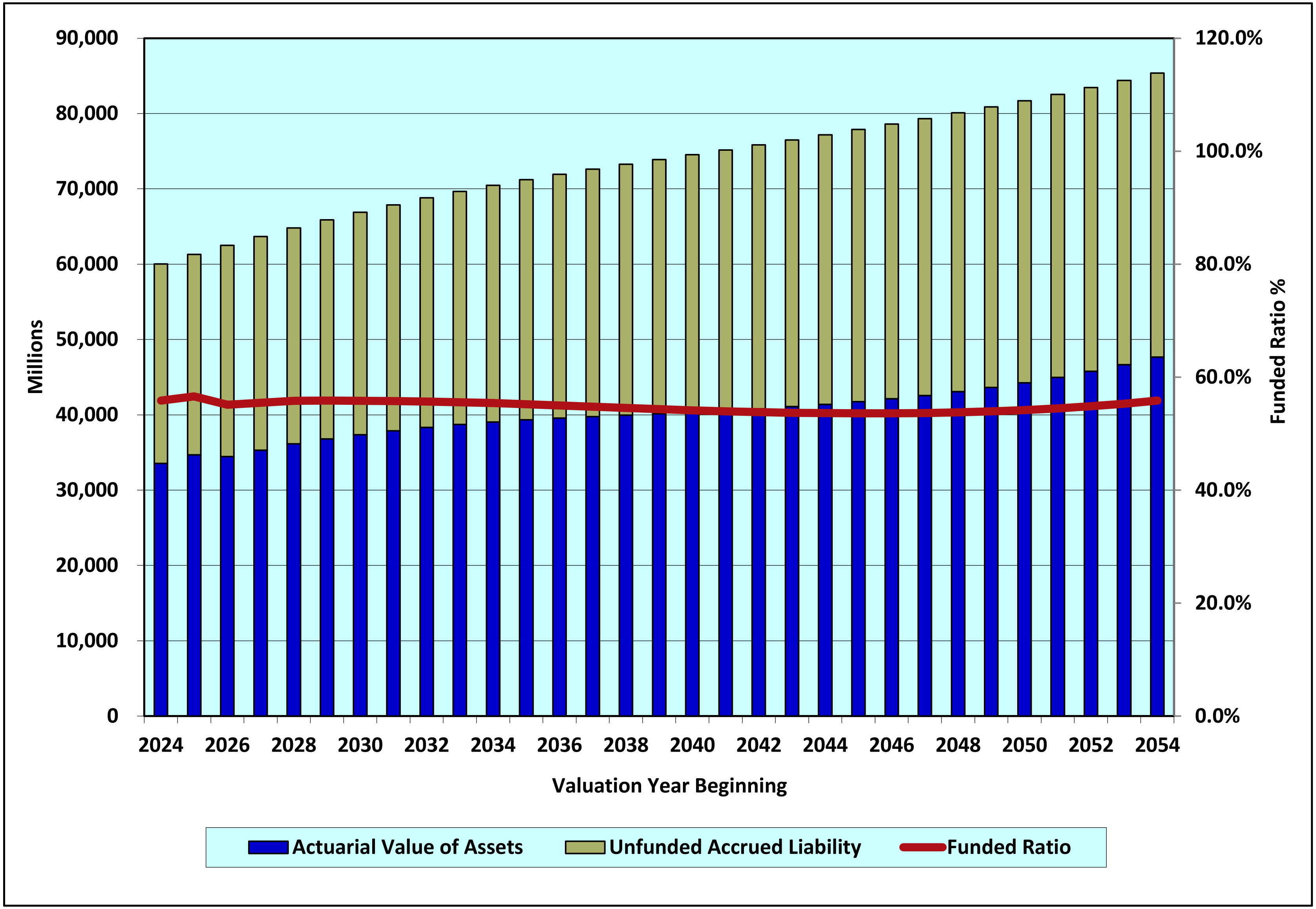
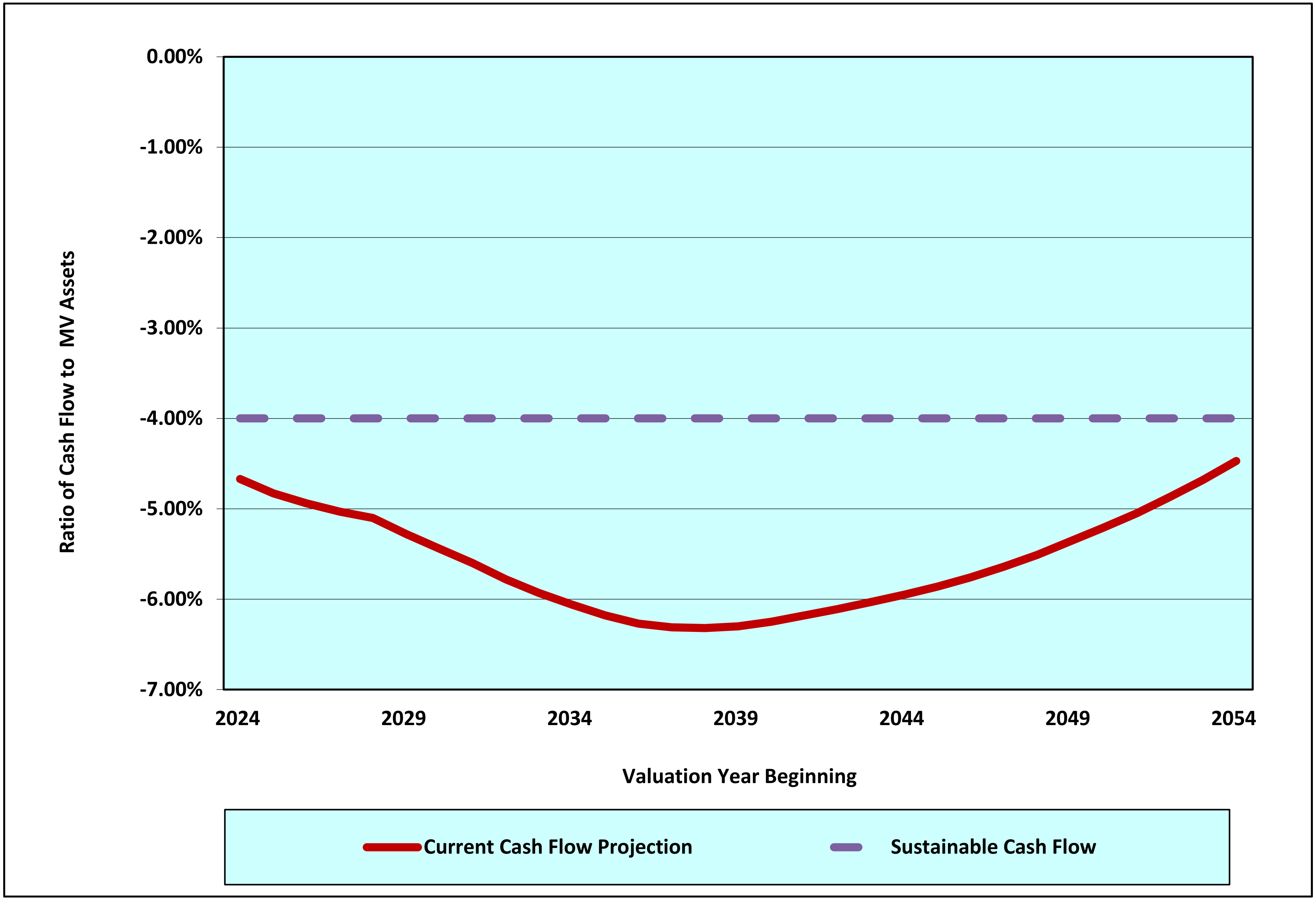


30-Year Projection of Negative Cash Flow Based on June 30, 2024 Valuation Results - PERS

CavMac
Actuarial Consulting Services



30-Year Projection of ADC and FCR
Based on June 30, 2024 Valuation Results - PERS

CavMac
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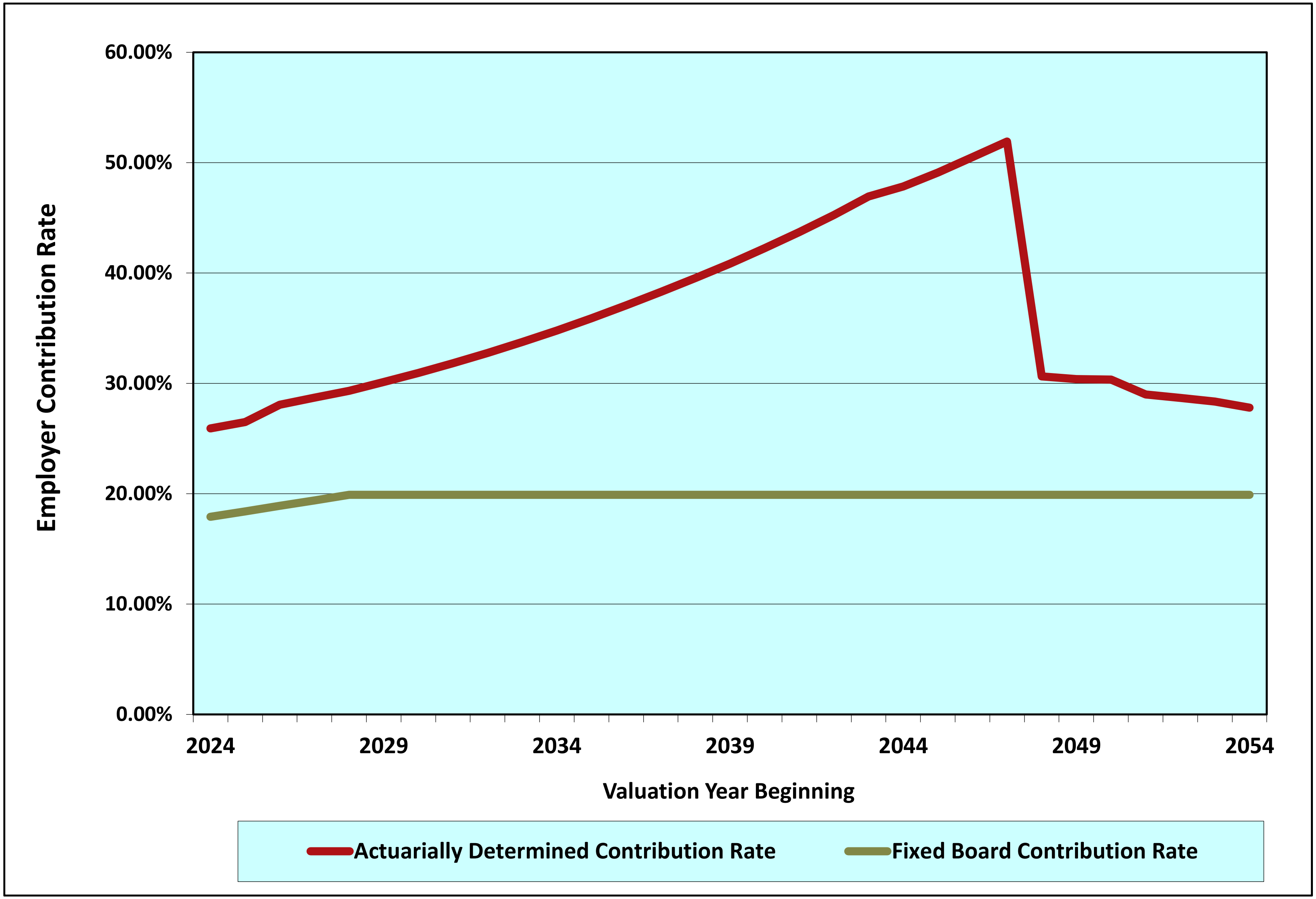


PERS Conclusion

Metric	2024 Baseline Projection	Status
Funding Ratio in 2047	53.7%	Red
Cash Flow as a Percentage of Assets	(6.3)%	Yellow
ADC/FCR Ratio from 2024 Valuation	130.3%	Red
ADC/FCR Ratio from 2025 Valuation	133.1%	Red

Two of the three metrics are in the "Red Status" for the 2024 valuation and per the Funding Policy, the actuary should recommend an increase in the FCR.

During the 2024 legislative session, the Legislature altered the PERS Board adopted phased-in approach to the FCR beginning July 1, 2024, by increasing the current FCR by 0.50% of annual compensation each year.

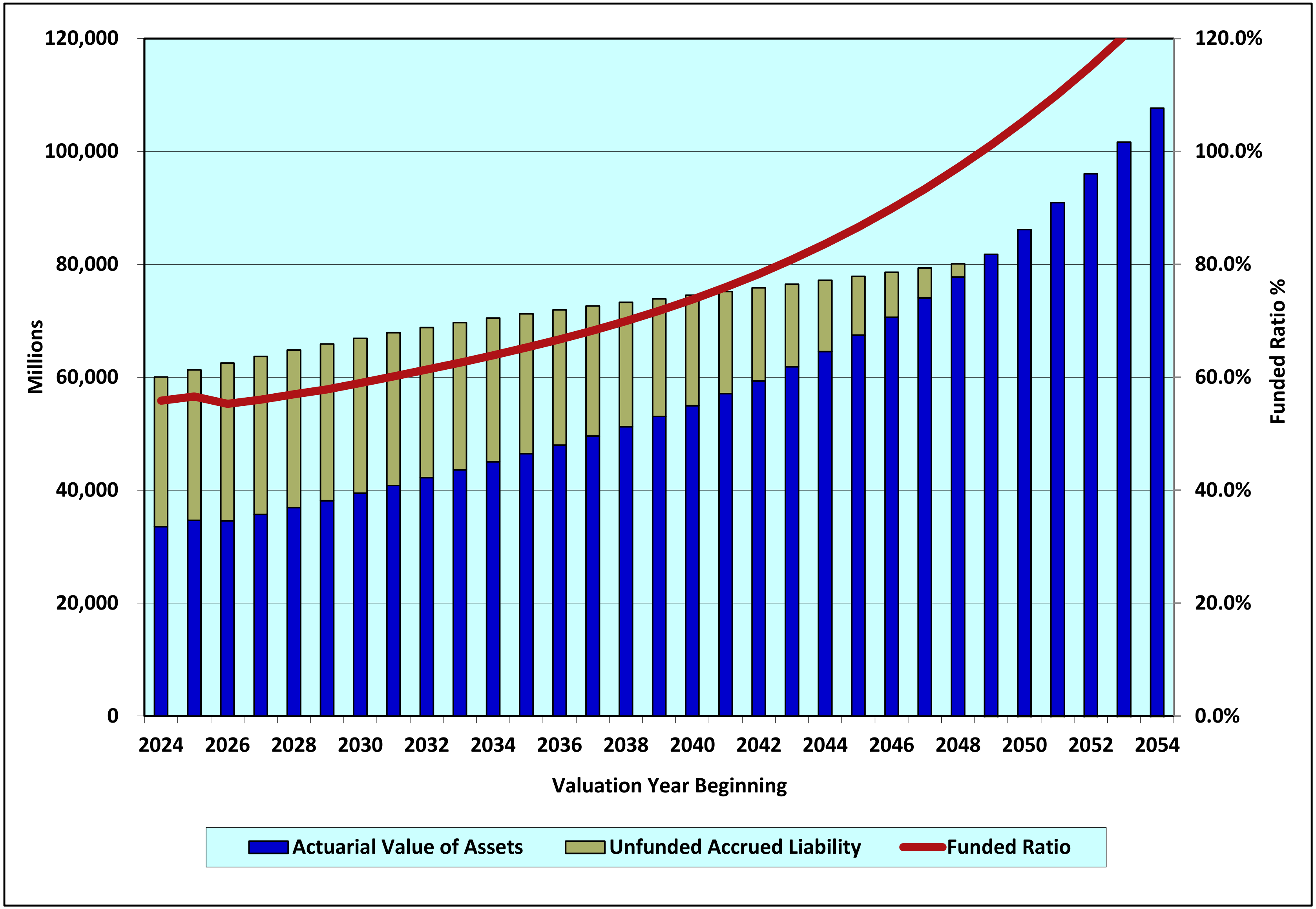
PERS Conclusion

CavMac recommends the Board and Legislature consider a funding change to either pay the full ADC of 25.92% of annual compensation beginning July 1, 2026, or continue the phased-in approach for five consecutive fiscal years, however, increase the FCR by 2% each year until it reaches 27.90% of annual compensation.

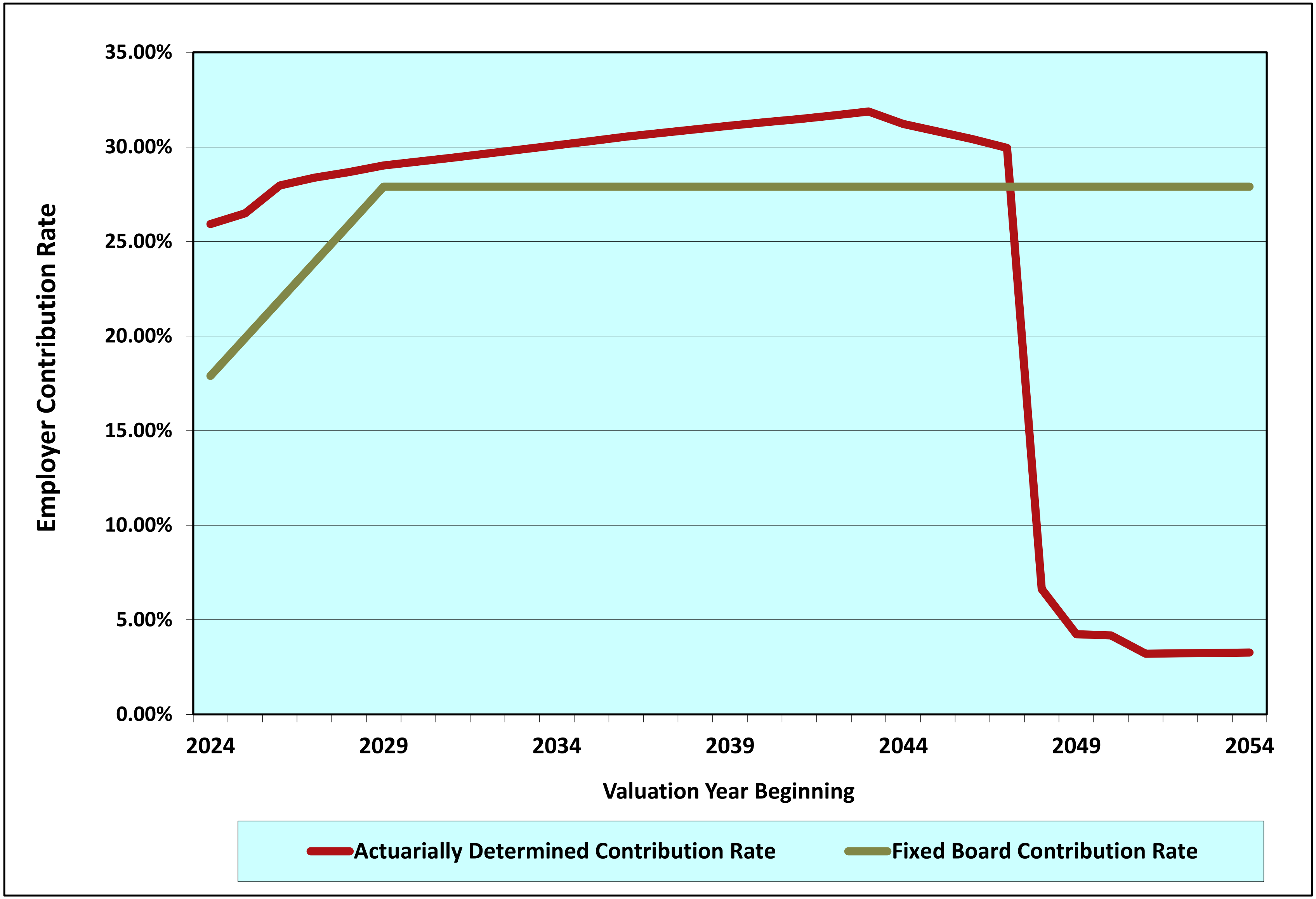
Metric	2024 Projection with FCR of 27.90%	Status
Funding Ratio in 2047	93.3%	**Green**
Cash Flow as a Percentage of Assets	(4.7)%	**Green**
ADC/FCR Ratio from 2024 Valuation*	92.9%	**Green**
ADC/FCR Ratio from 2025 Valuation*	94.9%	**Green**

* This ratio is based on an FCR of 27.90% of annual compensation.

30-Year Projection of Funded Ratio Based on Phase-in to 27.90% - PERS



30-Year Projection of ADC and FCR Based on Phase-in to 27.90% - PERS



ASOP 51 – Risk Assessment

ASOP 51

- Actuary is to identify risks that may affect the System's future financial condition

- Examples in ASOP 51 that are relevant for most public plans
  - ***Investment risk***
    - potential that return will be different than expected
  - ***Longevity risk***
    - potential that mortality experience will be different than expected
  - ***Covered payroll risk***
    - potential that covered payroll will not increase as assumed (especially important if UAL is amortized as level percent of payroll)
  - ***Active Population risk***
    - potential for number of active members to decline or plan closed to new entrants
  - ***Contribution rate risk***
    - potential for contribution rates to be too high for the plan sponsor/employer to pay

Investment Risk

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• Projected Funded Ratios

Single Year Event	PERS	HSPRS	SLRP
Projection Year	**2047**	**2047**	**2047**
▪ 1.00% in 2025	42.7%		
▪ 3.00% in 2025	46.4%		
▪ 5.00% in 2025	50.0%		
▪ **7.00% in 2025 (Baseline)**	**53.7%**		
▪ 9.00% in 2025	57.3%		
▪ 11.00% in 2025	61.0%		
▪ 13.00% in 2025	64.6%		
▪ Negative 5% in 2025	31.8%		
▪ Simulate 2008 loss using Negative 15% in 2025	13.5%		
Average Returns over next 10-Year Period (Simulated returns using mean and standard deviations from PERS' Investment Consultant's Capital Market Assumptions)			
▪ 6.00%	39.3%		
▪ 7.00%	53.9%		
▪ 8.00%	73.5%		

Demographic Risk

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- **Projected Funded Ratios**

Active Membership Growth	PERS	HSPRS	SLRP
Projection Year	**2047**	**2047**	**2047**
• Increase 0.50% each year	59.1%		N/A
• Increase 0.25% each year	56.4%		N/A
• **Static Population (Baseline Assumption)**	**53.7%**		
• Decrease 0.25% each year	51.0%		N/A
• Decrease 0.50% each year	48.4%		N/A

Active population is currently 145,836

Assumption Risk

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- **Projected Funded Ratios**

Projection Year				2047	2047	2047
Scenario	**Price Inflation**	**Discount Rate**	**Wage Inflation**	**PERS**	**HSPRS**	**SLRP**
1 - Baseline	**2.40%**	**7.00%**	**2.65%**	**53.7%**		
2	2.40%	6.75%	2.65%	46.2%		
3	2.10%	6.75%	2.35%	45.0%		

Contribution Risk

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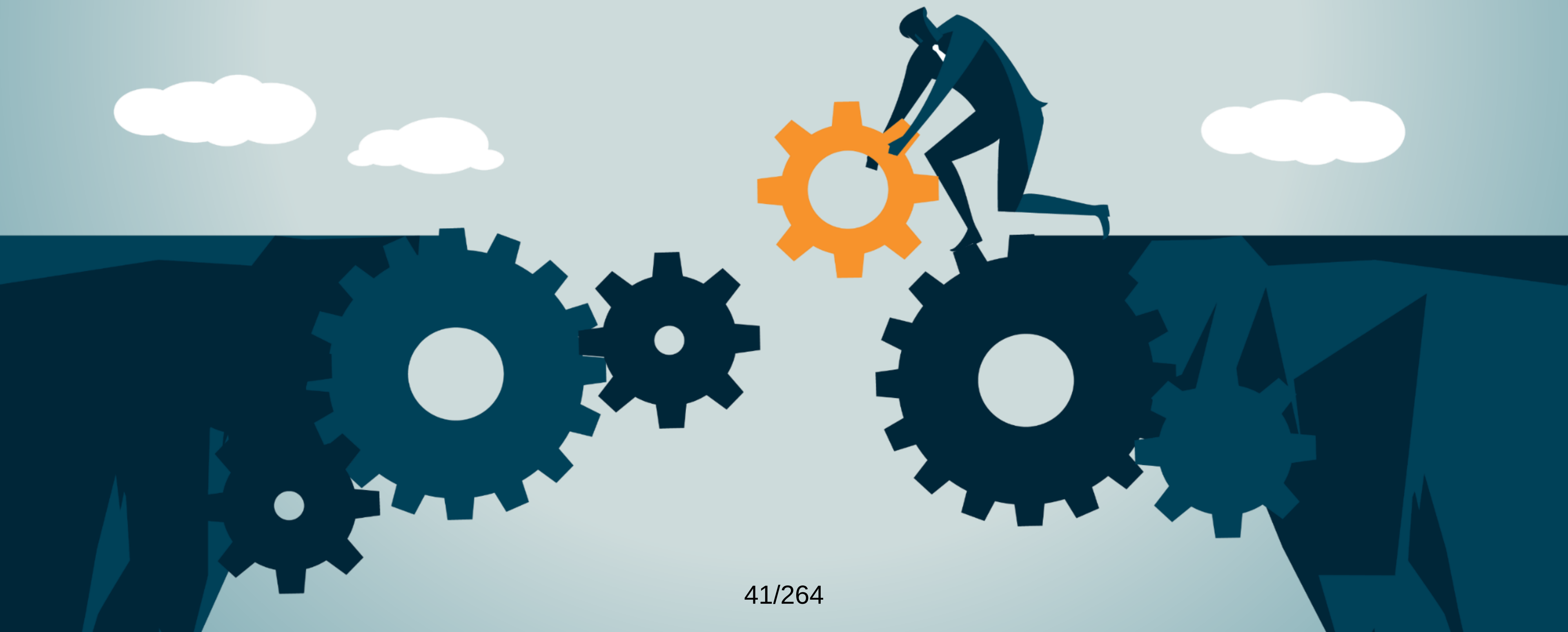
- **Projected Funded Ratios**

Projected to:	2047	2047	2047
Change in Fixed Contribution Rate (FCR)	**PERS**	**HSPRS**	**SLRP**
• **Baseline***	**53.7%**		
• 1.00% increase in FCR	58.9%		
• 1.00% decrease in FCR	48.5%		

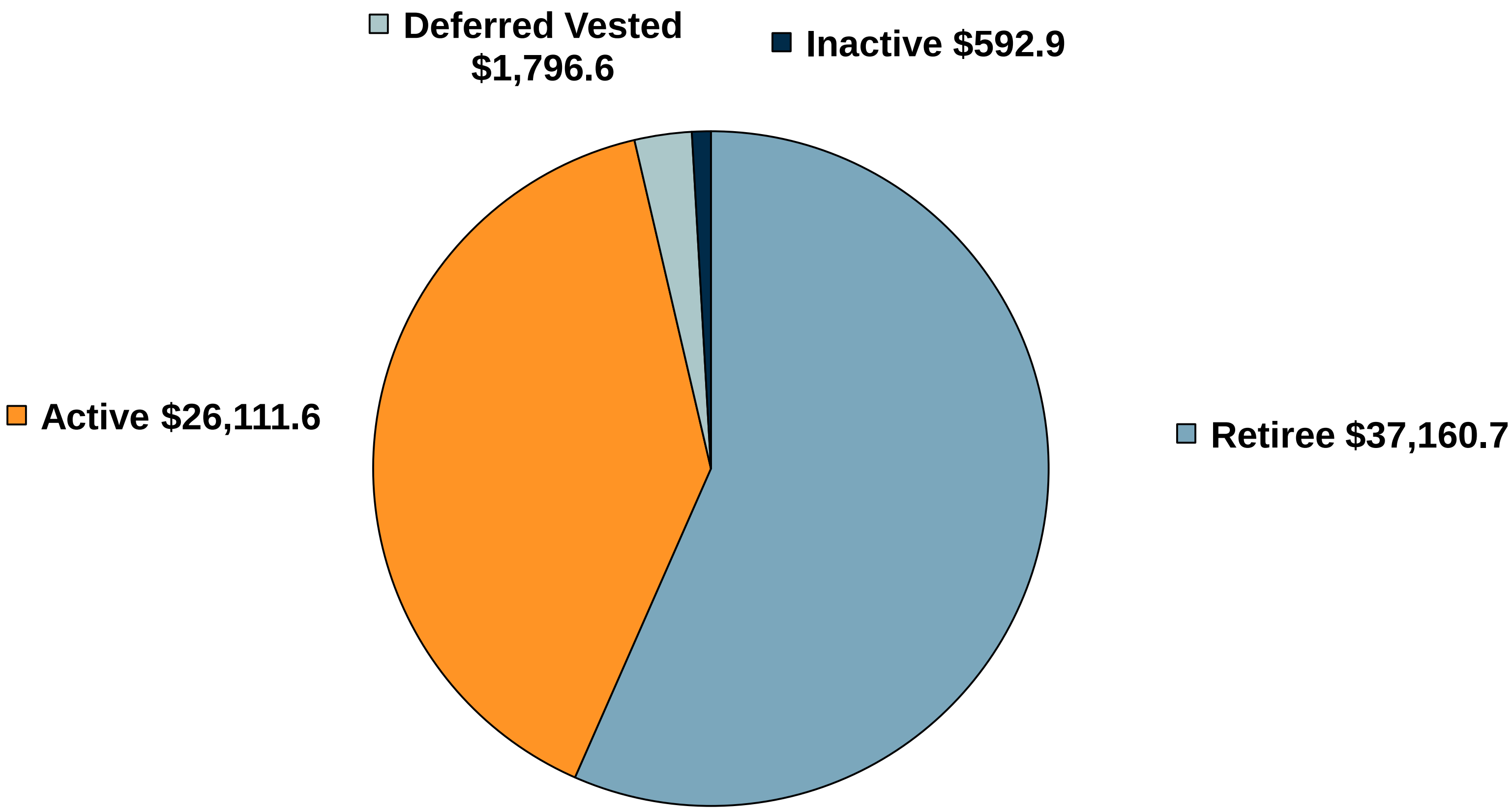
* Baseline FCR is currently 19.90%


THANK
YOU

Appendix



PERS Value of Future Benefits
($ millions)



Total - $65,661.8

PERS Cash Flow

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Mississippi PERS
30-year Open Group Projection of Cash Flow
PERS Plan
Based on June 30, 2024 Valuation Results

Projection of Cash Flow

Contribution Methodology: **Employee and Employer Contributions**

Investment Return Methodology: **As Programmed**

Valuation Year Beginning July 1	Expected Short-term Investment Return	Valuation Annual Payroll	Market Value of Assets July 1	Total Contributions	Projected Benefit Payments	Ratio of Cash Flow to MVA	Expected Investment Return	Net Cash Flow	Market Value of Assets June 30	Valuation Year Ending June 30
2024	7.00%	7,611,848,275	33,449,843,000	2,088,538,930	(3,649,482,001)	-4.67%	2,287,780,013	726,836,942	34,176,679,942	2025
2025	7.00%	7,663,421,707	34,176,679,942	2,141,773,099	(3,793,483,882)	-4.83%	2,335,535,460	683,824,676	34,860,504,618	2026
2026	7.00%	7,765,313,272	34,860,504,618	2,209,852,851	(3,930,544,207)	-4.94%	2,381,029,701	660,338,345	35,520,842,963	2027
2027	7.00%	7,883,261,131	35,520,842,963	2,283,623,084	(4,069,343,152)	-5.03%	2,425,015,874	639,295,807	36,160,138,770	2028
2028	7.00%	8,011,633,809	36,160,138,770	2,361,669,414	(4,206,658,053)	-5.10%	2,467,727,265	622,738,626	36,782,877,396	2029
2029	7.00%	8,150,006,915	36,782,877,396	2,402,459,038	(4,342,981,072)	-5.28%	2,508,031,852	567,509,819	37,350,387,214	2030
2030	7.00%	8,296,818,770	37,350,387,214	2,445,736,237	(4,477,875,368)	-5.44%	2,544,605,174	512,466,043	37,862,853,257	2031
2031	7.00%	8,450,593,001	37,862,853,257	2,491,065,805	(4,612,174,322)	-5.60%	2,577,416,534	456,308,017	38,319,161,274	2032
2032	7.00%	8,609,939,079	38,319,161,274	2,538,037,842	(4,751,929,603)	-5.78%	2,606,165,606	392,273,845	38,711,435,119	2033
2033	7.00%	8,777,302,892	38,711,435,119	2,587,373,347	(4,882,547,492)	-5.93%	2,630,828,007	335,653,862	39,047,088,981	2034
2034	7.00%	8,949,603,083	39,047,088,981	2,638,163,997	(5,005,690,651)	-6.06%	2,651,834,269	284,307,615	39,331,396,596	2035
2035	7.00%	9,130,728,543	39,331,396,596	2,691,556,160	(5,122,028,451)	-6.18%	2,669,569,966	239,097,675	39,570,494,271	2036
2036	7.00%	9,320,339,074	39,570,494,271	2,747,449,552	(5,227,336,130)	-6.27%	2,684,606,554	204,719,976	39,775,214,247	2037
2037	7.00%	9,522,270,054	39,775,214,247	2,806,974,767	(5,318,413,732)	-6.31%	2,697,851,297	186,412,331	39,961,626,578	2038
2038	7.00%	9,738,544,920	39,961,626,578	2,870,728,272	(5,397,659,135)	-6.32%	2,710,367,114	183,436,250	40,145,062,828	2039
2039	7.00%	9,966,557,451	40,145,062,828	2,937,941,805	(5,467,043,675)	-6.30%	2,723,132,951	194,031,081	40,339,093,909	2040
2040	7.00%	10,205,811,198	40,339,093,909	3,008,469,025	(5,529,113,042)	-6.25%	2,737,006,145	216,362,128	40,555,456,037	2041
2041	7.00%	10,454,976,438	40,555,456,037	3,081,917,954	(5,589,075,966)	-6.18%	2,752,615,521	245,457,510	40,800,913,547	2042
2042	7.00%	10,710,650,477	40,800,913,547	3,157,285,548	(5,651,079,795)	-6.11%	2,770,257,368	276,463,121	41,077,376,668	2043
2043	7.00%	10,971,518,837	41,077,376,668	3,234,184,323	(5,712,994,949)	-6.03%	2,790,125,343	311,314,717	41,388,691,385	2044
2044	7.00%	11,238,160,980	41,388,691,385	3,312,785,094	(5,776,153,594)	-5.95%	2,812,448,707	349,080,207	41,737,771,591	2045
2045	7.00%	11,512,022,822	41,737,771,591	3,393,514,087	(5,840,829,897)	-5.86%	2,837,436,663	390,120,853	42,127,892,445	2046
2046	7.00%	11,794,079,520	42,127,892,445	3,476,658,761	(5,903,518,970)	-5.76%	2,865,448,960	438,588,751	42,566,481,195	2047
2047	7.00%	12,085,505,363	42,566,481,195	3,562,565,271	(5,963,354,220)	-5.64%	2,897,047,234	496,258,285	43,062,739,480	2048
2048	7.00%	12,387,209,199	43,062,739,480	3,651,501,528	(6,023,154,381)	-5.51%	2,932,787,830	561,134,977	43,623,874,457	2049
2049	7.00%	12,698,316,485	43,623,874,457	3,743,209,733	(6,082,233,005)	-5.36%	2,973,189,998	634,166,727	44,258,041,184	2050
2050	7.00%	13,019,958,451	44,258,041,184	3,838,023,352	(6,143,280,344)	-5.21%	3,018,743,501	713,486,509	44,971,527,693	2051
2051	7.00%	13,352,559,724	44,971,527,693	3,936,067,555	(6,205,533,300)	-5.05%	3,069,919,063	800,453,319	45,771,981,012	2052
2052	7.00%	13,696,437,952	45,771,981,012	4,037,435,979	(6,267,025,529)	-4.87%	3,127,322,857	897,733,308	46,669,714,320	2053
2053	7.00%	14,052,147,278	46,669,714,320	4,142,291,975	(6,328,173,590)	-4.68%	3,191,668,093	1,005,786,477	47,675,500,797	2054
2054	7.00%	14,418,455,452	47,675,500,797	4,250,272,298	(6,379,903,360)	-4.47%	3,264,008,618	1,134,377,556	48,809,878,353	2055

PERS Reconciliation of Unfunded Actuarial Accrued Liability

$ in Millions

Last Year's UAAL	**$25,542.3**
Change due to:	
Expected Change from Amortization	55.9
Investment Experience	(88.0)
Demographic Experience	635.2
Contribution Deficiency	352.7
Total Experience	955.8
This Year's UAAL	**$26,498.1**

PERS Reconciliation of Amortization Period

Previously Reported Period	**32.2 years**
Change due to:	
Normal amortization	(1.0)
Actuarial experience	1.6
Net Assumption/FCR changes	11.5
Plan amendments	0.0
Contribution change	0.6
Computed Period	**44.9 years**

PERS Solvency Test
($ Millions)

Valuation Date	Aggregate Accrued Liabilities For			Actuarial Value of Assets	Portion Covered by Actuarial Value of Assets		
	Active Member Contribs	Retirees, Survivors and Inactives	Employer Portion for Active Members				
	(1)	(2)	(3)		(1)	(2)	(3)
6/30/2024	$5,982.2	$37,160.7	$16,890.9	$33,535.6	100%	74.1%	0.0%
6/30/2023	5,895.2	35,734.8	16,518.3	32,606.0	100%	74.7%	0.0%
6/30/2022	5,749.3	33,106.3	13,144.5	31,873.2	100%	78.9%	0.0%
6/30/2021	5,728.1	31,821.7	12,654.5	30,768.3	100%	78.7%	0.0%
6/30/2020	5,710.2	30,220.1	11,424.2	28,629.2	100%	75.8%	0.0%
6/30/2019	5,626.6	29,109.6	11,270.6	28,024.6	100%	76.9%	0.0%

PERS New Entrant Assumptions

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- Active Membership assumed to continue at current population of 145,836
- About 97.8% of those active in 2054 are hired after July 1, 2024

Member	2024	2029	2034	2044	2047	2054
Active – Existing Employees	145,836	81,596	48,571	17,552	12,107	3,259
Active – New Entrants	0	64,240	97,265	128,284	133,729	142,577
Retired/Deferred Vesteds	135,476	147,109	153,821	150,626	148,561	143,578
Total	281,312	292,945	299,657	296,462	294,397	289,414

PERS Projection Results
($ in thousands)

- Sensitivity Results at 6.50% (Phased-In to 19.90% Rate)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAL	$30,222,657	$33,979,381	$37,914,965	$47,504,341	$50,833,695	$59,495,930
Normal Cost Rate	3.86%	3.97%	4.08%	4.30%	4.38%	4.54%
UAL Rate	14.04%	15.93%	15.82%	15.60%	15.52%	15.36%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	52.6%	51.3%	49.2%	41.8%	39.5%	34.3%
Amortization Period	97 years	Infinite	Infinite	Infinite	Infinite	Infinite
ADC	27.88%	34.49%	40.67%	58.14%	64.14%	38.14%
ADC/FCR Ratio	140.1%	173.3%	204.4%	292.1%	322.3%	191.7%
Cash Flow Percentage	(4.7)%	(5.4)%	(6.5)%	(7.2)%	(7.3)%	(6.9)%

- Under this projection, the funded ratio is 39.5% in 2047

PERS Projection Results
($ in thousands)

- Sensitivity Results at 7.55% (Phased-In to 19.90% Rate)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAL	$22,925,045	$24,117,821	$24,574,416	$22,387,108	$20,243,110	$10,519,082
Normal Cost Rate	1.37%	1.52%	1.68%	1.89%	1.95%	2.07%
UAL Rate	16.53%	18.38%	18.22%	18.01%	17.95%	17.83%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	59.4%	61.1%	63.0%	69.2%	72.9%	86.9%
Amortization Period	31 years	32 years	28 years	17 years	13 years	5 years
ADC	22.71%	25.49%	28.36%	35.71%	37.23%	14.79%
ADC/FCR Ratio	114.1%	128.1%	142.5%	179.4%	187.1%	74.3%
Cash Flow Percentage	(4.7)%	(5.1)%	(5.7)%	(4.9)%	(4.4)%	(3.0)%

- Under this projection, the funded ratio is 72.9% in 2047

Public Employees' Retirement System of Mississippi

Annual Valuation Report

Prepared as of June 30, 2024

CavMac
Actuarial Consulting Services

October 19, 2024

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

Ladies and Gentlemen:

Presented in this report are the results of the annual actuarial valuation of the Public Employees' Retirement System (PERS) of Mississippi. The purpose of the valuation is to:

- Measure the System's funding progress as of the valuation date,
- To determine the unfunded actuarial accrued liability amortization period beginning July 1, 2024 using the phased-in Fixed Contribution Rate (FCR) of 19.90% of payroll as adopted by the Legislature during the 2024 Legislative session,
- To determine the actuarially determined contribution (ADC) for the fiscal year beginning July 1, 2026 using the assumptions and methods in the Board's Funding Policy,
- To project the System's funding progress for the next thirty years and provide clear reporting and risk analysis of the funding metrics as outlined in the Board's Funding Policy using a "Signal Light" approach, and
- To assist the Board in determining whether an increase or decrease is needed in the Fixed Contribution Rate.

The results may not be applicable for other purposes. The date of the valuation was June 30, 2024.

The valuation was based upon data, furnished by the Executive Director and the PERS staff, concerning active, inactive, and retired members along with pertinent financial information. While not verifying data at the source, the actuary performed tests for consistency and reasonableness. The valuation results depend on the integrity of the data. If any of the information is inaccurate or incomplete, our results may be different and our calculations may need to be revised. The complete cooperation of the PERS staff in furnishing materials requested is hereby acknowledged with appreciation.

Your attention is directed particularly to the presentation of the valuation results on page 1 and the projection results on pages 6 and 7. Since two of the three funding metrics are in a "Red Light" status as of this valuation, we recommend to the PERS Board and Legislature that the Fixed Contribution Rate (FCR) be increased.

In the 2024 legislative session, the Legislature canceled the Board-adopted phased-in Fixed Contribution Rate approach and instituted a phased-in Statutory Contribution Rate approach beginning July 1, 2024 of increasing the current contribution of 17.40% of annual compensation to 19.90% of annual compensation by 0.50% each year for the next 5 fiscal years. For consistency and since the statutory rate is not recognized in the Board's Funding Policy, we will still refer to this contribution as the Fixed Contribution Rate (FCR) for this valuation. The Legislature also required a one-time payment of $110 Million to be made from the State to PERS. This supplemental contribution is included in the assets as of June 30, 2024 and is incorporated in this valuation.

Based on the results of this valuation, we recommend that the Board and Legislature consider increasing the Fixed Contribution Rate to the Actuarially Determined Contribution (ADC). This recommendation would remove the phase-in approach altogether and the contribution rate for the fiscal year beginning July 1, 2026 would be equal to the ADC of 25.92% of annual compensation. Alternatives to this ADC recommendation would be to keep the phase-in approach of the FCR, however, we would recommend an acceleration in the FCR as a percentage of annual compensation (with or without the supplemental $110M made each year) based on one of the Scenarios shown in the following table:

Fiscal Year Beginning	Current Legislature Phased-In Fixed Contribution Rate	Scenario 1	Scenario 2
		Recommended Fixed Contribution Rate	Recommended Fixed Contribution Rate with Supplemental $110M Each Year
July 1, 2024	17.90%	17.90%	17.90%
July 1, 2025	18.40%	19.90%	19.70%
July 1, 2026	18.90%	21.90%	21.50%
July 1, 2027	19.40%	23.90%	23.30%
July 1, 2028	19.90%	25.90%	25.10%
July 1, 2029	19.90%	27.90%	26.90%

No changes were made to the actuarial assumptions or plan provisions since the previous valuation.

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

In order to prepare the results in this report, we have utilized actuarial models that were developed to measure liabilities and develop actuarial costs. These models include tools that we have produced and tested, along with commercially available valuation software that we have reviewed to confirm the appropriateness and accuracy of the output. In utilizing these models, we develop and use input parameters and assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. An analysis of the potential range of future measurements is provided in Section XI of this report.

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

To the best of our knowledge, this report is complete and accurate. The valuation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

Respectfully submitted,

Edward J. Koebel

Edward J. Koebel, EA, FCA, MAAA
Chief Executive Officer

Ben Mobley

Ben Mobley, ASA, FCA, MAAA
Consulting Actuary

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Table of Contents

1. This report, prepared as of June 30, 2024, presents the results of the annual actuarial valuation of the System. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below. The current valuation and reported benefit amounts reflect any benefit increases granted to retirees as of July 1, 2024.

VALUATION DATE	June 30, 2024	June 30, 2023
Investment Return Assumption	**7.00%**	**7.00%**
Active members included in valuation		
Number	145,836	145,985
Annual compensation	$ 7,245,823,966	$ 7,065,419,204
Retirees		
Number	118,321	115,890
Annual allowances	$ 3,258,663,013	$ 3,118,511,891
Assets		
Market related actuarial value	$ 33,535,621,000	$ 32,605,990,000
Market value of assets (MVA)	$ 33,449,843,000	$ 31,621,983,000
Unfunded actuarial accrued liability (UAAL)	$ 26,498,099,546	$ 25,542,291,981
Funded Ratio based on actuarial value	55.9%	56.1%
Employer Fixed Contribution Rate (FCR)		
Normal Cost*	2.57%	2.62%
Accrued liability	17.33	19.78
Total**	19.90%	22.40%
Payment period based on the FCR	44.9 years	32.2 years
For Fiscal Year Ending	**June 30, 2027**	**June 30, 2026**
Actuarially Determined Contribution (ADC) Rate		
Normal Cost*	2.57%	2.62%
Accrued liability	23.35	22.55
Total	25.92%	25.17%
Amortization period for ADC	23.8 years	24.7 years
ADC Ratio to Fixed Contribution Rate	130.25%	112.37%
Unfunded actuarial accrued liability based on MVA	$ 26,583,877,546	$ 26,526,298,981
Funded Ratio based on market value	55.7%	54.4%

* Includes load for administrative expenses. See Section VI for more contribution rate detail.

** The FCR of 19.90% will be phased-in over the next five fiscal years beginning July 1, 2024.

2. The valuation balance sheet showing the results and liabilities of the System is provided in Section III.
3. Comments on the valuation results are given in Section IV, comments on the experience and actuarial gains and losses during the valuation year are provided in Section V and the rates of contribution payable by employers are provided in Section VI and Section VII.
4. Schedule A of this report presents the development of the assets. The estimated net investment return for the plan year ending June 30, 2024 on a market value of assets basis was 10.41% and on an actuarial value of assets basis was 7.28%. These can be compared to the assumed rate of return for the same period of 7.00%. The market value of assets basis return may be slightly different than what PERS reports as this estimated return is assuming cash flow as of the middle of the year.
5. Schedule B details the actuarial assumptions and methods employed. There have been no changes since the previous valuation.
6. Schedule C provides a summary of the benefit and contribution provisions of the plan. There have been no changes since the previous valuation.
7. The funded ratio shown in the Summary of Principal Results is the ratio of actuarial value of assets to the actuarial accrued liability. The funded status is different based on the market value of assets. The funded ratio is an indication of progress in funding the promised benefits. Since the ratio is less than 100%, there is a need for additional contributions toward the payment of the unfunded accrued liability. In addition, this funded ratio does not have any relationship to measuring the sufficiency if the plan had to settle its liabilities.
8. The employer contribution rate, or Fixed Contribution Rate (FCR), of 19.90% of annual compensation is the current final phased-in contribution rate approved by the Legislature beginning July 1, 2024 based on the following table:

Fiscal Year Beginning	Current Legislature Phased-In Fixed Contribution Rate
July 1, 2024	17.90%
July 1, 2025	18.40%
July 1, 2026	18.90%
July 1, 2027	19.40%
July 1, 2028	19.90%
July 1, 2029	19.90%

As shown on page 1 of the report, the amortization period to pay off the Unfunded Actuarial Accrued Liability (UAAL) using the FCR of 19.90% is over 45 years, which is a snapshot view of the UAAL as of the valuation date of June 30, 2024.

9. In addition, as shown on page 1 of the report, the Actuarially Determined Contribution (ADC) Rate for the 2024 valuation year calculated based on the actuarial methods outlined in the Board's Funding Policy provided in Schedule F is 25.92% of annual compensation and the ratio of the ADC to the FCR (25.92% to 19.90%) is calculated at 130.25% as of June 30, 2024. Per the Board's Funding Policy, this actuarial metric is in the Red Status as the ratio exceeds 110%.

10. The projection results, shown beginning in Section IX, allow the Board to see a forecast of the System's funding progress over time, allow the Board to review the funding goals and benchmarks outlined in the Funding Policy, and provide the status of the metrics/targets in the Funding Policy that determines whether or not a contribution rate increase should be recommended. The objective of the current Funding Policy is to accumulate sufficient assets during a member's employment to fully finance the benefit the member receives throughout retirement. In order to reach that objective, some goals and benchmarks were established as follows:

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

11. For PERS, if any one of the following metrics are in the Red Signal Light status in conjunction with the annual valuation report and the projection report, the actuary shall determine and recommend to the Board an employer contribution rate increase to consider that is sufficient to get all three metrics back into the Green Signal Light status.

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

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

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

Status	Definition
Green	Net Cash Flow Percentage above negative 5.25% (-5.25%) during the projection period
Yellow	Net Cash Flow Percentage between negative 5.25% (-5.25%) and negative 7.00% (-7.00%) during the projection period
Red	Net Cash Flow Percentage below negative 7.00% (-7.00%) during the projection period

- Actuarially Determined Contribution (ADC) – defined as the contribution requirement determined by the actuary using a contribution allocation procedure based on the principal elements disclosed in Section III of the 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. The ratio of the ADC to the fixed contribution rate (ADC/FCR) as set by the 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
Yellow	ADC ratio between 100% and 110% of fixed contribution rate
Red	ADC ratio above 110% of fixed contribution rate

12. A summary of the estimated metrics from the projection results for the next five years and in the long-term are shown in the following two tables below. Please note that the projections shown below include the phase-in of the employer contribution rate to 19.90% of annual compensation over the next four fiscal years based on the Legislature-approved schedule. More details will be shown beginning in Section IX but as you can see from the first table below, the funded ratio and cash flow percentage remain relatively stable while the ADC/FCR ratio increases over the next five years.

Valuation Year	UAAL ($ in Millions)	Funded Ratio	Cash Flow %	ADC/FCR Ratio*
2024	$26,498	55.9%	(4.7)%	130.3%
2025	$26,611	56.6%	(4.8)%	133.1%
2026	$28,059	55.1%	(4.9)%	141.0%
2027	$28,368	55.5%	(5.0)%	144.2%
2028	$28,643	55.8%	(5.1)%	147.3%
2029	$29,096	55.8%	(5.3)%	151.3%

Metrics	2024 Baseline Projection	2024 Status
Funding Ratio in 2047	53.7%	Red
Cash Flow as a Percentage of Assets	(6.3)%	Yellow
ADC/FCR Ratio from 2024 Valuation*	130.3%	Red
ADC/FCR Ratio from 2025 Valuation*	133.1%	Red

* These ratios are based on the ultimate FCR of 19.90% of annual compensation.

13. As shown on the previous page, two of the three metrics are in the "Red Status" for the 2024 valuation and projections, and per the Funding Policy, the actuary should recommend an increase in the Fixed Contribution Rate (FCR). We recommend that the Board and Legislature consider increasing the Fixed Contribution Rate to the Actuarially Determined Contribution (ADC). This recommendation would remove the phase-in approach altogether and the contribution rate for the fiscal year beginning July 1, 2026 would be equal to the ADC of 25.92% of annual compensation. Alternatives to this ADC recommendation would be to keep the phase-in approach of the FCR, however, we would recommend an acceleration in the FCR as a percentage of annual compensation (with or without the supplemental $110M made each year) based on one of the Scenarios shown in the following table:

Fiscal Year Beginning	Current Legislature Phased-In Fixed Contribution Rate	Scenario 1	Scenario 2
		Recommended Fixed Contribution Rate	Recommended Fixed Contribution Rate with Supplemental $110M Each Year
July 1, 2024	17.90%	17.90%	17.90%
July 1, 2025	18.40%	19.90%	19.70%
July 1, 2026	18.90%	21.90%	21.50%
July 1, 2027	19.40%	23.90%	23.30%
July 1, 2028	19.90%	25.90%	25.10%
July 1, 2029	19.90%	27.90%	26.90%

The table below shows the metrics with Scenario 1 from above.

Metrics	2024 Projection	2024 Status
Funding Ratio in 2047	93.3%	Green
Cash Flow as a Percentage of Assets	(4.7)%	Green
ADC/FCR Ratio from 2024 Valuation*	92.9%	Green
ADC/FCR Ratio from 2025 Valuation*	94.9%	Green

* This ratio is based on the ultimate FCR of 27.90% of annual compensation.

14. The Board should continue to review the Sensitivity Analysis section of this report during the fiscal year to understand the volatility that may occur in the projections if investment experience is more or less than expected going forward.

15. The table on the following page provides a ten-year history of some pertinent figures.

Comparative Schedule

Valuation Date June 30	Active Members				Retired Lives				Valuation Results ($ millions)		
	Number	Payroll ($ millions)	Average Salary	% increase from previous year	Number	Active/ Retired Ratio	Annual Benefits ($ millions)	Benefits as % of Payroll	Actuarial Accrued Liability	Valuation Assets	UAAL
2015	157,215	$5,905	$37,559	3.9%	96,338	1.6	$2,116.3	35.8%	$40,364	$24,387	$15,977
2016	154,104	6,023	39,081	4.1	99,483	1.5	2,249.0	37.3	41,997	25,185	16,812
2017	152,382	6,038	39,626	1.4	102,260	1.5	2,374.7	39.3	43,166	26,364	16,802
2018	150,687	5,999	39,813	0.5	104,973	1.4	2,500.8	41.7	44,396	27,456	16,940
2019	150,651	6,145	40,789	2.5	107,844	1.4	2,635.0	42.9	46,007	28,025	17,982
2020	149,855	6,287	41,957	2.9	109,881	1.4	2,755.6	43.8	47,354	28,629	18,725
2021	145,673	6,246	42,877	2.2	112,158	1.3	2,875.5	46.0	50,204	30,768	19,436
2022	144,416	6,455	44,696	4.2	114,462	1.3	3,005.5	46.6	52,000	31,873	20,127
2023	145,985	7,065	48,398	8.3	115,890	1.3	3,118.5	44.1	58,148	32,606	25,542
2024	145,836	7,246	49,685	2.7	118,321	1.2	3,258.7	45.0	60,034	33,536	26,498

The active membership decreased slightly this year while the number of retirees increased by 2.1% for the 2024 fiscal year. The ratio of actives to retirees decreased from 1.3 to 1.2 for the 2024 fiscal year. The Unfunded Actuarial Accrued Liability (UAAL) increased by $956 million for this valuation, mostly due to experience losses for this year.

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System's office. The following tables summarize the membership of the System as of June 30, 2024 upon which the valuation was based. Detailed tabulations of the data are given in Schedule D.

Active Members

Employers	Number of Employers	Number	Payroll	Group Averages		
				Salary	Age	Benefit Service
State Agencies	108	25,333	$1,257,104,118	$49,623	46.2	10.3
State Universities	9	17,318	1,151,309,947	66,481	43.3	9.5
Public Schools	140	60,549	2,826,796,488	46,686	44.8	10.7
Community/Junior Colleges	15	5,836	322,834,135	55,318	46.5	11.3
Counties*	88	14,795	661,563,420	44,715	47.0	9.1
Municipalities	244	15,410	704,159,526	45,695	44.1	9.4
Other Political Subdivisions	254	6,595	322,056,332	48,833	45.4	8.6
Total in PERS	858	145,836	$7,245,823,966	$49,685	45.1	10.0

*There are 82 counties; however, 3 counties have multiple agencies.

The total number of active members includes 73,402 vested members and 72,434 non-vested members.

Retired Lives

Type of Benefit Payment	No.	Annual Benefits	Group Averages	
			Benefit	Age
Retirement	99,750	$2,870,028,502	$28,772	71.8
Disability	6,089	133,072,542	21,855	65.7
Survivor	12,482	255,561,969	20,474	69.2
Total in PERS	118,321	$3,258,663,013	$27,541	71.2

Deferred Vested/Inactive Lives

Type of Member	No.	Annual Deferred Benefits	Outstanding Refunds
Deferred Vested - Benefit Provided	15,145	$ 132,960,352	N/A
Deferred Vested – Missing Benefit	898	N/A	$ 40,944,362
Vested – Pending Retirements	1,112	37,340,723	N/A
Inactive	83,811	N/A	408,891,524
Total in PERS	100,966	$ 170,301,075	$ 449,835,886

For the liability in this valuation, deferred vested participants with benefits provided are valued assuming a retirement age of 60 for Tiers 1, 2, and 3 and age 65 for Tier 4. There are 1,112 records determined to be possible "pending retirements" based on the provided member status; these records are valued by assuming benefits are payable in the upcoming plan year.

SECTION III – VALUATION BALANCE SHEET

The following valuation balance sheet shows the assets and liabilities of the retirement system as of the current valuation date of June 30, 2024 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2023. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date. The development of the actuarial value of assets is presented in Schedule A.

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

	JUNE 30, 2024	June 30, 2023
ASSETS		
Current actuarial value of assets:		
Annuity Savings Account	$ 5,982,197,171	$ 5,895,176,003
Annuity Reserve	8,129,521,087	7,747,062,024
Employers' Accumulation Account	19,423,902,742	18,963,751,973
Total current assets	$ 33,535,621,000	$ 32,605,990,000
Future member contributions to Annuity Savings Account	$ 4,603,240,466	$ 4,474,706,118
Prospective contributions to Employer's Accumulation Account		
Normal contributions	$ 1,024,857,746	$ 1,022,157,145
Unfunded actuarial accrued liability contributions	26,498,099,546	25,542,291,981
Total prospective contributions	$ 27,522,957,292	$ 26,564,449,126
Total assets	$ 65,661,818,758	$ 63,645,145,244
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	$ 37,160,657,745	$ 35,734,821,291
Present value of benefits payable on account of active members	26,111,640,379	25,647,175,043
Present value of benefits payable on account of inactive members for service rendered before the valuation date	2,389,520,634	2,263,148,910
Total liabilities	$ 65,661,818,758	$ 63,645,145,244

BREAKDOWN OF TOTAL AND ACTUARIAL ACCRUED LIABILITIES
AS OF JUNE 30, 2024

	Total Liability	Actuarial Accrued Liability
Active Members		
Retirement	$ 22,835,730,590	$ 19,476,693,684
Death	350,589,119	242,127,570
Disability	482,828,268	315,419,726
Termination	2,442,492,402	449,301,187
Total	$ 26,111,640,379	$ 20,483,542,167
Retirees		
Retirement	$ 33,523,315,064	$ 33,523,315,064
Survivor	2,270,780,924	2,270,780,924
Disability	1,366,561,757	1,366,561,757
Total	$ 37,160,657,745	$ 37,160,657,745
Deferred Vested Members	1,796,627,924	1,796,627,924
Inactive Members	592,892,710	592,892,710
Total Actuarial Values	$ 65,661,818,758	$ 60,033,720,546
Actuarial Value of Assets		33,535,621,000
Unfunded Actuarial Accrued Liability		$ 26,498,099,546

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

The valuation balance sheet gives the following information with respect to the funds of the System as of June 30, 2024.

Total Assets

The Annuity Savings Account is the fund to which are credited contributions made by members together with interest thereon. When a member retires, the amount of his or her accumulated contributions is transferred from the Annuity Savings Account to the Annuity Reserve. The Employer's Accumulation Account is the fund to which are credited employer contributions and investment income, and from which are paid all employer-provided benefits under the plan. The assets credited to the Annuity Savings Account as of the valuation date, which represent the accumulated contributions of members to that date, amounted to $5,982,197,171. The assets credited to the Annuity Reserve were $8,129,521,087 and the assets credited to the Employer's Accumulation Account totaled $19,423,902,742. Current actuarial assets as of the valuation date equaled the sum of these three funds, $33,535,621,000. Future member contributions to the Annuity Savings Account were valued to be $4,603,240,466. Prospective contributions to the Employer's Accumulation Account were calculated to be $27,522,957,292 of which $1,024,857,746 is attributable to service rendered after the valuation date (normal contributions) and $26,498,099,546 is attributable to service rendered before the valuation date (unfunded actuarial accrued liability contributions).

Therefore, the balance sheet shows the present value of current and future assets of the System to be $65,661,818,758 as of June 30, 2024.

Total Liabilities

The present value of benefits payable on account of presently retired members and beneficiaries totaled $37,160,657,745 as of the valuation date. The present value of future benefit payments on behalf of active members amounted to $26,111,640,379. In addition, the present value of benefits for inactive members, due to service rendered before the valuation date, was calculated to be $2,389,520,634.

Therefore, the balance sheet shows the present value for all prospective benefit payments under the System to be $65,661,818,758 as of June 30, 2024.

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

Section 25-11-123(c) requires that the State contribute a certain percentage of the annual compensation of members to cover the normal contributions and a certain percentage to cover the accrued liability contributions of the System. These individual contribution percentages are established in accordance with an actuarial valuation. The PERS Board of Trustees increased the employer contribution rate from 15.75% to 17.40% of annual compensation effective for the fiscal year beginning July 1, 2019. The employer contribution rate of 17.40% of annual compensation will continue through the fiscal year ending June 30, 2024. Beginning July 1, 2024, the employer contribution rate will increase to 17.90% of annual compensation and then is scheduled to increase 0.50% each year over the next four fiscal years to 19.90% of annual compensation. This phase-in was adopted by the Legislature during the 2024 legislative session. Since the amortization period is calculated on an open basis, the amortization period for the June 30, 2024 valuation is 44.9 years, compared to 32.2 years for the previous valuation. The primary reason for the increase in the amortization period was due to the change in the ultimate Fixed Contribution Rate from 22.40% of annual compensation to 19.90% of annual compensation.

There was a loss on the unfunded actuarial accrued liability for the fiscal year ending June 30, 2024 of approximately $547.2 million (shown on the next page) which was primarily due to the greater than expected salary increases and demographic losses due to retirements and withdrawals of service of active members, offset by positive investment experience (actuarial value of assets basis more than expected).

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

SECTION V – DERIVATION OF EXPERIENCE GAINS & LOSSES

Actual experience will never (except by coincidence) match exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Details on the derivation of the experience gain/(loss) for the years ended June 30, 2024 and June 30, 2023 are shown below.

		2024 Valuation $ Millions	2023 Valuation $ Millions
(1)	UAAL* as of beginning of year	$ 25,542.3	$ 20,126.9
(2)	Total Normal cost from last valuation	779.6	646.0
(3)	Total Employee and Employer Contributions	2,138.7	1,965.5
(4)	Interest Rate (Beginning of Year)	7.00%	7.55%
(5)	Interest accrual: [[(1) + (2)] x (4)] - [(3) x ((4) / 2)]	1,767.7	1,494.2
(6)	Expected UAAL before changes: (1) + (2) – (3) + (5)	$ 25,950.9	$ 20,301.6
(7)	Change due to plan amendments	0.0	0.0
(8)	Change due to new actuarial assumptions or methods	0.0	3,769.2
(9)	Expected UAAL after changes: (6) + (7) + (8)	$ 25,950.9	$ 24,070.8
(10)	Actual UAAL as of end of year	$ 26,498.1	$ 25,542.3
(11)	Gain/(loss): (9) – (10)	$ (547.2)	$ (1,471.5)
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year	(0.9)%	(2.8)%

*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2019	(0.9)%
2020	(1.0)
2021	2.2
2022	(0.8)
2023	(2.8)
2024	(0.9)

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

Contribution for	2024 Valuation	2023 Valuation
Investment Return Assumption	7.00%	7.00%
Total Normal Cost:		
Service retirement benefits	10.76%	10.81%
Disability benefits	0.33%	0.33%
Survivor benefits	0.22%	0.22%
Total	11.31%	11.36%
Less Member Contributions:	9.00%	9.00%
Employer Normal Cost	2.31%	2.36%
Administrative Expense Load	0.26%	0.26%
Total Employer Normal Cost Rate	2.57%	2.62%
Unfunded Actuarial Accrued Liability Rate (44.9 years level % of payroll amortization*)	17.33%	19.78%
Total Employer Fixed Contribution Rate	19.90%	22.40%

* Amortization period a year ago was 32.2 years.

2. The Legislature adopted a new Fixed Contribution Rate (FCR) of 19.90% of annual compensation to be phased-in over the next five fiscal years beginning July 1, 2024 and kept the amortization period open-ended. Thirty-year projections are completed to determine if an increase or decrease in the employer contribution rate is warranted according to the metrics set forth in the Funding Policy. Please see Schedule F for the current Funding Policy.

3. The components of the change in the computed unfunded actuarial accrued liability amortization period from 32.2 years to 44.9 years are as follows:

Previously Reported Period	32.2 years
Change due to:	
Normal amortization	(1.0)
Actuarial experience	1.6
Net Assumption/FCR changes	11.5
Plan amendments	0.0
Contribution Shortfall/(Excess)	0.6
Computed Period	44.9 years

1. One of the metrics in the Funding Policy, as shown in Schedule F, is to calculate the Actuarially Determined Contribution (ADC) based on the principal elements of the Amortization Method disclosed in the Funding Policy. The ratio of the ADC to the Fixed Contribution Rate (ADC/FCR) as set by this Funding Policy will be tested with each valuation. The Funding Policy provides that the unfunded actuarial accrued liability as of June 30, 2018 (Transitional UAAL) will be amortized as a level percentage of payroll over a closed 30-year period. In each subsequent valuation, all benefit changes, assumption and method changes, and experience gains and/or losses that have occurred since the previous valuation will combine to determine a New Incremental UAAL. Each New Incremental UAAL will be amortized as a level percentage of payroll over a closed 25-year period from the date it is established.

2. The following table shows the components of the total Unfunded Actuarial Accrued Liability (UAAL) and the derivation of the UAAL Contribution Rate in accordance with the Funding Policy as of the valuation date:

TOTAL UAAL AND UAAL CONTRIBUTION RATE
($ in Thousands)

Date Established	Original UAAL Balance	Remaining UAAL Balance	Remaining Amortization Period	Amortization Payment
June 30, 2018	$16,940,459	$17,879,676	24 years	$1,192,200
June 30, 2019	784,879	791,331	20 years	59,005
June 30, 2020	524,319	528,690	21 years	38,220
June 30, 2021	506,599	509,805	22 years	35,808
June 30, 2022	561,966	564,969	23 years	38,630
June 30, 2023	5,309,730	5,323,698	24 years	354,979
June 30, 2024	899,931	899,931	25 years	58,611
Total		$26,498,100		$1,777,453
Estimated Payroll				$7,611,848
UAAL Amortization Contribution Rate				23.35%

3. The calculation of Actuarial Determined Contribution (ADC) for the past two valuations is shown below:

Funding Policy ADC Metric Test		
Valuation Date June 30	2024	2023
Actuarially Determined Contribution (ADC) rate		
Normal Cost*	2.57%	2.62%
Accrued liability	23.35	22.55
Total	25.92%	25.17%
Fixed Contribution Rate (FCR)	19.90%	22.40%
Ratio of ADC to FCR	130.25%	112.37%
Funding Policy Metric Status	Red	Red
Anticipated accrued liability payment period	23.8 years	24.7 years

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

Since the Ratio of ADC to FCR is above 110% and the Metric Status is in the "Red Status" for the 2024 valuation, per the Funding Policy, the actuary should recommend an increase to the FCR. The anticipated smoothing in of the negative experience due to the phase-in of needed contributions will worsen this ratio over the next few years. Therefore, we recommend an increase in the Fixed Contribution Rate to either the ADC as shown above or continuation of the phased-in approach based on one of the scenarios shown in the table on page 7. More details can be found in the Projection section of this report beginning in Section IX. The Board should continue to review the Sensitivity Analysis section of this report during the fiscal year to understand the volatility that may occur in the projections if investment experience is less than expected going forward.

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

NUMBER OF ACTIVE AND RETIRED PARTICIPANTS
AS OF JUNE 30, 2024

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	118,321
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	100,966
Active Participants	145,836
Total	365,123

2. Another such item is the schedule of funding progress as shown below. As can be seen in column 3 of the table below, the funded ratio has remained in a narrow range since 2015 with a decrease last year due to the change in the investment return assumption from 7.55% to 7.00%. However, the unfunded actuarial accrued liability as a percentage of payroll, shown in column 6, has steadily increased over the last 10 years. This is mainly due to the annual covered payroll not growing as anticipated over most years during this period.

SCHEDULE OF FUNDING PROGRESS
($ Thousands)

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Funded Ratio (1)/(2)	(4) Unfunded AAL (2) – (1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4)/(5)
06/30/15#	$24,387,161	$40,364,584	60.4%	$15,977,423	$5,904,827	270.6%
06/30/16*#	25,185,078	41,997,513	60.0	16,812,435	6,022,533	279.2
06/30/17#	26,364,446	43,166,491	61.1	16,802,045	6,038,229	278.3
06/30/18	27,455,702	44,396,161	61.8	16,940,459	5,999,231	282.4
06/30/19#	28,024,611	46,006,859	60.9	17,982,248	6,144,916	292.6
06/30/20	28,629,205	47,354,464	60.5	18,725,259	6,287,441	297.8
06/30/21#	30,768,251	50,204,296	61.3	19,436,045	6,246,077	311.2
06/30/22	31,873,200	52,000,143	61.3	20,126,943	6,454,760	311.8
06/30/23#	32,605,990	58,148,282	56.1	25,542,292	7,065,419	361.5
06/30/24	33,535,621	60,033,721	55.9	26,498,100	7,245,824	365.7

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

3. Additional information as of the latest valuation that went into the calculation of the Actuarially Determined Contribution (ADC) are as follows:

Valuation date	6/30/2024
Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, closed
Remaining amortization period on ADC Basis	23.8 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return (discount rate)*	7.00%
Projected salary increases*	2.65% – 17.90%
Cost-of-living adjustments	3.00% per annum

** Includes price inflation at 2.40%*

Solvency Tests
($ in Thousands)

	Actuarial Accrued Liabilities for				Portions of Accrued Liabilities Covered by Assets		
Valuation Date	(1) Accumulated Employee Contributions Including Allocated Investment Earnings	(2) Retirees and Beneficiaries Currently Receiving Benefits	(3) Active and Inactive Members Employer Financed Portion	Net Assets Available for Benefits	(1)	(2)	(3)
6/30/15	$5,379,226	$24,012,624	$10,972,734	$24,387,161	100.0%	79.2%	0.0%
6/30/16	5,468,859	25,390,774	11,137,880	25,185,078	100.0	77.7	0.0
6/30/17	5,534,403	26,686,958	10,945,130	26,364,446	100.0	78.1	0.0
6/30/18	5,570,524	27,874,365	10,951,272	27,455,702	100.0	78.5	0.0
6/30/19	5,626,602	29,109,623	11,270,634	28,024,611	100.0	76.9	0.0
6/30/20	5,710,182	30,220,083	11,424,199	28,629,205	100.0	75.8	0.0
6/30/21	5,728,172	31,821,655	12,654,469	30,768,251	100.0	78.7	0.0
6/30/22	5,749,289	33,106,303	13,144,551	31,873,200	100.0	78.9	0.0
6/30/23	5,895,176	35,734,821	16,518,285	32,605,990	100.0	74.7	0.0
6/30/24	5,982,197	37,160,658	16,890,866	33,535,621	100.0	74.1	0.0

As can be seen from the table above, the PERS plan assets currently cover 100% of the active member contribution account balances as of the valuation date but only cover about 74% of the retiree liability. This ratio has remained stable throughout the last 10 years. No assets remain to cover any employer-financed active liabilities.

Schedule of Active Member Valuation Data

		Active Members			
Valuation Date	Number of Employers	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
2015	868	157,215	$5,904,827,181	$37,559	3.9%
2016	862	154,104	6,022,532,933	39,081	4.1
2017	861	152,382	6,038,228,708	39,626	1.4
2018	858	150,687	5,999,230,701	39,813	0.5
2019	854	150,651	6,144,915,630	40,789	2.5
2020	853	149,855	6,287,441,467	41,957	2.9
2021	855	145,763	6,246,076,841	42,877	2.2
2022	859	144,416	6,454,760,163	44,696	4.2
2023	861	145,985	7,065,419,204	48,398	8.3
2024	858	145,836	7,245,823,966	49,685	2.7

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

	Fiscal Year Ended June 30									
Item	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Beginning of Year	93,504	96,338	99,483	102,260	104,973	107,844	109,881	112,158	114,462	115,890
Added	5,907	6,548	6,219	5,985	6,101	5,645	6,502	6,634	5,577	6,560
Removed	(3,073)	(3,403)	(3,442)	(3,272)	(3,230)	(3,608)	(4,225)	(4,330)	(4,149)	(4,129)
End of Year	96,338	99,483	102,260	104,973	107,844	109,881	112,158	114,462	115,890	118,321

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

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

Year Ending	2018	2019	2020	2021	2022	2023	2024
Beginning of Year	$2,374,747,017	$2,500,750,392	$2,635,004,675	$2,755,593,924	$2,875,483,858	$3,005,526,105	$3,118,511,891
Added	121,870,115	129,095,132	121,134,338	133,897,944	140,675,196	123,571,787	150,405,951
Removed	(64,186,324)	(67,416,138)	(76,727,172)	(93,663,207)	(94,287,872)	(97,250,520)	(102,690,643)
Benefit increase due to annual COLA	68,319,584	72,575,289	76,182,083	79,655,197	83,654,923	86,664,519	92,435,814
Benefit increase due to plan amendments	0	0	0	0	0	0	0
End of Year	$2,500,750,392	$2,635,004,675	$2,755,593,924	$2,875,483,858	$3,005,526,105	$3,118,511,891	$3,258,663,013

Schedule of Average Benefit Payments

	Years of Credited Service								
	0-9	10-14	15-19	20-24	25	26-29	30	31+	TOTAL
July 1, 2023 to June 30, 2024									
Average Monthly Benefit	$523.04	$881.27	$1,201.68	$1,985.67	$2,187.80	$2,603.43	$2,757.15	$3,429.19	$1,880.64
Average Final Salary	$38,406	$44,590	$44,800	$55,254	$56,311	$62,486	$61,949	$66,720	$53,288
Number of Active Retirants	731	914	897	1,410	445	1,188	206	769	6,560
July 1, 2022 to June 30, 2023									
Average Monthly Benefit	$544.01	$825.25	$1,247.91	$1,901.04	$2,155.60	$2,350.72	$2,734.55	$3,346.65	$1,803.94
Average Final Salary	$37,882	$41,639	$48,250	$52,843	$54,179	$57,900	$61,359	$66,322	$51,684
Number of Active Retirants	636	783	803	1,129	350	1,014	168	694	5,577
July 1, 2021 to June 30, 2022									
Average Monthly Benefit	$475.58	$863.97	$1,133.43	$1,885.21	$2,040.43	$2,379.10	$2,552.70	$3,086.65	$1,735.15
Average Final Salary	$35,214	$42,232	$42,668	$51,950	$51,494	$57,956	$58,253	$61,825	$49,732
Number of Active Retirants	740	1,008	918	1,339	424	1,209	173	823	6,634
July 1, 2020 to June 30, 2021									
Average Monthly Benefit	$484.13	$797.70	$1,170.70	$1,723.73	$2,080.55	$2,202.62	$2,731.08	$3,198.31	$1,678.95
Average Final Salary	$34,676	$39,370	$43,511	$49,033	$52,995	$54,445	$62,496	$62,914	$48,259
Number of Active Retirants	775	1,026	971	1,186	365	1,098	200	881	6,502
July 1, 2019 to June 30, 2020									
Average Monthly Benefit	$495.24	$780.45	$1,218.15	$1,881.34	$1,994.68	$2,307.13	$2,634.63	$3,166.16	$1,762.99
Average Final Salary	$34,969	$38,904	$45,180	$52,942	$51,515	$56,787	$60,150	$61,884	$49,926
Number of Active Retirants	641	844	787	1,037	339	1,062	192	838	5,645

Schedule of Average Benefit Payments

	Years of Credited Service								
	0-9	**10-14**	**15-19**	**20-24**	**25**	**26-29**	**30**	**31+**	**TOTAL**
July 1, 2018 to June 30, 2019									
Average Monthly Benefit	$476.23	$730.46	$1,156.10	$1,852.18	$2,090.55	$2,315.68	$2,469.25	$3,355.92	$1,734.50
Average Final Salary	$33,243	$36,871	$42,708	$51,686	$52,874	$55,298	$55,458	$65,639	$48,544
Number of Active Retirants	730	930	870	1,127	359	1,062	204	819	6,101
July 1, 2017 to June 30, 2018									
Average Monthly Benefit	$485.22	$722.11	$1,057.13	$1,767.43	$2,023.90	$2,173.95	$2,533.72	$3,178.78	$1,676.34
Average Final Salary	$32,660	$37,608	$39,878	$49,009	$52,289	$52,205	$57,261	$60,427	$46,987
Number of Active Retirants	672	933	849	1,047	348	1,080	192	864	5,985
July 1, 2016 to June 30, 2017									
Average Monthly Benefit	$475.88	$727.37	$1,013.30	$1,655.71	$1,947.82	$2,105.82	$2,446.29	$3,092.75	$1,632.44
Average Final Salary	$31,990	$37,033	$39,332	$47,400	$49,568	$50,461	$55,156	$59,849	$45,739
Number of Active Retirants	732	938	859	1,014	369	1,174	190	943	6,219
July 1, 2015 to June 30, 2016									
Average Monthly Benefit	$512.05	$701.11	$1,053.82	$1,638.19	$1,878.66	$2,117.88	$2,400.11	$3,196.32	$1,665.54
Average Final Salary	$31,771	$34,459	$39,422	$45,571	$46,533	$50,536	$52,472	$59,306	$44,872
Number of Active Retirants	751	997	874	1,048	402	1,204	234	1,038	6,548
July 1, 2014 to June 30, 2015									
Average Monthly Benefit	$458.27	$688.17	$977.30	$1,346.27	$1,833.91	$1,989.13	$2,217.36	$2,898.93	$1,600.68
Average Final Salary	$29,781	$33,585	$37,938	$40,770	$46,461	$48,614	$50,908	$57,019	$43,642
Number of Active Retirants	599	898	774	693	494	1,072	230	1,147	5,907

Annual actuarial valuations are performed for PERS which re-measure the assets and liabilities and the adequacy of the contribution rate. Actuarial projections are also performed every year with sensitivity testing of several factors. PERS also has experience studies performed every two years to analyze the discrepancies between actuarial assumptions and actual experience and determine if the actuarial assumptions need to be changed. Annual actuarial valuations and projections and periodic experience studies are practical ways to monitor and reassess risk.

As mentioned earlier in the report, the intended purpose of the projection results is to help assess the System's funding progress and to provide information to decision makers to help ensure that the applicable pension liabilities and funding mechanisms are managed in a manner that promotes sustainability.

The projection process should be viewed as an enhancement to the actuarial valuation control cycle by providing additional evaluation metrics to assess the need for further, in-depth analysis of the risks to the System's sustainability. The actuarial valuation control cycle is a key component of managing a long-term liability whose ultimate value is based upon uncertain future events. As the ultimate value of future cash flows cannot be predicted with certainty, pension liabilities are managed in the short-term through the continuous monitoring of economic and demographic assumptions, with a keen eye on the identification, measurement, and management of risks.

The projection process, like other actuarial modeling, is not intended to provide absolute results. The intended purpose of the projection process is to identify anticipated trends and to compare various outcomes, under a given methodology, rather than predicting certain future events. The results produced by the projection process do not predict the financial condition of the System or the System's ability to pay benefits in the future and do not provide any guarantee of future financial soundness of the System. Because actual experience will not unfold exactly as expected, actual results can be expected to differ from the results presented herein. To the extent actual experience deviates significantly from the assumptions, results could be significantly better or significantly worse than the expected outcome indicated in this report.

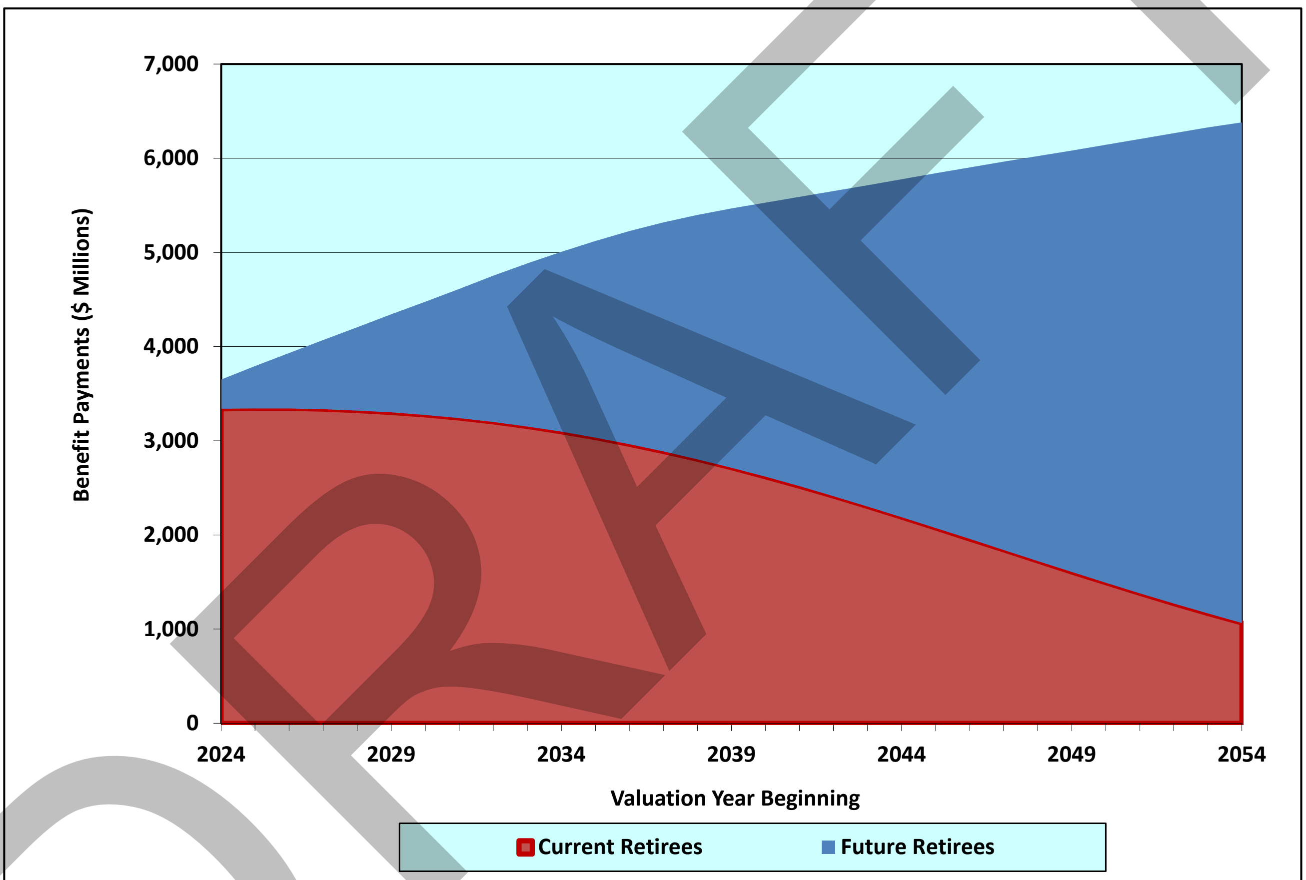
SPECIAL ASSUMPTIONS

In addition to the regular valuation assumptions used in performing the annual actuarial valuations of PERS, additional assumptions must be made that are unique to projections. The first of these is what, if any, change in the overall active membership will be anticipated. For this projection study, it was assumed that the number of active members would remain static over the 30-year projection period.

But since we assume active members will leave the system through termination, death, disability, or retirement, we need to make some assumptions as to the composition of new hires that will replace departing members in order to maintain the membership at a constant number. The new entrant profile we developed was based on the new hires over the 3-year period prior to the projection start date of June 30, 2024. The new entrant profile is summarized in the table below.

Age	Average Pay	Percent Male	Weight
19	$30,800	66%	1.2%
23	$33,300	39	19.3
27	$37,400	37	18.2
32	$36,800	35	12.9
37	$37,400	33	10.5
42	$37,400	34	9.3
47	$37,900	33	7.8
52	$38,900	38	7.6
57	$37,700	42	6.1
62	$37,700	45	4.0
69	$32,300	52	3.1

For the projection results presented in this section of the report, it was further assumed that the benefit structure as it exists on June 30, 2024 would remain in place for the following 30 years. The following graph shows the projection of benefit payments of PERS members. The red area of the graph represents the benefit payments for current retirees and the blue area represents the benefit payments for any future retirees. PERS currently pays approximately $3.4 billion in benefit payments to its retirees but over the 30-year period, that amount is expected to nearly double.



FUTURE MEMBERSHIP

The following chart and graph show the headcounts of active participants and retired members over the projection period. The actives are broken down into those existing as of June 30, 2024 and those who are hired after June 30, 2024. For baseline projection purposes, we have continued the active membership at its current population of 145,836 active members over the projected period. In Section XI of this report, we provide some sensitivity analysis around this static assumption.

By the end of the projection period, we estimate that about 97.8% of those active employees will have been hired after June 30, 2024 and be included in the Tier 4 benefit structure.

Member	2024	2029	2034	2044	2047	2054
Active – Existing Employees	145,836	81,596	48,571	17,552	12,107	3,259
Active – New Entrants	0	64,240	97,265	128,284	133,729	142,577
Retired/Deferred Vesteds	135,476	147,109	153,821	150,626	148,561	143,578
Total	281,312	292,945	299,657	296,462	294,397	289,414

PROJECTION RESULTS

The baseline projection results shown below use the same actuarial assumptions as used in the June 30, 2024 actuarial valuation report. In addition, the projection results using different long-term investment return assumption for future valuations (6.50% and 7.55%) is included below.

Baseline Projection Results (7.00%)
($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAAL	$26,498,100	$29,096,171	$31,425,966	$35,787,973	$36,758,119	$37,698,010
Normal Cost Rate	2.57%	2.70%	2.84%	3.05%	3.12%	3.26%
UAAL Rate	15.33%	17.20%	17.06%	16.85%	16.78%	16.64%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	55.9%	55.8%	55.4%	53.6%	53.7%	55.8%
Amortization Period	45 years	52 years	50 years	39 years	36 years	27 years
ADC	25.92%	30.11%	34.80%	47.84%	51.92%	27.80%
ADC/FCR Ratio	130.3%	151.3%	174.9%	240.4%	260.9%	139.7%
Cash Flow Percentage	(4.7)%	(5.3)%	(6.1)%	(6.0)%	(5.6)%	(4.5)%

Projection Results Assuming 6.50% Long-Term Investment Return
($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAAL	$30,222,657	$33,979,381	$37,914,965	$47,504,341	$50,833,695	$59,495,930
Normal Cost Rate	3.86%	3.97%	4.08%	4.30%	4.38%	4.54%
UAAL Rate	14.04%	15.93%	15.82%	15.60%	15.52%	15.36%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	52.6%	51.3%	49.2%	41.8%	39.5%	34.3%
Amortization Period	97 years	Infinite	Infinite	Infinite	Infinite	Infinite
ADC	27.88%	34.49%	40.67%	58.14%	64.14%	38.14%
ADC/FCR Ratio	140.10%	173.3%	204.4%	292.1%	322.3%	191.7%
Cash Flow Percentage	(4.7)%	(5.4)%	(6.5)%	(7.2)%	(7.3)%	(6.9)%

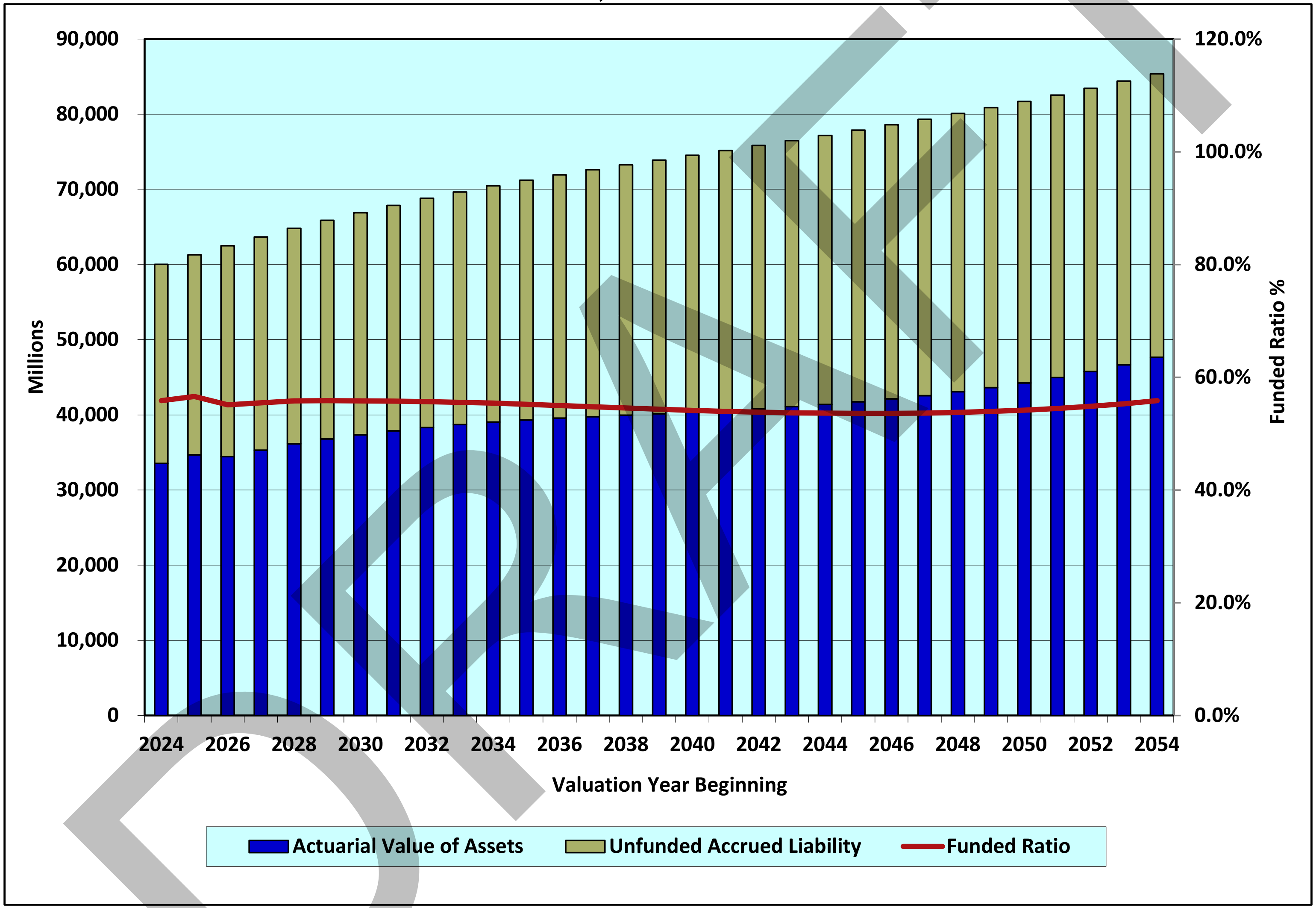
Projection Results Assuming 7.55% Long-Term Investment Return
($ in Thousands)

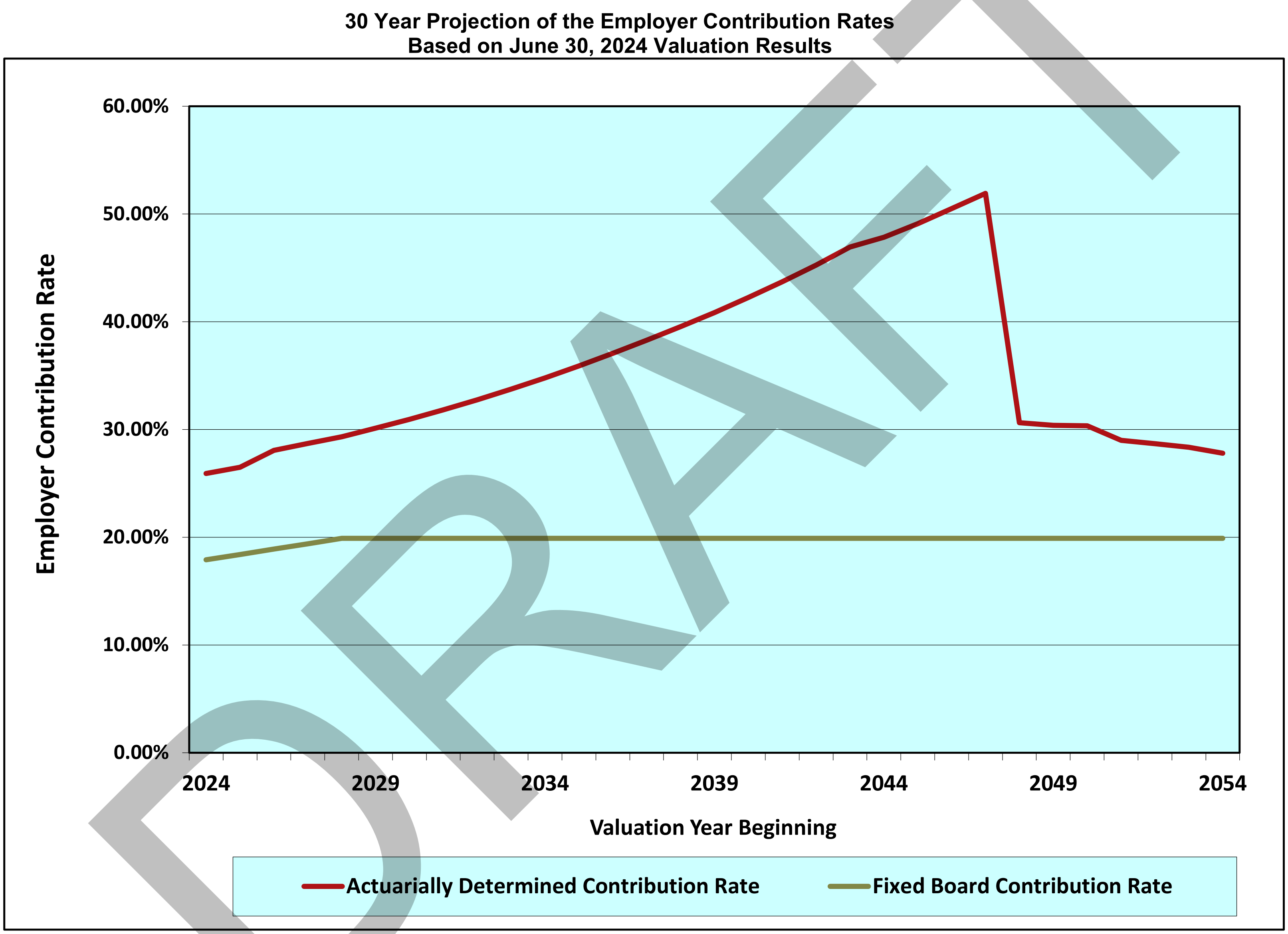
	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAAL	$22,925,045	$24,117,821	$24,574,416	$22,387,108	$20,243,110	$10,519,082
Normal Cost Rate	1.37%	1.52%	1.68%	1.89%	1.95%	2.07%
UAAL Rate	16.53%	18.38%	18.22%	18.01%	17.95%	17.83%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	59.4%	61.1%	63.0%	69.2%	72.9%	86.9%
Amortization Period	31 years	32 years	28 years	17 years	13 years	5 years
ADC	22.71%	25.49%	28.36%	35.71%	37.23%	14.79%
ADC/FCR Ratio	114.1%	128.1%	142.5%	179.4%	187.1%	74.3%
Cash Flow Percentage	(4.7)%	(5.1)%	(5.7)%	(4.9)%	(4.4)%	(3.0)%

The first graph that follows shows the projection of the Unfunded Accrued Liability (UAL), Actuarial Value of Assets and the Funded Ratio under the baseline valuation (assuming 7.00%) from the amounts shown in the baseline table on the previous page. As you can see from the graph, under the current assumptions, the funded ratio is expected to be stable at or around 55% funded for the entire projection period.

The second graph shows the projection of the calculated Actuarially Determined Contribution (ADC) based on the Board's Funding Policy and the current Fixed Contribution Rate (FCR) of 19.90% under the baseline valuation. As you can see from the graph, the ADC is expected to increase even further for the remaining projection period, as the valuation results continue to include contribution deficiency shortfalls due to the difference between the ADC and FCR. The drop in the ADC near the end of the projection period is a result of the initial 2018 UAL base of $16.9 Billion being paid off, based on the closed amortization period per the Board's Funding Policy. However, the ADC remains above the current FCR for the entire projection period.

30 Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2024 Valuation Results




30 Year Projection of the Employer Contribution Rates
Based on June 30, 2024 Valuation Results
Employer Contribution Rate
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
2024
2029
2034
2039
2044
2049
2054
Valuation Year Beginning
Actuarially Determined Contribution Rate
Fixed Board Contribution Rate
DRAFT

SECTION X – CASH FLOW PROJECTIONS

The funded ratio is the primary measure of funded status of a pension plan and, thereby, the most common measurement used for drawing conclusions on funding progress. The funded ratio is the ratio of the actuarial value of assets to the actuarial or accrued liability of the system as calculated by the funding method used in developing system contribution levels. When using the funded ratio in assessing trends over several valuations, we recommend that the basis for determining both the assets and liabilities in the ratio are taken into consideration and reasonable efforts are made to adjust the ratio to reflect these differences when they are known. On a consistent basis, an increasing funded ratio would typically indicate progress in meeting the obligations of the system. In most cases, other measures should also be considered in a trend assessment. These may include the trend in the length of the amortization period, the required contribution rate, percentage of required contributions funded, and the unfunded actuarial liability as a percentage of payroll. Focusing solely on any one measure as the indication of funding progress is an over-simplification of a complex and dynamic system.

Another of those additional metrics is an outlook on the cash flow as a percentage of assets for the System. Most retirement systems are funded with an advance-funding mechanism, meaning contributions and investment earnings are earned during a member's active lifetime in order to pay for the benefit payments during his retirement years. Many mature retirement systems, like PERS, have negative cash flow, where benefit payments paid out of the trust are more than the contributions being collected by employers and employees.

SECTION X – CASH FLOW PROJECTIONS

For the fiscal year ending June 30, 2025, we are projecting PERS to have a negative cash flow of approximately $1.56 Billion (benefit payments of $3.65 Billion and contributions of $2.09 Billion). With a market value of assets of $33.4 Billion as of June 30, 2024, the cash flow as a percentage of assets is estimated to be negative 4.67% for the 2025 fiscal year. While the market value of assets is assumed to earn 7.00% each year, the difference between the investment return assumption and the negative cash flow percentage is positive, meaning assets are projected to grow for the 2025 fiscal year. When assets do not earn a positive return enough to cover this negative cash flow percentage, assets are expected to decline for the year. If the negative cash flow percentage does not grow more than the assumed investment return assumption, the System's assets will continue to increase, and sustainability of the plan may be achieved.

The tables on the following two pages demonstrate the open group projection of cash flow on the baseline assumption and then a sensitivity analysis, using a one-year investment return of negative 5.00% for the fiscal year ending June 30, 2025. These results demonstrate the projection of this metric if PERS experiences one significant bad investment year in one of the next five years without a correction in the market. As can be seen from the table on page 40, the cash flow as a percentage of market value of assets worsens through the first half of projection period yet, the assets continue to grow on the baseline assumption.

However, if there is a significant negative investment experience in one of the next five years (as seen on the table on page 41), the negative cash flow will overcome the investment experience of the Plan in the next ten years and PERS' assets will decrease for the remainder of the projection period.

This metric will continue to be monitored as part of the Funding Policy under the baseline assumptions to ensure the continued growth of PERS' assets during the projection period.

Mississippi PERS
30-year Open Group Projection of Cash Flow
PERS Plan
Based on June 30, 2024 Valuation Results

Projection of Cash Flow

Contribution Methodology: Employee and Employer Contributions
Investment Return Methodology: As Programmed

Valuation Year Beginning July 1	Expected Short-term Investment Return	Valuation Annual Payroll	Market Value of Assets July 1	Total Contributions	Projected Benefit Payments	Ratio of Cash Flow to MVA	Expected Investment Return	Net Cash Flow	Market Value of Assets June 30	Valuation Year Ending June 30
2024	7.00%	7,611,848,275	33,449,843,000	2,088,538,930	(3,649,482,001)	-4.67%	2,287,780,013	726,836,942	34,176,679,942	2025
2025	7.00%	7,663,421,707	34,176,679,942	2,141,773,099	(3,793,483,882)	-4.83%	2,335,535,460	683,824,676	34,860,504,618	2026
2026	7.00%	7,765,313,272	34,860,504,618	2,209,852,851	(3,930,544,207)	-4.94%	2,381,029,701	660,338,345	35,520,842,963	2027
2027	7.00%	7,883,261,131	35,520,842,963	2,283,623,084	(4,069,343,152)	-5.03%	2,425,015,874	639,295,807	36,160,138,770	2028
2028	7.00%	8,011,633,809	36,160,138,770	2,361,669,414	(4,206,658,053)	-5.10%	2,467,727,265	622,738,626	36,782,877,396	2029
2029	7.00%	8,150,006,915	36,782,877,396	2,402,459,038	(4,342,981,072)	-5.28%	2,508,031,852	567,509,819	37,350,387,214	2030
2030	7.00%	8,296,818,770	37,350,387,214	2,445,736,237	(4,477,875,368)	-5.44%	2,544,605,174	512,466,043	37,862,853,257	2031
2031	7.00%	8,450,593,001	37,862,853,257	2,491,065,805	(4,612,174,322)	-5.60%	2,577,416,534	456,308,017	38,319,161,274	2032
2032	7.00%	8,609,939,079	38,319,161,274	2,538,037,842	(4,751,929,603)	-5.78%	2,606,165,606	392,273,845	38,711,435,119	2033
2033	7.00%	8,777,302,892	38,711,435,119	2,587,373,347	(4,882,547,492)	-5.93%	2,630,828,007	335,653,862	39,047,088,981	2034
2034	7.00%	8,949,603,083	39,047,088,981	2,638,163,997	(5,005,690,651)	-6.06%	2,651,834,269	284,307,615	39,331,396,596	2035
2035	7.00%	9,130,728,543	39,331,396,596	2,691,556,160	(5,122,028,451)	-6.18%	2,669,569,966	239,097,675	39,570,494,271	2036
2036	7.00%	9,320,339,074	39,570,494,271	2,747,449,552	(5,227,336,130)	-6.27%	2,684,606,554	204,719,976	39,775,214,247	2037
2037	7.00%	9,522,270,054	39,775,214,247	2,806,974,767	(5,318,413,732)	-6.31%	2,697,851,297	186,412,331	39,961,626,578	2038
2038	7.00%	9,738,544,920	39,961,626,578	2,870,728,272	(5,397,659,135)	-6.32%	2,710,367,114	183,436,250	40,145,062,828	2039
2039	7.00%	9,966,557,451	40,145,062,828	2,937,941,805	(5,467,043,675)	-6.30%	2,723,132,951	194,031,081	40,339,093,909	2040
2040	7.00%	10,205,811,198	40,339,093,909	3,008,469,025	(5,529,113,042)	-6.25%	2,737,006,145	216,362,128	40,555,456,037	2041
2041	7.00%	10,454,976,438	40,555,456,037	3,081,917,954	(5,589,075,966)	-6.18%	2,752,615,521	245,457,510	40,800,913,547	2042
2042	7.00%	10,710,650,477	40,800,913,547	3,157,285,548	(5,651,079,795)	-6.11%	2,770,257,368	276,463,121	41,077,376,668	2043
2043	7.00%	10,971,518,837	41,077,376,668	3,234,184,323	(5,712,994,949)	-6.03%	2,790,125,343	311,314,717	41,388,691,385	2044
2044	7.00%	11,238,160,980	41,388,691,385	3,312,785,094	(5,776,153,594)	-5.95%	2,812,448,707	349,080,207	41,737,771,591	2045
2045	7.00%	11,512,022,822	41,737,771,591	3,393,514,087	(5,840,829,897)	-5.86%	2,837,436,663	390,120,853	42,127,892,445	2046
2046	7.00%	11,794,079,520	42,127,892,445	3,476,658,761	(5,903,518,970)	-5.76%	2,865,448,960	438,588,751	42,566,481,195	2047
2047	7.00%	12,085,505,363	42,566,481,195	3,562,565,271	(5,963,354,220)	-5.64%	2,897,047,234	496,258,285	43,062,739,480	2048
2048	7.00%	12,387,209,199	43,062,739,480	3,651,501,528	(6,023,154,381)	-5.51%	2,932,787,830	561,134,977	43,623,874,457	2049
2049	7.00%	12,698,316,485	43,623,874,457	3,743,209,733	(6,082,233,005)	-5.36%	2,973,189,998	634,166,727	44,258,041,184	2050
2050	7.00%	13,019,958,451	44,258,041,184	3,838,023,352	(6,143,280,344)	-5.21%	3,018,743,501	713,486,509	44,971,527,693	2051
2051	7.00%	13,352,559,724	44,971,527,693	3,936,067,555	(6,205,533,300)	-5.05%	3,069,919,063	800,453,319	45,771,981,012	2052
2052	7.00%	13,696,437,952	45,771,981,012	4,037,435,979	(6,267,025,529)	-4.87%	3,127,322,857	897,733,308	46,669,714,320	2053
2053	7.00%	14,052,147,278	46,669,714,320	4,142,291,975	(6,328,173,590)	-4.68%	3,191,668,093	1,005,786,477	47,675,500,797	2054
2054	7.00%	14,418,455,452	47,675,500,797	4,250,272,298	(6,379,903,360)	-4.47%	3,264,008,618	1,134,377,556	48,809,878,353	2055

Mississippi PERS
30-year Open Group Projection of Cash Flow
PERS Plan
Based on June 30, 2024 Valuation Results

Projection of Cash Flow

Contribution Methodology:	Employee and Employer Contributions
Investment Return Methodology:	As Programmed

Valuation Year Beginning July 1	Expected Short-term Investment Return	Valuation Annual Payroll	Market Value of Assets July 1	Total Contributions	Projected Benefit Payments	Ratio of Cash Flow to MVA	Expected Investment Return	Net Cash Flow	Market Value of Assets June 30	Valuation Year Ending June 30
2024	-5.00%	7,611,848,275	33,449,843,000	2,088,538,930	(3,649,482,001)	-4.67%	(1,632,968,189)	(3,193,911,260)	30,255,931,740	2025
2025	7.00%	7,663,421,707	30,255,931,740	2,141,773,099	(3,793,483,882)	-5.46%	2,061,083,086	409,372,302	30,665,304,042	2026
2026	7.00%	7,765,313,272	30,665,304,042	2,209,852,851	(3,930,544,207)	-5.61%	2,087,365,660	366,674,304	31,031,978,346	2027
2027	7.00%	7,883,261,131	31,031,978,346	2,283,623,084	(4,069,343,152)	-5.75%	2,110,795,351	325,075,284	31,357,053,630	2028
2028	7.00%	8,011,633,809	31,357,053,630	2,361,669,414	(4,206,658,053)	-5.88%	2,131,511,305	286,522,666	31,643,576,296	2029
2029	7.00%	8,150,006,915	31,643,576,296	2,402,459,038	(4,342,981,072)	-6.13%	2,148,280,775	207,758,742	31,851,335,037	2030
2030	7.00%	8,296,818,770	31,851,335,037	2,445,736,237	(4,477,875,368)	-6.38%	2,159,671,521	127,532,390	31,978,867,427	2031
2031	7.00%	8,450,593,001	31,978,867,427	2,491,065,805	(4,612,174,322)	-6.63%	2,165,537,526	44,429,009	32,023,296,436	2032
2032	7.00%	8,609,939,079	32,023,296,436	2,538,037,842	(4,751,929,603)	-6.91%	2,165,455,067	(48,436,694)	31,974,859,742	2033
2033	7.00%	8,777,302,892	31,974,859,742	2,587,373,347	(4,882,547,492)	**-7.18%**	2,159,267,731	(135,906,414)	31,838,953,328	2034
2034	7.00%	8,949,603,083	31,838,953,328	2,638,163,997	(5,005,690,651)	**-7.44%**	2,147,264,773	(220,261,881)	31,618,691,447	2035
2035	7.00%	9,130,728,543	31,618,691,447	2,691,556,160	(5,122,028,451)	**-7.69%**	2,129,680,605	(300,791,686)	31,317,899,761	2036
2036	7.00%	9,320,339,074	31,317,899,761	2,747,449,552	(5,227,336,130)	**-7.92%**	2,106,924,939	(372,961,639)	30,944,938,122	2037
2037	7.00%	9,522,270,054	30,944,938,122	2,806,974,767	(5,318,413,732)	**-8.12%**	2,079,731,968	(431,706,998)	30,513,231,124	2038
2038	7.00%	9,738,544,920	30,513,231,124	2,870,728,272	(5,397,659,135)	**-8.28%**	2,048,979,432	(477,951,432)	30,035,279,692	2039
2039	7.00%	9,966,557,451	30,035,279,692	2,937,941,805	(5,467,043,675)	**-8.42%**	2,015,448,132	(513,653,738)	29,521,625,954	2040
2040	7.00%	10,205,811,198	29,521,625,954	3,008,469,025	(5,529,113,042)	**-8.54%**	1,979,783,388	(540,860,629)	28,980,765,325	2041
2041	7.00%	10,454,976,438	28,980,765,325	3,081,917,954	(5,589,075,966)	**-8.65%**	1,942,387,171	(564,770,840)	28,415,994,485	2042
2042	7.00%	10,710,650,477	28,415,994,485	3,157,285,548	(5,651,079,795)	**-8.78%**	1,903,313,034	(590,481,213)	27,825,513,272	2043
2043	7.00%	10,971,518,837	27,825,513,272	3,234,184,323	(5,712,994,949)	**-8.91%**	1,862,494,906	(616,315,720)	27,209,197,552	2044
2044	7.00%	11,238,160,980	27,209,197,552	3,312,785,094	(5,776,153,594)	**-9.05%**	1,819,884,139	(643,484,361)	26,565,713,190	2045
2045	7.00%	11,512,022,822	26,565,713,190	3,393,514,087	(5,840,829,897)	**-9.21%**	1,775,392,575	(671,923,235)	25,893,789,956	2046
2046	7.00%	11,794,079,520	25,893,789,956	3,476,658,761	(5,903,518,970)	**-9.37%**	1,729,061,786	(697,798,423)	25,195,991,532	2047
2047	7.00%	12,085,505,363	25,195,991,532	3,562,565,271	(5,963,354,220)	**-9.53%**	1,681,112,957	(719,675,992)	24,476,315,540	2048
2048	7.00%	12,387,209,199	24,476,315,540	3,651,501,528	(6,023,154,381)	**-9.69%**	1,631,738,154	(739,914,699)	23,736,400,841	2049
2049	7.00%	12,698,316,485	23,736,400,841	3,743,209,733	(6,082,233,005)	**-9.85%**	1,581,066,845	(757,956,426)	22,978,444,415	2050
2050	7.00%	13,019,958,451	22,978,444,415	3,838,023,352	(6,143,280,344)	**-10.03%**	1,529,171,727	(776,085,265)	22,202,359,150	2051
2051	7.00%	13,352,559,724	22,202,359,150	3,936,067,555	(6,205,533,300)	**-10.22%**	1,476,077,265	(793,388,479)	21,408,970,671	2052
2052	7.00%	13,696,437,952	21,408,970,671	4,037,435,979	(6,267,025,529)	**-10.41%**	1,421,912,133	(807,677,416)	20,601,293,255	2053
2053	7.00%	14,052,147,278	20,601,293,255	4,142,291,975	(6,328,173,590)	**-10.61%**	1,366,878,619	(819,002,997)	19,782,290,258	2054
2054	7.00%	14,418,455,452	19,782,290,258	4,250,272,298	(6,379,903,360)	**-10.77%**	1,311,483,880	(818,147,182)	18,964,143,076	2055

SENSITIVITY ANALYSIS

Measuring pension obligations and actuarially determined contributions requires the use of assumptions regarding future economic and demographic experience. Whenever assumptions are made about future events, there is risk that actual experience will differ from expected. Actuarial valuations include the risk that actual future measurements will deviate from expected future measurements due to actual experience that is different than the actuarial assumptions. The primary areas of risk in this actuarial valuation are.

- Investment Risk – the potential that actual investment returns will be different than expected.
- Longevity and Other Demographic Risks – the potential that mortality or other demographic experience will be different than expected.
- Interest Rate Risk – to the extent market rates of interest affect the expected return on assets, there is a risk of changing to the discount rate which determines the present value of liabilities and actuarial valuation results.
- Contribution Risk – the potential that actual contributions are different than the fixed contribution rates.
- Liquidation Risk – the potential that the plan (or all covered employment) ended on the valuation date and all of the accrued benefits had to be paid with cash-flow matched bonds.

Investment Risk

In this section of the report, we will demonstrate the variability in achieving funding goals based on sensitivity around the three key variables listed above. Earlier in this section, we reviewed the projections if the long-term investment return assumption was lowered to rates below 7.00% (6.50%). In this section, we keep the long-term investment return assumption at 7.00% but review the sensitivity of short-term investment returns as a single year event (and then 7.00% for all years thereafter) and simulate the next 10-year periods of returns (and then 7.00% for all years thereafter).

Projected Funded Ratio in 2047

Single Year Event	2024 Valuation	2023 Valuation*
• 1.00% for the next fiscal year	42.7%	54.2%
• 3.00% for the next fiscal year	46.4%	57.9%
• 5.00% for the next fiscal year	50.0%	61.7%
• **7.00% for the next fiscal year (Baseline)**	**53.7%**	**65.5%**
• 9.00% for the next fiscal year	57.3%	69.2%
• 11.00% for the next fiscal year	61.0%	73.0%
• 13.00% for the next fiscal year	64.6%	76.7%
• Negative 5% for the next fiscal year	31.8%	43.0%
• Simulate 2008 loss using -15% for the next fiscal year	13.5%	24.2%
Average Returns over next 10-Year Period (Simulated returns using mean and standard deviations from PERS' Investment Consultant's Capital Market Assumptions)**	**2024 Valuation**	**2023 Valuation***
• 6.00%	39.3%	50.4%
• 7.00%	53.9%	65.6%
• 8.00%	73.5%	85.7%

** Based on 22.40% FCR*

*** 6.00% Average Returns over the next 10-Year Period: 7.04%, 10.32%, 2.25%, 5.45%, 8.52%, 0.00%, 5.44%, 11.49%,-7.04%, 18.53%*
7.00% Average Returns over the next 10-Year Period: 3.61%, 20.67%,-0.02%, 11.58%,-4.84%, 8.13%, 18.10%, 2.04%, 0.83%, 12.67%
8.00% Average Returns over the next 10 Year Period: 9.00%, 9.01%, 16.24%, 4.84%, 16.62%, 6.78%,-3.74%, 6.19%, 18.57%,-1.19%

As can be seen from the projected funded ratios on the table above, the sensitivity of short-term investment returns does have a significant impact to the funding of PERS in the long-term, especially another repeat of the Great Recession of 2008. We believe it demonstrates the importance of these continued projection reports and the continued monitoring of this sensitivity analysis because short-term differences in investment returns can have a major impact on the projection of funded ratios.

Demographic Risk

While actual investment returns compared to that assumed is the most critical driver of funding, many other assumptions are used in the actuarial projections to review sensitivity, such as population growth and wage inflation. Variances in these other assumptions over the long-term may also have an impact on the funding of the System.

For PERS, there has been a significant decline in active membership since 2008, however, there was an increase in this year's valuation. In the baseline projections we assume a static population, meaning the active membership will be the same in each of the projection years than it is in 2024. For sensitivity analysis, we have performed the projections assuming both a 0.25% and 0.50% increase and decrease each year around this static assumption. For PERS, a 0.50% decrease in active population each year of the projection results in the active population dropping to 126,000 at the end of the projection period (it is currently near 146,000). In the table below, we review these alternatives to the static active membership growth:

Projected Funded Ratio in 2047

Active Membership Growth	2024 Valuation	2023 Valuation*
• Increase 0.50% each year	59.1%	72.1%
• Increase 0.25% each year	56.4%	68.8%
• **Static Population (Baseline Assumption)**	**53.7%**	**65.5%**
• Decrease 0.25% each year	51.0%	62.2%
• Decrease 0.50% each year	48.4%	58.9%

* *Based on 22.40% FCR*

Assumption Risk

We also performed a sensitivity analysis for the wage inflation assumption. As a result of the experience study presented in April 2023, the Board kept the wage inflation assumption at 2.65%, which is 0.25% above the price inflation of 2.40%. Wage inflation is major component of the underlying salary increase assumptions, as well as the amortization of the Unfunded Accrued Liability which is based on the level percent of payroll amortization methodology.

In the table below, the second scenario lowers the discount rate to 6.75% but does not change the price inflation or wage inflation. The third scenario lowers the price and wage inflation by 0.30% and lowers the discount rate to 6.75%.

Projected Funded Ratio in 2047

Scenario	Price Inflation	Discount Rate	Wage Inflation	2024 Valuation	2023 Valuation*
1 - Baseline	2.40%	7.00%	2.65%	**53.7%**	**65.5%**
2	2.40%	6.75%	2.65%	46.2%	56.9%
3	2.10%	6.75%	2.35%	45.0%	55.5%

* *Based on 22.40% FCR*

Contribution Risk

To demonstrate the contribution risk of making the Fixed Contribution Rates (FCR) for PERS, we have calculated the projected funded ratios if the FCRs were 1% higher or 1% lower than the current rates for all future years.

Projected Funded Ratio in 2047

Change in Fixed Contribution Rate (FCR)	2024 Valuation	2023 Valuation*
• Baseline	**53.7%**	**65.5%**
• 1.00% increase in FCR	58.9%	70.9%
• 1.00% decrease in FCR	48.5%	60.0%

* *Based on 22.40% FCR*

Over a long projection period, gains and losses due to population growth and wage inflation assumptions will be relatively concentrated around the expected value of these assumptions. So, the impact of the sensitivity around these baseline assumptions is small when compared to the investment return assumption.

Liquidation Risk

Under the revised Actuarial Standards of Practice (ASOP) No. 4 effective for valuations after February 15, 2023, we must now include a low-default-risk obligation measure of the Fund's liability in our funding valuation report. This is an informational disclosure as described below and would not be appropriate for assessing the funding progress or health of this plan.

This measure uses the unit credit cost method and reflects all the assumptions and provisions of the funding valuation except that the discount rate is derived from considering low-default-risk fixed income securities. We considered the FTSE Pension Discount Curve based on market bond rates published by the Society of Actuaries as of June 30, 2024 and with the 30-year spot rate used for all durations beyond 30. Using these assumptions, we calculate a low-default-risk obligation measure liability of approximately $64,932,726,000.

This amount approximates the termination liability if the plan (or all covered employment) ended on the valuation date and all of the accrued benefits had to be paid with cash-flow matched bonds. This assurance of funded status and benefit security is typically more relevant for corporate plans than for governmental plans since governments rarely have the need or option to completely terminate a plan.

Utilizing the Funding Policy for PERS and with a fixed contribution rate as a percentage of annual compensation of 19.90% of payroll, the projection results for 2024 show that the Plan will have a "Red" light status for two of the three metrics.

Metrics	2024 Baseline Projection	2024 Status
Funding Ratio in 2047	53.7%	Red
Cash Flow as a Percentage of Assets	(6.3)%	Yellow
ADC/FCR Ratio from 2024 Valuation	130.3%	Red
ADC/FCR Ratio from 2025 Valuation	133.1%	Red

As shown above, two of the three metrics are in the "Red Status" for the 2024 valuation and projections, and per the Funding Policy, the actuary should recommend an increase in the Fixed Contribution Rate (FCR). **Our recommendation to the PERS Board and Legislature is to either change to an ADC contribution approach and contribute 25.92% beginning July 1, 2026 or to continue the phased-in approach for the next five consecutive fiscal years until the FCR reaches one of the scenarios listed below.** Although the Actuarially Determined Contribution (ADC) for the 2024 valuation is 25.92% (shown on page 1), since a phase-in of contributions will result in contribution losses over the next few valuations, our recommendation is for a higher contribution rate than the current ADC.

Fiscal Year Beginning	Current Legislature Phased-In Fixed Contribution Rate	Scenario 1	Scenario 2
		Recommended Fixed Contribution Rate	Recommended Fixed Contribution Rate with Supplemental $110M Each Year
July 1, 2024	17.90%	17.90%	17.90%
July 1, 2025	18.40%	19.90%	19.70%
July 1, 2026	18.90%	21.90%	21.50%
July 1, 2027	19.40%	23.90%	23.30%
July 1, 2028	19.90%	25.90%	25.10%
July 1, 2029	19.90%	27.90%	26.90%

The tables below show the metrics with Scenario 1 from above implemented (Scenario 2 shows similar results).

Metrics	2024 Projection	2024 Status
Funding Ratio in 2047	**93.3%**	Green
Cash Flow as a Percentage of Assets	(4.7)%	Green
ADC/FCR Ratio from 2024 Valuation*	92.9%	Green
ADC/FCR Ratio from 2025 Valuation*	94.9%	Green

* This ratio is based on the ultimate FCR of 27.90% of annual compensation.

Projection Results with Actuarially Recommended FCR from Scenario 1
($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAAL	$26,498,100	$27,758,507	$25,455,039	$12,645,032	$5,285,750	$0
Normal Cost Rate	2.57%	2.70%	2.84%	3.05%	3.12%	3.26%
UAAL Rate	15.33%	25.20%	25.06%	24.85%	24.78%	24.64%
FCR Rate	17.90%	27.90%	27.90%	27.90%	27.90%	27.90%
Funded Ratio	55.9%	57.9%	63.9%	83.6%	**93.3%**	100.0%
Amortization Period	45 years	21 years	16 years	6 years	2 years	0 years
ADC	25.92%	29.02%	30.09%	31.21%	29.95%	3.26%
ADC/FCR Ratio*	92.9%	104.0%	107.9%	111.9%	107.4%	11.7%
Cash Flow Percentage	(4.7)%	(3.4)%	(3.6)%	(2.4)%	(1.9)%	(0.9)%

SCHEDULE A – DEVELOPMENT OF ASSETS

($ thousands)

	Valuation Date June 30:	2023	2024	2025	2026	2027	2028
A.	Actuarial Value Beginning of Year	$31,873,200	$32,605,990				
B.	Market Value End of Year	31,621,983	33,449,843				
C.	Market Value Beginning of Year	30,791,115	31,621,983				
D.	Cash Flow						
	D1. Contributions	1,965,549	2,028,748				
	D2. Other Revenue	0	110,000				
	D3. Benefit Payments	(3,237,085)	(3,394,102)				
	D4. Refunds	(115,517)	(118,413)				
	D5. Administrative Expenses	(16,446)	(18,251)				
	D6. Net	(1,403,499)	(1,392,018)				
E.	Investment Income						
	E1. Market Total: B.-C.-D6.	2,234,367	3,219,878				
	E2. Assumed Rate	7.55%	7.00%				
	E3. Amount for Immediate Recognition	2,271,747	2,164,818				
	E4. Amount for Phased-In Recognition	(37,380)	1,055,060				
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: 0.20*E4.	(7,476)	211,012				
	F2. First Prior Year	(1,116,922)	(7,476)	211,012			
	F3. Second Prior Year	1,326,446	(1,116,922)	(7,476)	211,012		
	F4. Third Prior Year	(256,231)	1,326,446	(1,116,922)	(7,476)	211,012	
	F5. Fourth Prior Year	(81,275)	(256,229)	1,326,447	(1,116,923)	(7,476)	211,012
	F6. Total Recognized Investment Gain	(135,458)	156,831	413,061	(913,387)	203,536	211,012
G.	Actuarial Value End of Year:						
	A.+D6.+E3.+F6.	$32,605,990	$33,535,621				
H.	Difference Between Market & Actuarial Values	$984,007	$85,778	$498,839	$(414,548)	$(211,012)	$0

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

	Market Value	Actuarial Value
Asset Summary June 30, 2024 ($ in Thousands)		
(1) Assets at June 30, 2023	$31,621,983	$32,605,990
(2) Contributions and Misc. Revenue	2,138,748	2,138,748
(3) Investment Increment	3,219,878	2,321,649
(4) Benefit Payments	(3,394,102)	(3,394,102)
(5) Refunds	(118,413)	(118,413)
(6) Administrative Expenses	(18,251)	(18,251)
(7) Assets at June 30, 2024 (1) + (2) + (3) + (4) + (5) + (6)	$33,449,843	$33,535,621
(8) Net Investment Return* [2 x (3)] / [(7) + (1) – (3)]	10.41%	7.28%

* Calculated assuming middle of year cash flow experience.

Schedule A – Development of Assets

The net investment returns for the past five valuations are summarized in the table below:

Period Ending June 30	Market Value	Actuarial Value
2020	3.1%	6.7%
2021	32.2%	12.5%
2022	(8.6)%	8.5%
2023	7.4%	6.9%
2024	10.4%	7.3%

Since 1986, PERS' assets have experienced better than assumed investment returns overall. As you can see from the table below, for the period ending June 30, 2024, the annualized returns for all but the 25-year period is above the current assumption of 7.00%. The historical rolling returns are as follows (these returns are gross returns).

Period Ending June 30	10-Year Annualized Rate of Return	20-Year Annualized Rate of Return	25-Year Annualized Rate of Return	30-Year Annualized Rate of Return
2021	10.1	7.7	8.1	8.7
2022	9.0	7.6	7.0	8.0
2023	8.5	7.8	6.6	7.8
2024	7.7	7.6	6.5	8.1

SCHEDULE B – ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the valuation are based on the results of the experience investigation for the four-year period ending June 30, 2022, dated April 21, 2023, and adopted by the Board on August 22, 2023. The combined effect of the assumptions is expected to have no significant bias.

INTEREST RATE: 7.00% per annum, compounded annually (net of investment expense only). The expected return on assets consists of 2.40% price inflation and 4.60% real rate of return.

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

	Annual Rates of			
	Death*		Disability	
Age	Male	Female	Male	Female
20	0.0483%	0.0126%	0.006%	0.006%
25	0.0567	0.0189	0.011	0.011
30	0.0630	0.0259	0.016	0.016
35	0.0714	0.0350	0.020	0.020
40	0.0893	0.0483	0.065	0.050
45	0.1218	0.0665	0.150	0.070
50	0.1764	0.0917	0.230	0.145
55	0.2594	0.1274	0.360	0.275
60	0.3980	0.1757	0.270	0.250
65	0.6353	0.2429	0.240	0.220
70	1.1655	0.4739	0.240	0.150
75	2.1389	0.9247	0.240	0.150
79	3.4755	1.5785	0.240	0.150

* Adjusted Base Rates

AGE	Annual Rates of Withdrawal* Years of Service											
	0		5		10		15		20		24	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
20	42.00%	45.00%	13.00%	12.50%								
25	35.00	37.00	13.00	12.50	6.50%	7.00%						
30	35.00	35.00	12.50	12.50	6.50	7.00	3.75%	4.00%				
35	35.00	30.00	12.50	12.00	6.50	6.00	3.75	4.00	3.25%	3.50%		
40	35.00	28.00	10.00	9.50	6.00	6.00	3.75	4.00	3.25	3.50	3.25%	3.50%
45	32.00	27.50	9.50	9.50	6.00	6.00	3.75	4.00	3.25	3.50	3.25	3.50
50	27.00	27.50	9.00	9.50	5.75	6.00	3.75	4.00	3.25	3.50	3.25	3.50
53+	25.00	25.00	9.00	9.50	5.75	6.00	3.75	4.00	3.25	3.50	3.25	3.50

* Rates stop at eligibility for retirement. For Tier 4, rates at 24 years of service are extended out to 29 years of service.

Annual Rates of Service Retirements				
	Male		Female	
Age	Under 25 Years of Service*	25 Years of Service and Over*	Under 25 Years of Service*	25 Years of Service and Over*
45		28.00%		21.00%
50		20.00		16.50
55		20.00		20.75
60	11.50%	19.50	13.25%	21.50
62	20.00	29.00	18.75	32.25
65	26.50	33.00	30.00	40.00
70	21.25	26.00	24.25	30.00
75	22.00	22.00	24.00	25.00
80	100.00	100.00	100.00	100.00

* For Tier 4 members, 30 years of service.

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

		Annual Rates of	
Service	Merit & Seniority	Base (Economy)	Increase Next Year
0	15.25%	2.65%	17.90%
1	5.25	2.65	7.90
2	2.75	2.65	5.40
3	1.75	2.65	4.40
4	1.25	2.65	3.90
5-7	0.75	2.65	3.40
8-27	0.25	2.65	2.90
28 and Over	0.00	2.65	2.65

DEATH AFTER RETIREMENT:

Service Retirees*

Membership Table	Adjustment to Rates	Projection Scale
PubS.H-2010(B) Retiree	Male: 95% up to age 60, 110% for ages 61 to 75, and 101% for ages above 77 Female: 84% up to age 72, 100% for ages above 76	MP-2020

Contingent Annuitants*

Membership Table	Adjustment to Rates	Projection Scale
PubS.H-2010(B) Contingent Annuitant	Male: 97% for all ages Female: 110% for all ages	MP-2020

Disabled Retirees*

Membership Table	Adjustment to Rates	Projection Scale
PubG.H-2010 Disabled	Male: 134% for all ages Female: 121% for all ages	MP-2020

* Please note that none of the recommended tables have any setbacks or setforwards.

Representative values of the assumed rates of death after retirement are as follows:

	Rates of Death After Retirement*					
	Service Retirees		Contingent Annuitants		Disabled Retirees	
AGE	Male	Female	Male	Female	Male	Female
45	0.2983%	0.0983%	0.7692%	0.5104%	1.4660%	1.1919%
50	0.4190%	0.1638%	0.8837%	0.6556%	2.2780%	1.7956%
55	0.5197%	0.2738%	1.0156%	0.7843%	2.9855%	2.1078%
60	0.7771%	0.4578%	1.2397%	1.0131%	3.6475%	2.4684%
65	1.3211%	0.7652%	1.6286%	1.4157%	4.5426%	2.9730%
70	2.1758%	1.2785%	2.4153%	1.9998%	5.8129%	3.8127%
75	3.8566%	2.3659%	3.7209%	3.0052%	7.6661%	5.2683%
80	6.2640%	4.2530%	5.7734%	4.7289%	10.8125%	7.7779%
85	11.0605%	7.3240%	9.2228%	7.8562%	15.7785%	11.9947%
90	17.6902%	12.6470%	14.6577%	13.4530%	22.7224%	17.5353%

** Adjusted Base Rates*

Schedule B – Actuarial Assumptions and Methods

PAYROLL GROWTH: 2.65% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.26% of payroll.

TIMING OF DECREMENTS AND PAY INCREASES: Middle of Year.

ASSUMED INTEREST RATE ON EMPLOYEE CONTRIBUTIONS: 2.00%.

ACTIVE MEMBER DISABILITY ASSUMPTION: 12% of active member disabilities are assumed to be in the line of duty and 88% of active member disabilities are assumed to not be in the line of duty.

ACTIVE MEMBER DEATH ASSUMPTION: 4% of active deaths are assumed to be in the line of duty and 96% of active member deaths are assumed to not be in the line of duty.

ACTIVE MEMBER WITHDRAWAL ASSUMPTION: 65% of vested participants who terminate before retirement elect to receive a deferred benefit upon attaining the eligibility requirements for retirement. They are assumed to commence their benefit at age 60 for Tiers 1, 2 and 3 and age 62 for Tier 4. The remaining 35% elect to withdraw their contributions.

FINAL AVERAGE COMPENSATION: 0.25% load on the final average compensation produced by our valuation software.

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

UNUSED SICK LEAVE: Assumed 0.55 years at retirement.

MILITARY SERVICE: Assumed that participants will have on average 0.20 years of military service at retirement.

MAXIMUM COVERED EARNINGS ASSUMPTION GROWTH: 2.65%

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

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

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value.

AMORTIZATION METHOD FOR ACTUARIALLY DETERMINED CONTRIBUTION (ADC): Level Percentage of Payroll Method using closed amortization periods 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.

VALUATION METHOD: The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability, or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 7.00%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

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

Under the entry age normal cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial liability. The unfunded actuarial liability represents the difference between the actuarial liability and the actuarial value of assets as of the the valuation date. The unfunded actuarial liability is calculated each year and reflects experience gains/losses. The accrued liability contribution amortizes the balance of the unfunded actuarial accrued liability over a period of years from the valuation date.

SCHEDULE C – MAIN BENEFIT & CONTRIBUTION PROVISIONS

The following summary presents the main benefit and contribution provisions of the System in effect June 30, 2024, as interpreted in preparing the actuarial valuation.

DEFINITIONS

Average Compensation	Average annual covered earnings of an employee during the four highest years of service. To determine the four highest years, PERS considers these scenarios: • Four highest fiscal years of earned compensation; • Four highest calendar years of earned compensation; • Combination of four highest fiscal and calendar years of earned compensation that do not overlap; or • Final 48 months of earned compensation prior to termination of employment.
Covered Earnings	Gross salary not in excess of the maximum amount on which contributions were required.
Fiscal Year	Year commencing on July 1 and ending June 30.
Credited Service	Service while a contributing member plus additional service as described below.
Unused Sick and Vacation Leave	Service credit is provided at no charge to members for unused sick and vacation time that has accrued at the time of retirement. A payment of up to 240 hours of leave may be used in the Average Compensation definition.
Additional Service	Additional service credit may be granted for service prior to February 1, 1953, active duty military service, out-of-state service, professional leave and non-covered and retroactive service

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

EMPLOYER AND EMPLOYEE RATES OF CONTRIBUTION AND MAXIMUM COVERED EARNINGS

Fiscal Date From	Fiscal Date To	Employer Rate	Maximum Covered Earnings	Employee Rate	Maximum Covered Earnings
7/1/14	6/30/15	15.75%	$260,000	9.00%	$260,000
7/1/15	6/30/17	15.75	265,000	9.00	265,000
7/1/17	6/30/18	15.75	270,000	9.00	270,000
7/1/18	6/30/19	15.75	275,000	9.00	275,000
7/1/19	6/30/20	17.40	280,000	9.00	280,000
7/1/20	6/30/21	17.40	285,000	9.00	285,000
7/1/21	6/30/22	17.40	290,000	9.00	290,000
7/1/22	6/30/23	17.40	305,000	9.00	305,000
7/1/23	6/30/24	17.40	330,000	9.00	330,000
7/1/24	6/30/25	17.90	345,000	9.00	345,000

BENEFITS

Superannuation Retirement

Condition for Retirement

A retirement allowance is paid upon the request of any member who retires and has attained age 60 and completed at least eight years (4 years if hired prior to July 1, 2007) of membership service.

A retirement allowance may also be paid upon the completion of 25 years of creditable service for members hired prior to July 1, 2011 or upon the completion of 30 years of creditable service for members hired on or after July 1, 2011.

Amount of Allowance

The annual retirement allowance payable to a member who retires is equal to:

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

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

Early Retirement

Condition for Retirement

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

Amount of Allowance

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

Deferred Vested

Condition for Termination

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

Amount of Allowance

The annual retirement allowance payable to a member who terminates as a deferred vested payable at age 60 is equal to:

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

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

Ordinary Disability Retirement

Condition for Retirement

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

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

Amount of Allowance

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

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

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

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

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

The minimum allowance is $120 per year of creditable service.

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

The minimum allowance is $120 per year of creditable service.

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

Accidental Disability Retirement

Condition for Retirement	A retirement allowance is paid to a member who is totally and permanently disabled in the line of performance of duty.
Amount of Allowance	The annual accidental disability retirement allowance is equal to the allowance payable on disability retirement but not less than 50% of average compensation. There is no minimum benefit.

Accidental Death Benefit

Condition for Benefit	A retirement allowance is paid to a spouse and/or dependent children upon the death of an active member in the line of performance of duty.
Amount of Allowance	The annual retirement allowance is equal to 50% of average compensation payable to the spouse and 25% of average compensation payable to one dependent child or 50% to two or more children until age 19 (23 if a full time student). There is no minimum benefit.

Ordinary Death Benefit

Condition for Benefit	Upon the death of a member who has completed at least eight years* of membership service, a benefit is payable, in lieu of a refund of the member's accumulated contributions, to his or her spouse, if said spouse has been married to the member for not less than one year. *four years for those who entered the system before July 1, 2007.
Amount of Allowance	The annual retirement allowance payable to the lawful spouse of a vested member who dies is equal to the greater of (i) the allowance that would have been payable had the member retired and elected Option 2, reduced by an actuarially determined factor based on the number of years the member lacked in qualifying for unreduced retirement benefits, or (ii) a lifetime benefit equal to 20% of the deceased member's average compensation, but not less than $50 per month. In addition, a benefit is payable to dependent children until age 19 (23 if a full time student). The benefit is equal to the greater of 10% of average compensation or $50 per month for each dependent child up to 3.

Return of Contributions

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

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

Effective July 1, 2016, the interest rate on employee contributions shall be calculated based on the money market rate as published by the Wall Street Journal on December 31 of each preceding year with a minimum rate of one percent and a maximum rate of five percent.

Normal Form of Benefit

The normal form of benefit (modified cash refund) is an allowance payable during the life of the member with the provision that upon his or her death the excess of his or her total contributions with interest at the time of retirement over the total retirement annuity paid to him or her will be paid to his or her designated beneficiary.

Optional Benefits

A member upon retirement may elect to receive his or her allowance in one of the following forms which are computed to be actuarially equivalent to the applicable retirement allowance.

Option 1. Reduced allowance with the provision that if the pensioner dies before he receives the value of the member's annuity as it was at the time of retirement, the balance shall be paid to his or her beneficiary.

Option 2. Upon his or her death, his or her reduced retirement allowance shall be continued throughout the life of, and paid to, his or her beneficiary.

Option 3. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary and the other 50% of his or her reduced retirement allowance to some other designated beneficiary.

Option 4. Upon his or her death, 75% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4A. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4B. A reduced retirement allowance shall be continued throughout the life of the pensioner, but with the further guarantee of payment to the pensioner or his or her beneficiary for a specified number of years certain.

Option 4C. A member may elect any option with the added provision that the member shall receive, so far as possible, the same total amount annually (considering both PERS and Social Security benefits) before and after the earliest age at

which the member becomes eligible for a Social Security benefit. This option was only available to those who retired prior to July 1, 2004.

A member who elects Option 2, Option 4, or Option 4A at retirement may revert to the normal form of benefit if the designated beneficiary predeceases the retired member or if the retired member divorces the designated beneficiary. A member who elects the normal form of benefit or Option 1 at retirement may select Option 2, Option 4, or Option 4A to provide beneficiary protection to a new spouse if married after retirement.

A member hired prior to July 1, 2011 and who has at least 28 years of creditable service* or a member hired on or after July 1, 2011 who has at least 33 years of creditable service can select a partial lump-sum option at retirement. Under this option, the retiree has the option of taking a partial lump-sum distribution equal to 12, 24, or 36 times the base maximum monthly benefit. With each lump-sum amount, the base maximum monthly benefit will be actuarially reduced. A member selecting the partial lump-sum option may also select any of the regular options except Option 1, the prorated single-life annuity, and Option 4-C, the Social Security leveling provision. The benefit is then calculated using the new reduced maximum benefit as a starting point in applying the appropriate option factors for the reduction.

* or at least age 63 with four years of membership service for those who entered the system before July 1, 2007.

Post-Retirement Adjustments In Allowances

The allowances of retired members are adjusted annually by an amount equal to (a) 3% of the annual retirement allowance for each full fiscal year of retirement prior to the year in which the member reaches age 55*, plus (b) 3% compounded for each year thereafter beginning with the fiscal year in which the member turns age 55*.

*Age 60 for members hired on or after July 1, 2011

A prorated portion of the annual adjustment will be paid to the member, beneficiary, or estate of any member or beneficiary who is receiving the annual adjustment in a lump sum, but whose benefits are terminated between July 1 and December 1.

RECONCILIATION OF DATA RECEIVED FROM PERS

Reconciliation of Data received from PERS	Active File			Pensioner File			Total
	Active	Inactive NonVested	Inactive Vested	Retirees	Disableds	Survivors	
From PERS	148,437	81,752	15,675	99,735	6,085	12,628	364,312
Return to Active Status	26		(26)	(1)			(1)
Deceased			(19)	(4)		(2)	(25)
Certain Period Ended						(153)	(153)
Added Back			34	20	4	9	67
Pay less than $100	(347)	163	17				(167)
Not Contributing	(2,275)	1,898	377				
Balance = 0							
Status Change			19				19
In Retiree Status	(4)		(8)				(12)
In Disabled Status	(1)		(4)				(5)
Pending Retirees			1,037				1,037
Suspended Beneficiaries			55				55
For Valuation	145,836	83,813	17,157	99,750	6,089	12,482	365,127

STATUS RECONCILIATION FROM 2023 TO 2024

Reconciliation of Data from Last Year to This Year	Actives	Retirees	Disableds	Survivors	Inactives		Total
					Vested	Non-Vested	
As of June 30, 2023	145,985	97,395	6,153	12,342	17,191	78,809	357,875
Retirement	(3,751)	5,463			(1,708)	(4)	
Disabled	(146)	(7)	186		(32)	(1)	
Death with Survivor	(89)	(610)	(38)	908	(23)		148
Terminated Vested	(3,056)				3,123	(67)	
Terminated Non-Vested	(8,336)				(47)	7,959	(424)
Return to Active Service	4,494	(104)	(4)		(872)	(3,514)	
Refunded	(3,927)				(455)	(3,327)	(7,709)
Death No Survivor	(207)	(2,358)	(208)	(583)	(42)	(57)	(3,455)
Benefit Ended		(3)		(188)			(191)
Removed/Cleanup		(28)					(28)
New	14,869						14,869
Pickups		2		3	20	4,013	4,037
As of June 30, 2024	145,836	99,750	6,089	12,482	17,155	83,811	365,123

Retirants & Beneficiaries as of June 30, 2024
Tabulated by Year of Retirement

Year of Retirement Ending June 30	No.	Total Annual Benefits, excluding COLA	COLA	Total Annual Benefits	Average Monthly Total Benefit
2024	5,216	$126,846,933	$135,278	$126,982,211	$2,029
2023	5,075	114,233,877	1,344,579	115,578,456	1,898
2022	5,700	125,232,007	5,224,993	130,457,000	1,907
2021	5,314	113,892,524	8,347,463	122,239,987	1,917
2020	4,969	110,785,699	11,693,939	122,479,638	2,054
2019	5,093	111,373,583	15,343,600	126,717,183	2,073
2018	5,172	108,938,587	18,571,847	127,510,434	2,054
2017	5,044	104,146,512	21,172,025	125,318,537	2,070
2016	5,152	108,806,685	25,965,534	134,772,219	2,180
2015	4,790	97,773,497	27,010,866	124,784,363	2,171
2014	5,178	104,626,158	32,901,606	137,527,764	2,213
2013	4,908	98,758,833	34,958,308	133,717,141	2,270
2012	5,114	102,874,740	40,450,223	143,324,963	2,335
2011	5,010	103,650,663	45,189,537	148,840,200	2,476
2010	4,186	82,241,761	39,090,746	121,332,507	2,415
2009	3,478	67,196,526	34,819,841	102,016,367	2,444
2008	3,696	72,066,303	40,187,759	112,254,062	2,531
2007	3,417	65,056,484	39,368,834	104,425,318	2,547
2006	3,399	60,946,565	39,538,639	100,485,204	2,464
2005	3,038	55,536,687	38,677,115	94,213,802	2,584
2004	3,087	55,982,776	42,224,128	98,206,904	2,651
2003	2,791	50,149,260	40,265,192	90,414,452	2,700
2002	2,725	46,407,305	39,617,858	86,025,163	2,631
2001	2,552	43,858,695	39,857,098	83,715,793	2,734
2000	1,907	32,220,334	31,112,663	63,332,997	2,768
1999	1,599	25,151,222	25,781,878	50,933,100	2,654
1998	1,581	24,723,312	26,648,049	51,371,361	2,708
1997	1,527	22,692,397	26,007,852	48,700,249	2,658
1996	1,428	21,117,211	25,631,661	46,748,872	2,728
1995	1,093	14,489,999	18,263,565	32,753,564	2,497
1994	936	12,313,279	16,408,407	28,721,686	2,557
1993	947	12,978,792	18,434,187	31,412,979	2,764
1992	938	12,675,743	18,689,776	31,365,519	2,787
1991	465	5,772,000	9,082,187	14,854,187	2,662
1990	441	4,773,974	7,733,241	12,507,215	2,363
1989 & Prior	1,355	10,879,921	21,741,695	32,621,616	2,006
Totals	118,321	$2,331,170,844	$927,492,169	$3,258,663,013	$2,295

Schedule of Retired Members by Type of Retirement

Benefits Payable June 30, 2024

Amount of Monthly Benefit**	Number of Rets.	Ret. Type 1*	Ret. Type 2*	Ret. Type 3*
$1-$500	20,451	15,328	688	4,435
501-1,000	22,793	17,380	1,963	3,450
1,001-1,500	20,334	16,743	1,588	2,003
1,501-2,000	17,629	15,609	947	1,073
2,001-2,500	13,973	12,873	474	626
2,501-3,000	8,877	8,337	203	337
3,001-3,500	5,622	5,281	108	233
3,501-4,000	3,120	2,952	55	113
4,001-4,500	2,017	1,904	36	77
4,501-5,000	1,072	1,024	10	38
Over 5,000	2,433	2,319	17	97
Totals	118,321	99,750	6,089	12,482

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

**Reflects reduced benefit

Schedule of Retired Members by Type of Option

Benefits Payable June 30, 2024

Amount of Monthly Benefit**	Number of Rets.	Life	Option 1	Option 2	Option 3	Option 4	Option 4A	Option 4B	Option 4C*	Option 5	PLSO 1 Year*	PLSO 2 Years*	PLSO 3 Years*
$1-$500	20,451	14,783	632	2,482	234	220	410	1,670	131	20	568	457	2,058
501-1,000	22,793	16,063	639	2,977	250	323	876	1,637	592	28	948	656	2,226
1,001-1,500	20,334	13,392	610	3,056	260	418	1,056	1,508	749	34	947	792	3,158
1,501-2,000	17,629	11,080	470	2,832	191	470	1,195	1,372	335	19	835	875	3,764
2,001-2,500	13,973	8,443	331	2,356	127	368	1,188	1,150	97	10	881	752	3,229
2,501-3,000	8,877	5,452	194	1,360	61	279	771	751	36	9	651	506	1,865
3,001-3,500	5,622	3,393	132	896	36	182	520	459	12	4	516	373	1,022
3,501-4,000	3,120	1,902	64	517	18	78	286	255	8	0	291	198	516
4,001-4,500	2,017	1,146	33	344	6	75	247	166	3	0	189	127	348
4,501-5,000	1,072	630	17	185	6	33	121	80	1	0	95	49	190
Over 5,000	2,433	1,210	28	546	11	125	328	185	2	0	191	105	352
Totals	118,321	77,494	3,150	17,551	1,200	2,571	6,998	9,233	1,966	124	6,112	4,890	18,728

<u>Option Selected</u>

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

*Included in other options
** Reflects reduced benefit

Retirant and Beneficiary Information June 30, 2024
Tabulated by Attained Ages

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20					417	$2,389,076	417	$2,389,076
20 – 24					146	982,181	146	982,181
25 – 29					78	795,345	78	795,345
30 – 34			1	23,061	115	1,320,390	116	1,343,451
35 – 39			29	596,694	178	2,035,700	207	2,632,394
40 – 44	24	747,968	104	2,065,365	314	3,738,775	442	6,552,108
45 – 49	594	18,685,011	230	4,720,504	354	4,478,465	1,178	27,883,980
50 – 54	3,024	101,333,747	487	10,183,484	531	7,590,257	4,042	119,107,488
55 – 59	5,445	183,388,648	774	17,304,064	649	10,112,116	6,868	210,804,828
60 – 64	12,914	353,473,694	1,178	25,717,761	1,016	17,163,456	15,108	396,354,911
65 – 69	20,518	539,706,420	1,230	27,555,965	1,401	26,519,867	23,149	593,782,252
70 – 74	21,604	620,517,326	1,008	22,096,064	1,761	37,852,304	24,373	680,465,694
75 – 79	17,716	525,867,451	641	14,249,329	1,886	43,590,526	20,243	583,707,306
80 – 84	10,290	306,420,262	271	6,200,892	1,676	42,523,167	12,237	355,144,321
85 – 89	5,022	146,113,488	112	1,943,535	1,210	33,929,355	6,344	181,986,378
90 – 94	1,949	56,090,951	22	388,695	563	15,647,715	2,534	72,127,361
95	193	5,816,579			54	1,590,383	247	7,406,962
96	151	4,003,332	1	14,610	37	863,396	189	4,881,338
97	103	2,903,935	1	12,519	28	636,122	132	3,552,576
98	77	1,863,885			22	602,682	99	2,466,567
99	49	1,268,684			16	499,131	65	1,767,815
100 & Over	77	1,827,121			30	701,560	107	2,528,681
Totals	99,750	$2,870,028,502	6,089	$133,072,542	12,482	$255,561,969	118,321	$3,258,663,013

Average Age: 71.2 years
Average Age at Retirement: 59.3 years
Average Age at Death: 81.1 years
Average Years Since Retirement: 12.8 years

Total Active Members as of June 30, 2024
Tabulated by Attained Ages and Years of Service

Attained Age								Total	
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Over	No.	Payroll
Under 20	366							366	$ 8,916,577
20 to 24	6,612	65						6,677	231,946,846
25 to 29	10,913	2,298	17					13,228	560,161,495
30 to 34	7,572	5,965	1,603	26				15,166	704,966,110
35 to 39	6,255	4,294	4,884	1,609	38			17,080	862,964,947
40 to 44	5,663	3,719	3,499	5,128	1,704	29		19,742	1,055,370,332
45 to 49	4,792	3,291	2,872	3,352	4,376	1,017	13	19,713	1,100,145,986
50 to 54	4,548	2,999	2,618	3,094	3,148	2,276	416	19,099	1,039,738,256
55 to 59	3,749	2,694	2,191	2,520	2,465	1,473	962	16,054	807,538,301
60 to 64	2,598	2,164	1,679	1,679	1,602	1,123	898	11,743	564,196,958
65 to 69	1,184	924	677	555	457	284	377	4,458	202,087,821
70 & Over	698	506	370	302	225	160	249	2,510	107,790,337
Total Count	54,950	28,919	20,410	18,265	14,015	6,362	2,915	145,836	$ 7,245,823,966

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

Age:	45.1 years
Service:	10.0 years
Entry Age:	35 years
Annual Payroll:	$49,685

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

Type of Activity	$ Gain (or Loss) For Year Ending 6/30/2024	$ Gain (or Loss) For Year Ending 6/30/2023
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	$ (63.2)	$ 26.3
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(3.3)	(1.6)
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	0.8	(1.7)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(112.0)	(122.5)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(212.9)	(935.3)
New Members. Additional unfunded accrued liability will produce a loss.	(120.9)	(132.0)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	88.0	(217.2)
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	9.0	16.5
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	(132.7)	(104.0)
Gain (or Loss) During Year From Financial Experience	$ (547.2)	$ (1,471.5)
Non-Recurring Items. Adjustments for plan amendments, software changes, assumption changes, or method changes.	0.0	(3,769.2)
Composite Gain (or Loss) During Year	$ (547.2)	$ (5,240.7)

SCHEDULE F – FUNDING POLICY OF 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 and the projection report, 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 2024 deems an increase to be considered, then it would be effective for July 1, 2026).

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 5.25% (-5.25%) during the projection period
Yellow	Net Cash Flow Percentage between negative 5.25% (-5.25%) and negative 7.00% (-7.00%) during the projection period
Red	Net Cash Flow Percentage below negative 7.00% (-7.00%) 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, 2022 (State of Mississippi Retirement Systems Experience Investigation for the Four-Year Period Ending June 30, 2022). The long-term investment return assumption adopted by the PERS' Board in conjunction with the experience investigation is 7.00 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)** – 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)** – 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)** – The Board is responsible for ensuring that an experience analysis is performed as prescribed, review of the results of the study, and approving the actuarial assumptions and methodologies to be used for all actuarial purposes relating to the defined benefit pension plan.
- **Actuarial Audit (performed at least every five years)** – The Board is responsible for the review of an audit report performed by a new actuarial firm to provide a critique of the reasonableness of the actuarial methods and assumptions in use and the resulting actuarially computed liabilities and contribution rates.
- **Funding Policy Review (performed at least annually)** – The Board is responsible for the periodic review of this policy, but at least annually following the Projection Report and biennially following the Experience Analysis.

V. Glossary of Funding Policy Terms

- **Actuarial Accrued Liability (AAL):** The AAL is the value at a particular point in time of all past normal costs. This is the amount of assets the plan would have today if the current plan provisions, actuarial assumptions, and participant data had always been in effect, contributions equal to the normal cost had been made, and all actuarial assumptions had been met.
- **Actuarial Cost Method:** The actuarial cost method allocates a portion of the total cost (present value of benefits) to each year of service, both past service and future service.
- **Actuarial Determined Contribution (ADC):** The potential payment to the plan as determined by the actuary using a contribution allocation procedure that, if contributed consistently and combined with investment earnings, would be sufficient to pay promised benefits in full over the long term. The ADC may or may not be the amount actually paid by the plan sponsor or other contributing entity.
- **Asset Values**:
  - **Actuarial Value of Assets (AVA):** The AVA is the market value of assets less the deferred investment gains or losses not yet recognized by the asset smoothing method.

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

- **Entry Age Normal Actuarial Cost Method (EAN):** The EAN actuarial cost method is a funding method that calculates the normal cost as a level percentage of pay or level dollar amount over the working lifetime of the plan's members.

- **Funded Ratio:** The funded ratio is the ratio of the plan assets to the plan's actuarial accrued liabilities.
  - **Actuarial Value Funded Ratio:** is the ratio of the AVA to the AAL.

- **Normal Cost**: The normal cost is the cost allocated under the actuarial cost method to each year of active member service.

- **Present Value of Benefits (PVB) or total cost:** The PVB is the value at a particular point in time of all projected future benefit payments for current plan members. The future benefit payments and the value of those payments are determined using actuarial assumptions regarding future events. Examples of these assumptions are estimates of retirement and termination patterns, salary increases, investment returns, etc.

- **Surplus:** A surplus refers to the positive difference, if any, between the AVA and the AAL.

- **Unfunded Actuarial Accrued Liability (UAAL):** The UAAL is the portion of the AAL that is not currently covered by the AVA. It is the positive difference between the AAL and the AVA.

- **Valuation Date:** The valuation date is the annual date upon which an actuarial valuation is performed; meaning that the trust assets and liabilities of the plan are valued as of that date. PERS' annual valuation date is June 30.

Since 1985, the benefit structure of the Public Employees Retirement System (PERS) of Mississippi has undergone significant changes as noted in the table below.

Fiscal Year Beginning	Benefit Modifications
July 1, 1985	• Final average compensation calculated using the highest four consecutive years (reduced from highest five consecutive years) • Liberalized survivor benefit provision to reduce the marriage requirement from 5 years to 1 year and to allow a member to designate a child as beneficiary • Minimum benefit increased from \$5.00 to \$7.50 per month for each year of creditable service for current and future retirees • Eligibility for service retirement reduced from 10 years to 4 years at age 60 • Established "discretionary" COLA provision in addition to the base COLA provision to be paid to eligible retirees based on sufficient actuarial gains • 3% ad hoc increase for all retirees
July 1, 1986	• Eligibility for non-duty related disability retirement reduced from 10 years to 4 years • Permanent exemption from 3% penalty for those required to retire at age 60 • Retirement incentive granted – one additional year of credit to any member with 30 years of service credit or age 60
July 1, 1987	• Established service retirement eligibility based on 25 & out with reduced benefits • Benefit accrual increased from 1-5/8% to 1-3/4% for the first 20 years • Minimum benefit increased from \$7.50 to \$10.00 per month for each year of service for current and future retirees • 5% ad hoc increase for all retirees • Provided elected official leave credit
July 1, 1989	• Unreduced retirement at age 55 with 25 years of service • Benefit accrual increased from 1-3/4% to 1-7/8% for the first 30 years of service • Unreduced retirement lowered from age 65 to age 60 • 5% ad hoc increase for all retirees
July 1, 1990	• Provided that base COLA percentage granted shall be cumulative from year to year
July 1, 1991	• Unreduced retirement at any age with 25 years of service • Benefit accrual increased to 2% for all years of service over 25

Fiscal Year Beginning	Benefit Modifications
July 1, 1992	• Ad hoc increase for those retired prior to July 1, 1991, with more than 25 years of service • Tiered disability benefit • Expanded survivor benefits to include automatic spousal and dependent child benefits • Liberalized definition of average compensation to provide that the highest four years did not have to be consecutive years • Expanded military service credit to include all active duty military • Removed reference to "Governor's Salary" and established maximum compensation cap at $125,000
July 1, 1994	• Benefits for all retirees under Options 2(5) and 4A(5) were recalculated to remove the reduction imposed for the right to revert to the Maximum
July 1, 1999	• Benefit accrual increased from 2% to 2-1/4% for all years of service over 25 for current and future retirees • Base COLA increased to 3% simple up to age 55 and 3% compounded after age 55 • Reemployed retiree COLA will be based on all fiscal years in retirement, not just the fiscal years in retirement since the last retirement. • Provided that the COLA will be prorated and paid to the beneficiary of a retiree or beneficiary who is receiving the COLA in a lump sum and who dies between July 1 and December 1
July 1, 2000	• Benefit accrual increased from 1-7/8% to 2% for all years of service over 10 and less than 25 for current and future retirees
July 1, 2001	• Benefit accrual increased from 1-7/8% to 2% for all years of service over 5 and less than 25 for current and future retirees
July 1, 2002	• Benefit accrual increased from 1-7/8% to 2% for all years of service up to and including 25 and from 2-1/4% to 2-1/2% for all years of service over 25 for current and future retirees • Increased maximum compensation cap to $150,000 • Provided for free active duty military service for pre-1972 service in the Commissioned Corps of the U.S. Public Health Service for those retiring on or after July 1, 2002 • Reemployed retiree who has previously been retired for at least one full fiscal year no longer has to wait another full fiscal year for his or her COLA to resume • A local county or municipal elected official who is receiving retirement benefits may receive a salary for the elected position that does not exceed 25% of the retiree's average compensation

Fiscal Year Beginning	Benefit Modifications
July 1, 2004	• Removed remarriage penalty on certain spouse / survivor benefits and provided upon application for the reinstatement of spouse survivor benefits previously terminated due to remarriage
July 1, 2008	• Maximum reportable earned compensation was increased from $150,000 to $230,000 to coincide with the compensation limit set pursuant to Section 401(a)(17) of the Internal Revenue Code • Vesting requirement for those employees hired on or after July 1, 2007 was increased from 4 to 8 years of service.
July 1, 2010	• Members who retire on or after July 1, 2010 receive additional credit toward retirement for one-half day of leave for each full fiscal year of membership service accrued after June 30, 2010 • Option 4, a 75% joint and survivor annuity, made available to members who retire on or after January 1, 2011
July 1, 2011	• For members hired on or after July 1, 2011, 30 years of creditable service will be required for retirement regardless of age. • For members hired on or after July 1, 2011, 33 years of creditable service will be required to select a partial lump sum option at retirement. • For members hired on or after July 1, 2011, the retirement formula will be 2% of average compensation for the first 30 years of creditable service plus 2.5% of average compensation for each year beyond 30 years of creditable service. • For members hired on or after July 1, 2011, the actuarial reduction for early retirement will be the lesser of the number of years below 30 years of creditable service or the number of years in age a member is below age 65. • For members hired on or after July 1, 2011, the COLA will be a simple 3% of the annual retirement allowance at retirement up to the fiscal year in which the retired member reaches age 60. Thereafter, the COLA will be a compounded 3% for all future years.
July 1, 2016	• The interest rate on employee contributions shall be calculated based on the money market rate as published by the Wall Street Journal on December 31 of each preceding year with a minimum rate of one percent and a maximum rate of five percent.

Public Employees' Retirement System of Mississippi

2024 Preliminary Independent Actuarial Assessment

October 22, 2024

Janet Cranna, FSA, FCA, EA, MAAA
Patrick Nelson, FSA, CERA, EA, MAAA

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Topics for Discussion

- Senate Bill 3231
- 2024 Independent Actuarial Assessment
- Funding Policy Metrics
- Projected Outlook

Scope and Purpose

Senate Bill 3231

- Rescind the PERS Board approved employer contribution rate increases of 5% phased in over 3 years
- Provide for 0.5% increases each year from July 1, 2024 through July 1, 2028, with ultimate rate of 19.90% beginning July 1, 2028
- PERS Board has authority to make recommendations regarding additional funding
  - Must be accompanied by two assessments from independent actuaries
  - Legislature has sole authority to implement recommendations

2024 Independent Actuarial Assessment

Summary of Results

	June 30, 2023	June 30, 2024
Liabilities		
Present Value of Future Benefits [PVFB]	$ 63,645	$ 65,382
Actuarial Liability [AL]	$ 58,148	$ 59,638
Assets		
Market Value [MVA]	$ 31,622	$ 33,450
Actuarial Value [AVA]	$ 32,606	$ 33,536
Unfunded Liabilities		
UAL [AL - AVA]	$ 25,542	$ 26,102
Funded Ratio [AVA / AL]	56.1%	56.2%
UAL [AL - MVA]	$ 26,526	$ 26,188
Funded Ratio [MVA / AL]	54.4%	56.1%
Contributions, as % of Payroll	**FYE 2026**	**FYE 2027**
Net Employer Normal Cost	2.62%	2.98%
UAL Payment for FCR	19.78%	15.92%
Fixed Contribution Rate [FCR]	22.40%	18.90%
UAL Payment for ADC	22.55%	22.90%
Actuarially Determined Contribution [ADC]	25.17%	25.88%
Shortfall [ADC - FCR]	2.77%	6.98%

$ in millions

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2024 Independent Actuarial Assessment

Data Summary

	June 30, 2023		June 30, 2024	
Participant Counts				
Actives		145,985		145,836
Retired		97,395		99,750
Disabled		6,153		6,089
Survivors		12,342		12,482
Deferred Vested and Inactives		96,000		100,966
Total		357,875		365,123
Summary Statistics				
Annual Compensation	$	7,065	$	7,246
Annual Retirement Allowances	$	3,119	$	3,277

$ in millions

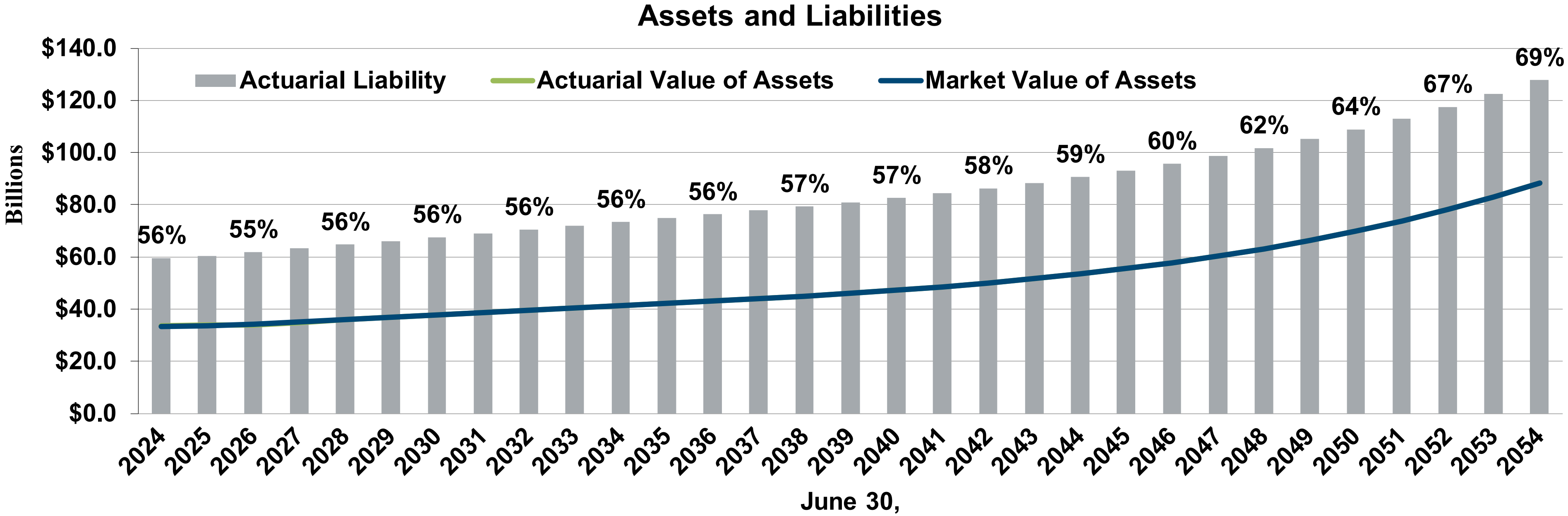
2024 Independent Actuarial Assessment

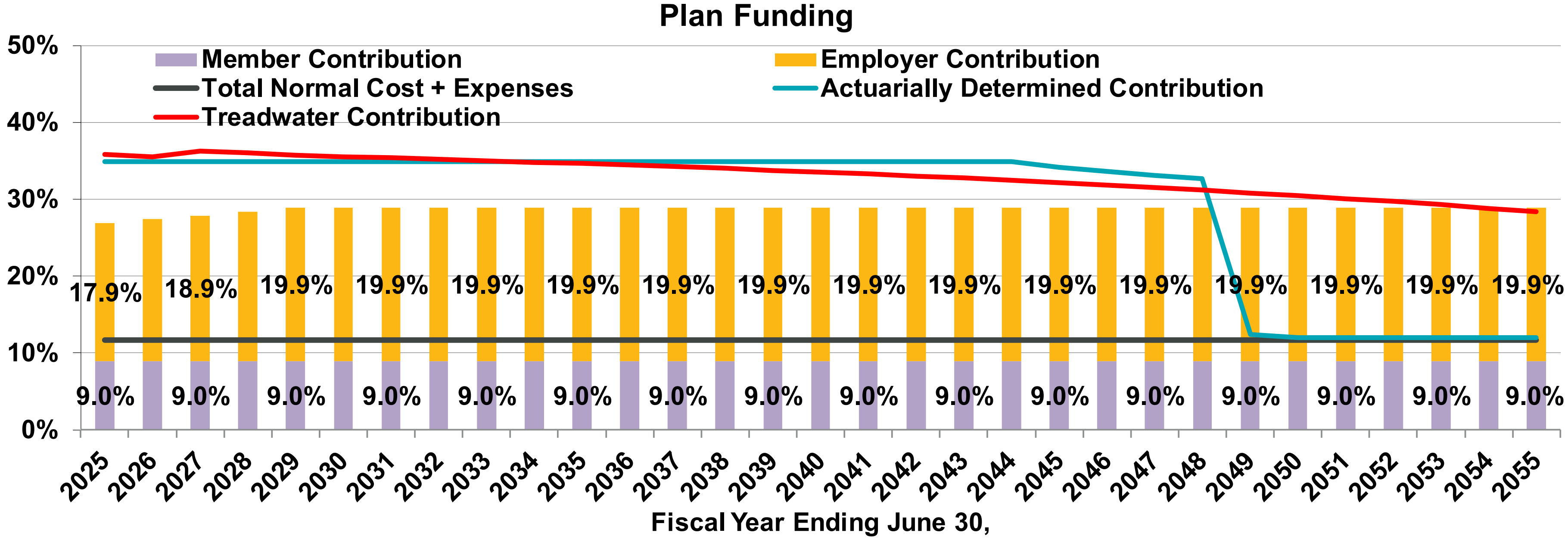
Actuarial Assumptions

- Based on the same assumptions used in the June 30, 2023 actuarial valuation
- Assumptions were adopted by the Board based on the Actuarial Experience Investigation covering the four-year period ending June 30, 2022 prepared by CavMac
- We have reviewed the Actuarial Experience Investigation
  - Economic assumptions (including the 7.00% interest rate assumption) are reasonable and in compliance with *ASOP 27 Selection of Economic Assumptions for Measuring Pension Obligations*
  - Demographic assumptions are reasonable and in compliance with *ASOP 35 Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*

Projected Outlook

Baseline projections using currently scheduled fixed contribution rates per SB 3231





Projected Outlook

Baseline projections using currently scheduled fixed contribution rates per SB 3231

Baseline Projection Results[1] (7.00%) ($ in Thousands)	2024	2029	2034	2044	2047	2054
Total Payroll	$ 7,648,566	$ 8,717,155	$ 9,935,038	$ 12,905,032	$ 13,958,409	$ 16,762,879
UAL	$ 26,101,921	$ 29,337,044	$ 32,153,278	$ 37,190,884	$ 38,293,826	$ 39,299,399
Normal Cost Rate	2.98%	2.98%	2.98%	2.98%	2.98%	2.98%
UAL Rate	14.92%	16.92%	16.92%	16.92%	16.92%	16.92%
FCR Rate[2]	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	56.23%	55.65%	56.17%	58.97%	61.17%	69.23%
Amortization Period	48.3 years	40.8 years	37.2 years	29.4 years	26.9 years	21.0 years
ADC	25.88%	28.77%	32.25%	42.81%	46.14%	27.55%
ADC / FCR Ratio	144.59%	144.58%	162.04%	215.11%	231.84%	138.44%
Cash Flow Percentage	-4.40%	-4.48%	-4.66%	-3.08%	-2.20%	-0.29%

[1] Projections assume constant active population with similar demographics to current population

[2] Based on current funding policy increasing to 19.90% as of July 1, 2028

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Board Metrics

Signal Lights

	Definition	Status
Funded Ratio	Funded Ratio above 80% in 2047	Green
	Funded Ratio between 65% and 80% in 2047	Yellow
	Funded Ratio below 65% in 2047	Red
Net Cash Flow	Net Cash Flow Percentage above negative 5.25% (-5.25%) during the projection period	Green
	Net Cash Flow Percentage between negative 5.25% (-5.25%) and negative 7.00 (-7.00%) during the projection period	Yellow
	Net Cash Flow Percentage below negative 7.00% (-7.00%) during the projection period	Red
ADC : FCR Ratio	ADC ratio at or below 100% of fixed contribution rate	Green
	ADC ratio between 100% and 110% of fixed contribution rate	Yellow
	ADC ratio above 110% of fixed contribution rate	Red

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Board Metrics

Current scheduled fixed contribution rates per SB 3231

Payable as of:	FCR
July 1, 2024	17.90%
July 1, 2025	18.40%
July 1, 2026	18.90%
July 1, 2027	19.40%
July 1, 2028	19.90%

Definition	Value	Status
Funded Ratio below 65% in 2047	61%	Red
Net Cash Flow Percentage above negative 5.25% (-5.25%) during the projection period	-4.40%	Green
ADC/FCR ratio above 110% of fixed contribution rate in 2024	133%	Red

Actual net cash flow percentage for fiscal year ending June 30, 2024

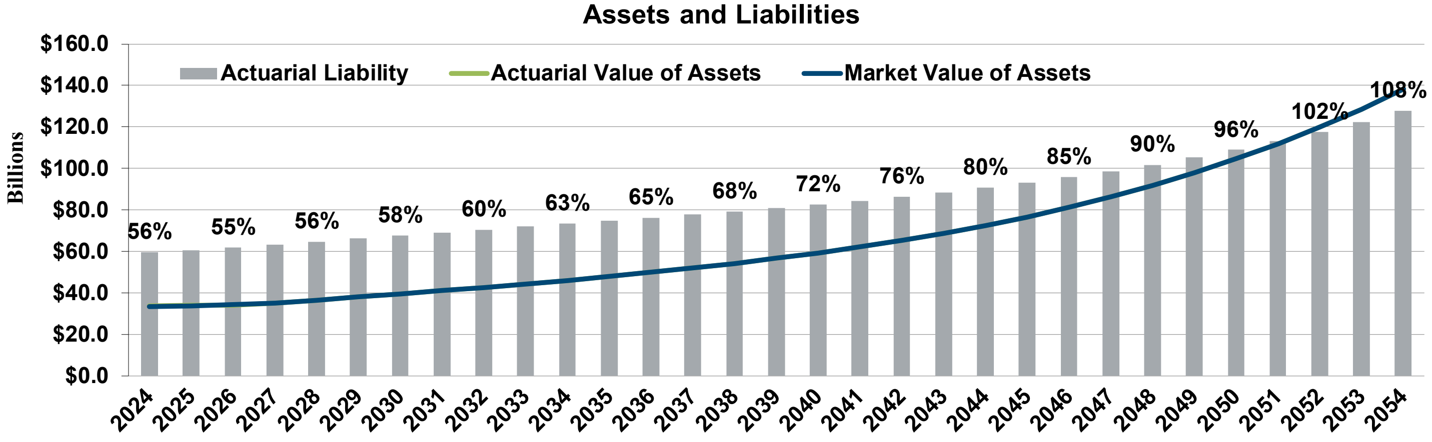
Based on scheduled fixed contribution rate of 19.40% payable beginning July 1, 2027

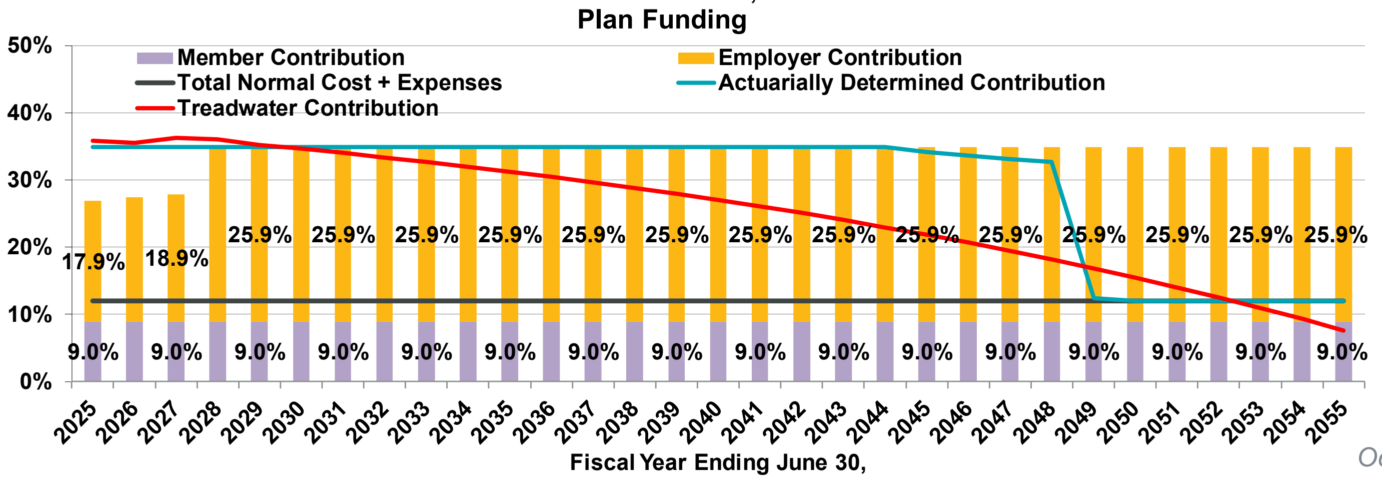
Board Metrics

Recommend FCR equal to the ADC rate of 25.88% beginning July 1, 2027 so all metrics are Green

Definition	Value	Status
Funded Ratio above 80% in 2047	87%	Green
Cash Flow as a Percentage of Assets for Projection Period	Above -5.25%	Green
ADC/FCR ratio at or below 100% of fixed contribution rate in 2024	100%	Green

Based on ultimate fixed contribution rate of 25.88% payable beginning July 1, 2027





Reliance

The purpose of this presentation is to present the results of the 2024 Independent Actuarial Assessment of the Public Employees' Retirement System of Mississippi.

In preparing this presentation, we relied on information (some oral and some written) supplied by the System and current retained actuary (CavMac). This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23, Data Quality.

The results of this report rely on future System experience conforming to the underlying assumptions. To the extent that actual System experience deviates from the underlying assumptions, the results will vary accordingly. The actuarial assumptions were adopted by the Board based on the proposed demographic assumptions shown in the Actuarial Experience Investigation covering the four-year period ending June 30, 2022 prepared by CavMac.

Cheiron utilizes and relies upon ProVal, an actuarial valuation software leased from Winklevoss Technologies for the intended purpose of calculating liabilities and projected benefit payments. Projected expected results of future valuations in this presentation were developed using P-scan, our proprietary tool for the intended purpose of developing projections. As part of the review process for this presentation, we have performed a number of tests to verify that the results are reasonable and appropriate. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations or known weaknesses that would affect this presentation.

This presentation and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinions contained in this presentation. This presentation does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This presentation was prepared exclusively for the Public Employees' Retirement System of Mississippi for the purpose described herein. Other users of this presentation are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

Janet Cranna, FSA, FCA, EA, MAAA
Principal Consulting Actuary

Patrick Nelson, FSA, CERA, EA, MAAA
Consulting Actuary

Classic Values, Innovative Advice

Contact us if you have any questions

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Public Employees' Retirement System of Mississippi

Report on the June 30, 2024 Independent Actuarial Assessment

Produced by Cheiron

October 2024

DRAFT

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Letter Of Transmittal

October 21, 2024

Mr. Ray Higgins
Executive Director
Public Employees' Retirement System of Mississippi
429 Mississippi Street
Jackson, Mississippi 39201-1005

Dear Ray:

At your request, we have conducted an independent actuarial assessment of the valuation of the Public Employees' Retirement System of Mississippi as of June 30, 2024, as required by Senate Bill 3231. This report is organized as follows:

- In Section I **Board Summary,** we describe the purpose of an independent actuarial assessment and summarize the key results found in this assessment.
- The **Main Body** of the report presents details on the System's:
  - Section II - Assets
  - Section III - Liabilities
  - Section IV - Contributions
- In the **Appendices,** we conclude our report with information describing the System's membership (Appendix A), actuarial assumptions and methods employed (Appendix B), pertinent plan provisions (Appendix C), funding provisions of governing law (Appendix D), and a glossary of terms (Appendix E).

The results of this report rely on future System experience conforming to the underlying assumptions. To the extent that actual System experience deviates from the underlying assumptions, the results will vary accordingly. The actuarial assumptions were adopted by the Board based on the proposed demographic assumptions shown in the Actuarial Experience Investigation covering the four-year period ending June 30, 2022 prepared by CavMac.

The purpose of this report is to present Cheiron's independent actuarial assessment of the Public Employees' Retirement System of Mississippi (the System). This report is for the use of the Board in complying with Senate Bill 3231.

In preparing our report, we relied on information supplied by the System staff and CavMac. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23, Data Quality.

The report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice as set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This independent actuarial assessment was prepared exclusively for the System for the purpose described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

Sincerely,
Cheiron

Janet Cranna, FSA, FCA, EA, MAAA
Principal Consulting Actuary

Michael Moehle, FSA, FCA, EA, MAAA
Public Pension Oversight

Patrick Nelson, FSA, CERA, EA, MAAA
Consulting Actuary

SECTION I – BOARD SUMMARY

This June 30, 2024 independent actuarial assessment was completed for the System, as required by Senate Bill 3231. The primary purpose of the independent actuarial assessment and this report is to measure, describe and identify as of the valuation date:

- The assets and actuarial liabilities of the System
- The current and projected financial condition of the System, and
- The employers' Actuarially Determined Contribution

In the balance of this Board Summary we present the basis upon which this year's independent assessment was completed, and the key findings of this valuation including a summary of all key financial results and the projected financial outlook for the System. All results as of June 30, 2023 and prior are those of the current retained actuary, CavMac.

The results of this report are based on the same assumptions as were used in the June 30, 2023 actuarial valuation prepared by CavMac The actuarial assumptions were adopted by the Board based on the proposed demographic assumptions shown in the Actuarial Experience Investigation covering the four-year period ending June 30, 2022 prepared by CavMac. We have reviewed the Actuarial Experience Investigation and find that the recommended economic assumptions (including the 7.00% interest rate assumption) and demographic assumptions are reasonable and in compliance with *Actuarial Standards of Practice No.* 27, *Selection of Economic Assumptions for Measuring Pension Obligations* and *Actuarial Standards of Practice No. 35*, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*. Please see Appendix B for additional information.

Key Findings of this Independent Actuarial Assessment

The key results of the June 30, 2024 independent actuarial assessment for the Public Employees' Retirement System of Mississippi are as follows:

- The total actuarially determined contribution for the System, including the employer and employee contributions, is 34.88% of pay for FYE June 30, 2027. The employer portion of the total actuarial cost is 25.88% of pay, while members contribute 9.00% of pay.

- The employer portion of the actuarially determined contribution for fiscal year ending June 30, 2027 of 25.88% of pay is higher than the scheduled employer Fixed Contribution Rate (FCR) to the System for that year, which is 18.90% of pay effective July 1, 2026, creating an expected shortfall of 6.98% of pay. The Fixed Contribution Rate as of July 1, 2024 is 17.90%; contributions are currently scheduled to increase by 0.5% per year through July 1, 2028 to an ultimate employer contribution rate of 19.90% of pay per Senate Bill 3231. If all assumptions are met and the contributions continue at their current scheduled rates, the funded status of the System is expected to slowly improve.

SECTION I – BOARD SUMMARY

- The "Tread Water Rate" – or the rate of employer contributions expected to hold the unfunded accrued liability (UAL) at its current dollar amount, net of the member contributions and assuming all assumptions are met – is about 27% of pay for FYE 2025. Since the FRC is below the trend water level, the UAL will continue to grow, on a dollar basis, even if all actuarial assumptions are met.

- The Unfunded Actuarial Liability (UAL), which is the excess of the Plan's Actuarial Liability over its Actuarial Value of Assets, increased from $25.5 billion on June 30, 2023 to $26.1 billion on June 30, 2024. The System's funded ratio, which is the Actuarial Value of Assets over the Actuarial Liability, increased slightly from 56.1% as of June 30, 2023 to 56.2% as of June 30, 2024. On a Market Value of Assets basis, the funded ratio increased from 54.4% as of June 30, 2023 to 56.1% as of June 30, 2024.

SECTION I – BOARD SUMMARY

Table I-1 summarizes all the key results of the independent actuarial assessment with respect to the System's membership, assets, liabilities, and contributions. The results are presented and compared for both the current and prior years.

Table I-1
Summary of Results

	June 30, 2023	June 30, 2024
Participant Counts		
Actives	145,985	145,836
Retired	97,395	99,750
Disabled	6,153	6,089
Survivors	12,342	12,482
Deferred Vested and Inactives	96,000	100,966
Total	357,875	365,123
Annual Compensation	$ 7,065,419,204	$ 7,245,823,968
Annual Retirement Allowances	$ 3,118,511,891	$ 3,276,558,966
Discount Rate	7.00%	7.00%
Assets and Liabilities		
Actuarial Liability [AL]	$58,148,281,981	$ 59,637,540,589
Actuarial Value of Assets [AVA]	32,605,990,000	33,535,619,000
Unfunded Actuarial Liability [UAL]	$25,542,291,981	$ 26,101,921,589
Funded Percentage [AVA / AL]	56.1%	56.2%
Market Value of Assets [MVA]	$31,621,983,000	$ 33,449,843,000
Funded Percentage [MVA / AL]	54.4%	56.1%
Actuarial Contributions	**FYE 2026**	**FYE 2027**
Net Employer Normal Cost Rate	2.62%	2.98%
UAL Payment Rate for FCR	19.78%	15.92%
Fixed Rate Contribution [FCR]	22.40% [1]	18.90% [2]
UAL Payment Rate for ADC	22.55%	22.90%
Actuarially Determined Contribution[3] [ADC]	25.17%	25.88%
Shortfall [ADC - FCR]	2.77%	6.98%

[1] Policy as of June 30, 2023 is a phased-in fixed contribution rate with employer contributions of 17.40% of pay through June 30, 2024. Beginning July 1, 2024, the employer fixed contribution rate increased to 19.40% of pay. It is scheduled to increase to 21.40% of pay beginning July 1, 2025 and then increase to 22.40% of pay beginning July 1, 2026.
[2] Senate Bill 3231 sets fixed contribution rate to 17.90% as of July 1, 2024, increasing 0.5% each July 1 through 2028 to an ultimate rate of 19.90%
[3] ADC determined as of June 30, 2023 is for fiscal year ending June 30, 2026, and ADC determined as of June 30, 2024 is for fiscal year ending June 30, 2027

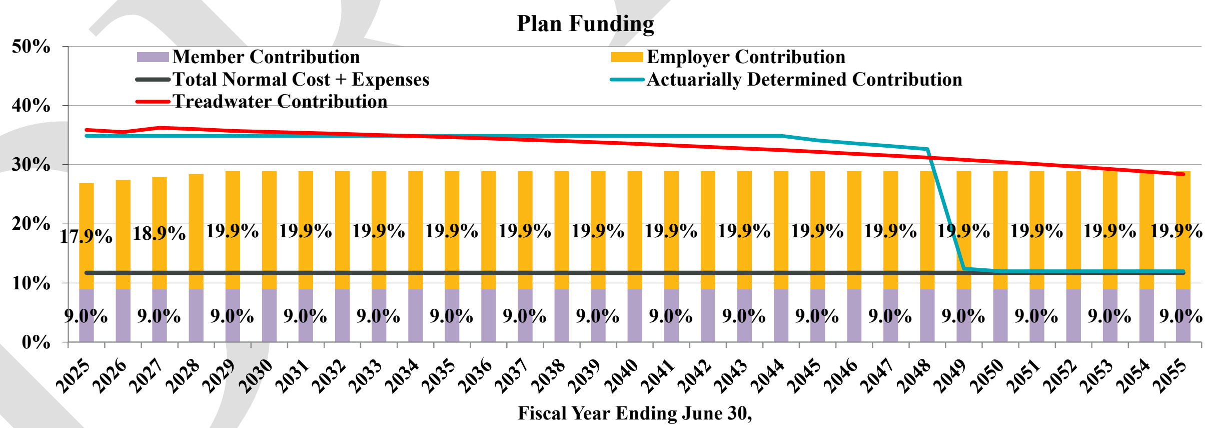
Future Expected Financial Trends

The analysis of projected financial trends is perhaps the most important component of the independent actuarial assessment. The charts presented in this section show the expected progress of the System's funded status over the next 30 years, measured in terms of the expected contributions and funded ratio, assuming that the System is ongoing.

The baseline projections assume all assumptions are realized, including the 7.00% investment return assumption and total payroll growth of 2.65% per year. While the assumptions individually are reasonable for this valuation, they are also considered reasonable in the aggregate and appropriate. The projections and values shown below are estimates of the implications of future funding and funded status of the System over time. The future outcomes become increasingly uncertain over time, therefore the general trends, and not the absolute values should be considered when reviewing these projections. It is important to note that the experience will not conform exactly to the assumptions every year.

Baseline returns of 7.0%

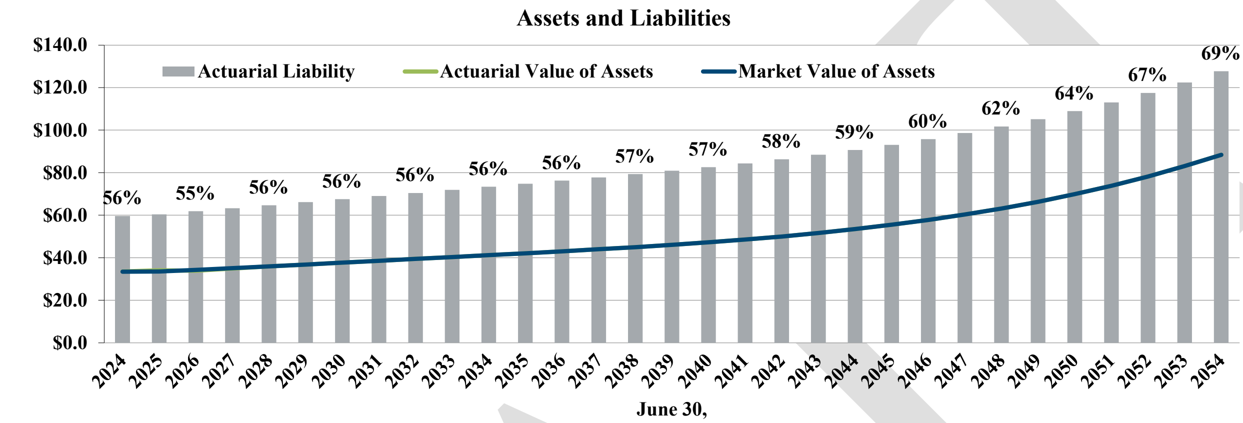
The first chart shows the total projected employer contributions (gold bars) and the member contributions (gray bars) based on the Fixed Contribution Rates (FCR) shown in SB3231. The FCR as of July 1, 2024 is 17.90% and is scheduled to increase 0.5% each July 1 through 2028 to an ultimate rate of 19.90% per Senate Bill 3231. The actuarially determined contributions (employer and member rates) are shown by the blue line and assume that the System contributes the actuarially determined contribution each year. The tread water rates (normal cost plus interest on the unfunded actuarial liability) are shown by the red line. The total normal cost, including administrative expenses, is represented by the black line. The years shown in the charts are fiscal years ending June 30.



The chart above shows that the total actuarially determined contribution (employer and employee rates) remains relatively level at approximately 35% of pay before the large decrease as the initial unfunded liability is fully amortized.

SECTION I – BOARD SUMMARY

This next chart compares the market value of assets (blue line) and the actuarial, or smoothed value of assets (green line), to the System's actuarial liabilities (gray bars). In addition, above the bars, we show the System's funded ratio (ratio of actuarial value of assets to actuarial liabilities) based on the employer contributing the FCR. The projections assume that the FCR, as shown in the previous chart, are made each year. The years shown in the chart signify the valuation date as of June 30.



If the System earns the assumed investment rate of 7.0% each and every year, the funded ratio will increase slowly from 56% to 69% at the end of the 30-year projection period. The projections assume a constant active population with similar demographics to the current population.

Key metrics from another projection are shown below. In this projection, the actuarially determined contribution (ADC) assumes that the employer contributes based on the FCR.

Table I-2
Baseline Projection Results (7.00%)
($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$ 7,648,566	$ 8,717,155	$ 9,935,038	$ 12,905,032	$ 13,958,409	$ 16,762,879
UAL	$ 26,101,921	$ 29,337,044	$ 32,153,278	$ 37,190,884	$ 38,293,826	$ 39,299,399
Normal Cost Rate	2.98%	2.98%	2.98%	2.98%	2.98%	2.98%
UAL Rate	14.92%	16.92%	16.92%	16.92%	16.92%	16.92%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	56.23%	55.65%	56.17%	58.97%	61.17%	69.23%
Amortization Period	48.3 years	40.8 years	37.2 years	29.4 years	26.9 years	21.0 years
ADC	25.88%	28.77%	32.25%	42.81%	46.14%	27.55%
ADC / FCR Ratio	144.59%	144.58%	162.04%	215.11%	231.84%	138.44%
Cash Flow Percentage[1]	-4.40%	-4.48%	-4.66%	-3.08%	-2.20%	-0.29%

[1] Based on current funding policy increasing to 19.90% as of July 1, 2028

Board's Funding Goals and Objectives

Based on the System's funding policy, "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."

SECTION I – BOARD SUMMARY

To track the progress in achieving the funding goals and objectives of the Board (shown in Appendix D) 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 are measured annually in conjunction with information provided in the actuarial valuation. Each metric is calculated and assigned a "Signal Light" as described in Appendix D.

Table I-3 summarizes these metrics. The metrics are based on the phase-in of the employer's FCR to 19.90% of pay as of July 1, 2028.

Table I-3

Metric	2024 Baseline Projection	2024 Status
Funded Ratio in 2047	61%	Red
Cash Flow as Percentage of Assets in 2024	-4.4%	Green
ADC / FCR Ratio in 2024[1]	133%	Red
ADC / FCR Ratio in 2025[2]	130%	Red

[1] Ratio based on scheduled FCR of 19.40% payable as of July 1, 2026
[2] Ratio based on scheduled FCR of 19.90% payable as of July 1, 2027

As shown in Table I-4 above, two of the three metrics are in the "Red Status" for 2024. We determined that an FCR of 25.88% of pay would be needed effective July 1, 2027 to get all three metrics into the "Green Status". Table I-3 shows the metrics assuming the FCR is increased to 25.88% beginning July 1, 2027.

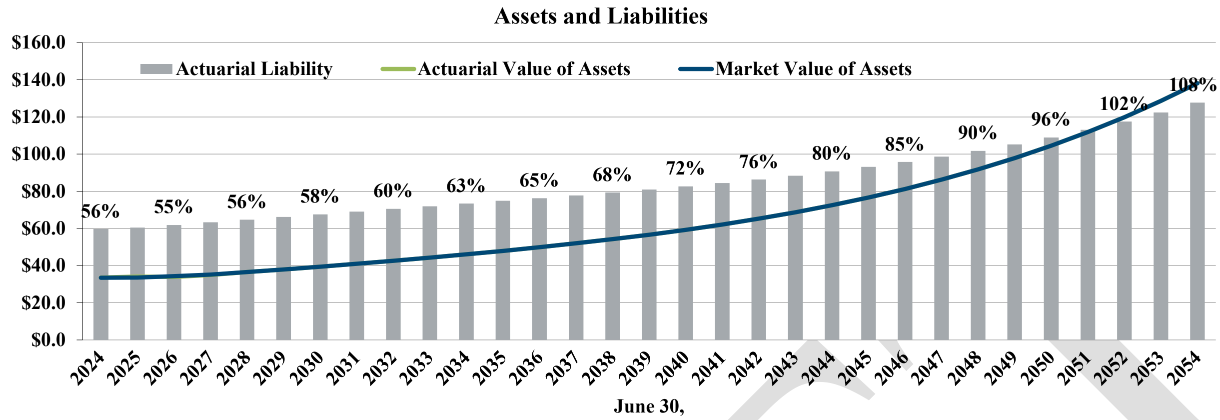
Table I-4

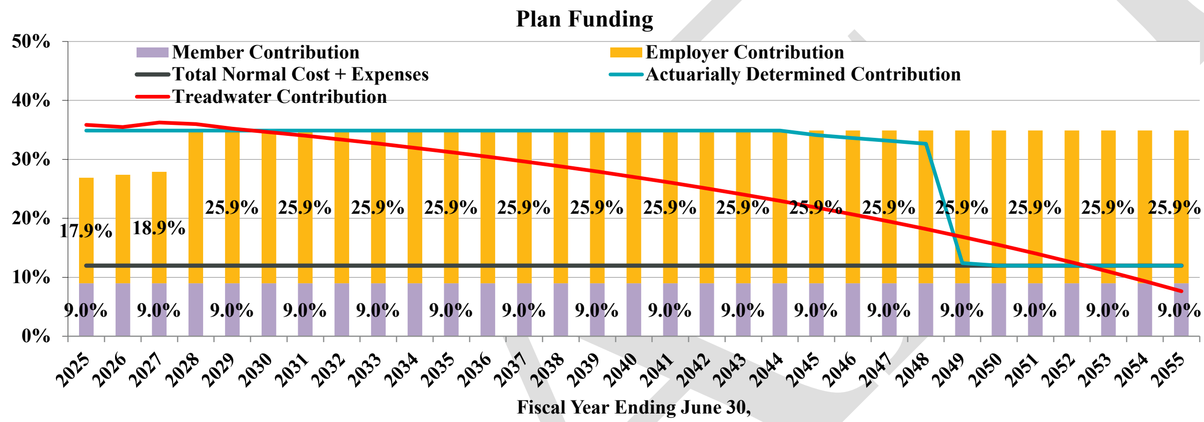
Metric	2024 Baseline Projection	2024 Status
Funded Ratio in 2047	87%	Green
Cash Flow as Percentage of Assets for Projection Period	Above -5.25%	Green
ADC / FCR Ratio in 2024[1]	100%	Green
ADC / FCR Ratio in 2025[1]	100%	Green

[1] Ratio based on ultimate FCR of 25.88% payable as of July 2, 2027

Assuming the FCR is increased to the actuarially determined contribution rate of 25.88% beginning July 1, 2027, the funded ratio is expected to reach 104% by the end of the projection period as shown in the graphs below. The Board should consider recommending a funding policy of contributing the actuarially determined contribution each year to improve the funded status of the System.

SECTION I – BOARD SUMMARY





SECTION II – ASSETS

Pension plan assets play a key role in the financial operation of the System and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on the System assets including:

- Statement of the changes in market values from June 30, 2023 to June 30, 2024;
- Development of the Actuarial Value of Assets;
- An assessment of investment performance.

Disclosure

There are two types of asset values disclosed in this independent actuarial assessment, the market value of assets (MVA) and the actuarial value of assets (AVA). The market value represents a "snap-shot" or "cash-out" value which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-range planning as are the actuarial value of assets which reflect smoothing of annual investment returns.

Changes in Market Value

Table II-1 shows the components of change between the market value of assets from June 30, 2023 and June 30, 2024.

Table II-1
Change in Market Value of Assets

Market Value as of June 30, 2023	$ 31,621,983,000
Contributions	
Employer	1,345,811,000
Member	682,937,000
Additional State Contribution	110,000,000
Subtotal	*$ 2,138,748,000*
Net Investment Income	
Net Appreciation in Fair Value	$ 2,601,301,000
Interest & Dividends	708,719,000
Managers' Fees & Trading Costs	(103,922,000)
Other Additions	314,000
Subtotal	*$ 3,206,412,000*
Securities Lending	
Net Appreciation in Fair Value	$ 5,498,000
Interest	124,689,000
Program Fees	(116,721,000)
Subtotal	*$ 13,466,000*
Deductions	
Pension Benefits	$ (3,394,102,000)
Refunds to Terminated Employees	(118,413,000)
Administrative Expense	(18,251,000)
Subtotal	*$ (3,530,766,000)*
Market Value as of June 30, 2024	$ 33,449,843,000

SECTION II – ASSETS

Actuarial Value of Assets

The actuarial value of assets represents a "smoothed" value used to reduce or eliminate erratic results which could develop from short-term fluctuations in the market value of assets. For this System, the actuarial value of assets has been calculated by recognizing the full expected return each year plus (minus) 20% of the gain (loss) each for each of the past five years. Differences between the actual return on the market value of assets and the expected return on the market value of assets are recognized over five years.

Table II-2
Development of Actuarial Value of Assets

(1) Market Value as of June 30, 2023			$ 31,621,983,000
(2) Contributions			2,138,748,000
(3) Benefit Payments			(3,512,515,000)
(4) Administrative Expenses			(18,251,000)
(5) Expected Return at 7.0%			2,164,818,000
(6) Expected Value at June 30, 2024			$ 32,394,783,000
(7) Market Value as of June 30, 2024			$ 33,449,843,000
(8) Net Cash Flow [(2) + (3) + (4)]			$ (1,392,018,000)
(9) Actual Return [(7) - (1) - (8)]			$ 3,219,878,000
(10) Immediate Recognition [(1) x 7.0% + (8) x 7.0% / 2]			$ 2,164,818,000
(11) Gain / (Loss) [(9) - (10)]			$ 1,055,060,000
	Total Gain/(Loss)	% Recognized	
Investment gain / (loss) for 2024	$ 1,055,060,000	20%	$ 211,012,000
Investment gain / (loss) for 2023	(37,380,000)	20%	(7,476,000)
Investment gain / (loss) for 2022	(5,584,610,000)	20%	(1,116,922,000)
Investment gain / (loss) for 2021	6,632,230,000	20%	1,326,446,000
Investment gain / (loss) for 2020	(1,281,155,000)	20%	(256,231,000)
(12) Total Phase-In			$ 156,829,000
(13) Actuarial Value as of June 30, 2023			$ 32,605,990,000
(14) Actuarial Value as of June 30, 2024 [(8) + (10) + (12) + (13)]			$ 33,535,619,000

Investment Performance

The market value of assets returned 10.41% during the fiscal year ending June 30, 2024, which is greater than the assumed 7.0% assumption for the period. A return of 7.28% was experienced on the actuarial value of assets, resulting in an actuarial gain for the year. Table II-2 shows a comparison of the assumed rate of return, and the actual rate of return on both the market value and actuarial value of assets.

Table II-3
Historical Returns

FYE	Assumed Return	Market Value	Actuarial Value
2015	8.00%	3.46%	12.21%
2016	7.75%	0.89%	7.19%
2017	7.75%	14.96%	9.31%
2018	7.75%	9.59%	9.16%
2019	7.75%	6.64%	7.19%
2020	7.75%	3.11%	6.72%
2021	7.75%	32.17%	12.47%
2022	7.55%	-8.64%	8.49%
2023	7.55%	7.43%	6.85%
2024	7.00%	10.41%	7.28%
10-year average	7.66%	7.55%	8.67%

SECTION III – LIABILITIES

In this section, we present detailed information on the System liabilities as of June 30, 2024.

Two types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of All Future Benefits:** Used for measuring all future System obligations, represents the amount of money needed today to fully fund all benefits of the System both earned as of the valuation date and those expected to be earned in the future by current plan participants, under the current plan provisions.
- **Actuarial Liability:** Calculated as of the valuation date as the present value of benefits allocated to service prior to that date. The actuarial liability is determined using the Entry Age Normal method.

These liabilities are for funding purposes and are not appropriate for measuring the cost of settling plan liabilities by purchasing annuities or paying lump sums.

Table III-1, which follows, discloses each of these liabilities for our independent actuarial assessment. With respect to each disclosure, a subtraction of the appropriate value of plan assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

SECTION III – LIABILITIES

Table III-1
Summary of Liabilities

	June 30, 2023	June 30, 2024
Present Value of Future Benefits [PVFB]		
Actives	$25,647,175,043	$25,544,106,384
Retired	32,179,084,583	33,697,981,643
Disabled	1,362,112,330	1,382,406,701
Survivors	2,193,624,378	2,245,286,962
Deferred Vested	1,705,195,138	1,914,179,360
Inactive	557,953,772	597,702,699
Total	$63,645,145,244	$65,381,663,749
Market Value of Assets	$31,621,983,000	$33,449,843,000
Unfunded PVFB	$32,023,162,244	$31,931,820,749
Actuarial Liability [AL]		
Actives	$20,150,311,780	$19,799,983,224
Retired	32,179,084,583	33,697,981,643
Survivors	2,193,624,378	2,245,286,962
Disabled	1,362,112,330	1,382,406,701
Deferred Vested	1,705,195,138	1,914,179,360
Inactive	557,953,772	597,702,699
Total	$58,148,281,981	$59,637,540,589
Actuarial Value of Assets	$32,605,990,000	$33,535,619,000
Unfunded Actuarial Liability [UAL]	$25,542,291,981	$26,101,921,589

SECTION IV – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the System. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this System, the funding method employed is the **Entry Age Normal Actuarial Cost Method**. Under this funding method, a normal cost rate is determined as a level percentage of pay for each active member. The normal cost rate multiplied by payroll equals the total normal cost for each active member. The total anticipated member contributions for the year are then subtracted from the sum of the total normal cost to arrive at the employer normal cost. The normal cost contributions (employer and active member) will pay for projected benefits at retirement for each active member. An administrative expense rate of 0.26% of payroll is added to the normal cost.

The EAN actuarial liability is the difference between the plan's total present value of future benefits and the present value of future normal costs. The difference between the Entry Age Normal actuarial liability and the actuarial value of assets is the unfunded actuarial liability. The Funding Policy provides that the unfunded actuarial liability as of June 30, 2018 is amortized as a level percentage of payroll over a closed 30-year period. In each subsequent valuation, all benefit changes, assumption and method changes, and experiences gains and/or losses that have occurred since the previous valuation will be amortized as a level percentage of payroll over a closed 25-year period from the date it is established.

This amortization method is used for benchmark purposes only, since the employer contribution is based on a fixed percentage of payroll.

SECTION IV – CONTRIBUTIONS

Table IV-1 below develops the employer contribution rates for the System for the fiscal years ending 2024 and 2025.

Table IV-1
Actuarial Contribution Rates

Fiscal Year Ending	June 30, 2026	June 30, 2027
Actuarially Determined Contribution Rate		
Employer Normal Cost plus Admin Expenses	2.62%	2.98%
UAL Liability Rate	22.55%	22.90%
Total ADC	25.17%	25.88%
Fixed Contribution Rate (FCR)	22.40% [1]	19.40% [2]
Ratio of ADC to FCR	112.4%	133.4%
Funding Policy Metric Status	Red	Red
Anticipated UAL Payment Period under FCR[3]	32.2 years	48.3 years

[1] Policy as of June 30, 2023 is a phased-in fixed contribution rate with the employer contributions of 17.40% of pay through June 30, 2024. Beginning July 1, 2024, the employer fixed contribution rate increased to 19.40% of pay. It is scheduled to increase to 21.40% of pay beginning July 1, 2025 and then increase to 22.40% of pay beginning July 1, 2026.
[2] Senate Bill 3231 sets fixed contribution rate to 17.90% as of July 1, 2024, increasing 0.5% each July 1 through 2028 to an ultimate rate of 19.90%
[3] UAL payment period based on currently scheduled Fixed Contribution Rate beginning as of respective valuation dates.

SECTION IV – CONTRIBUTIONS

Table IV-2 below presents the amortization schedule for the actuarially determined contribution rate.

Table IV-2
Development of Amortization Payments as of June 30, 2024

Date Established	Original UAL Balance	Remaining UAL Balance	Remaining Amortization Period	Amortization Payment
June 30, 2018	$16,940,459,000	$17,879,678,003	24 years	$1,192,199,186
June 30, 2019	784,879,000	791,330,529	20 years	59,005,073
June 30, 2020	524,319,000	528,689,216	21 years	38,220,130
June 30, 2021	506,599,000	509,805,348	22 years	35,808,180
June 30, 2022	561,966,000	564,968,457	23 years	38,630,170
June 30, 2023	5,309,730,000	5,323,697,515	24 years	354,978,867
June 30, 2024	503,752,521	503,752,521	25 years	32,808,648
Total		$26,101,921,589		$1,751,650,255
Estimated Payroll				$7,648,565,596
UAL Amortization Contribution Rate				22.90%

APPENDIX A – MEMBERSHIP INFORMATION

The June 30, 2024 census data was provided by Cav Mav and is summarized below. The June 30, 2023 data was based on CavMac's June 30, 2023 Actuarial Valuation Report.

Membership Data

	June 30, 2023	June 30, 2024
Active		
Count	145,985	145,836
Average Age	45.2	45.1
Average Service	10.2	10.1
Total Salary	$7,065,419,204	$7,648,565,596
Average Salary	$ 48,398	$ 52,446
Retired		
Count	97,395	99,750
Average Age	71.7	71.8
Total Benefits	$2,740,183,618	$2,884,704,412
Average Benefit	$ 28,135	$ 28,919
Disabled		
Count	6,153	6,089
Average Age	65.3	65.7
Total Benefits	$ 131,430,485	$ 144,332,066
Average Benefit	$ 21,360	$ 23,704
Survivors		
Count	12,342	12,482
Average Age	69.0	69.2
Total Benefits	$ 246,897,788	$ 255,561,969
Average Benefit	$ 20,005	$ 20,474

	June 30, 2023	June 30, 2024
Vested, Pending Retirement		
Count	936	1,112
Total Benefits	$ 30,338,787	$ 37,340,723
Average Benefit	$ 32,413	$ 33,580
Deferred Vested, Benefit Provided		
Count	15,180	15,145
Total Benefits	$ 135,081,505	$ 132,960,352
Average Benefit	$ 8,899	$ 8,779
Deferred Vested, Missing Benefit		
Count	1,075	898
Total Refunds	$ 46,557,950	$ 40,944,362
Average Refund	$ 43,310	$ 45,595
Inactive, Due Refund		
Count	78,809	83,811
Total Refunds	$ 384,795,705	$ 408,891,524
Average Refund	$ 4,883	$ 4,879

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

The actuarial assumptions used in our independent actuarial assessment are the same as those described in the June 30, 2023 Actuarial Valuation Report prepared by Cavanaugh Macdonald Consulting. Those assumptions were based on the recommended assumptions shown in the Experience Investigation for the four-year period ending June 30, 2022 which was prepared by Cavanaugh Macdonald Consulting and approved by the Board.

We have reviewed the Experience Investigation and find that the recommended economic assumptions (including the 7.00% interest rate assumption) and demographic assumptions reasonable and in compliance with ASOP 27 *Selection of Economic Assumptions for Measuring Pension Obligations* and ASOP 35 *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations.* However, we have the following recommendations for future experience investigations:

Mortality

- Consider whether the General Employees table provides a better fit than the Public Safety table. Consider whether the income-weighted tables provide a better fit than the headcount weighted tables.
- Provide a discussion on the level of credible data when adjusting the standard tables for PERS experience.
- Consider the most recent mortality improvement scale.

Retirement Age for Terminated Vested Participants

This assumption was not analyzed in the June 30, 2022 Experience Investigation. CavMac should analyze the retirement age for terminated vested participants in the next Experience Investigation.

B. Actuarial Methods

The actuarial methods used in our independent actuarial assessment are the same as those described in the June 30, 2023 Actuarial Valuation Report prepared by Cavanaugh Macdonald Consulting.

1. Actuarial Value of Assets

The actuarial value of assets is a five-year smoothed market value. Unanticipated changes in market value are recognized over five years in the actuarial value of assets. This smoothing method complies with ASOP 44 *Selection and Use of Asset Valuation Methods for Pension Valuations*. Smoothing the market gains and losses over a reasonable period of time to determine the actuarial value of assets is a generally accepted approach, and we concur with its use.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

2. Actuarial Cost Method

The funding method for the valuation of liabilities used for this independent actuarial assessment is the Entry Age Normal (EAN) method. Under this funding method, a normal cost rate is determined as a level percentage of pay for each active member. The normal cost rate multiplied by payroll equals the total normal cost for each active member. The normal cost contributions (employer and active member) will pay for projected benefits at retirement for each active member.

The actuarial liability is the difference between the present value of future benefits and the present value of future normal costs. The difference between this actuarial liability and the actuarial value of assets is the unfunded actuarial liability (UAL).

The portion of the actuarial liability in excess of System assets, the UAL, is amortized to develop an additional cost that is added to each year's employer normal cost. Under this funding method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability. The amortization method is described below.

3. Amortization Method

The initial Unfunded Actuarial Liability as of June 30, 2018 is amortized over a closed 30 year amortization period as a level percent of payroll. Each subsequent experience gains or losses, assumption changes and plan changes are amortized over separate 25-year layers as a level percent of payroll.

This amortization method is used for benchmark purposes only, since the employer contribution is based on a fixed percentage of payroll.

4. Valuation Software

Cheiron utilizes ProVal, an actuarial valuation software program leased from Winklevoss Technologies (WinTech), to calculate liabilities, normal costs, and projected benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal as it relates to the System and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in the output of ProVal that would affect the contents of this actuarial valuation report.

Projections in this valuation report were developed using P-Scan, our proprietary tool for developing projections. The projections shown in this report cover multiple scenarios and the variables are not necessarily correlated. We are not aware of any material inconsistencies, unreasonable output resulting from the aggregation of assumptions, material limitations, or known weaknesses that would affect the projections shown in this report.

APPENDIX C – SUMMARY OF PERTINENT PLAN PROVISIONS

The plan provisions used in our independent actuarial assessment are the same as those described in the June 30, 2023 Actuarial Valuation Report from Cavanaugh Macdonald Consulting. It is our understanding that there have been no changes in plan provisions since the June 30, 2023 actuarial valuation.

We compared the summary of main benefit and contribution provisions shown in Schedule C of the June 30, 2023 Actuarial Valuation Report from Cavanaugh Macdonald Consulting to what is contained in the Mississippi Code, the member handbooks and other information provided by PERS. We found that the benefit and contribution provisions matched our source documents.

APPENDIX D – FUNDING PROVISIONS OF GOVERNING LAW

Pages in Appendix D are reprinted from CavMac's June 30, 2023 Actuarial Valuation Report

FUNDING POLICY OF THE PERS BOARD OF TRUSTEES

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

APPENDIX D – FUNDING PROVISIONS OF GOVERNING LAW

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 and the projection report, 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 2024 deems an increase to be considered, then it would be effective for July 1, 2026).

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 5.25% (-5.25%) during the projection period
Yellow	Net Cash Flow Percentage between negative 5.25% (-5.25%) and negative 7.00% (-7.00%) during the projection period
Red	Net Cash Flow Percentage below negative 7.00% (-7.00%) during the projection period

APPENDIX D – FUNDING PROVISIONS OF GOVERNING LAW

- **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.

APPENDIX D – FUNDING PROVISIONS OF GOVERNING LAW

- **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, 2022 (State of Mississippi Retirement Systems Experience Investigation for the Four-Year Period Ending June 30, 2022). The long-term investment return assumption adopted by the PERS' Board in conjunction with the experience investigation is 7.00 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)** – 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)** – 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)** – The Board is responsible for ensuring that an experience analysis is performed as prescribed, review of the

APPENDIX D – FUNDING PROVISIONS OF GOVERNING LAW

results of the study, and approving the actuarial assumptions and methodologies to be used for all actuarial purposes relating to the defined benefit pension plan.

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

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

V. Glossary of Funding Policy Terms

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

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

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

- **Asset Values**:
  - **Actuarial Value of Assets (AVA):** The AVA is the market value of assets less the deferred investment gains or losses not yet recognized by the asset smoothing method.
  - **Market Value of Assets (MVA):** The MVA is the fair value of assets of the plan as reported in the plan's audited financial statements.

- **Entry Age Normal Actuarial Cost Method (EAN):** The EAN actuarial cost method is a funding method that calculates the normal cost as a level percentage of pay or level dollar amount over the working lifetime of the plan's members.

APPENDIX D – FUNDING PROVISIONS OF GOVERNING LAW

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

APPENDIX E – GLOSSARY OF TERMS

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

3. Actuarial Gain/(Loss)

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made. As a simple example: assume you owe $100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

Amount		Probability of Payment		1/(1+Investment Return)		
$100	x	(1 - .01)	x	1/(1+.1)	=	$90

6. Actuarial Valuation/Actuarial Assessment

The determination, as of a specified date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

APPENDIX E – GLOSSARY OF TERMS

7. Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way long-term costs are not distorted by short-term fluctuations in the market.

8. Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

9. Amortization Payment

The portion of the pension plan contribution which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Percentage

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

12. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

13. Mortality Table

A set of percentages which estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and sex.

14. Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses, which is allocated to a valuation year by the Actuarial Cost Method.

APPENDIX E – GLOSSARY OF TERMS

15. Projected Benefits

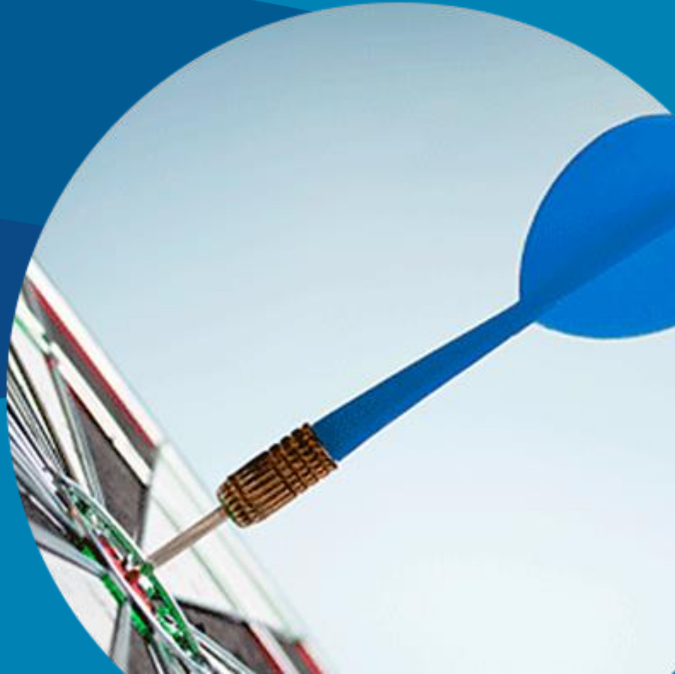
Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

16. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.

Public Employees’ Retirement System of Mississippi (PERS)

June 30, 2024 Actuarial Audit
October 23, 2024



Background

- The retained actuary produces reports each year on the financial condition of the retirement system
  - Calculates actuarially required contributions
  - Determines funded ratio, UAAL, etc.
- The work of the retained actuary is fundamental to the Board's governance and financial well being of the retirement system
- Actuarial work is very specialized
  - Difficult for Retirement Boards and Legislators to judge the quality and accuracy of an actuary's work

GRS

Background (cont.)

- An “Actuarial Audit” is the process by which a Retirement Board retains an independent actuarial firm to provide an opinion on the quality and accuracy of the retained actuary’s work
- Government Finance Officers Association (GFOA) guidelines suggest an actuarial audit or review be performed at least every five years
- Many systems have an actuarial audit or review performed on a regular basis

Scope of Review

- Provide an evaluation and express an opinion regarding the reasonableness and accuracy of the 2024 actuarial valuation:
  - Evaluate the data used by the actuary, the degree to which the data is sufficient to support the conclusions of the investigation, and the use and appropriateness of any assumptions made regarding the data.
  - Validate the results of the actuarial valuation, including a determination of the actuarial accrued liability, normal cost, and expected employee and employer contributions, including the calculation of the Actuarially Determined Contribution.
  - Reconcile any significant discrepancies between the findings, assumptions, methodology, rates, and adjustments of the auditing actuary and those of the consulting actuary.
  - Determine whether the valuations were performed in accordance with principles and practices prescribed by the Actuarial Standards Board.

Scope of Review (cont.)

- Provide an evaluation and express an opinion regarding the reasonableness and accuracy of the 2024 actuarial valuation:
  - Evaluate the current actuarial report in terms of content, format, detail, clarity, and scope.
  - Discuss the reasonableness and appropriateness of the demographic and economic assumptions.
  - Determine whether the actuary is following generally accepted best practices for actuaries.
  - Determine whether the retirement plans' financial objectives are being met. The objectives are set forth in the funding policy.
  - Provide 30-year open-group projection results.

Primary Conclusions

- Based on our review of the census data, experience study documents, actuarial valuation reports, and full valuation replication, we believe the 2024 actuarial valuation for PERS is reasonable, based on reasonable assumptions and methods, and the report generally complies with the Actuarial Standards of Practice.
- We also found the comments noted by CavMac in their valuation reports regarding the projected financial condition of PERS to also be appropriate and we concur that the System needs additional contributions to be sustainable.

GRS

Actuarial Assumptions in Context

- Over time, the true cost of the benefits will be borne out in the actual experience
  - Benefits determined by actual membership behavior (e.g. termination and retirement), plan provisions, and actual life expectancy
  - Plan funding is greatly dependent on actual investment returns and actual contributions to the System
- Assumptions help all stakeholders anticipate the expected future financial condition of PERS
  - Actual experience mirrors the assumptions
    - Plan funding evolves as expected
  - Actual experience is more favorable than assumed
    - Plan funding improves better than expected
  - Actual experience is less favorable than assumed
    - Additional contributions will likely be necessary to finance experience losses
    - Have to make up for lost time on needed contributions

GRS

Principal Assumptions and Methods Audited by GRS

- Economic assumptions
  - Price inflation
  - Investment return
  - Payroll growth rate
- Demographic assumptions
  - Salary increases (for individuals)
  - Mortality (active, post-employment, disability)
  - Disability incidence
  - Retirement rate
  - Other terminations
- Valuation methodologies
  - Amortization policy
  - Actuarial cost method and asset valuation method

Demographic Assumptions

- Review of demographic assumptions is more dependent on actual historical experience
- Reasonable ✓
  - Mortality using standard current tables
  - Modest adjustments to some other demographic assumptions were also reasonable
  - No major demographic gains or losses since study
  - Gains and losses offsetting
    - No concerning bias

Economic Assumptions

- Review of economic assumptions is more dependent on forward looking expectations and less on actual historical experience
- Economic assumptions reasonable ✓
  - Price inflation unchanged at 2.40%
  - Investment return decreased from 7.55% to 7.00%
  - Wage inflation unchanged at 2.65%
  - Payroll growth rate unchanged at 2.65%

GRS

Review Investment Return Assumption

Nominal Investment Return Expectations

	Investment Consultant	50th Percentile Expected Return (Geometric) 2022	50th Percentile Expected Return (Geometric) 2021	Probability of Exeeding 7.00% 2022	Probability of Exeeding 7.00% 2021
	(1)	(2)	(3)	(4)	(5)
7 to 10 Year Expectations	1	5.3%	5.2%	29%	27%
	2	5.6%	5.2%	31%	26%
	3	5.7%	5.5%	34%	32%
	4	5.8%	5.7%	34%	33%
	5	6.0%	5.9%	37%	36%
	6	6.0%	5.8%	37%	34%
	7	7.4%	6.7%	55%	46%
20 to 30 Year Expectations	1	6.3%	6.5%	40%	43%
	2	6.4%	6.4%	41%	42%
	3	6.9%	6.5%	48%	44%
	4	7.7%	7.3%	59%	54%
7-10 Year Expectation Avg:		6.0%	5.7%	37%	33%
20-30 Year Expectation Avg:		6.8%	6.7%	47%	46%

- Aon
- Black Rock
- Callan
- Cambridge
- Meketa
- Me[illegible]
- Verus

Review the Calculation of the Liability and ADC

Comparison of Key Valuation Results

	CavMac	GRS	Difference
Actuarial Accrued Liability	$60,033,721	$60,243,797	0.3%
Actuarial Value of Assets	$33,535,621	$33,535,621	0.0%
Unfunded Actuarial Accrued Liability	$26,498,100	$26,708,176	0.8%
Funded Ratio	55.9%	55.7%	-0.2%
Payroll for Upcoming Year	$7,611,848	$7,647,771	0.5%
Fixed Rate Contribution			
Amounts as a % of Pay:			
Total Normal Cost	11.31%	11.26%	
Administrative Expenses	0.26%	0.26%	
Amortization of Unfunded Liability	17.33%	17.38%	
Total Actuarially Determined Contribution	28.90%	28.90%	
Employee Contribution Rate	9.00%	9.00%	
Net Employer Fixed Contribution Rate (FCR)	19.90%	19.90%	
FCR Amortization Period	45 Years	45 Years	

Review the Calculation of the Liability and ADC

Comparison of Key Valuation Results

Actuarially Determined Contribution

Amounts as a % of Pay:		
Total Normal Cost	11.31%	11.26%
Administrative Expenses	0.26%	0.26%
Amortization of Unfunded Liability	23.35%	23.42%
Total Actuarially Determined Contribution	34.92%	34.94%
Employee Contribution Rate	9.00%	9.00%
Net Employer Actuarially Determined Contribution (ADC)	25.92%	25.94%
ADC Amortization Period	24 Years	24 Years

We believe this funding policy satisfies Section 3.21 of the Actuarial Standard of Practice No. 4, "Reasonable Actuarially Determined Contribution" which outlines the requirements that an actuary must follow when performing a funding valuation and the actuary is required to calculate and disclose a reasonable actuarially determined contribution.

GRS

Comparison of Financial Projections

We Believe CavMac's Financial Projections are Reliable for Stakeholders to Make Business Decisions

GRS Projection

Baseline Projection Based on the July 1, 2024 Actuarial Valuation (7.00%)

($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,647,771	$8,176,416	$9,031,331	$11,376,226	$12,250,625	$14,603,636
UAAL	$26,708,176	$29,712,446	$32,423,998	$37,705,084	$39,025,544	$41,019,905
ER Normal Cost Rate	2.52%	2.24%	2.03%	1.98%	2.01%	2.10%
UAAL Rate	17.38%	17.66%	17.87%	17.92%	17.89%	17.80%
FCR Rate	19.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	55.7%	55.7%	55.2%	52.8%	52.6%	53.9%
Amortization Period	45 years	48 years	45 years	36 years	33 years	26 years
ADC	25.94%	30.10%	34.54%	47.74%	51.95%	31.20%
ADC/FCR Ratio	130.4%	151.3%	173.6%	239.9%	261.1%	156.8%
Cash Flow Percentage	-4.3%	-5.0%	-5.8%	-6.0%	-5.6%	-4.6%

CavMac Projection

Baseline Projection Based on the July 1, 2024 Actuarial Valuation (7.00%)

($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAAL	$26,498,100	$29,096,171	$31,425,966	$35,787,973	$36,758,119	$37,698,010
ER Normal Cost Rate	2.57%	2.70%	2.84%	3.05%	3.12%	3.26%
UAAL Rate	15.33%	17.20%	17.06%	16.85%	16.78%	16.64%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	55.9%	55.8%	55.4%	53.6%	53.7%	55.8%
Amortization Period	45 years	52 years	50 years	39 years	36 years	27 years
ADC	25.92%	30.11%	34.80%	47.84%	51.92%	27.80%
ADC/FCR Ratio	130.3%	151.3%	174.9%	240.4%	260.9%	139.7%
Cash Flow Percentage	-4.7%	-5.3%	-6.1%	-6.0%	-5.6%	-4.5%

Suggestions for Consideration

- The termination assumption was based on four years of experience. We suggest the actuary consider using a longer period of experience (e.g. 10 years), as to not overreact to possible short-term changes in economic conditions.
- Consider using a salary weighted approach when reviewing the termination and retirement assumptions.
- Continue to monitor the appropriateness of the 7.00% investment return assumption.
- Document any unique assumptions used in the projections in the Actuarial Assumptions and Methods section of the valuation report.

Thank You

- Thank you to the PERS staff for their assistance with this actuarial review
- Thank you to CavMac actuaries, whose cooperation in this matter was essential for GRS to meet PERS's deadlines
- We hope PERS, CavMac, and other Stakeholders find our conclusions useful

GRS

Disclaimers

- This presentation is intended to be used in conjunction with the actuarial audit report issued on October 18, 2024. This presentation should not be relied on for any purpose other than the purpose described in the actuarial review report.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- The actuaries completing the report (Paul Wood, Daniel White, and Cassie Rapoport) are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Public Employees' Retirement System of Mississippi

Actuarial Audit of the June 30, 2024 Actuarial Valuation

P: 469.524.0000 | www.grsconsulting.com

October 18, 2024

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

Members of the Board:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the July 1, 2024 Actuarial Valuation of the Public Employees' Retirement System of Mississippi (PERS). We are grateful to the PERS staff, and CavMac, the retained actuary, for their cooperation throughout the actuarial audit process.

This actuarial audit involves an independent verification and analysis of the assumptions, procedures, methods, and conclusions used by the retained actuary for PERS in the valuation as of July 1, 2024, to ensure that the conclusions are technically sound and conform to the appropriate Standards of Practice as promulgated by the Actuarial Standards Board.

GRS is pleased to report to the Board and Staff that, in our professional opinion, the July 1, 2024 Actuarial Valuation prepared by the retained actuary provides a fair and reasonable assessment of the financial position of PERS. We also found the comments noted by CavMac in their valuation reports regarding the projected financial condition of PERS to also be appropriate and concur that the System needs additional contributions to improve the long-term financial condition of the System. **In summary, we believe the results of the July 1, 2024 actuarial valuation for PERS is reasonable for the purpose of assessing the financial condition of PERS and determining the employer contribution rates.**

The undersigned are independent actuaries and consultants. All are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. Thank you for the opportunity to work on this assignment.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Paul T Wood

Paul Wood, ASA, FCA, MAAA
Senior Consultant

Daniel J White

Daniel J White, FSA, EA, MAAA
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Table of Contents

SECTION I

EXECUTIVE SUMMARY

Executive Summary

The Public Employees' Retirement System of Mississippi engaged Gabriel, Roeder, Smith & Company (GRS) for an actuarial audit of the 2024 actuarial valuation prepared for the Public Employees' Retirement System of Mississippi (PERS).

The purpose of this report is to:

- Provide an evaluation and express an independent opinion regarding the reasonableness and accuracy of the valuation results (including a determination of actuarial accrued liability, normal cost, and actuarially determined contributions), appropriateness of the actuarial assumptions, and application of the actuarial cost method for the 2024 actuarial valuation; and
- Include any recommendations regarding reasonable alternatives to the actuarial assumptions used in the 2024 actuarial valuation.

The scope of this actuarial audit includes the following:

A. **Reproduction of Actuarial Valuations dated June 30, 2024.** GRS will use the same data, actuarial assumptions and methods as the consulting actuary has used in the valuation. The validation shall be done through a **full replication audit** that attempts to duplicate the results of the entire valuation for each plan. GRS will:

    1. Evaluate the data used by the actuary, the degree to which the data is sufficient to support the conclusions of the investigation, and the use and appropriateness of any assumptions made regarding the data.
    2. Determine whether the valuations were performed in accordance with principles and practices prescribed by the Actuarial Standards Board.
    3. Validate the results of the actuarial valuation, including a determination of the actuarial accrued liability, normal cost, and expected employee and employer contributions, including the calculation of the Actuarially Determined Contribution.
    4. Reconcile any significant discrepancies between the findings, assumptions, methodology, rates, and adjustments of the contracting Firm and those of the consulting actuary.
    5. Evaluate the current actuarial report in terms of content, format, detail, clarity, and scope.
    6. Discuss the reasonableness and appropriateness of the demographic and economic assumptions.
    7. Determine whether the actuary is following generally accepted best practices for actuaries.
    8. Determine whether the retirement plans' financial objectives are being met. The objectives are set forth in the funding policy.
    9. Provide 30-year open-group projection results.

B. **Review of Experience Studies.** GRS will evaluate the general appropriateness, completeness, and conclusions of the June 30, 2022 Experience Study.

C. **Provide a report to the Executive Director and Board of Trustees who will then deliver the report to the Lieutenant Governor, Speaker of the House, Chairman of the Senate Appropriations Committee and Chairman of the House Appropriations Committee.** GRS will analyze the economic impact of any such recommendation to adjust the employer contributions to the system and state, including, but not limited to, information showing the fiscal impact to every agency and arm of the state, including, but not limited to, state agencies, cities, counties and school districts.

D. Attend an in-person meeting. Attend one in-person meeting to discuss the results of the audit.

Summary of Findings

Based on our review of the census data, experience study documents, liability replications, and actuarial valuation report, we believe the 2024 actuarial valuation for PERS is reasonable for the purpose, based on reasonable assumptions and methods, and the report generally complies with the Actuarial Standards of Practice.

The technical portion of the audit or the replication was clean with very limited findings. The Total Present Value of Future Benefits is generally considered the primary actuarial result for replication purposes. **GRS was able to match this primary result within 0.2%. In addition to that, GRS was able to match the accrued liability by within 0.3% and the Actuarially Determined Contribution (ADC) Rate within 0.02% of payroll.**

We also found the comments noted by CavMac in their valuation reports regarding the projected financial condition of PERS to also be appropriate and agree that the System needs additional contributions to improve the long-term financial condition of the System.

SECTION II

GENERAL ACTUARIAL AUDIT PROCEDURE

General Actuarial Audit Procedure

GRS received and reviewed the following items:

- June 30, 2023 actuarial valuation report;
- June 30, 2024 actuarial valuation report;
- Experience Investigation for the Four-Year Period Ending June 30, 2022;
- Census data for plan participants and beneficiaries as of June 30, 2023 and June 30, 2024 originally provided by PERS to the retained actuary for the actuarial valuation; and
- A final set of census data for plan participants and beneficiaries as of June 30, 2023 and June 30, 2024 used by the retained actuary for the actuarial valuation.

In performing our review, we:

- Reviewed descriptions of member benefits and applicable statutes to understand the benefits provided;
- Reviewed the appropriateness of the actuarial assumptions and methods;
- Reviewed the actuarial valuation report; and
- Replicated the actuarial valuation results, including the determination of actuarial accrued liability, normal cost, and actuarially determined contributions.

The actuarial audit observations, which follow, are based on our review of this information and subsequent correspondence with the retained actuary for clarification and further documentation.

Key Actuarial Concepts

An actuarial valuation is a detailed statistical simulation of the future operation of a retirement system using the set of actuarial assumptions adopted by the governing board. It is designed to simulate all of the dynamics of such a retirement system for each current participant of the plan, including:

- Accrual of future service,
- Changes in benefits,
- Leaving the plan through retirement, disability, withdrawal, or death, and
- Determination of and payment of benefits from the plan.

This simulated dynamic is applied to each active member in the plan and results in a set of expected future benefit payments for that member. Discounting those future payments for the likelihood of survival at the assumed rate of investment return produces the Total Present Value of Plan Benefits (TPV) for that participant. The actuarial cost method will allocate this TPV between the participant's past service (actuarial accrued liability) and future service (future normal costs).

We believe that an actuarial audit should not focus on finding differences in actuarial processes and procedures utilized by the consulting actuary and the auditing actuary. Rather, our intent is to identify and suggest improvements to the process and procedures utilized by the retained actuary for PERS. In performing this actuarial audit, we attempted to limit our discussions regarding opinion differences and focus our attention on the accuracy of the calculations of the liability and costs, completeness and reliability of reporting, and compliance with the Actuarial Standards of Practice that apply to the work performed by the retained actuary.

These key actuarial concepts will be discussed in more detail throughout this report.

Actuarial Qualifications

The actuarial valuation report was signed by Edward J. Koebel, EA, FCA, MAAA and Ben Mobley, ASA, FCA, MAAA. Both signing actuaries have attained the actuarial credentials noted on the signature line of the actuarial valuation report and are compliant with the Society of Actuaries Continuing Professional Development requirement.

SECTION III

ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

Overview

The actuarial valuation report contains a description of the actuarial assumptions which were used in the actuarial valuation as of July 1, 2024. The retained actuary published an actuarial experience report, dated April 21, 2023 which was used to set the assumptions in this 2024 valuation.

The set of actuarial assumptions is one of the foundations upon which an actuarial valuation is based. An actuarial valuation is, essentially, a statistical projection of the amount and timing of future benefits to be paid under the retirement plan. In any statistical projection, assumptions as to future events will drive the process. Actuarial valuations are no exception.

It is important to understand the nature of the retirement plan and the plan sponsor when assessing the reasonableness of the actuarial assumptions. No projection of future events can be labeled as "correct" or "incorrect". However, there is a "range of reasonableness" for each assumption. We evaluate individual elements as follows:

- Whether or not they fall within the range of reasonableness, and
- If they fall within that range, whether they are reasonable for the actuarial valuation of the plan.

Actuarial assumptions for the valuation of retirement plans are of two types: (i) demographic assumptions, and (ii) economic assumptions. We have assessed the reasonableness of both types as part of this actuarial audit.

Demographic Assumptions

General

These assumptions simulate the movement of participants into and out of plan coverage and between status types. Key demographic assumptions are:

- turnover among active participants,
- retirement patterns among active participants, and
- healthy retiree mortality.

In addition, there are a number of other demographic assumptions with less substantial impact on the results of the process, such as:

- disability incidence and mortality among disabled benefit recipients,
- mortality among active participants,
- distribution of form of payment selection, and
- percent of active participants who are married and the relationship of the ages of participants and spouses.

Demographic assumptions for a retirement plan such as PERS are normally established by statistical studies of recent actual experience, called experience studies. Such studies underlie the assumptions used in the valuations.

Once it is determined whether or not an assumption needs adjustment, setting the new assumption depends upon the extent to which the current experience is an indicator of the long-term future.

- Full credibility may be given to the current experience. Under this approach, the new assumptions are set very close to recent experience.
- Alternatively, the recent experience might be given only partial credibility. Thus, the new assumptions may be set by blending the recent experience with the prior assumption.
- If recent experience is believed to be atypical of the future, such knowledge is taken into account.
- Finally, it may be determined that the size of the plan does not provide a large enough sample to make the data credible. In such cases, the experience of the plan may be disregarded and the assumption is set based upon industry standards for similar groups.

The measurement of experience is normally affected by simply counting occurrences of an event. Thus, for example, in reviewing retirement patterns, an actuary might count the number of actual retirees among males aged 55 with 30 years of service. These retirements would be compared against the number of total people in that group to generate a raw rate of retirement for that group. In many cases, especially for the development of withdrawal and healthy mortality rates, these counts are weighted by salary, liability, or benefit amount.

Actuarial Standards of Practice (ASOP) No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, applies to actuaries when they are selecting demographic assumptions. ASOP 35 was recently combined with ASOP 27 for valuations on or after January 1, 2025, but no guidance was changed. In accordance with ASOP No. 35, an actuary should identify the types of demographic assumptions to use for a specific measurement. In doing so, the actuary should determine the following:

a) The purpose and nature of the measurement;
b) The plan provisions or benefits and factors that will affect the timing and value of any potential benefit payments;
c) The characteristics of the obligation to be measured (such as measurement period, pattern of plan payments over time, open or closed group, and volatility);
d) The contingencies that give rise to benefits or result in loss of benefits;
e) The significance of each assumption; and
f) The characteristics of the covered group.

Not every contingency requires a separate assumption. For example, for a plan that is expected to provide benefits of equal value to employees who voluntarily terminate employment or become disabled, retire, or die, the actuary may use an assumption that reflects some or all of the above contingencies in combination rather than selecting a separate assumption for each.

Observations on Statistical Data Reported and Used

We find that the statistical data included in the experience study was sufficient.

Observations on Assumptions

Overall, it appears that the current demographic assumptions are reasonable for valuing the liabilities and assessing the contributions.

Mortality

The mortality assumption uses recent, standard tables published by the SOA based on public sector data (Pub-2010). The adjustments made specific to PERS relied upon benefit-weighted information. While no specific credibility factors were mentioned in the experience study report, CavMac discussed in sufficient depth the rationale for not changing the assumption from the prior experience study.

Future mortality adjustments were reflected using the MP-2020. We find that each component of this approach follows best practice.

Departures (Retirement, Termination, Disability)

During the experience review period, demographic gains and losses related to departures from active status were minimal in relation to the overall liabilities and did not demonstrate any consistent bias in the assumptions. There was minimal change recommended to the assumptions in the most recent experience study which is consistent with the observed gains and losses over the study period. Their analysis was also reviewed separately for males and females among age and service. We believe these assumptions to be reasonable in general.

We also find the use of a single withdrawal assumption for each of the employee membership types reasonable. However, we suggest that CavMac monitor experience separately for each employee group in order to verify the behavior (i.e. pattern of retirement and termination) of different membership groups is similar.

CavMac's recommendation to reduce the rate of disability incidence to be in conformity of the latest PERS experience and also consistent with the change in disability experience we are seeing in several other retirement systems. We believe this disability incidence assumption to be reasonable.

The termination assumption was based on four years of experience, and termination experience can be influenced over the short-term by the local economic conditions. As a result, we suggest CavMac consider using a longer experience period (e.g. ten years of experience) as to not overreact to possible short-term changes in economic conditions.
Also, we suggest CavMac consider using a salary weighted approach when reviewing the termination and retirement experience with the idea that behavior of members with a larger salary have a larger liability

and if these assumptions are developed using a salary weighted approach then liability gains and losses due to these decrements will be smaller each year.

Other Assumptions

CavMac assumes 35% of future deferred vested participants will elect to receive a refund, and 65% of future deferred vested participants will elect to receive a deferred annuity. Given the 9.00% member contribution rate and that the plan has an eight-year vesting requirement for members hired after July 1, 2007, we suggest CavMac consider basing this assumption on the age and service of each participant, as those factors can influence whether or not a participant elects a refund or annuity.

We also examined the other demographic assumptions used in the valuation and found them to be reasonable and similar to those used by other public sector plans (when applicable).

Economic Assumptions

General

These assumptions simulate the impact of economic forces on the amounts and values of future benefits. Key economic assumptions are the assumed rate of investment return and assumed rates of future salary increase. All economic assumptions are built upon an underlying inflation assumption.

ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, applies to actuaries when they are selecting economic assumptions. ASOP No. 27 states that each economic assumption selected by the actuary should be reasonable. For this purpose, an assumption is reasonable if it has the following characteristics:

a) It is appropriate for the purpose of the measurement;
b) It reflects the actuary's professional judgment;
c) It takes into account historical and current economic data that is relevant as of the measurement date;
d) It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof; and
e) It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed, or when alternative assumptions are used for the assessment of risk.

Additionally, ASOP No. 27 states that communications regarding actuarial reports subject to this standard should contain the following:

a) A description of each significant assumption used in the measurement and whether the assumption represents an estimate of future experience, and
b) A description of the information and analysis used in selecting each economic assumption that has a significant effect on the measurement.

Inflation

Inflation refers to mean price inflation as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions. It primarily impacts investment return and salary increases.

The current explicit price inflation assumption is 2.40%. The inflation assumption was left unchanged at 2.40% following the most recent experience study. GRS finds that the recommendation to leave the assumption unchanged at 2.40% was reasonable and appropriate.

The exhibit on the next page shows some of the key metrics GRS uses in making inflation recommendations. Although some metrics *could* be used to support a different inflation assumption, GRS believes that CavMac's analysis and conclusions sufficiently support the continued use of a 2.40% price inflation assumption.

Forward-Looking Price Inflation Forecasts[a]	
Congressional Budget Office[b]	
5-Year Annual Average	2.44%
10-Year Annual Average	2.32%
Federal Reserve Bank of Philadelphia[c]	
5-Year Annual Average	2.50%
10-Year Annual Average	2.33%
Federal Reserve Bank of Cleveland[d]	
10-Year Expectation	2.37%
20-Year Expectation	2.41%
30-Year Expectation	2.46%
Federal Reserve Bank of St. Louis[e]	
10-Year Breakeven Inflation	2.26%
20-Year Breakeven Inflation	2.43%
30-Year Breakeven Inflation	2.27%
U.S. Department of the Treasury[f]	
10-Year Breakeven Inflation	2.19%
20-Year Breakeven Inflation	2.43%
30-Year Breakeven Inflation	2.27%
50-Year Breakeven Inflation	2.36%
100-Year Breakeven Inflation	2.43%
Social Security Trustees[g]	
Ultimate Intermediate Assumption	2.40%

[a] **End of the Second Quarter, 2024**. Version 2024-07-12 by Gabriel, Roeder, Smith & Company

[b] *An Update to the Budget and Economic Outlook: 2024 to 2034*, Release Date: June 2024, Consumer Price Index (CPI-U), Percentage Change from Year to Year, 5-Year Annual Average (2024 - 2028), 10-Year Annual Average (2024 - 2033).

[c] *Second Quarter 2024 Survey of Professional Forecasters*, Release Date: May 10, 2024, Headline CPI, Annualized Percentage Points, 5-Year Annual Average (2024 - 2028), 10-Year Annual Average (2024 - 2033).

[d] Inflation Expectations, Model output date: June 1, 2024.

[e] The breakeven inflation rate represents a measure of expected inflation derived from X-Year Treasury Constant Maturity Securities and X-Year Treasury Inflation-Indexed Constant Maturity Securities. Observation date: June, 2024.

[f] The Treasury Breakeven Inflation (TBI) Curve, Monthly Average Rates, June, 2024.

[g] *The 2024 Annual Report of The Board of Trustees of The Federal Old-Age And Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, p. 10, Key Assumptions and Summary Measures for Long-Range (75-year) Projections, Intermediate, Consumer Price Index (CPI-W).

Investment Return

The investment return assumption is one of the principal assumptions in any actuarial valuation of a retirement plan. It is used to discount future expected benefit payments to the valuation date, in order to determine the liabilities of the retirement plan. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates. The current assumption incorporates inflation of 2.40% per annum plus an annual real rate of return of 4.60%, net of investment-related expenses paid from the trust, for an assumed nominal rate of return of 7.00%.

In the most recent study, CavMac examined multiple sources in making their recommendation including Callan's (the PERS investment consultant) asset allocation study, as well as the 10 and 20-year returns from the Horizon survey. GRS uses an approach in reviewing the investment return assumption similar to that used by CavMac when they referenced the Horizon Actuarial Services survey for forward-looking return expectations. GRS also uses forward-looking expectations developed by nationally recognized professional investment consulting firms. Some of these forward-looking assumptions are based on a seven- to ten-year time horizon, while others are based on a longer 20- to 30-year time horizon. Since investment consultants update their assumptions on at least an annual basis, we also compared their expectations developed in 2022, to their prior year assumptions to better understand changes in their expectations. Below is an exhibit that provides this comparison for each investment consulting firm for 2021 and 2022. While there is more current information available by investment consultants, we believe it is appropriate to use the information available in 2022, the time CavMac performed the experience study analysis and made a recommendation to use a 7.00% investment return assumption.

Nominal Investment Return Expectations - 50% Percentile

	Investment Consultant	50th Percentile Expected Return (Geometric) 2022	2021	Probability of Exeeding 7.00% 2022	2021
	(1)	(2)	(3)	(4)	(5)
7 to 10 Year Expectations	1	5.3%	5.2%	29%	27%
	2	5.6%	5.2%	31%	26%
	3	5.7%	5.5%	34%	32%
	4	5.8%	5.7%	34%	33%
	5	6.0%	5.9%	37%	36%
	6	6.0%	5.8%	37%	34%
	7	7.4%	6.7%	55%	46%
20 to 30 Year Expectations	1	6.3%	6.5%	40%	43%
	2	6.4%	6.4%	41%	42%
	3	6.9%	6.5%	48%	44%
	4	7.7%	7.3%	59%	54%
7-10 Year Expectation Avg:		6.0%	5.7%	37%	33%
20-30 Year Expectation Avg:		6.8%	6.7%	47%	46%

The investment consultants used in the GRS analysis, in alphabetical order, include: Aon, Black Rock, Callan, Cambridge, Meketa, Mercer, and Versus. These forward-looking return assumptions are mapped to the investment policy documented in the PERS 2022 annual report.

In conclusion, GRS finds that CavMac's analysis process and the external sources of information they used in their analysis to be appropriate. We also concur with the recommendation to decrease the real rate of return to 4.60%, which results in a 7.00% nominal return assumption.

Please note that a future change in the System's investment policy or a return to a low interest rate economic environment may result in a decrease in the probability the System attains a 7.00% return assumption, which may require a further decrease in the return assumption at a future date.

Administrative Expenses

The investment return assumption is stated net of expected investment-related expenses from the trust. Accordingly, the actuarial valuation includes an explicit assumption for administrative expenses. This is our preferred approach and a reasonable assumption based on past experience. Recent experience showed that the recommended expense assumption of 0.26% of pay assumption to be reasonable by GRS.

Member Salary Increase Assumption

In general, assumed rates of pay increases are often constructed as the total of three main components:

- Price inflation – currently 2.40%
- Economic Productivity Increases – currently 0.25%
- Merit, Promotion, and Longevity – This portion of the salary increase assumption reflects components such as promotional increases as well as increases for merit and longevity. This portion of the assumption is not related to inflation. The current assumptions vary this component based on the participant's current service.

This structure is reasonable and our preferred approach. The productivity increase assumption is supportable. The merit assumption looks reasonable given the experience study data.

Summary

The set of actuarial assumptions and methods, taken in combination, are reasonable and established in accordance with ASOP No. 27 and ASOP No. 35 (soon to be combined ASOP 27).

We have no recommended changes to the actuarial assumptions.

Actuarial Methods

Actuarial Cost Method

The Entry Age Normal actuarial cost method is the most prevalent funding method in the public sector. It is appropriate for the public sector because it produces costs that remain relatively stable as a percentage of payroll over time, resulting in intergenerational equity for taxpayers. We have reviewed the retained actuary's application of the Entry Age Normal actuarial cost method and we believe that the method is reasonable and appropriately applied.

Asset Smoothing Method

PERS uses five-year asset smoothing. This is a reasonable and common approach.

Amortization Method

The Actuarially Determined Contribution (ADC) uses a 30-year level percent of pay amortization for the existing UAAL on June 30, 2018. Annual future actuarial experience gains and losses, assumption changes or benefit enhancements or reductions are amortized over 25 years from the date of the valuation. This is a reasonable and common approach.

As a result, there are 24 years remaining for the original June 30, 2018 amortization base and new amortization base layers will now be longer than the original UAAL base. The use of a layered amortization base for financing the unfunded actuarial accrued liability has become increasingly common among public retirement systems. This amortization method provides increased stability in the contribution requirements and still achieve PERS's goal of attaining a fully funded Retirement System.

We believe PERS's continued use of this funding policy for determining the Actuarial Determined Contribution (ADC) is appropriate for use for PERS. We believe this funding policy also satisfies Section 3.21 of the Actuarial Standard of Practice No. 4, "Reasonable Actuarially Determined Contribution" which outlines the requirements that an actuary must follow when performing a funding valuation and the actuary is required to calculate and disclose a reasonable actuarially determined contribution.

SECTION IV

ACTUARIAL VALUATION RESULTS

Actuarial Valuation Results

Replication of Actuarial Valuation Results

We replicated the 2024 actuarial valuation results using the assumptions and methods used by the retained actuary, and we were able to replicate the plan liabilities very closely.

PERS Key Valuation Results as of July 1, 2024 (‘s in millions)

	CavMac	**GRS**	**Difference**
Actuarial Accrued Liability	$60,033,721	$60,243,797	0.3%
Actuarial Value of Assets	$33,535,621	$33,535,621	0.0%
Unfunded Actuarial Accrued Liability	$26,498,100	$26,708,176	0.8%
Funded Ratio	55.9%	55.7%	-0.2%
Payroll for Upcoming Year	$7,611,848	$7,647,771	0.5%
Fixed Rate Contribution			
Amounts as a % of Pay:			
Total Normal Cost	11.31%	11.26%	
Administrative Expenses	0.26%	0.26%	
Amortization of Unfunded Liability	17.33%	17.38%	
Total Actuarially Determined Contribution	28.90%	28.90%	
Employee Contribution Rate	9.00%	9.00%	
Net Employer Fixed Contribution Rate (FCR)	19.90%	19.90%	
FCR Amortization Period	45 Years	45 Years	
Actuarially Determined Contribution			
Amounts as a % of Pay:			
Total Normal Cost	11.31%	11.26%	
Administrative Expenses	0.26%	0.26%	
Amortization of Unfunded Liability	23.35%	23.42%	
Total Actuarially Determined Contribution	34.92%	34.94%	
Employee Contribution Rate	9.00%	9.00%	
Net Employer Actuarially Determined Contribution (ADC)	25.92%	25.94%	
ADC Amortization Period	24 Years	24 Years	

We have also included long term projections as part of this audit. The summary is shown below. As you will see, the projected 30-year funded ratio aligns relatively closely with the CavMac results. That is, the 30-year funded ratio in CavMac's report was 55.8% and the results from our projection is 53.9%. From our perspective, this is very close over such a long projection period. The projections below assume the total FCR will increase to 28.9% over the next five years.

Mississippi PERS
Projection Results Based on July 1, 2024 Actuarial Valuation - Ultimate Total FCR of 28.9%
Discount Rate: 7.00%

Valuation as of July 1,	Actuarial Accrued Liability (AAL, in thousands)	Actuarial Value of Assets (AVA, in thousands)	Actuarial Accrued Liability (UAAL, in thousands)	Funded Ratio	Market Return for FY Beginning on Valuation Date	Contribution Rate for Fiscal Year Following Valuation Date		Projected Payroll - (in thousands)	Employee Contributions (in thousands)	Employer Contributions (in thousands)
						Employee	Employer			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2024	$60,243,797	$33,535,621	$26,708,176	55.7%	7.00%	9.00%	17.90%	$7,647,771	$702,065	$1,396,330
2025	61,662,801	34,753,005	26,909,796	56.4%	7.00%	9.00%	18.40%	7,703,348	707,167	1,445,764
2026	63,107,195	34,663,966	28,443,229	54.9%	7.00%	9.00%	18.90%	7,809,887	716,948	1,505,590
2027	64,503,646	35,671,430	28,832,216	55.3%	7.00%	9.00%	19.40%	7,945,993	729,442	1,572,353
2028	65,838,069	36,657,084	29,180,985	55.7%	7.00%	9.00%	19.90%	8,042,147	738,269	1,632,395
2029	67,078,647	37,366,201	29,712,446	55.7%	7.00%	9.00%	19.90%	8,176,416	750,595	1,659,649
2030	68,256,876	38,006,671	30,250,205	55.7%	7.00%	9.00%	19.90%	8,342,134	765,808	1,693,286
2031	69,396,454	38,606,350	30,790,103	55.6%	7.00%	9.00%	19.90%	8,497,755	780,094	1,724,874
2032	70,466,720	39,134,568	31,332,152	55.5%	7.00%	9.00%	19.90%	8,654,134	794,449	1,756,616
2033	71,469,152	39,590,484	31,878,668	55.4%	7.00%	9.00%	19.90%	8,844,480	811,923	1,795,253
2034	72,435,001	40,011,003	32,423,998	55.2%	7.00%	9.00%	19.90%	9,031,331	829,076	1,833,180
2035	73,356,668	40,386,167	32,970,501	55.1%	7.00%	9.00%	19.90%	9,232,558	847,549	1,874,025
2036	74,213,120	40,697,389	33,515,731	54.8%	7.00%	9.00%	19.90%	9,427,097	865,407	1,913,512
2037	75,019,782	40,960,422	34,059,360	54.6%	7.00%	9.00%	19.90%	9,625,347	883,607	1,953,753
2038	75,775,633	41,172,390	34,603,243	54.3%	7.00%	9.00%	19.90%	9,824,535	901,892	1,994,184
2039	76,491,039	41,344,820	35,146,218	54.1%	7.00%	9.00%	19.90%	10,055,001	923,049	2,040,964
2040	77,188,300	41,505,695	35,682,605	53.8%	7.00%	9.00%	19.90%	10,300,757	945,609	2,090,848
2041	77,850,263	41,641,069	36,209,193	53.5%	7.00%	9.00%	19.90%	10,546,843	968,200	2,140,798
2042	78,517,104	41,792,613	36,724,491	53.2%	7.00%	9.00%	19.90%	10,814,994	992,816	2,195,227
2043	79,204,157	41,979,882	37,224,275	53.0%	7.00%	9.00%	19.90%	11,098,986	1,018,887	2,252,872
2044	79,937,730	42,232,646	37,705,084	52.8%	7.00%	9.00%	19.90%	11,376,226	1,044,338	2,309,146
2045	80,698,982	42,531,670	38,167,312	52.7%	7.00%	9.00%	19.90%	11,663,371	1,070,697	2,367,431
2046	81,496,365	42,888,728	38,607,637	52.6%	7.00%	9.00%	19.90%	11,947,123	1,096,746	2,425,027
2047	82,337,526	43,311,983	39,025,544	52.6%	7.00%	9.00%	19.90%	12,250,625	1,124,607	2,486,632
2048	83,218,106	43,800,871	39,417,235	52.6%	7.00%	9.00%	19.90%	12,536,477	1,150,849	2,544,654
2049	84,115,782	44,332,250	39,783,532	52.7%	7.00%	9.00%	19.90%	12,845,158	1,179,185	2,607,310
2050	85,045,910	44,928,402	40,117,507	52.8%	7.00%	9.00%	19.90%	13,175,529	1,209,514	2,674,369
2051	85,938,224	45,525,280	40,412,945	53.0%	7.00%	9.00%	19.90%	13,514,215	1,240,605	2,743,115
2052	86,855,173	46,190,381	40,664,791	53.2%	7.00%	9.00%	19.90%	13,870,544	1,273,316	2,815,443
2053	87,842,053	46,973,351	40,868,702	53.5%	7.00%	9.00%	19.90%	14,229,155	1,306,236	2,888,234
2054	88,886,713	47,866,808	41,019,905	53.9%	7.00%	9.00%	19.90%	14,603,636	1,340,614	2,964,246

The table on the following page provides a comparison of certain projection information that was independently calculated by GRS and the projection information provided on page 34 of the 2024 actuarial valuation report prepared by CavMac. There are additional assumptions (e.g. a new entrant profile) and other calculation nuances (e.g. timing of contributions and benefit payments) that are required to prepare a projection. These differences will also result in subtle differences in the two projections, especially as stakeholders look at the information beyond 15 years.

However, it is GRS's opinion that stakeholders can rely on CavMac's projection information for making business decisions.

GRS Projection
Baseline Projection Based on the July 1, 2024 Actuarial Valuation (7.00%)
($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,647,771	$8,176,416	$9,031,331	$11,376,226	$12,250,625	$14,603,636
UAAL	$26,708,176	$29,712,446	$32,423,998	$37,705,084	$39,025,544	$41,019,905
ER Normal Cost Rate	2.52%	2.24%	2.03%	1.98%	2.01%	2.10%
UAAL Rate	17.38%	17.66%	17.87%	17.92%	17.89%	17.80%
FCR Rate	19.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	55.7%	55.7%	55.2%	52.8%	52.6%	53.9%
Amortization Period	45 years	48 years	45 years	36 years	33 years	26 years
ADC	25.94%	30.10%	34.54%	47.74%	51.95%	31.20%
ADC/FCR Ratio	130.4%	151.3%	173.6%	239.9%	261.1%	156.8%
Cash Flow Percentage	-4.3%	-5.0%	-5.8%	-6.0%	-5.6%	-4.6%

CavMac Projection
Baseline Projection Based on the July 1, 2024 Actuarial Valuation (7.00%)
($ in Thousands)

	2024	2029	2034	2044	2047	2054
Total Payroll	$7,245,824	$8,011,634	$8,777,303	$10,971,519	$11,794,080	$14,052,147
UAAL	$26,498,100	$29,096,171	$31,425,966	$35,787,973	$36,758,119	$37,698,010
ER Normal Cost Rate	2.57%	2.70%	2.84%	3.05%	3.12%	3.26%
UAAL Rate	15.33%	17.20%	17.06%	16.85%	16.78%	16.64%
FCR Rate	17.90%	19.90%	19.90%	19.90%	19.90%	19.90%
Funded Ratio	55.9%	55.8%	55.4%	53.6%	53.7%	55.8%
Amortization Period	45 years	52 years	50 years	39 years	36 years	27 years
ADC	25.92%	30.11%	34.80%	47.84%	51.92%	27.80%
ADC/FCR Ratio	130.3%	151.3%	174.9%	240.4%	260.9%	139.7%
Cash Flow Percentage	-4.7%	-5.3%	-6.1%	-6.0%	-5.6%	-4.5%

Projection information shown above for certain years provides a comparison of projections that were independently prepared by GRS and CavMac.

SECTION V

CONTENT OF THE VALUATION REPORT

Content of the Valuation Report and Presentation

ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*, and ASOP No. 41, *Actuarial Communications*, provide guidance for measuring pension obligations and communicating the results. These Standards list specific elements to be included, either directly or by references to prior communication, in pension actuarial communications.

The pertinent items that should be included in an actuarial valuation report on a pension plan should include:

- The name of the person or firm retaining the actuary and the purposes that the communication is intended to serve.
- A statement as to the effective date of the calculations, the date as of which the participant and financial information were compiled, and the sources and adequacy of such information.
- An outline of the benefits being discussed or valued and of any significant benefits not included in the actuarial determinations.
- A summary of the participant information, separated into significant categories such as active, retired, and terminated with future benefits payable. Actuaries are encouraged to include a detailed display of the characteristics of each category and reconciliation with prior reported data.
- A description of the actuarial assumptions, the cost method and the asset valuation method used. Changes in assumptions and methods from those used in previous communications should be stated and their effects noted. If the actuary expects that the long-term trend of costs resulting from the continued use of present assumptions and methods would result in a significantly increased or decreased cost basis, this should also be communicated.
- A summary of asset information and derivation of the actuarial value of assets. Actuaries are encouraged to include an asset summary by category of investment and reconciliation with prior reported assets showing total contributions, benefits, investment return, and any other reconciliation items.
- A statement of the findings, conclusions, or recommendations necessary to satisfy the purpose of the communication and a summary of the actuarial determinations upon which these are based. The communication should include applicable actuarial information regarding financial reporting. Actuaries are encouraged to include derivation of the items underlying these actuarial determinations.
- A disclosure of any facts which, if not disclosed, might reasonably be expected to lead to an incomplete understanding of the communication.

We believe that CavMac has complied with these ASOP requirements when issuing their valuation report and we only have a few minor comments for consideration:

- We recommend CavMac disclose additional assumptions used in the projections in the valuation report, as well as the rationale for it. This would include the use of a 2% load on the projected contributiuons.
- The valuation report shows sample active mortality rates, but does not list the table being used. We recommend the table being used for active mortality rates be disclosed in the valuation report.
- The modified cash refund is currently being valued by assuming retirement benefits will be guaranteed for 5 years. We recommend this assumption be disclosed in the valuation report.

We have reviewed the actuarial valuation report prepared by CavMac with regard to disclosures as required by ASOP 51. Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions. PERS is currently in a precarious financial condition and in need of additional employer contributions. In our professional opinion, we believe that CavMac's projections, sensitivity information, and commentary satisfy the requirements regarding disclosure of risk, measuring pension obligations, and determining pension plan contributions.

SECTION VI

SUMMARY

Summary

Based on our review of the census data, experience study documents, liability replications, and actuarial valuation report, we believe the 2024 actuarial valuation is reasonable for the purpose of determining the sufficiency of the current contribution rates, based on reasonable assumptions and methods, and the report generally complies with the Actuarial Standards of Practice.

GRS has identified some items for the Board, the retained actuary and Staff for the upcoming valuation and experience study which we believe will further improve the accuracy of your valuation results in future years, as well as some strategic considerations for the Board going forward. These recommendations are for consideration, but do not hinder our opinion of this being a "clean" audit.

Finally, to reiterate, PERS needs additional contributions as the current contribution levels are not sufficient to fund the plan over a reasonable period of time.

§ 25-14-5. Deferred compensation program authorized; investment; deferred compensation exempt from tax and execution.

(1) The State of Mississippi, or any state agency, county, municipality or other political subdivision may, by contract, agree with any employee to defer, in whole or in part, any portion of that employee's income, and a county, municipality or other political subdivision, except community and junior college districts, may make contributions to the plan on behalf of actively participating members on a uniform basis through an employer contribution agreement as provided for in the Mississippi Deferred Compensation Plan and Trust Plan Document if making the contribution does not conflict with any other state law. Those funds may subsequently be used to purchase a fixed or variable life insurance or annuity contract authorized for purchase by the Public Employees' Retirement System of Mississippi for the purpose of protecting its obligation to the deferred compensation program for the employee from any life underwriter duly licensed by this state who represents an insurance company licensed to contract fixed and variable annuities and fixed or variable life insurance business in this state and authorized by the Public Employees' Retirement System of Mississippi to offer their products in the plan, or to purchase any investments authorized for purchase by the Public Employees' Retirement System of Mississippi under Section 25-11-121, or to invest those monies in a fund or funds maintained by a corporate trustee, which fund or funds are used as an investment media for retirement, pension or profit sharing plans that are tax qualified for that purpose. However, in the administration of this plan, the Public Employees' Retirement System of Mississippi may adopt such regulations as are reasonable and necessary to assure the orderly functioning of the plan, but those regulations shall not unreasonably restrict all licensed life underwriters and insurance companies described in this section from concurrently participating in providing contracts authorized under this section.

(2) Except as otherwise provided in subsections (3) and (4) of this section and anything in any other law to the contrary notwithstanding, the deferred portion of the employee's compensation, the plan and the monies in the plan created by this chapter are exempt from any state, county or municipal ad valorem taxes, income taxes, premium taxes, privilege taxes, property taxes, sales and use taxes and any other taxes not so named, until the deferred compensation is paid to the employee or beneficiary and exempt from levy, garnishment, attachment or any other process whatsoever.

(3) The Mississippi Deferred Compensation Plan and Trust or any other deferred compensation plan established by this chapter may include Roth accounts pursuant to 26 USC Section 402A of the Internal Revenue Code or any other post-tax vehicle contribution allowed pursuant to the Internal Revenue Code if permitted under the plan document. A participant's Roth or other allowable post-tax contribution into a deferred compensation account shall be treated by the employer as includable in the participant's income at the time the participant would have received that amount in compensation if the participant had not made a deferred election.

(4) The Mississippi Deferred Compensation Plan and Trust shall comply with any judgment, decree or order which establishes the right of an alternate payee within the meaning of Internal Revenue Code Section 414(p)(8) to all or a portion of a Participant's benefit under the Plan to the extent that it is a "qualified domestic relations order" ("QDRO") under Code Section 414(p). The administrator shall establish reasonable written procedures to determine whether a domestic relations order is a QDRO and to administer the distribution of benefits with respect to such orders, which procedures may be amended from time to time. Notwithstanding any other provisions in the plan, the plan may make an immediate distribution to the alternate payee pursuant to a QDRO.

§ 25-14-15. Deferred compensation not included for withholding taxes purposes.

Except as provided in Section 25-14-5(3) and notwithstanding any other provision of this chapter or any other provision of law to the contrary, any sum deferred under the deferred compensation program shall not be included for the purposes of computation of any taxes withheld on behalf of any employee.

UAAL Draft

Unfunded Actuarial Accrued Liability

25-11-105(f) Each political subdivision of the state and each instrumentality of the state or a political subdivision, or both, is authorized to submit, for approval by the board of trustees, a plan for extending the benefits of this article to employees of any such political subdivision or instrumentality. Each such plan or any amendment to the plan for extending benefits thereof shall be approved by the board of trustees if it finds that the plan, or the plan as amended, is in conformity with such requirements as are provided in Articles 1 and 3; however, upon approval of the plan or any such plan previously approved by the board of trustees, the approved plan shall not be subject to cancellation or termination by the political subdivision or instrumentality. Any plan terminated through legislation, privatization, sale, dissolution, actions of the board of trustees through subparagraph (v), or any other method of termination, shall pay to the board its portion of the unfunded actuarial accrued liability **as of June 30, 2025, or the date of termination, whichever amount is greater,** in a lump sum before termination, as provided by regulations of the board of trustees. No such plan shall be approved unless:

(i) It provides that all services that constitute employment as defined in Section 25-11-5 and are performed in the employ of the political subdivision or instrumentality, by any employees thereof, shall be covered by the plan, with the exception of municipal employees who are already covered by existing retirement plans; however, those employees in this class may elect to come under the provisions of this article;

(ii) It specifies the source or sources from which the funds necessary to make the payments required by paragraph (d) of Section 25-11-123 and of paragraph (f)(v)2 and 3 of this section are expected to be derived and contains reasonable assurance that those sources will be adequate for that purpose;

(iii) It provides for such methods of administration of the plan by the political subdivision or instrumentality as are found by the board of trustees to be necessary for the proper and efficient administration thereof;

(iv) It provides that the political subdivision or instrumentality will make such reports, in such form and containing such information, as the board of trustees may from time to time require;

(v) It authorizes the board of trustees to terminate the plan in its entirety in the discretion of the board if it finds that there has been a failure to comply substantially with any provision contained in the plan, the termination to take effect at the expiration of such notice and on such conditions as may be provided by regulations of the board and as may be consistent with applicable federal law.

1. The board of trustees shall not finally refuse to approve a plan submitted under paragraph (f), and shall not terminate an approved plan without reasonable notice and opportunity for hearing to each political subdivision or instrumentality affected by the board's decision. The board's decision in any such case shall be final, conclusive and binding unless an appeal is taken by the political subdivision or instrumentality aggrieved by the decision to the Circuit Court of the First Judicial District of Hinds County, Mississippi, in accordance with the provisions of law with respect to civil causes by certiorari.

2. Each political subdivision or instrumentality as to which a plan has been approved under this section shall pay into the contribution fund, with respect to wages (as defined

in Section 25-11-5), at such time or times as the board of trustees may by regulation prescribe, contributions in the amounts and at the rates specified in the applicable agreement entered into by the board.

3. Every political subdivision or instrumentality required to make payments under paragraph (f)(v)2 of this section is authorized, in consideration of the employees' retention in or entry upon employment after enactment of Articles 1 and 3, to impose upon its employees, as to services that are covered by an approved plan, a contribution with respect to wages (as defined in Section 25-11-5) not exceeding the amount provided in Section 25-11-123(d) if those services constituted employment within the meaning of Articles 1 and 3, and to deduct the amount of the contribution from the wages as and when paid. Contributions so collected shall be paid into the contribution fund as partial discharge of the liability of the political subdivisions or instrumentalities under paragraph (f)(v)2 of this section. Failure to deduct the contribution shall not relieve the employee or employer of liability for the contribution.

4. Any state agency, school, political subdivision, instrumentality or any employer that is required to submit contribution payments, termination payments, or wage reports under any section of this chapter shall be assessed interest on delinquent payments or wage reports as determined by the board of trustees in accordance with rules and regulations adopted by the board and delinquent payments, assessed interest and any other amount certified by the board as owed by an employer, may be recovered by action in a court of competent jurisdiction against the reporting agency liable therefor or may, upon due certification of delinquency and at the request of the board of trustees, be deducted from any other monies payable to the reporting agency by any department or agency of the state.

5. Each political subdivision of the state and each instrumentality of the state or a political subdivision or subdivisions that submit a plan for approval of the board, as provided in this section, shall reimburse the board for coverage into the expense account, its pro rata share of the total expense of administering Articles 1 and 3 as provided by regulations of the board.

APPROVAL OF THE PAYMENT OF AN AD HOC COST-OF-LIVING ADJUSTMENT FOR THE CITY OF TUPELO

The City of Tupelo, as authorized by Senate Bill 3138 of the 1996 Regular Session of the Mississippi Legislature, requests approval to pay a 2.0% ad hoc cost-of-living adjustment (COLA) to the 67 retirees and beneficiaries of the City of Tupelo Fire and Police Disability and Relief Fund retroactive to October 1, 2024.

The city council, by a unanimous vote of 7-0, adopted a resolution on September 10, 2024, to authorize the payment which will not result in an increase of the millage rate. PERS' actuary, CavMac, calculated the financial impact for the increased benefits would result in a millage rate of 1.44. The current millage rate of the City of Tupelo is 1.61 since they have chosen to assess based on the old funding policy.

PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI
BOARD OF TRUSTEES
October 23, 2024

RETIREE INSURANCE ADVISORY COMMITTEE APPOINTMENTS

Request approval of appointments to the Retiree Insurance Advisory Committee

The Executive Director requests approval of the following appointments to fill vacancies on the Retiree Insurance Advisory Committee:

1. Mr. Steve Allen
2. Dr. Kim S. Benton
3. Dr. Larry G. Bailey

If approved, all three appointments will serve a term that ends October 31, 2027.

Prepared by: Lisa Green

October 23, 2024

One case was considered by the Disability Appeals Committee. As the report reflects, we are recommending one case for approval of duty related disability.

PERS Case Number	Applied for	If Duty-Related, eligible to apply for Non-Duty Related?	Medical Board Decision	Disability Appeals Committee Recommendation	Eligible for Service Retirement?	Disability Appeals Committee Members
24-04	Duty Related	Yes	Denied Duty Related and Non-Duty Related	Approved - Duty Related	No	Sweet, Wyatt, and Rubisoff

DAC: Dr. Selika Sweet, Dr. Felice Wyatt and Honorable Chuck Rubisoff

MONTHLY TOTALS BY RETIREMENT TYPE AND BENEFIT AMOUNT									
ALL SYSTEMS		SERVICE		DISABILITY		SURVIVOR		SUMMARY TOTAL	
MONTH	**YEAR**	**#**	**$**	**#**	**$**	**#**	**$**	**#**	**$**
JULY	2024	110,928	$200,366,848.93	7,157	$9,489,766.91	3,731	$3,513,795.28	121,816	$213,370,411.12
AUGUST	2024	111,073	$200,814,873.23	7,149	$9,475,745.05	3,727	$3,514,935.06	121,949	$213,805,553.34
SEPTEMBER	2024	111,049	$200,936,966.45	7,138	$9,470,290.51	3,730	$3,517,115.87	121,917	$213,924,372.83
OCTOBER	2024	111,058	$201,042,668.00	7,131	$9,460,167.16	3,726	$3,520,034.14	121,915	$214,022,869.30
NOVEMBER	2024								
DECEMBER	2024								
DECEMBER 15	2024								
JANUARY	2025								
FEBRUARY	2025								
MARCH	2025								
APRIL	2025								
MAY	2025								
JUNE	2025								
YEAR-TO-DATE			**$803,161,356.61**		**$ 37,895,969.63**		**$ 14,065,880.35**		**$855,123,206.59**

MONTHLY TOTALS BY RETIREMENT PLAN AND BENEFIT AMOUNT											
ALL SYSTEMS		PERS		SLRP		MHSP		MRS		SUMMARY TOTAL	
MONTH	**YEAR**	**#**	**$**	**#**	**$**	**#**	**$**	**#**	**$**	**#**	**$**
JULY	2024	119,422	$208,584,512.63	245	$115,546.65	811	$2,565,734.74	1,338	$2,104,617.10	121,816	$213,370,411.12
AUGUST	2024	119,558	$208,995,702.18	244	$115,448.98	815	$2,592,886.18	1,332	$2,101,516.00	121,949	$213,805,553.34
SEPTEMBER	2024	119,536	$209,129,799.21	244	$115,159.41	811	$2,588,975.24	1,326	$2,090,438.97	121,917	$213,924,372.83
OCTOBER	2024	119,542	$209,239,351.50	244	$115,165.30	810	$2,589,214.69	1,319	$2,079,137.81	121,915	$214,022,869.30
NOVEMBER	2024										
DECEMBER	2024										
DECEMBER 15	2024										
JANUARY	2025										
FEBRUARY	2025										
MARCH	2025										
APRIL	2025										
MAY	2025										
JUNE	2025										
YEAR-TO-DATE			**$835,949,365.52**		**$461,320.34**		**$10,336,810.85**		**$ 8,375,709.88**		**$855,123,206.59**

RECIPIENTS ADDED TO AND REMOVED FROM PAYROLL BY PLAN																					
ALL SYSTEMS		PERS				MHSP				SLRP				MRS				SUMMARY TOTALS			
MONTH	**YEAR**	YTD	Added	Removed	**Total**	YTD	Added	Removed	**Total**	YTD	Added	Removed	**Total**	YTD	Added	Removed	**Total**	YTD	Added	Removed	**Total**
JULY	2024	118,453	1,381	412	**119,422**	811	4	4	**811**	245	-	-	**245**	1,344	4	10	**1,338**	120,853	1,389	426	**121,816**
AUGUST	2024	119,422	459	323	**119,558**	811	7	3	**815**	245	-	1	**244**	1,338	-	6	**1,332**	121,816	466	333	**121,949**
SEPTEMBER	2024	119,558	381	403	**119,536**	815	2	6	**811**	244	1	1	**244**	1,332	2	8	**1,326**	121,949	386	418	**121,917**
OCTOBER	2024	119,536	334	328	**119,542**	811	1	2	**810**	244	-	-	**244**	1,326	2	9	**1,319**	121,917	337	339	**121,915**
NOVEMBER	2024																				
DECEMBER	2024																				
JANUARY	2025																				
FEBRUARY	2025																				
MARCH	2025																				
APRIL	2025																				
MAY	2025																				
JUNE	2025																				

DAILY PAYROLL TOTALS BY PAYMENT TYPE

ALL SYSTEMS		PARTIAL LUMP SUMS	BENEFITS	REFUNDS	TOTAL
MONTH	**YEAR**	**$**	**$**	**$**	**$**
JULY	2024	$41,880,428.08	$1,342,850.69	$10,982,639.93	$54,205,918.70
AUGUST	2024	$5,944,244.28	$817,290.92	$13,054,868.70	$19,816,403.90
SEPTEMBER	2024	$3,349,084.98	$594,832.24	$12,048,530.67	$15,992,447.89
OCTOBER	2024				
NOVEMBER	2024				
DECEMBER	2024				
JANUARY	2025				
FEBRUARY	2025				
MARCH	2025				
APRIL	2025				
MAY	2025				
JUNE	2025				
YEAR-TO-DATE		**$51,173,757.34**	**$2,754,973.85**	**$36,086,039.30**	**$90,014,770.49**

COMBINED DAILY AND MONTHLY RETIREE PAYROLL TOTALS				
ALL SYSTEMS		DAILY PAYROLL**	MONTHLY PAYROLL	PAYROLL TOTALS
MONTH	**YEAR**	**$**	**$**	**$**
JULY	2024	$43,223,278.77	$213,370,411.12	$256,593,689.89
AUGUST	2024	$6,761,535.20	$213,805,553.34	$220,567,088.54
SEPTEMBER	2024	$3,943,917.22	$213,924,372.83	$217,868,290.05
OCTOBER	2024			
NOVEMBER	2024			
DECEMBER	2024			
DECEMBER 15	2024			
JANUARY	2025			
FEBRUARY	2025			
MARCH	2025			
APRIL	2025			
MAY	2025			
JUNE	2025			
YEAR-TO-DATE		**$53,928,731.19**	**$ 641,100,337.29**	**$695,029,068.48**

**These amounts do not include refunds; they represent retiree payroll (partial lump sums and benefits) only.

Public Employees' Retirement System of Mississippi

Report of Investments

September 30, 2024

(Unaudited)

Consolidated Portfolio Summary

9/30/2024

Asset Class	Book Value	% of Total Book Value	Market Value	% of Total Market Value
Domestic Equity	4,341,118,427.62	16.86%	9,006,852,978.30	25.50%
Fixed Income	7,344,103,930.02	28.52%	7,346,986,484.99	20.80%
International Equity	8,940,298,062.58	34.72%	11,394,218,290.42	32.26%
Real Estate	1,833,743,776.23	7.12%	2,885,414,851.67	8.17%
Private Equity	2,228,549,466.79	8.65%	3,700,315,557.85	10.48%
Private Credit	81,287,826.31	0.32%	82,204,736.31	0.23%
Cash & Cash Equivalent In-House	442,430,986.98	1.72%	442,430,986.98	1.25%
Cash & Cash Equivalent Manager	539,085,281.84	2.09%	457,570,153.69	1.30%
Total	**25,750,617,758.37**	**100.00%**	**35,315,994,040.21**	**100.00%**

Manager Portfolio Summary
9/30/2024

Manager	Account #	Book Value	% of Asset Class (BV)	% of Portfolio (BV)	Market Value	% of Asset Class (MV)	% of Portfolio (MV)
Domestic Equity							
Active							
ARTISAN PARTNERS	MS6F10015002	384,348,169.65	2.84%	1.49%	516,829,813.28	2.50%	1.46%
DIMENSIONAL FUND ADVISORS	MS6F10014002	289,786,880.00	2.14%	1.13%	358,277,052.38	1.73%	1.01%
EAGLE CAPITAL	MS6F10017002	584,784,026.67	4.32%	2.27%	878,384,594.36	4.25%	2.49%
RIVERBRIDGE PARTNERS	MS6F10019002	243,028,828.50	1.79%	0.94%	334,753,990.79	1.62%	0.95%
VICTORY MID CAP VALUE	MS6F10021002	524,735,224.61	3.87%	2.04%	604,972,617.61	2.93%	1.71%
WELLINGTON SMALL CAP	MS6F10013102	293,280,926.34	2.16%	1.14%	371,599,919.88	1.80%	1.05%
Total Active		**2,319,964,055.77**	**17.12%**	**9.01%**	**3,064,817,988.30**	**14.83%**	**8.68%**
Passive							
NOR TR RSSLL 10000 V	MS6F10016102	33,091.91	0.00%	0.00%	33,091.91	0.00%	0.00%
NORTHERN TRUST- SP 500	MS6F10010002	2,114,896,025.17	15.61%	8.21%	6,035,776,643.32	29.20%	17.09%
Total Passive		**2,114,929,117.08**	**15.61%**	**8.21%**	**6,035,809,735.23**	**29.20%**	**17.09%**
Total Domestic Equity		**4,434,893,172.85**	**32.73%**	**17.22%**	**9,100,627,723.53**	**44.02%**	**25.77%**
Global Equity							
ACADIAN ASSET	MS6F30010002	880,030,216.71	6.49%	3.42%	1,075,884,519.30	5.20%	3.05%
EPOCH GLOBAL	MS6F30020002	877,699,582.71	6.48%	3.41%	1,078,026,593.14	5.21%	3.05%
HARDING LOEVNER	MS6F30030002	788,150,428.72	5.82%	3.06%	1,087,167,538.33	5.26%	3.08%
LSV GLOBAL VALUE	MS6F30080002	865,935,176.17	6.39%	3.36%	1,069,376,567.62	5.17%	3.03%
Total Global Equity Managers		**3,411,815,404.31**	**25.18%**	**13.25%**	**4,310,455,218.39**	**20.85%**	**12.21%**
Total Global Equity Managers		**3,411,815,404.31**	**25.18%**	**13.25%**	**4,310,455,218.39**	**20.85%**	**12.21%**
International Equity							
Active							
ARROWSTREET CAPITAL	MS6F20020002	651,338,181.34	4.81%	2.53%	719,492,910.47	3.48%	2.04%
BAILLIE GIFFORD	MS6F20021002	590,180,413.31	4.36%	2.29%	812,503,130.96	3.93%	2.30%
MARATHON ASSET MGMT	MS6F20023002	752,849,329.98	5.56%	2.92%	916,875,557.80	4.44%	2.60%
NT INTL SMALL CAP	MS6F20025002	326,565,481.47	2.41%	1.27%	352,453,348.90	1.70%	1.00%
PRINCIPAL SC INTL	MS6F20019102	306,568,040.48	2.26%	1.19%	374,394,233.27	1.81%	1.06%
Total Active		**2,627,501,446.58**	**19.39%**	**10.20%**	**3,175,719,181.40**	**15.36%**	**8.99%**
Passive							
NT MSCI WORLD EX US INDEX	MS6F20024002	1,774,864,713.07	13.10%	6.89%	2,513,340,690.25	12.16%	7.12%
Total Passive		**1,774,864,713.07**	**13.10%**	**6.89%**	**2,513,340,690.25**	**12.16%**	**7.12%**
Regional/Emerging							
FISHER INVESTMENTS	MS6F20022002	568,285,128.31	4.19%	2.21%	758,529,092.88	3.67%	2.15%
LAZARD FRERES ASSET EM	MS6F20011002	733,100,999.58	5.41%	2.85%	814,016,958.13	3.94%	2.30%
Total Regional/Emerging		**1,301,386,127.89**	**9.60%**	**5.05%**	**1,572,546,051.01**	**7.61%**	**4.45%**
Total International Equity		**5,703,752,287.54**	**42.09%**	**22.15%**	**7,261,605,922.66**	**35.13%**	**20.56%**
Total Equity		**13,550,460,864.70**	**100.00%**	**52.62%**	**20,672,688,864.58**	**100.00%**	**58.54%**
Fixed Income							
Domestic Active							
LOOMIS SAYLES	MS6F40016002	1,222,796,693.55	16.49%	4.75%	1,184,858,327.59	16.15%	3.36%
MANULIFE ASSET MGMT	MS6F40018002	713,974,017.45	9.63%	2.77%	696,770,696.15	9.50%	1.97%
PACIFIC INVESTMENTS MGT	MS6F40013002	721,395,771.72	9.73%	2.80%	700,792,035.11	9.55%	1.98%
PRUDENTIAL	MS6F40017002	1,264,134,338.35	17.05%	4.91%	1,218,991,622.36	16.62%	3.45%
SIT SHORT DURATION FIXED	MS6F40019002	1,184,657,802.42	15.98%	4.60%	1,196,292,956.26	16.31%	3.39%
Total Domestic Active		**5,106,958,623.49**	**68.88%**	**19.83%**	**4,997,705,637.47**	**68.13%**	**14.15%**
Global Active							
ALLIANCE BERNSTEIN GLOBAL	MS6F45010002	787,672,972.33	10.62%	3.06%	796,348,146.77	10.86%	2.25%
PIMCO GLOBAL	MS6F45011002	781,159,368.83	10.54%	3.03%	789,848,512.29	10.77%	2.24%
Total Global Active		**1,568,832,341.16**	**21.16%**	**6.09%**	**1,586,196,659.06**	**21.62%**	**4.49%**
International Active							
WELLINGTON EM DEBT	MS6F50010002	738,660,562.71	9.96%	2.87%	752,167,949.57	10.25%	2.13%
Total International Active		738,660,562.71	9.96%	2.87%	752,167,949.57	10.25%	2.13%
Total Active		**7,414,451,527.36**	**100.00%**	**28.79%**	**7,336,070,246.10**	**100.00%**	**20.77%**
Total Fixed Income		**7,414,451,527.36**	**100.00%**	**28.79%**	**7,336,070,246.10**	**100.00%**	**20.77%**
Real Estate Managers							
Core Commingled							
INVESCO US INCOME FD	MS6F60030002	197,398,061.52	10.50%	0.77%	163,067,080.98	5.56%	0.46%
JPM STRAT PROP FD	MS6F60021002	207,947,503.00	11.07%	0.81%	384,435,598.96	13.12%	1.09%
PRINCIPAL COMMINGLED FUND	MS6F60010002	347,408,863.47	18.49%	1.35%	822,861,804.96	28.08%	2.33%
UBS TRUMBULL PROP FUND	MS6F60011002	168,646,137.26	8.97%	0.65%	360,204,413.86	12.29%	1.02%
UBS TRUMBULL PROP G&I FUND	MS6F60020002	99,519,144.92	5.30%	0.39%	220,419,776.88	7.52%	0.62%
Total Core Commingled		**1,020,919,710.17**	**54.33%**	**3.96%**	**1,950,988,675.64**	**66.57%**	**5.52%**
Manulife Timber							
MANULIFE TIMBER FUND	MS6F60014002	24,365,721.81	1.30%	0.09%	38,457,880.81	1.31%	0.11%
Manulife Timber		**24,365,721.81**	**1.30%**	**0.09%**	**38,457,880.81**	**1.31%**	**0.11%**

Manager Portfolio Summary
9/30/2024

Manager	Account #	Book Value	% of Asset Class (BV)	% of Portfolio (BV)	Market Value	% of Asset Class (MV)	% of Portfolio (MV)
REITS							
CENTERSQUARE INV	MS6F60027002	203,378,303.39	10.82%	0.79%	245,559,159.82	8.38%	0.70%
COHEN & STEERS GLOBAL REIT	MS6F60018002	99,862,240.52	5.31%	0.39%	120,132,396.46	4.10%	0.34%
Total REITS		**303,240,543.91**	**16.14%**	**1.18%**	**365,691,556.28**	**12.48%**	**1.04%**
VALUE ADDED							
AEW PARTNERS IX LP	MS6F60028002	55,089,034.08	2.93%	0.21%	63,196,253.08	2.16%	0.18%
AEW PARTNERS VI LP	MS6F60017102	288,211.29	0.02%	0.00%	751,994.29	0.03%	0.00%
AEW PARTNERS VII LP	MS6F60017202	6,561,993.91	0.35%	0.03%	3,879,989.15	0.13%	0.01%
AEW PARTNERS VIII LP	MS6F60017302	4,430,620.13	0.24%	0.02%	11,799,006.13	0.40%	0.03%
AEW PARTNERS X LP	MS6F60032002	0.00	0.00%	0.00%	0.00	0.00%	0.00%
AG CORE PLUS FD II	MS6F60015002	822.45	0.00%	0.00%	822.45	0.00%	0.00%
AG CORE PLUS FD III	MS6F60022002	1,193,033.38	0.06%	0.00%	137,216.61	0.00%	0.00%
AG CORE PLUS FD IV	MS6F60025002	23,304,629.06	1.24%	0.09%	16,717,987.49	0.57%	0.05%
AG REALTY VALUE FUND X	MS6F60025102	44,965,747.59	2.39%	0.17%	49,718,047.82	1.70%	0.14%
AG REALTY VALUE FUND XI	MS6F60031002	17,959,450.17	0.96%	0.07%	22,982,659.50	0.78%	0.07%
HEITMAN V	MS6F60029002	60,614,867.84	3.23%	0.24%	62,571,516.84	2.13%	0.18%
HEITMAN VALUE PARTNERS III	MS6F60016102	404,922.96	0.02%	0.00%	404,922.96	0.01%	0.00%
HEITMAN VALUE PARTNERS IV LP	MS6F60016202	23,212,394.39	1.24%	0.09%	31,290,610.55	1.07%	0.09%
HEITMAN VI	MS6F60034002	0.00	0.00%	0.00%	0.00	0.00%	0.00%
INVESCO VA FUND IV	MS6F60024002	1,711,628.06	0.09%	0.01%	1,857,576.23	0.06%	0.01%
INVESCO VA FUND V	MS6F60024102	66,222,750.02	3.52%	0.26%	57,255,478.02	1.95%	0.16%
INVESCO VA FUND VI	MS6F60024202	39,189,495.71	2.09%	0.15%	37,631,057.71	1.28%	0.11%
TA REALTY X	MS6F60023002	794,786.98	0.04%	0.00%	794,786.98	0.03%	0.00%
TA REALTY XI	MS6F60023102	1,112,164.07	0.06%	0.00%	474,693.07	0.02%	0.00%
TA REALTY XII	MS6F60023202	73,679,506.09	3.92%	0.29%	94,769,882.09	3.23%	0.27%
TA REALTY XIII	MS6F60023302	31,997,218.89	1.70%	0.12%	41,951,490.89	1.43%	0.12%
WESTBROOK RE FUND XI	MS6F60026102	58,391,875.66	3.11%	0.23%	64,217,051.66	2.19%	0.18%
WESTBROOK RE FUND XII	MS6F60033002	0.00	0.00%	0.00%	0.00	0.00%	0.00%
WESTBROOK REAL ESTATE FUND X	MS6F60026002	19,436,222.09	1.03%	0.08%	13,215,247.20	0.45%	0.04%
Total Value Added		**530,561,374.82**	**28.24%**	**2.06%**	**575,618,290.72**	**19.64%**	**1.63%**
Total Real Estate Managers		**1,879,087,350.71**	**100.00%**	**7.30%**	**2,930,756,403.45**	**100.00%**	**8.30%**
Private Equity Managers							
CFIG DIV PRTNR 14-1	MS6F70014002	210,865,179.42	8.95%	0.82%	632,388,351.84	16.53%	1.79%
GCM GROSVENOR 2018 1 SERIES	MS6F70014102	375,779,821.04	15.96%	1.46%	527,376,139.53	13.78%	1.49%
GCM GROSVENOR 2019 1 SERIES	MS6F70011002	259,275,657.26	11.01%	1.01%	127,023,279.10	3.32%	0.36%
GCM GRSVNR PE 2024	MS6F70014202	9,775,239.00	0.42%	0.04%	10,834,014.00	0.28%	0.03%
PATHWAY PEF 2016	MS6F70013102	700,357,173.56	29.74%	2.72%	1,288,379,786.50	33.67%	3.65%
PATHWAY PEF SRS 2012	MS6F70013002	301,702,212.93	12.81%	1.17%	656,151,137.62	17.15%	1.86%
PATHWAY PEF SRS 2021	MS6F70013202	316,459,395.77	13.44%	1.23%	373,316,284.77	9.76%	1.06%
PATHWAY- PEF XXIII	MS6F70010002	180,609,442.70	7.67%	0.70%	211,121,219.38	5.52%	0.60%
Total Private Equity Managers		**2,354,824,121.68**	**100.00%**	**9.14%**	**3,826,590,212.74**	**100.00%**	**10.84%**
Private Credit Managers							
BLUE OWL LENDNG 2023	MS6F75000102	29,489,449.00	36.28%	0.11%	30,403,013.00	36.98%	0.09%
GCM PC SERIES 2023	MS6F75000002	51,798,377.31	63.72%	0.20%	51,801,723.31	63.02%	0.15%
Total Private Credit Managers		**81,287,826.31**	**100.00%**	**0.32%**	**82,204,736.31**	**100.00%**	**0.23%**
Terminated Managers							
BLACKROCK GLOBAL INV	MS6F20013002	1,545,054.23	6.66%	0.01%	1,529,474.57	6.60%	0.00%
DIMENSIONAL FUND ADV EAFE	MS6F20010002	211,651.26	0.91%	0.00%	170,610.45	0.74%	0.00%
INTL TRANSITION	MS6F20090002	3,737,373.11	16.10%	0.01%	3,504,610.88	15.11%	0.01%
JARISLOWSKY,FRASER LMT	MS6F20015002	411,892.60	1.77%	0.00%	334,488.33	1.44%	0.00%
LONGVIEW PARTNERS	MS6F30040002	1,037,847.01	4.47%	0.00%	1,021,454.98	4.40%	0.00%
MONDRIAN SMALL CAP	MS6F20018002	2,158,148.76	9.30%	0.01%	2,239,169.24	9.66%	0.01%
NEW STAR INSTITUTIONAL	MS6F20014002	130,711.96	0.56%	0.00%	105,969.95	0.46%	0.00%
NOR TR RSSLL MID CAP	MS6F10010102	13,962.26	0.00%	0.00%	13,962.26	0.00%	0.00%
NORTHERN TRUST BB AGGREGATE	MS6F40014102	-141.78	0.00%	0.00%	-141.78	0.00%	0.00%
NORTHERN TRUST EAFE	MS6F20013102	12,332,834.76	0.36%	0.05%	12,700,840.44	0.29%	0.04%
NORTHERN TRUST GLOBAL EQUITY INDEX	MS6F30060002	1,443,297.82	0.04%	0.01%	1,379,739.02	0.03%	0.00%
PYRAMIS SMALL CAP	MS6F20019002	147,241.19	0.00%	0.00%	144,589.34	0.00%	0.00%
RREEF REIT	MS6F60012002	0.00	0.00%	0.00%	0.00	0.00%	0.00%
WELLINGTON MIDCAP	MS6F10013002	45,039.93	0.00%	0.00%	45,039.93	0.00%	0.00%
Total Terminated Managers		**23,214,913.11**	**40.18%**	**0.09%**	**23,189,807.61**	**38.74%**	**0.07%**
Transition Managers							
MSPRS NORTHERN TRST TRANSITION	MS6F30050002	4,860,167.52	0.14%	0.02%	2,062,782.44	0.05%	0.01%
Total Transition		**4,860,167.52**	**0.14%**	**0.02%**	**2,062,782.44**	**0.05%**	**0.01%**
Short Term In-House							
PERS ADMINISTRATIVE SHORT TERM	MS6F80010002	442,430,986.98	100.00%	1.72%	442,430,986.98	100.00%	1.25%
Total Short Term In-House		**442,430,986.98**	**100.00%**	**1.72%**	**442,430,986.98**	**100.00%**	**1.25%**
Grand Total		**25,750,617,758.37**		**100.00%**	**35,315,994,040.21**		**100.00%**

69 Portfolios
36 Managers

Securities Lending Management Summary

As of September 2024

2024/2025 EARNINGS

	Gov.	Equity	Corp.	Int'l Fixed	Int'l Equities	Total
July	$106,970	$534,507	$183,854	$65,205	$118,491	$1,009,027
Aug	$45,786	$418,854	$138,353	$72,387	$111,691	$787,071
Sept	$17,199	$345,105	$6,340	$17,067	$118,056	$503,767
Oct						$0
Nov						$0
Dec						$0
Jan						$0
Feb						$0
Mar						$0
Apr						$0
May						$0
June						$0
YTD	$169,955	$1,298,466	$328,547	$154,659	$348,238	$2,299,865

Outstandings (000's)

	Gov.	Equity	Corp.	Int'l Fixed	Int'l Equities	Total
July	$289,121	$1,030,113	$331,065	$217,466	$335,947	$2,203,712
Aug	$98,433	$709,774	$228,047	$186,122	$282,883	$1,505,259
Sept	$69,669	$36,131	$16,896	$55,895	$39,995	$218,586
Oct						$0
Nov						$0
Dec						$0
Jan						$0
Feb						$0
Mar						$0
Apr						$0
May						$0
June						$0
AVG	$152,408	$592,006	$192,003	$153,161	$219,608	$327,296

SPREADS

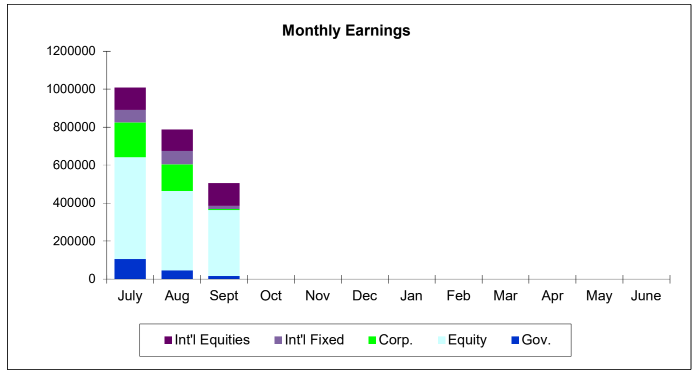
	Gov.	Equity	Corp	Int'l Fixed	Int'l Equities	Spread
July	51	71	76	41	49	58
Aug	61	79	84	53	55	71
Sept	35	39	53	44	31	38
Oct						
Nov						
Dec						
Jan						
Feb						
Mar						
Apr						
May						
June						
WHT AVG	49	63	71	46	45	56

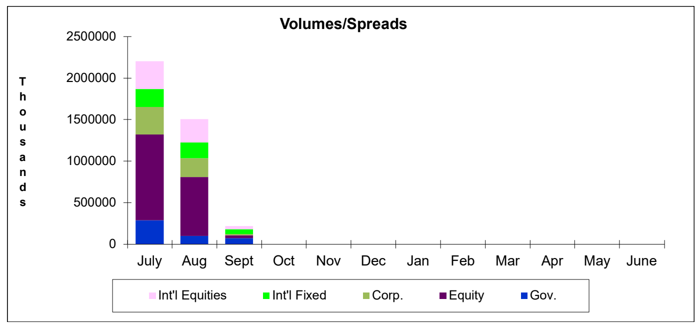
September 2024

I. Earnings	This Month	Year-to-Date
Governments	$17,199	$169,955
Equity	$345,105	$1,298,466
Corporate/Equities	$6,340	$328,547
Int'l Fixed	$17,067	$154,659
Int'l Equities	$118,056	$348,238
Total	$503,767	$2,299,865

II. Monthly Performance Measures	Avg. Loan Volume (000's)	Avg. Wgt. Spread (BP)
Governments	$69,669	35
Equity	$36,131	39
Corporate/Equities	$16,896	53
Int'l Fixed	$55,895	44
Int'l Equities	$39,995	31
Total	$218,586	38

III. Trend Analysis



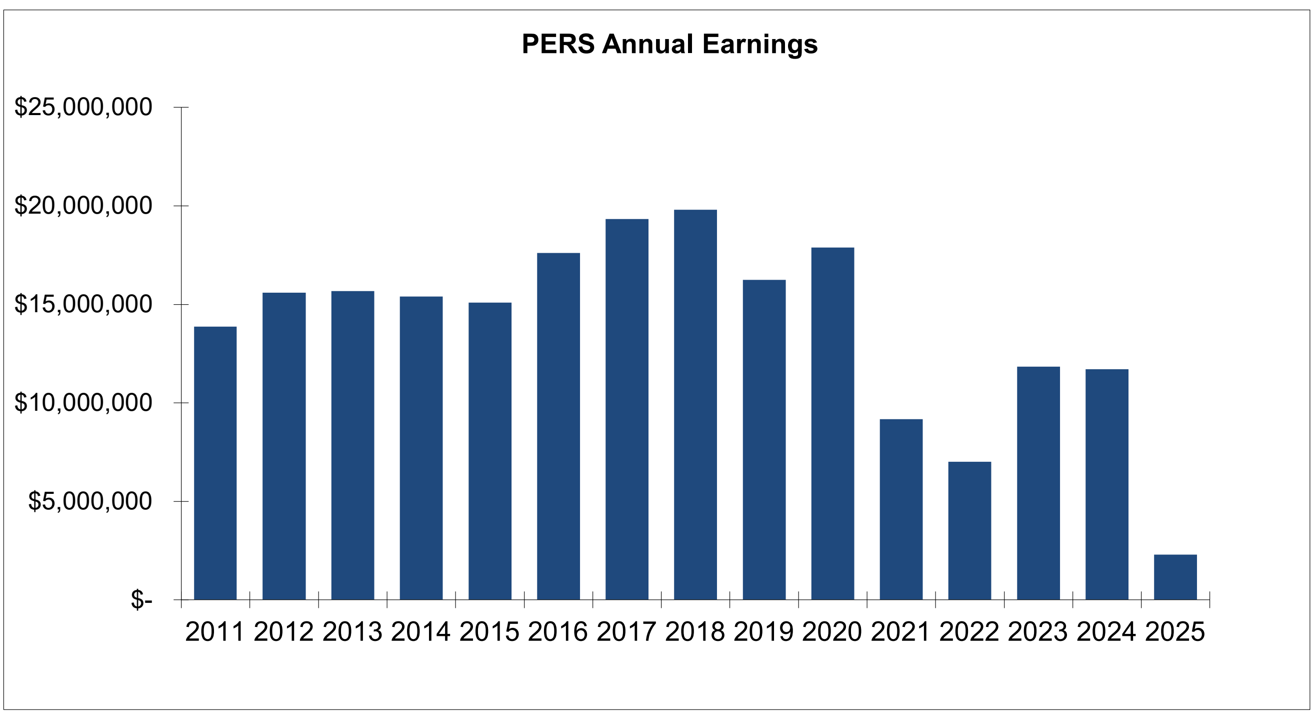


Securities Lending Management Summary

As of September

Fiscal Year		PERS Earnings	Lending Agent Earnings	Total Program Earnings
2011		$ 13,878,226	$ 2,449,099	$ 16,327,325
2012		$ 15,596,477	$ 2,752,319	$ 18,348,796
2013		$ 15,682,377	$ 2,767,478	$ 18,449,855
2014		$ 15,401,726	$ 2,717,952	$ 18,119,678
2015		$ 15,094,878	$ 2,663,802	$ 17,758,681
2016		$ 17,605,026	$ 3,106,769	$ 20,711,795
2017		$ 19,329,769	$ 3,411,136	$ 22,740,905
2018		$ 19,813,714	$ 3,496,538	$ 23,310,252
2019		$ 16,240,589	$ 2,865,986	$ 19,106,575
2020		$ 17,887,629	$ 3,156,640	$ 21,044,269
2021		$ 9,167,025	$ 1,617,710	$ 10,784,735
2022		$ 7,017,725	$ 1,238,422	$ 8,256,147
2023		$ 11,837,810	$ 2,089,025	$ 13,926,835
2024		$ 11,718,471	$ 2,067,966	$ 13,786,437
2025	*	$ 2,299,865	$ 405,859	$ 2,705,724

* As of September



FY 2025
FUND TRANSFERS

DATE	MANAGER	AMOUNT	DATE	MANAGER	AMOUNT
7/15/2024	Principal Capital MGT RE	($1,808,410.00)			
7/15/2024	Invesco VA Fund VI	$1,808,410.00			
7/23/2024	GCM Grosvenor 2014-1	($545,454.55)			
7/23/2024	Heitman Value Partners V	$545,454.55			
8/7/2024	MSPERS Short-term	($20,379,620.38)			
8/7/2024	Blue Owl Lending Fund 2023	$20,379,620.38			
8/8/2024	GCM Grosvenor 2014-1	($127,285.71)			
8/8/2024	GCM Grosvenor 2024-1	$127,285.71			
8/8/2024	GCM Grosvenor 2014-1	($511,589.67)			
8/8/2024	GCM Grosvenor 2018-1	$511,589.67			
8/8/2024	GCM Grosvenor 2014-1	($15,334,600.00)			
8/8/2024	GCM Grosvenor 2018-1	$15,334,600.00			
8/16/2024	GCM Grosvenor 2009-1	($21,000,000.00)			
8/16/2024	Pathway PEF 2008	($29,000,000.00)			
8/16/2024	Pathway PEF 2016	($90,000,000.00)			
8/16/2024	Principal Capital MGT RE	($30,000,000.00)			
8/16/2024	UBS Trumbull Growth & Income Fund	($3,000,000.00)			
8/16/2024	UBS Trumbull Property Fund	($12,000,000.00)			
8/16/2024	JPM Strategic Property Fund	($19,000,000.00)			
8/16/2024	Invesco U.S. Income Fund	($3,000,000.00)			
8/16/2024	AG Realty Core Plus Fund III	($1,000,000.00)			
8/16/2024	Heitman Value Partners IV	($4,000,000.00)			
8/16/2024	Reality Assoc. Fund XI	($9,000,000.00)			
8/16/2024	Reality Assoc. Fund XIII	($5,000,000.00)			
8/16/2024	AEW Partners VIII	($4,000,000.00)			
8/16/2024	AEW Partners IX	($4,000,000.00)			
8/16/2024	Hancock Timber Fund	($1,400,000.00)			
8/16/2024	MSPERS Short-term	$235,400,000.00			
8/30/2024	Pathway PEF 2013	($12,145,250.07)			
8/30/2024	Pathway PEF 2021	$12,145,250.07			
9/6/2024	Pathway PEF 2013	($2,625,000.00)			
9/6/2024	AG Realty Value Fund XI	$2,625,000.00			
9/11/2024	MSPERS Short-term	($5,552,200.00)			
9/11/2024	GCM Grosvenor PC 2023	$5,552,200.00			
9/12/2024	GCM Grosvenor 2014-1	($1,800,000.00)			
9/12/2024	Heitman Value Partners V	$1,800,000.00			
9/20/2024	GCM Grosvenor 2014-1	($7,388,515.00)			
9/20/2024	Westbrook RE Fund XI	$7,388,515.00			
9/20/2024	From Special State Funding to MSPERS Short-term	$110,000,000.00			
10/4/2024	GCM Grosvenor 2014-1	($10,493,056.85)			
10/4/2024	GCM Grosvenor 2018-1	$10,493,056.85			
10/4/2024	Pathway PEF 2013	($11,338,146.49)			
10/4/2024	Pathway PEF 2021	$11,338,146.49			

INVESTMENT MANAGERS' FEE EXPENSES
For Fiscal Year Ended 06/30/2024

Manager	BNYM IAS Account	Q1 Qtr Ended 9/30/2023	Q2 Qtr Ended 12/31/2023	Q3 Qtr Ended 3/31/2024	Q4 Qtr Ended 6/30/2024	YTD As of 6/30/2024
Artisan	MS6F1001502	**479,013.22**	**522,485.24**	**603,158.59**	**591,404.94**	**2,196,061.99**
Dimensional SC	MS6F1001402	**218,533.80**	**252,281.51**	**251,468.86**	**232,758.04**	**955,042.21**
Eagle	MS6F1001702	**1,433,785.33**	**1,445,154.52**	**1,510,337.40**	**1,471,420.69**	**5,860,697.94**
Northern Trust S&P 500	MS6F1001002	**67,237.39**	**69,698.21**	**72,344.14**	**72,187.52**	**281,467.26**
Riverbridge Dom Eq	MS6F1001902	**534,295.99**	**580,567.94**	**617,850.14**	**579,271.58**	**2,311,985.65**
Victory Mid Cap Value	MS6F1002102	**607,412.00**	**655,629.00**	**680,204.66**	**634,752.00**	**2,577,997.66**
Wellington SC	MS6F1001312	**492,526.85**	**555,422.74**	**563,427.04**	**529,884.66**	**2,141,261.29**
Alliance B Global	MS6F4501002	**420,632.10**	**447,696.89**	**448,326.33**	**447,778.32**	**1,764,433.64**
Loomis Sayles	MS6F4001602	**470,831.87**	**500,431.32**	**499,149.59**	**498,816.98**	**1,969,229.76**
Manulife Asset Mgmt	MS6F4001802	**229,578.41**	**244,698.68**	**243,392.24**	**244,211.90**	**961,881.23**
Northern Trust BB.AGG	MS6F4001412	**16,339.48**	**10,942.40**	**129.40**	**-**	**27,411.28**
PIMCO (Pacific) 163	MS6F4001302	**233,304.79**	**249,687.51**	**248,804.95**	**249,712.91**	**981,510.16**
PIMCO Global 7263	MS6F4501102	**432,349.17**	**454,339.34**	**455,222.71**	**456,249.59**	**1,798,160.81**
Prudential	MS6F4001702	**368,518.52**	**388,267.47**	**388,585.46**	**390,026.90**	**1,535,398.35**
Sit Short Duration	MS6F4001902	**5,207.10**	**50,034.97**	**138,053.83**	**376,611.87**	**569,907.77**
Wellington EMD	MS6F5001002	**724,833.20**	**793,067.65**	**809,513.36**	**809,973.53**	**3,137,387.74**
Acadian	MS6F3001002	**933,650.67**	**946,463.75**	**999,572.33**	**982,883.94**	**3,862,570.69**
Epoch	MS6F3002002	**1,039,464.94**	**1,153,016.67**	**1,098,247.68**	**1,052,419.23**	**4,343,148.52**
Harding Loevner	MS6F3003002	**873,779.86**	**958,398.84**	**1,008,473.36**	**1,019,590.51**	**3,860,242.57**
LSV Global Value Equity AC	MS6F3008002	**820,381.00**	**898,498.00**	**886,455.00**	**895,047.00**	**3,500,381.00**
Arrowstreet	MS6F2002002	**891,597.58**	**894,081.91**	**938,093.36**	**878,279.14**	**3,602,051.99**
Baillie Gifford	MS6F2002102	**616,934.91**	**672,112.85**	**690,293.67**	**686,047.34**	**2,665,388.77**
Fisher Investments	MS6F2002002	**885,329.72**	**962,010.28**	**978,853.01**	**1,008,919.99**	**3,835,113.00**
Lazard EM	MS6F2001102	**575,533.10**	**553,052.51**	**561,801.32**	**583,482.26**	**2,273,869.19**
Marathon Intl	MS6F2002302	**1,158,108.63**	**1,209,866.20**	**1,253,223.11**	**1,243,721.37**	**4,864,919.31**
Mondrian Intl SC	MS6F2001802	**511,926.89**	**562,543.68**	**555,785.59**	**182,763.27**	**1,813,019.43**
Northern Trust INTL SC	MS6F2002502	**-**	**-**	**-**	**12,764.03**	**12,764.03**
Northern Trust MSCI Wrld	MS6F2002402	**52,864.42**	**58,423.24**	**59,916.92**	**58,287.43**	**229,492.01**
Principal Global SC Intl	MS6F2001412	**306,027.63**	**307,720.15**	**314,459.57**	**307,590.67**	**1,235,798.02**
CenterSquare AM	MS6F6002702	**126,554.84**	**144,056.04**	**155,678.96**	**207,040.03**	**633,329.87**
Cohen & Steers REIT	MS6F6001802	**103,907.83**	**119,095.17**	**118,942.62**	**117,155.65**	**459,101.27**
AEW IX	MS6F6002802	65,989.00	37,599.00	105,758.00	111,838.00	321,184.00
AEW VII	MS6F6001722	6,658.00	(13,779.00)	3,933.00	2,954.00	(234.00)
AEW VIII	MS6F6001732	27,427.00	34,530.00	25,699.00	25,384.00	113,040.00
AG Core Plus III	MS6F6002202	6,815.00	-	-	-	6,815.00
AG Core Plus IV	MS6F6002502	110,372.00	101,007.00	97,720.00	87,493.00	396,592.00
AG Core Value X	MS6F6002512	165,060.00	192,679.00	182,173.00	183,409.00	723,321.00
AG Realty Value XI	MS6F6003102	247,490.00	250,319.00	250,924.00	253,529.54	1,002,262.54
Hancock Timber	MS6F6001402	148,203.00	151,540.00	151,630.00	143,242.00	594,615.00
Heitman III	MS6F6001612	-	-	-	-	-
Heitman IV	MS6F6001622	55,132.00	55,590.00	53,489.00	53,489.00	217,700.00
Heitman V	MS6F6002902	86,139.00	90,992.00	109,931.00	109,930.00	396,992.00
Invesco RE IV	MS6F6002402	4,665.00	4,714.00	-	69,686.00	79,065.00
Invesco RE V	MS6F6002412	224,468.00	203,812.00	194,929.00	191,681.00	814,890.00
Invesco VA Fund VI	MS6F6002422	70,144.00	-	145,013.00	351,438.94	566,595.94
Invesco US Income Fund	MS6F6003002	-	759,636.73	356,624.19	-	1,116,260.92
JP Morgan SPF	MS6F6002102	876,993.00	809,247.89	757,060.77	739,371.98	3,182,673.64
Principal CF	MS6F6001002	1,720,876.06	1,654,661.53	1,589,799.70	1,547,821.18	6,513,158.47
TA Realty X	MS6F6002302	-	-	-	-	-
TA Realty XI	MS6F6002312	93,826.00	10,192.00	3,854.00	-	107,872.00
TA Realty XII	MS6F6002322	787,114.00	382,880.00	384,366.00	-	1,554,360.00
TA Realty XIII	MS6F6002332	-	966,230.00	199,294.00	-	1,165,524.00
UBS TPF	MS6F6001102	966,100.74	465,283.94	446,809.22	-	1,878,193.90
UBS TPG	MS6F6002002	1,166,939.52	531,155.21	495,913.38	-	2,194,008.11
Westbrook Fund X	MS6F6002602	57,420.00	114,840.00	52,947.00	52,992.00	278,199.00
Westbrook Fund XI	MS6F6002612	214,930.00	449,584.00	219,823.00	219,769.00	1,104,106.00
GCM Grosvenor 2009	MS6F7001102	270,165.93	269,881.46	256,262.10	255,070.68	1,051,380.17
GCM Grosvenor 2014	MS6F7001402	516,465.06	512,592.71	499,874.41	491,979.26	2,020,911.44
GCM Grosvenor 2018	MS6F7001412	525,000.00	525,000.00	525,000.00	525,000.00	2,100,000.00
Pathway 2008	MS6F7001002	340,888.00	281,603.00	227,259.00	227,259.00	1,077,009.00
Pathway 2013	MS6F7001302	612,500.00	612,500.00	612,500.00	525,000.00	2,362,500.00
Pathway 2016	MS6F7001312	926,250.00	926,250.00	926,250.00	926,250.00	3,705,000.00
Pathway 2021	MS6F7001322	486,000.00	486,000.00	486,000.00	546,528.00	2,004,528.00
Blue Owl Lending PC	MS6F7500002	-	-	-	-	-
GCM Grosvenor PC 2023	MS6F7500012	-	-	-	93,990.00	93,990.00
		26,410,491.55	**27,526,286.15**	**26,510,600.97**	**24,556,158.87**	**105,003,537.54**
					FY Ending Market Value	33,728,719,682.00
					Fee as a % of Market Value	0.31%