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PERS
of MISSISSIPPI

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

Prepared as of June 30, 2023

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CONSULTING, LLC
The experience and dedication you deserve

November 10, 2023

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, 2023 using the Fixed Contribution Rate (FCR) of 22.40% of payroll,
- To determine the actuarially determined contribution (ADC) for the fiscal year beginning July 1, 2025 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, 2023.

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

Your attention is directed particularly to the presentation of the valuation results on page 1 and the projection results on pages 7 and 8. Since one of the funding metrics is in a "Red Light" status as of this valuation, we recommend to the PERS Board that the Fixed Contribution Rate (FCR) be increased from 22.40% to 27.40% of annual compensation. The Board has already instituted a phased-in approach to the FCR beginning July 1, 2024 of increasing the current FCR by 2.00% of annual compensation. We recommend continuation of this approach for five consecutive fiscal years until the FCR reaches 27.40% of annual compensation based on the following table:

Fiscal Year Beginning	Recommended Fixed Contribution Rate as a Percent of Annual Compensation
July 1, 2024	19.40%
July 1, 2025	21.40%
July 1, 2026	23.40%
July 1, 2027	25.40%
July 1, 2028	27.40%

Since the previous valuation, the Board adopted new actuarial assumptions based on the experience investigation for the four-year period ending June 30, 2022. The results of this study were presented to the Board in April, 2023 and the Board adopted all of the demographic assumption recommendations (e.g., rates of retirement and withdrawal). The Board also adopted a decrease in the investment return assumption from 7.55% to 7.00% at its August, 2023 meeting. The complete list of actuarial assumption changes is shown on page 2 of this report. No changes were made to the 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

Table of Contents

Section I: Executive Summary

1. This report, prepared as of June 30, 2023, 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, 2023.

VALUATION DATE	June 30, 2023	June 30, 2022
Investment Return Assumption	**7.00%**	**7.55%**
Active members included in valuation		
Number	145,985	144,416
Annual compensation	$ 7,065,419,204	$ 6,454,760,163
Retirees		
Number	115,890	114,462
Annual allowances	$ 3,118,511,891	$ 3,005,526,105
Assets		
Market related actuarial value	$ 32,605,990,000	$ 31,873,200,000
Market value of assets (MVA)	$ 31,621,983,000	$ 30,791,115,000
Unfunded actuarial accrued liability (UAAL)	$ 25,542,291,981	$ 20,126,942,746
Funded Ratio based on actuarial value	56.1%	61.3%
Employer Fixed Contribution Rate (FCR)		
Normal Cost*	2.62%	1.60%
Accrued liability	19.78	15.80
Total**	22.40%	17.40%
Payment period based on the FCR	32.2 years	48.8 years
Actuarially Determined Contribution (ADC) Rate		
Normal Cost*	2.62%	1.60%
Accrued liability	22.55	20.12
Total	25.17%	21.72%
Amortization period for ADC	24.7 years	25.6 years
ADC Ratio to Fixed Contribution Rate	112.37%	124.83%
Unfunded actuarial accrued liability based on MVA	$ 26,526,298,981	$ 21,209,027,746
Funded Ratio based on market value	54.4%	59.2%

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

** The FCR of 22.40% will be phased-in over the next three 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 investment return for the plan year ending June 30, 2023 on a market value of assets basis was 7.43% and on an actuarial value of assets basis was 6.85%. These can be compared to the assumed rate of return for the same period of 7.55%.
5. Schedule B details the actuarial assumptions and methods employed. Since the previous valuation, various economic and demographic assumptions have been revised. The changes are summarized below and shown in more detail in Schedule B:
   - The investment rate of return assumption was reduced from 7.55% to 7.00%.
   - The assumed load for administrative expenses was decreased from 0.28% to 0.26% of payroll.
   - Withdrawal rates, disability rates and service retirement rates were adjusted to reflect actual experience more closely.
   - The percentage of participants assumed to receive a deferred benefit upon attaining the eligibility requirements for retirement was increased from 60% to 65%.
   - For married members, the number of years that a male is assumed to be older than his spouse was changed from 3 years to 2 years.
   - The assumed amount of unused sick leave at retirement was increased from 0.50 years to 0.55 years.
   - The assumed average number of years of military service that participants will have at retirement was decreased from 0.25 years to 0.20 years.
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 17.40% of annual compensation has been the contribution rate for employers since July 1, 2019. However, the FCR is scheduled to increase to 22.40% of annual compensation by phasing in over the next three fiscal years (19.40% of annual compensation beginning July 1, 2024, 21.40% of annual compensation beginning July 1, 2025, and 22.40% of annual compensation beginning July 1, 2026). As shown on page 1 of the report, the amortization period to pay off the Unfunded Actuarial Accrued Liability (UAAL) using the FCR of 22.40% is over 32 years, which is a snapshot view of the UAAL as of the valuation date of June 30, 2023. However, this snapshot calculation of the amortization period does not take into consideration the smoothing in of the investment experience that the System will encounter over the next four years. The majority of this anticipated experience over the next four years will be negative.

9. In addition, as shown on page 1 of the report, the Actuarially Determined Contribution (ADC) Rate for the 2023 valuation year is 25.17% of annual compensation and the ratio of the ADC to the FCR (25.17% to 22.40%) is calculated at 112.37% as of June 30, 2023. Per the Board's Funding Policy, which is provided in Schedule F, 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 22.40% of annual compensation over the next three fiscal years based on the Board-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*
2023	$25,542	56.1%	(4.7)%	112.4%
2024	$26,196	55.9%	(4.6)%	116.7%
2025	$26,488	56.3%	(4.3)%	119.1%
2026	$27,961	54.8%	(4.3)%	126.0%
2027	$28,235	55.1%	(4.5)%	128.5%
2028	$28,491	55.5%	(4.6)%	131.0%

Metrics	2023 Baseline Projection (7.00%)	2023 Status
Funding Ratio in 2047	65.5%	Yellow
Cash Flow as a Percentage of Assets	(5.4)%	Yellow
ADC/FCR Ratio from 2023 Valuation*	112.4%	Red
ADC/FCR Ratio from 2024 Valuation*	116.7%	Red

* These ratios are based on the ultimate FCR of 22.40% of annual compensation.

13. As shown on the previous page, one of the three metrics is in the “Red Status” for the 2023 valuation and projections, and per the Funding Policy, the actuary should recommend an increase in the Fixed Contribution Rate (FCR). Although the Actuarially Determined Contribution (ADC) for the 2023 valuation is 25.17% (shown on page 1), there is still negative investment experience that will be recognized in the smoothing of assets over the next four valuations that will most likely lead to higher ADC rates. **Therefore, our recommendation to the PERS Board is to increase the ultimate FCR from 22.40% to 27.40% of annual compensation**. **The Board has already instituted a phased-in approach to the FCR beginning July 1, 2024 of increasing the current FCR by 2.00% of annual compensation. We recommend continuation of this approach for five consecutive fiscal years until the FCR reaches 27.40% of annual compensation.** This increase will improve the projected funding ratio, the cash flow outlook and the ADC/FCR Ratio.

The table below shows the metrics with an ultimate FCR of 27.40% of annual compensation.

Metrics	2023 Projection with 27.40% FCR (7.00%)	2023 Status
Funding Ratio in 2047	90.5%	Green
Cash Flow as a Percentage of Assets	(4.7)%	Green
ADC/FCR Ratio from 2023 Valuation	112.4%	Red
ADC/FCR Ratio from 2024 Valuation*	95.4%	Green

* This ratio is based on the ultimate FCR of 27.40% of annual compensation.

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.

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

Section I: Executive Summary

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
2014	161,360	$5,835	$36,159	0.4%	93,504	1.7	$1,998.3	34.2%	$37,015	$22,570	$14,445
2015	157,215	5,905	37,559	3.9	96,338	1.6	2,116.3	35.8	40,364	24,387	15,977
2016	154,104	6,023	39,081	4.1	99,483	1.5	2,249.0	37.3	41,997	25,185	16,812
2017	152,382	6,038	39,626	1.4	102,260	1.5	2,374.7	39.3	43,166	26,364	16,802
2018	150,687	5,999	39,813	0.5	104,973	1.4	2,500.8	41.7	44,396	27,456	16,940
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

The active membership increased this year for the first time in the past 11 years while the number of retirees increased by 1.2% for the 2023 fiscal year. The ratio of actives to retirees remained at 1.3 for the 2023 fiscal year. The Unfunded Actuarial Accrued Liability (UAAL) increased by $5,415 million for this valuation, mostly due to the assumption changes from the latest experience study report and the salary experience this year.

Section II: Membership Data

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System's office. The following tables summarize the membership of the System as of June 30, 2023 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	106	24,922	$1,222,667,756	$49,060	46.3	10.6
State Universities	9	17,220	1,124,528,218	65,304	43.3	9.6
Public Schools	140	61,095	2,770,307,893	45,344	44.8	10.7
Community/Junior Colleges	15	5,835	312,666,211	53,585	46.8	11.4
Counties*	88	14,671	638,591,490	43,527	47.4	9.6
Municipalities	244	15,526	680,269,298	43,815	44.0	9.4
Other Political Subdivisions	259	6,716	316,388,338	47,110	45.4	8.7
Total in PERS	861	145,985	$7,065,419,204	$48,398	45.2	10.2

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

The total number of active members includes 74,321 vested members and 71,664 non-vested members.

Retired Lives

Type of Benefit Payment	No.	Annual Benefits	Group Averages	
			Benefit	Age
Retirement	97,395	$2,740,183,618	$28,135	71.7
Disability	6,153	131,430,485	21,360	65.3
Survivor	12,342	246,897,788	20,005	69.0
Total in PERS	115,890	$3,118,511,891	$26,909	71.1

Section II: Membership Data

Deferred Vested/Inactive Lives

Type of Member	No.	Annual Deferred Benefits	Outstanding Refunds
Deferred Vested - Benefit Provided	15,180	$ 135,081,505	N/A
Deferred Vested – Missing Benefit	1,075	N/A	$ 46,557,950
Vested – Pending Retirements	936	30,338,787	N/A
Inactive	78,809	N/A	384,795,705
Total in PERS	96,000	$ 165,420,292	$ 431,353,655

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 936 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, 2023 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2022. 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.

Section III: Valuation Balance Sheet

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

	JUNE 30, 2023	June 30, 2022
ASSETS		
Current actuarial value of assets:		
Annuity Savings Account	$ 5,895,176,003	$ 5,749,288,725
Annuity Reserve	7,747,062,024	7,450,550,558
Employers' Accumulation Account	18,963,751,973	18,673,360,717
Total current assets	$ 32,605,990,000	$ 31,873,200,000
Future member contributions to Annuity Savings Account	$ 4,474,706,118	$ 3,967,906,879
Prospective contributions to Employer's Accumulation Account		
Normal contributions	$ 1,022,157,145	$ 462,108,152
Unfunded actuarial accrued liability contributions	25,542,291,981	20,126,942,746
Total prospective contributions	$ 26,564,449,126	$ 20,589,050,898
Total assets	$ 63,645,145,244	$ 56,430,157,777
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	$ 35,734,821,291	$ 33,106,302,835
Present value of benefits payable on account of active members	25,647,175,043	21,300,507,616
Present value of benefits payable on account of inactive members for service rendered before the valuation date	2,263,148,910	2,023,347,326
Total liabilities	$ 63,645,145,244	$ 56,430,157,777

BREAKDOWN OF TOTAL AND ACTUARIAL ACCRUED LIABILITIES
AS OF JUNE 30, 2023

	Total Liability	Actuarial Accrued Liability
Active Members		
Retirement	$ 22,463,684,215	$ 19,180,095,306
Death	344,034,305	238,089,276
Disability	465,555,106	303,130,515
Termination	2,373,901,417	428,996,683
Total	$ 25,647,175,043	$ 20,150,311,780
Retirees		
Retirement	$ 32,179,084,583	$ 32,179,084,583
Survivor	2,193,624,378	2,193,624,378
Disability	1,362,112,330	1,362,112,330
Total	$ 35,734,821,291	$ 35,734,821,291
Deferred Vested Members	1,705,195,138	1,705,195,138
Inactive Members	557,953,772	557,953,772
Total Actuarial Values	$ 63,645,145,244	$ 58,148,281,981
Actuarial Value of Assets		32,605,990,000
Unfunded Actuarial Accrued Liability		$ 25,542,291,981

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

Section IV: Comments on Valuation

The valuation balance sheet gives the following information with respect to the funds of the System as of June 30, 2023.

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 $5,895,176,003. The assets credited to the Annuity Reserve were $7,747,062,024 and the assets credited to the Employer's Accumulation Account totaled $18,963,751,973. Current actuarial assets as of the valuation date equaled the sum of these three funds, $32,605,990,000. Future member contributions to the Annuity Savings Account were valued to be $4,474,706,118. Prospective contributions to the Employer's Accumulation Account were calculated to be $26,564,449,126 of which $1,022,157,145 is attributable to service rendered after the valuation date (normal contributions) and $25,542,291,981 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 $63,645,145,244 as of June 30, 2023.

Total Liabilities

The present value of benefits payable on account of presently retired members and beneficiaries totaled $35,734,821,291 as of the valuation date. The present value of future benefit payments on behalf of active members amounted to $25,647,175,043. In addition, the present value of benefits for inactive members, due to service rendered before the valuation date, was calculated to be $2,263,148,910.

Therefore, the balance sheet shows the present value for all prospective benefit payments under the System to be $63,645,145,244 as of June 30, 2023.

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

Section IV: Comments on Valuation

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 19.40% of annual compensation and then is scheduled to increase to 21.40% of annual compensation beginning July 1, 2025 and then to 22.40% of annual compensation beginning July 1, 2026. Since the amortization period is calculated on an open basis, the amortization period for the June 30, 2023 valuation is 32.2 years, compared to 48.8 years for the previous valuation. The primary reason for the decrease in the amortization period was due to the change in the Fixed Contribution Rate to 22.40% of annual compensation offset by the cost of assumption changes.

The assumption changes increased the actuarial accrued liability by approximately $3,769.2 million (shown on next page). The majority of this increase was due to the change in the long-term investment return assumption from 7.55% to 7.00%.

There was a loss on the unfunded actuarial accrued liability for the fiscal year ending June 30, 2023 of approximately $1,471.5 million (shown on the next page) which was primarily due to the greater than expected salary increases, negative investment experience (actuarial value of assets basis less than expected) and demographic losses due to withdrawals of service of active members.

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, 2023 and June 30, 2022 are shown below.

		2023 Valuation $ Millions	2022 Valuation $ Millions
(1)	UAAL* as of beginning of year	$ 20,126.9	$ 19,436.0
(2)	Total Normal cost from last valuation	646.0	686.7
(3)	Total Employee and Employer Contributions	1,965.5	1,826.4
(4)	Interest Rate (Beginning of Year)	7.55%	7.55%
(5)	Interest accrual: [[(1) + (2)] x (4)] - [(3) x ((4) / 2)]	1,494.2	1,450.3
(6)	Expected UAAL before changes: (1) + (2) – (3) + (5)	$ 20,301.6	$ 19,746.6
(7)	Change due to plan amendments	0.0	0.0
(8)	Change due to new actuarial assumptions or methods	3,769.2	0.0
(9)	Expected UAAL after changes: (6) + (7) + (8)	$ 24,070.8	$ 19,746.6
(10)	Actual UAAL as of end of year	$ 25,542.3	$ 20,126.9
(11)	Gain/(loss): (9) – (10)	$ (1,471.5)	$ (380.3)
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year	(2.8)%	(0.8)%

*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2018	0.5%
2019	(0.9)
2020	(1.0)
2021	2.2
2022	(0.8)
2023	(2.8)

Section VI: Fixed Contribution Rate (FCR)

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	2023 Valuation	2022 Valuation
Investment Return Assumption	**7.00%**	**7.55%**
Total Normal Cost:		
Service retirement benefits	10.81%	9.76%
Disability benefits	0.33%	0.35%
Survivor benefits	0.22%	0.21%
Total	11.36%	10.32%
Less Member Contributions:	9.00%	9.00%
Employer Normal Cost	2.36%	1.32%
Administrative Expense Load	0.26%	0.28%
Total Employer Normal Cost Rate	2.62%	1.60%
Unfunded Actuarial Accrued Liability Rate (32.2 years level % of payroll amortization*)	19.78%	15.80%
Total Employer Fixed Contribution Rate	22.40%	17.40%

* Amortization period a year ago was 48.8 years.

2. The Board adopted a new Fixed Contribution Rate (FCR) of 22.40% of annual compensation to be phased-in over the next three 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.

Section VI: Fixed Contribution Rate (FCR)

3. The components of the change in the computed unfunded actuarial accrued liability amortization period from 48.8 years to 32.2 years are as follows:

Previously Reported Period	48.8 years
Change due to:	
Normal amortization	(1.0)
Actuarial experience	(3.4)
Net Assumption/FCR changes	(12.3)
Plan amendments	0.0
Contribution Shortfall/(Excess)	0.1
Computed Period	32.2 years

Section VII: Actuarially Determined Contribution Rate (ADC)

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	$17,832,768	25 years	$1,161,421
June 30, 2019	784,879	795,131	21 years	57,482
June 30, 2020	524,319	530,097	22 years	37,233
June 30, 2021	506,599	510,177	23 years	34,884
June 30, 2022	561,966	564,389	24 years	37,633
June 30, 2023	5,309,730	5,309,730	25 years	345,815
Total		$25,542,292		$1,674,468
Estimated Payroll				$7,424,445
UAAL Amortization Contribution Rate				22.55%

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	2023	2022
Actuarially Determined Contribution (ADC) rate		
Normal Cost*	2.62%	1.60%
Accrued liability	22.55	20.12
Total	25.17%	21.72%
Fixed Contribution Rate (FCR)	22.40%	17.40%
Ratio of ADC to FCR	112.37%	124.83%
Funding Policy Metric Status	Red	Red
Anticipated accrued liability payment period	24.7 years	25.6 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 2023 valuation, per the Funding Policy, the actuary should recommend an increase to the FCR. The anticipated smoothing in of the negative investment experience from previous years will worsen this ratio over the next few years. Therefore, we recommend an increase in the Fixed Contribution Rate from 22.40% to 27.40% of annual compensation. **The Board has already instituted a phased-in approach to the FCR beginning July 1, 2024 of increasing the current FCR by 2.00% of annual compensation. We recommend continuation of this approach for five consecutive fiscal years until the FCR reaches 27.40% of annual compensation**. 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.

Section VIII: Supplemental Disclosure Information

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

NUMBER OF ACTIVE AND RETIRED PARTICIPANTS
AS OF JUNE 30, 2023

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	115,890
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	96,000
Active Participants	145,985
Total	357,875

1. 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 2014 with a decrease this 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)
06/30/14	$22,569,940	$37,015,288	61.0%	$14,445,348	$5,834,687	247.6%
06/30/15#	24,387,161	40,364,584	60.4	15,977,423	5,904,827	270.6
06/30/16*#	25,185,078	41,997,513	60.0	16,812,435	6,022,533	279.2
06/30/17#	26,364,446	43,166,491	61.1	16,802,045	6,038,229	278.3
06/30/18	27,455,702	44,396,161	61.8	16,940,459	5,999,231	282.4
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

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

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

Valuation date	6/30/2023
Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, closed
Remaining amortization period on ADC Basis	24.7 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)
6/30/14	$5,277,944	$22,033,588	$9,703,756	$22,569,940	100.0%	78.5%	0.0%
6/30/15	5,379,226	24,012,624	10,972,734	24,387,161	100.0	79.2	0.0
6/30/16	5,468,859	25,390,774	11,137,880	25,185,078	100.0	77.7	0.0
6/30/17	5,534,403	26,686,958	10,945,130	26,364,446	100.0	78.1	0.0
6/30/18	5,570,524	27,874,365	10,951,272	27,455,702	100.0	78.5	0.0
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

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 75% 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

Valuation Date	Number of Employers	Active Members Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
2014	871	161,360	$5,834,686,655	$36,159	0.4%
2015	868	157,215	5,904,827,181	37,559	3.9
2016	862	154,104	6,022,532,933	39,081	4.1
2017	861	152,382	6,038,228,708	39,626	1.4
2018	858	150,687	5,999,230,701	39,813	0.5
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

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

	Fiscal Year Ended June 30									
Item	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Beginning of Year	90,214	93,504	96,338	99,483	102,260	104,973	107,844	109,881	112,158	114,462
Added	6,159	5,907	6,548	6,219	5,985	6,101	5,645	6,502	6,634	5,577
Removed	(2,869)	(3,073)	(3,403)	(3,442)	(3,272)	(3,230)	(3,608)	(4,225)	(4,330)	(4,149)
End of Year	93,504	96,338	99,483	102,260	104,973	107,844	109,881	112,158	114,462	115,890

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

Section VIII: Supplemental Disclosure Information

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

Year Ending	2017	2018	2019	2020	2021	2022	2023
Beginning of Year	$2,249,044,704	$2,374,747,017	$2,500,750,392	$2,635,004,675	$2,755,593,924	$2,875,483,858	$3,005,526,105
Added	123,938,697	121,870,115	129,095,132	121,134,338	133,897,944	140,675,196	123,571,787
Removed	(62,470,173)	(64,186,324)	(67,416,138)	(76,727,172)	(93,663,207)	(94,287,872)	(97,250,520)
Benefit increase due to annual COLA	64,233,789	68,319,584	72,575,289	76,182,083	79,655,197	83,654,923	86,664,519
Benefit increase due to plan amendments	0	0	0	0	0	0	0
End 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

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, 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
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

Schedule of Average Benefit Payments

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

Section IX: Projection Results

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

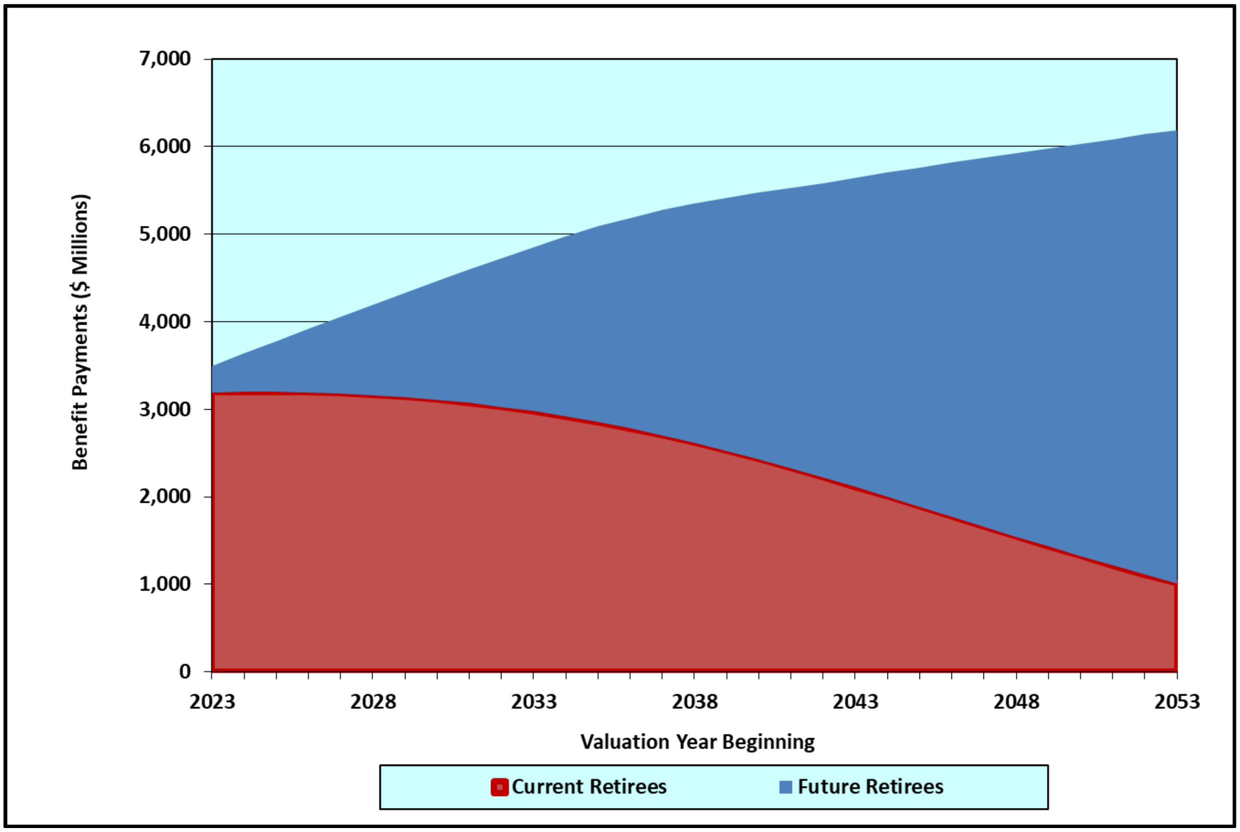
In addition to the regular valuation assumptions used in performing the annual actuarial valuations of PERS, additional assumptions must be made that are unique to projections. The first of these is what, if any, change in the overall active membership will be anticipated. For this projection study, 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, 2023. The new entrant profile is summarized in the table below.

Age	Average Pay	Percent Male	Weight
19	$30,300	66%	1.1%
23	$32,800	39	19.8
27	$36,800	37	19.3
32	$36,300	35	12.8
37	$36,800	33	10.5
42	$36,800	34	9.1
47	$37,300	34	7.7
52	$38,300	37	7.4
57	$37,100	41	5.7
62	$37,100	45	3.7
69	$31,800	52	2.9

Section IX: Projection Results

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, 2023 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 $3.2 billion in benefit payments to its retirees but over the 30-year period, that amount is expected to nearly double.



Section IX: Projection Results

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, 2023 and those who are hired after June 30, 2023. For baseline projection purposes, we have continued the active membership at its current population of 145,985 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, 2023 and be included in the Tier 4 benefit structure.

Member	2023	2028	2033	2042	2047	2053
Active – Existing Employees	145,985	81,638	48,677	19,057	10,308	3,207
Active – New Entrants	0	64,347	97,308	126,928	135,677	142,778
Retired/Deferred Vesteds	133,081	145,450	152,547	151,076	146,563	141,229
Total	279,066	291,435	298,532	297,061	292,548	287,214

PROJECTION RESULTS

The baseline projection results shown below use the same actuarial assumptions as used in the June 30, 2023 actuarial valuation report. In addition, the projection results using a different long-term investment return assumption for future valuations (6.50%) is included below.

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

	2023	2028	2033	2042	2047	2053
Total Payroll	$7,065,419	$7,832,982	$8,607,885	$10,522,466	$11,899,192	$13,849,182
UAAL	$25,542,292	$28,490,929	$29,530,284	$29,343,733	$26,979,231	$20,413,221
Normal Cost Rate	2.62%	2.70%	2.82%	2.97%	3.07%	3.18%
UAAL Rate	19.78%	19.70%	19.58%	19.43%	19.33%	19.22%
FCR Rate	22.40%	22.40%	22.40%	22.40%	22.40%	22.40%
Funded Ratio	56.1%	55.5%	57.0%	60.7%	65.5%	75.5%
Amortization Period	32 years	36 years	32 years	22 years	16 years	10 years
ADC	25.17%	29.34%	32.60%	40.79%	44.66%	20.07%
ADC/FCR Ratio	112.4%	131.0%	145.5%	182.1%	199.4%	89.6%
Cash Flow Percentage	-4.7%	-4.6%	-5.2%	-4.7%	-3.9%	-2.6%

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

	2023	2028	2033	2042	2047	2053
Total Payroll	$7,065,419	$7,832,982	$8,607,885	$10,522,466	$11,899,192	$13,849,182
UAAL	$25,542,292	$33,231,954	$35,844,160	$40,232,748	$41,957,314	$42,645,462
Normal Cost Rate	2.62%	3.97%	4.06%	4.22%	4.33%	4.45%
UAAL Rate	19.78%	18.43%	18.34%	18.18%	18.07%	17.95%
FCR Rate	22.40%	22.40%	22.40%	22.40%	22.40%	22.40%
Funded Ratio	56.1%	51.0%	50.7%	49.0%	49.3%	51.8%
Amortization Period	32 years	52 years	49 years	40 years	34 years	27 years
ADC	25.17%	33.68%	38.48%	50.76%	58.05%	31.61%
ADC/FCR Ratio	112.4%	150.4%	171.8%	226.6%	259.1%	141.1%
Cash Flow Percentage	-4.7%	-4.7%	-5.6%	-5.5%	-4.9%	-3.6%

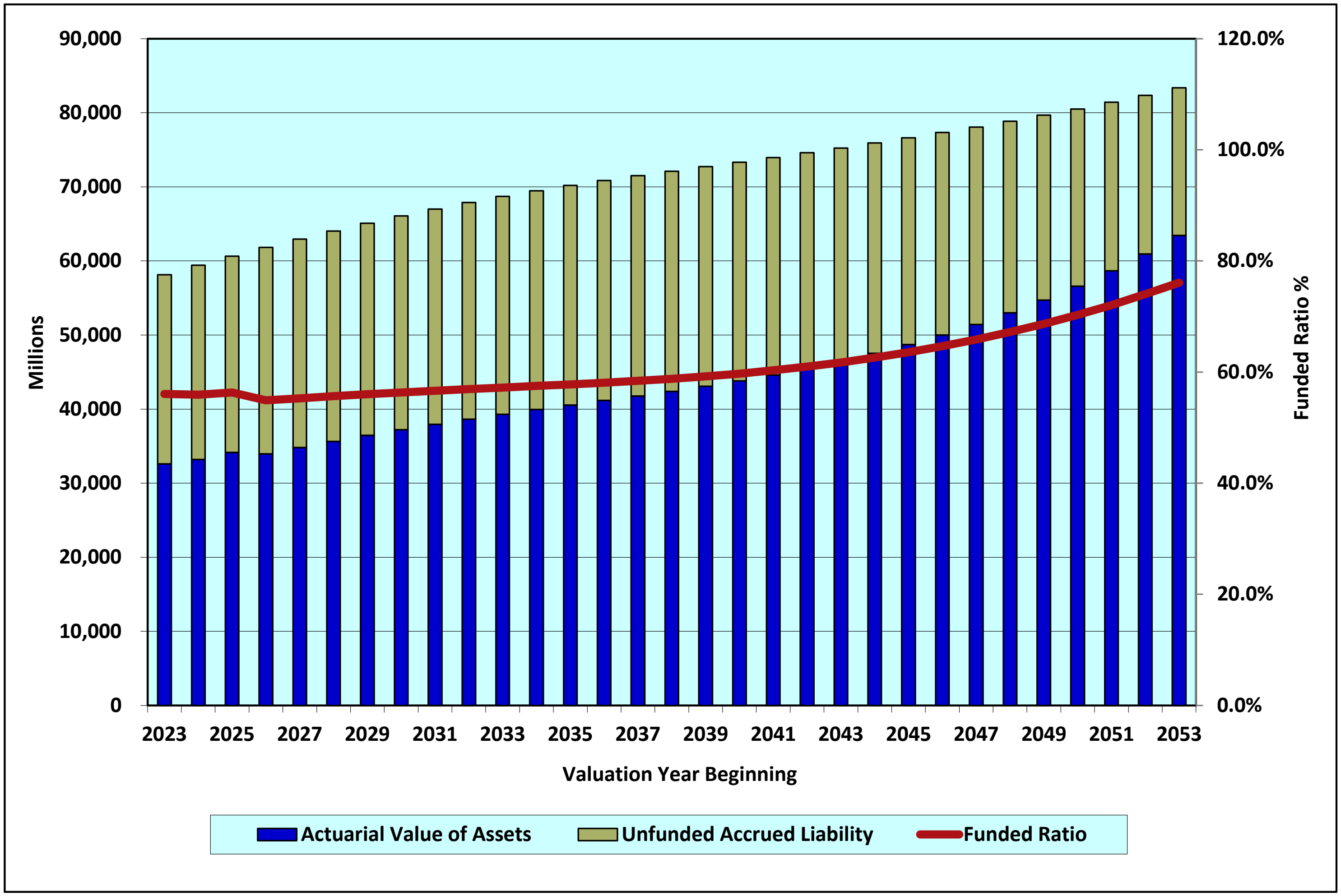
Section IX: Projection Results

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 60% funded for the next twenty years and then slightly increase over the remaining projection period to about 75% funded by the 2053 valuation year.

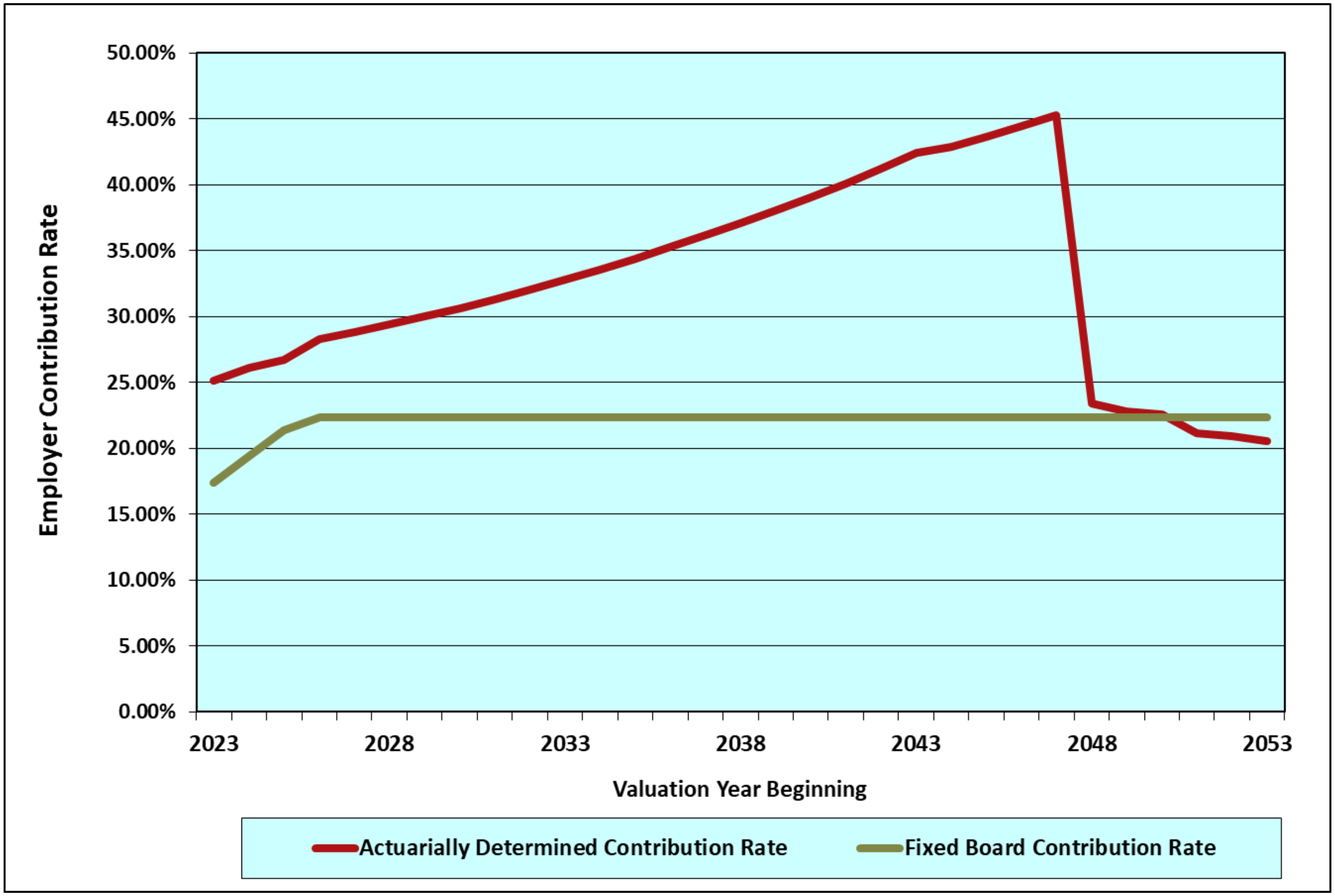
The second graph shows the projection of the calculated Actuarially Determined Contribution (ADC) based on the Board's Funding Policy and the current Fixed Contribution Rate (FCR) of 22.40% under the baseline valuation. As you can see from the graph, the ADC is expected to increase over the next five years as the investment losses from the past valuations are fully recognized. After this initial period, the ADC is then 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.

Section IX: Projection Results

Mississippi PERS – PERS Plan
30 Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2023 Valuation Results



Mississippi PERS – PERS Plan
30 Year Projection of the Employer Contribution Rates
Based on June 30, 2023 Valuation Results



Section X: Cash Flow Projections

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, 2024, we are projecting PERS to have a negative cash flow of approximately $1.5 Billion (benefit payments of $3.50 Billion and contributions of $2.00 Billion). With a market value of assets of $31.6 Billion as of June 30, 2023, the cash flow as a percentage of assets is estimated to be negative 4.74% for the 2024 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 2024 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, 2024. 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 be almost as much as the investment experience of the Plan and PERS' assets will remain level for most 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, 2023 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
2023	7.00%	7,424,444,966	31,621,983,000	1,999,254,540	(3,497,941,807)	-4.74%	2,161,971,914	663,284,647	32,285,267,647	2024
2024	7.00%	7,479,765,458	32,285,267,647	2,166,738,458	(3,641,172,210)	-4.57%	2,209,236,355	734,802,603	33,020,070,250	2025
2025	7.00%	7,582,634,554	33,020,070,250	2,351,223,323	(3,778,189,027)	-4.32%	2,262,305,820	835,340,116	33,855,410,366	2026
2026	7.00%	7,703,109,896	33,855,410,366	2,467,152,037	(3,918,220,031)	-4.29%	2,319,950,315	868,882,322	34,724,292,688	2027
2027	7.00%	7,832,981,925	34,724,292,688	2,508,747,451	(4,056,820,697)	-4.46%	2,377,434,317	829,361,071	35,553,653,759	2028
2028	7.00%	7,972,255,859	35,553,653,759	2,553,354,107	(4,191,741,205)	-4.61%	2,432,382,069	793,994,971	36,347,648,730	2029
2029	7.00%	8,120,747,745	36,347,648,730	2,600,913,088	(4,328,169,758)	-4.75%	2,484,903,889	757,647,219	37,105,295,949	2030
2030	7.00%	8,276,072,488	37,105,295,949	2,650,660,496	(4,460,828,905)	-4.88%	2,535,086,363	724,917,954	37,830,213,903	2031
2031	7.00%	8,438,012,119	37,830,213,903	2,702,526,521	(4,598,156,806)	-5.01%	2,582,890,044	687,259,760	38,517,473,663	2032
2032	7.00%	8,607,884,770	38,517,473,663	2,756,933,334	(4,729,708,790)	-5.12%	2,628,343,813	655,568,357	39,173,042,020	2033
2033	7.00%	8,782,229,535	39,173,042,020	2,812,772,475	(4,856,876,818)	-5.22%	2,671,779,311	627,674,969	39,800,716,989	2034
2034	7.00%	8,962,699,134	39,800,716,989	2,870,573,279	(4,976,735,815)	-5.29%	2,713,581,258	607,418,721	40,408,135,710	2035
2035	7.00%	9,151,792,737	40,408,135,710	2,931,136,178	(5,090,846,800)	-5.34%	2,754,258,083	594,547,461	41,002,683,171	2036
2036	7.00%	9,349,212,396	41,002,683,171	2,994,365,746	(5,191,140,937)	-5.36%	2,794,601,086	597,825,895	41,600,509,066	2037
2037	7.00%	9,559,959,568	41,600,509,066	3,061,863,850	(5,278,436,708)	-5.33%	2,835,767,700	619,194,842	42,219,703,909	2038
2038	7.00%	9,783,620,325	42,219,703,909	3,133,497,918	(5,353,716,603)	-5.26%	2,878,985,893	658,767,208	42,878,471,117	2039
2039	7.00%	10,019,275,936	42,878,471,117	3,208,973,697	(5,419,982,807)	-5.16%	2,925,416,481	714,407,371	43,592,878,488	2040
2040	7.00%	10,265,739,858	43,592,878,488	3,287,911,162	(5,476,758,142)	-5.02%	2,976,187,552	787,340,571	44,380,219,059	2041
2041	7.00%	10,522,466,268	44,380,219,059	3,370,135,496	(5,531,351,752)	-4.87%	3,032,252,112	871,035,856	45,251,254,915	2042
2042	7.00%	10,785,747,479	45,251,254,915	3,454,459,203	(5,589,604,871)	-4.72%	3,094,121,660	958,975,992	46,210,230,907	2043
2043	7.00%	11,053,252,209	46,210,230,907	3,540,135,617	(5,646,367,334)	-4.56%	3,162,244,851	1,056,013,134	47,266,244,041	2044
2044	7.00%	11,327,573,845	47,266,244,041	3,627,995,351	(5,706,035,193)	-4.40%	3,237,135,798	1,159,095,956	48,425,339,997	2045
2045	7.00%	11,609,096,672	48,425,339,997	3,718,161,482	(5,764,908,922)	-4.23%	3,319,349,225	1,272,601,785	49,697,941,783	2046
2046	7.00%	11,899,192,128	49,697,941,783	3,811,073,255	(5,821,171,818)	-4.04%	3,409,692,366	1,399,593,802	51,097,535,585	2047
2047	7.00%	12,198,858,731	51,097,535,585	3,907,050,474	(5,875,684,858)	-3.85%	3,509,090,634	1,540,456,251	52,637,991,835	2048
2048	7.00%	12,508,039,336	52,637,991,835	4,006,074,839	(5,928,596,438)	-3.65%	3,618,509,222	1,695,987,622	54,333,979,458	2049
2049	7.00%	12,827,255,557	54,333,979,458	4,108,313,410	(5,984,201,122)	-3.45%	3,738,832,936	1,862,945,224	56,196,924,681	2050
2050	7.00%	13,156,707,463	56,196,924,681	4,213,830,266	(6,038,583,495)	-3.25%	3,870,998,540	2,046,245,312	58,243,169,993	2051
2051	7.00%	13,497,279,396	58,243,169,993	4,322,908,645	(6,093,850,564)	-3.04%	4,016,087,253	2,245,145,334	60,488,315,327	2052
2052	7.00%	13,849,182,318	60,488,315,327	4,435,616,113	(6,151,064,832)	-2.84%	4,175,156,839	2,459,708,120	62,948,023,447	2053
2053	7.00%	14,210,992,980	62,948,023,447	4,551,496,832	(6,198,918,430)	-2.62%	4,349,677,088	2,702,255,490	65,650,278,937	2054

Section X: Cash Flow Projections

Mississippi PERS
30-year Open Group Projection of Cash Flow
PERS Plan
Based on June 30, 2023 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
2023	-5.00%	7,424,444,966	31,621,983,000	1,999,254,540	(3,497,941,807)	-4.74%	(1,543,151,541)	(3,041,838,808)	28,580,144,192	2024
2024	7.00%	7,479,765,458	28,580,144,192	2,166,738,458	(3,641,172,210)	-5.16%	1,949,877,713	475,443,961	29,055,588,153	2025
2025	7.00%	7,582,634,554	29,055,588,153	2,351,223,323	(3,778,189,027)	-4.91%	1,984,792,073	557,826,369	29,613,414,522	2026
2026	7.00%	7,703,109,896	29,613,414,522	2,467,152,037	(3,918,220,031)	-4.90%	2,023,010,606	571,942,613	30,185,357,135	2027
2027	7.00%	7,832,981,925	30,185,357,135	2,508,747,451	(4,056,820,697)	-5.13%	2,059,708,828	511,635,582	30,696,992,717	2028
2028	7.00%	7,972,255,859	30,696,992,717	2,553,354,107	(4,191,741,205)	-5.34%	2,092,415,796	454,028,698	31,151,021,415	2029
2029	7.00%	8,120,747,745	31,151,021,415	2,600,913,088	(4,328,169,758)	-5.54%	2,121,139,977	393,883,307	31,544,904,722	2030
2030	7.00%	8,276,072,488	31,544,904,722	2,650,660,496	(4,460,828,905)	-5.74%	2,145,858,978	335,690,569	31,880,595,291	2031
2031	7.00%	8,438,012,119	31,880,595,291	2,702,526,521	(4,598,156,806)	-5.95%	2,166,416,742	270,786,458	32,151,381,749	2032
2032	7.00%	8,607,884,770	32,151,381,749	2,756,933,334	(4,729,708,790)	-6.14%	2,182,717,379	209,941,923	32,361,323,672	2033
2033	7.00%	8,782,229,535	32,361,323,672	2,812,772,475	(4,856,876,818)	-6.32%	2,194,959,026	150,854,684	32,512,178,356	2034
2034	7.00%	8,962,699,134	32,512,178,356	2,870,573,279	(4,976,735,815)	-6.48%	2,203,383,553	97,221,016	32,609,399,372	2035
2035	7.00%	9,151,792,737	32,609,399,372	2,931,136,178	(5,090,846,800)	-6.62%	2,208,346,540	48,635,918	32,658,035,290	2036
2036	7.00%	9,349,212,396	32,658,035,290	2,994,365,746	(5,191,140,937)	-6.73%	2,210,475,734	13,700,543	32,671,735,833	2037
2037	7.00%	9,559,959,568	32,671,735,833	3,061,863,850	(5,278,436,708)	-6.78%	2,210,753,574	(5,819,284)	32,665,916,550	2038
2038	7.00%	9,783,620,325	32,665,916,550	3,133,497,918	(5,353,716,603)	-6.80%	2,210,220,778	(9,997,907)	32,655,918,643	2039
2039	7.00%	10,019,275,936	32,655,918,643	3,208,973,697	(5,419,982,807)	-6.77%	2,209,837,808	(1,171,302)	32,654,747,341	2040
2040	7.00%	10,265,739,858	32,654,747,341	3,287,911,162	(5,476,758,142)	-6.70%	2,210,518,372	21,671,391	32,676,418,732	2041
2041	7.00%	10,522,466,268	32,676,418,732	3,370,135,496	(5,531,351,752)	-6.61%	2,212,986,089	51,769,833	32,728,188,565	2042
2042	7.00%	10,785,747,479	32,728,188,565	3,454,459,203	(5,589,604,871)	-6.52%	2,217,507,015	82,361,347	32,810,549,912	2043
2043	7.00%	11,053,252,209	32,810,549,912	3,540,135,617	(5,646,367,334)	-6.42%	2,224,267,182	118,035,465	32,928,585,377	2044
2044	7.00%	11,327,573,845	32,928,585,377	3,627,995,351	(5,706,035,193)	-6.31%	2,233,499,692	155,459,850	33,084,045,227	2045
2045	7.00%	11,609,096,672	33,084,045,227	3,718,161,482	(5,764,908,922)	-6.19%	2,245,458,591	198,711,151	33,282,756,379	2046
2046	7.00%	11,899,192,128	33,282,756,379	3,811,073,255	(5,821,171,818)	-6.04%	2,260,629,388	250,530,824	33,533,287,203	2047
2047	7.00%	12,198,858,731	33,533,287,203	3,907,050,474	(5,875,684,858)	-5.87%	2,279,593,247	310,958,864	33,844,246,066	2048
2048	7.00%	12,508,039,336	33,844,246,066	4,006,074,839	(5,928,596,438)	-5.68%	2,302,947,018	380,425,418	34,224,671,485	2049
2049	7.00%	12,827,255,557	34,224,671,485	4,108,313,410	(5,984,201,122)	-5.48%	2,331,181,378	455,293,666	34,679,965,150	2050
2050	7.00%	13,156,707,463	34,679,965,150	4,213,830,266	(6,038,583,495)	-5.26%	2,364,811,372	540,058,144	35,220,023,294	2051
2051	7.00%	13,497,279,396	35,220,023,294	4,322,908,645	(6,093,850,564)	-5.03%	2,404,466,984	633,525,065	35,853,548,359	2052
2052	7.00%	13,849,182,318	35,853,548,359	4,435,616,113	(6,151,064,832)	-4.78%	2,450,723,151	735,274,432	36,588,822,791	2053
2053	7.00%	14,210,992,980	36,588,822,791	4,551,496,832	(6,198,918,430)	-4.50%	2,504,533,042	857,111,444	37,445,934,235	2054

Section XI: Sensitivity Analysis

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.

Section XI: Sensitivity Analysis

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	2023 Valuation	2022 Valuation*
• 1.00% for the next fiscal year	54.2%	33.5%
• 3.00% for the next fiscal year	57.9%	38.5%
• 5.00% for the next fiscal year	61.7%	43.6%
• **7.00% for the next fiscal year (Baseline)**	**65.5%**	**48.6%**
• 9.00% for the next fiscal year	69.2%	53.6%
• 11.00% for the next fiscal year	73.0%	58.6%
• 13.00% for the next fiscal year	76.7%	63.6%
• Negative 5% for the next fiscal year	43.0%	17.2%
• Simulate 2008 loss using -15% for the next fiscal year	24.2%	Insolvency
Average Returns over next 10-Year Period (Simulated returns using mean and standard deviations from PERS' Investment Consultant's Capital Market Assumptions)**	**2023 Valuation**	**2022 Valuation**
• 6.00%	50.4%	19.9%
• 7.00%	65.6%	38.5%
• 8.00%	85.7%	64.3%

** Based on 17.40% FCR and 7.55% expected returns and sensitivity around that assumption.*

*** 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%

Section XI: Sensitivity Analysis

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.

Section XI: Sensitivity Analysis

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 2023. 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	2023 Valuation	2022 Valuation*
• Increase 0.50% each year	72.1%	56.1%
• Increase 0.25% each year	68.8%	52.4%
• **Static Population (Baseline Assumption)**	**65.5%**	**48.6%**
• Decrease 0.25% each year	62.2%	44.9%
• Decrease 0.50% each year	58.9%	41.2%

** Based on 17.40% FCR and 7.55% expected return.*

Section XI: Sensitivity Analysis

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	2023 Valuation	2022 Valuation*
1 - Baseline	2.40%	7.00%	2.65%	**65.5%**	**48.6%**
2	2.40%	6.75%	2.65%	56.9%	39.8%
3	2.10%	6.75%	2.35%	55.5%	37.8%

** Based on 17.40% FCR and 7.55% expected return and sensitivity around that assumption.*

Section XI: Sensitivity Analysis

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)	2023 Valuation	2022 Valuation*
• Baseline	**65.5%**	**48.6%**
• 1.00% increase in FCR	70.9%	56.1%
• 1.00% decrease in FCR	60.0%	41.0%

** Based on 17.40% FCR and 7.55% expected return.*

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.

Section XI: Sensitivity Analysis

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, 2023 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 $66,052,325,000.

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.

Section XII: Projection Summary

Utilizing the funding policy for PERS and with a fixed contribution rate as a percentage of annual compensation of 22.40% of payroll, the projection results for 2023 show that the Plan will have a "Red" light status for one of the three metrics.

Metrics	2023 Baseline Projection (7.00%)	2023 Status
Funding Ratio in 2047	65.5%	**Yellow**
Cash Flow as a Percentage of Assets	(5.4)%	**Yellow**
ADC/FCR Ratio from 2023 Valuation	112.4%	**Red**
ADC/FCR Ratio from 2024 Valuation	116.7%	**Red**

As shown above, one of the three metrics is in the "Red Status" for the 2023 valuation and projections, and per the Funding Policy, the actuary should recommend an increase in the Fixed Contribution Rate (FCR). Although the Actuarially Determined Contribution (ADC) for the 2023 valuation is 25.17%, there is still negative investment experience that will be recognized in the smoothing of assets over the next four valuations that will most likely lead to higher ADC rates. **Therefore, our recommendation to the PERS Board is to increase the ultimate FCR from 22.40% to 27.40% of annual compensation**. **The Board has already instituted a phased-in approach to the FCR beginning July 1, 2024 of increasing the current FCR by 2.00% of annual compensation. We recommend continuation of this approach for five consecutive fiscal years until the FCR reaches 27.40% of annual compensation.** This increase will improve the projected funding ratio, the cash flow outlook and the ADC/FCR Ratio. The table below shows the metrics with an ultimate FCR of 27.40%.

Metrics	2023 Projection with 27.40% FCR (7.00%)	2023 Status
Funding Ratio in 2047	90.5%	**Green**
Cash Flow as a Percentage of Assets	(4.7)%	**Green**
ADC/FCR Ratio from 2023 Valuation	112.4%	**Red**
ADC/FCR Ratio from 2024 Valuation*	95.4%	**Green**

* This ratio is based on the ultimate FCR of 27.40% of annual compensation.

Schedule A: Development of Assets

($ thousands)

	Valuation Date June 30:	2022	2023	2024	2025	2026	2027
A.	Actuarial Value Beginning of Year	$30,768,251	$31,873,200				
B.	Market Value End of Year	30,791,115	31,621,983				
C.	Market Value Beginning of Year	35,216,597	30,791,115				
D.	Cash Flow						
	D1. Contributions	1,826,424	1,965,549				
	D2. Other Revenue	0	0				
	D3. Benefit Payments	(3,134,860)	(3,237,085)				
	D4. Refunds	(120,806)	(115,517)				
	D5. Administrative Expenses	(15,926)	(16,446)				
	D6. Net	(1,445,168)	(1,403,499)				
E.	Investment Income						
	E1. Market Total: B.-C.-D6.	(2,980,314)	2,234,367				
	E2. Assumed Rate	7.55%	7.55%				
	E3. Amount for Immediate Recognition	2,604,298	2,271,747				
	E4. Amount for Phased-In Recognition	(5,584,612)	(37,380)				
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: 0.20*E4.	(1,116,922)	(7,476)				
	F2. First Prior Year	1,326,446	(1,116,922)	(7,476)			
	F3. Second Prior Year	(256,231)	1,326,446	(1,116,922)	(7,476)		
	F4. Third Prior Year	(81,275)	(256,231)	1,326,446	(1,116,922)	(7,476)	
	F5. Fourth Prior Year	73,801	(81,275)	(256,229)	1,326,447	(1,116,923)	(7,476)
	F6. Total Recognized Investment Gain	(54,181)	(135,458)	(54,181)	202,046	(1,124,400)	(7,476)
G.	Actuarial Value End of Year:						
	A.+D6.+E3.+F6.	$31,873,200	$32,605,990				
H.	Difference Between Market & Actuarial Values	$1,082,085	$984,007	$929,826	$1,131,875	$7,476	$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.

Schedule A: Development of Assets

	Asset Summary June 30, 2023 ($ in Thousands)	
	Market Value	**Actuarial Value**
(1) Assets at June 30, 2022	$30,791,115	$31,873,200
(2) Contributions and Misc. Revenue	1,965,549	1,965,549
(3) Investment Increment	2,234,367	2,136,289
(4) Benefit Payments	(3,237,085)	(3,237,085)
(5) Refunds	(115,517)	(115,517)
(6) Administrative Expenses	(16,446)	(16,446)
(7) Assets at June 30, 2023 (1) + (2) + (3) + (4) + (5) + (6)	$31,621,983	$32,605,990
(8) Net Investment Return* [2 x (3)] / [(7) + (1) – (3)]	7.43%	6.85%

* 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
2019	6.3%	6.8%
2020	3.1%	6.7%
2021	32.2%	12.5%
2022	(8.6)%	8.5%
2023	7.4%	6.9%

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, 2023, 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
2020	9.4	5.8	7.5	8.0
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

Schedule B: Statement of Actuarial Assumptions & 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.

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: Statement of Actuarial Assumptions & 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.

Schedule B: Statement of Actuarial Assumptions & Methods

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 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: Summary of Main Benefit & Contribution Provisions

The following summary presents the main benefit and contribution provisions of the System in effect June 30, 2023, 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

Schedule C: Summary of Main Benefit & Contribution Provisions

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
7/1/13	6/30/14	15.75%	$255,000	9.00%	$255,000
7/1/14	6/30/15	15.75	260,000	9.00	260,000
7/1/15	6/30/17	15.75	265,000	9.00	265,000
7/1/17	6/30/18	15.75	270,000	9.00	270,000
7/1/18	6/30/19	15.75	275,000	9.00	275,000
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

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.

Schedule D: Detailed Tabulations of the Data

RECONCILIATION OF DATA RECEIVED FROM PERS

Reconciliation of Data received from PERS	Active File			Pensioner File			Total
	Active	Inactive NonVested	Inactive Vested	Retirees	Disableds	Survivors	
From PERS	149,427	76,470	15,725	97,332	6,148	12,455	357,557
Return to Active Status				(1)			(1)
Deceased			(19)	(3)		(2)	(24)
Certain Period Ended						(122)	(122)
Added Back			45	67	5	11	128
Pay less than $100	(964)	895	69				
Not Contributing	(2,478)	2,036	398				(44)
Balance = 0		(589)					(589)
Status Change		(3)	(2)				(5)
In Retiree Status			(36)				(36)
In Disabled Status			(8)				(8)
Pending Retirees			936				936
Suspended Beneficiaries			83				83
For Valuation	145,985	78,809	17,191	97,395	6,153	12,342	357,875

Schedule D: Detailed Tabulations of the Data

STATUS RECONCILIATION FROM 2022 TO 2023

Reconciliation of Data from Last Year to This Year	Actives	Retirees	Disableds	Survivors	Inactives		Total
					Vested	Non-Vested	
As of June 30, 2022	144,416	95,976	6,251	12,235	16,856	74,034	349,768
Retirement	(2,988)	4,494			(1,502)	(4)	
Disabled	(134)	(2)	165		(28)	(1)	
Death with Survivor	(75)	(626)	(43)	886	(31)	(31)	80
Terminated Vested	(3,322)			(78)	3,452	(52)	
Terminated Non-Vested	(8,180)					8,180	
Return to Active Service	4,976	(92)	(5)		(1,106)	(3,773)	
Refunded	(4,907)				(431)	(3,270)	(8,608)
Death No Survivor	(15)	(2,355)	(214)	(606)	(4)	(5)	(3,199)
Benefit Ended		(1)	(1)	(128)	(9)		(139)
Removed/Cleanup	(16)				(11)	(106)	(133)
New	16,230						16,230
Pickups		1		33	5	3,837	3,876
As of June 30, 2023	145,985	97,395	6,153	12,342	17,191	78,809	357,875

Schedule D: Detailed Tabulations of the Data

Retirants & Beneficiaries as of June 30, 2023
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
2023	4,498	$104,603,496	$96,962	$104,700,458	$1,940
2022	5,767	126,335,458	1,441,063	127,776,521	1,846
2021	5,376	115,362,346	4,890,830	120,253,176	1,864
2020	5,019	111,698,982	8,244,778	119,943,760	1,991
2019	5,152	112,956,149	11,920,749	124,876,898	2,020
2018	5,226	110,117,388	15,058,417	125,175,805	1,996
2017	5,101	105,197,349	17,801,279	122,998,628	2,009
2016	5,225	109,925,485	22,367,127	132,292,612	2,110
2015	4,866	99,045,601	23,691,890	122,737,491	2,102
2014	5,292	106,265,528	29,439,114	135,704,642	2,137
2013	4,993	100,022,492	31,540,271	131,562,763	2,196
2012	5,218	104,744,600	37,032,301	141,776,901	2,264
2011	5,101	104,920,012	41,412,479	146,332,491	2,391
2010	4,296	83,990,079	36,389,412	120,379,491	2,335
2009	3,569	68,646,942	32,674,627	101,321,569	2,366
2008	3,802	73,325,312	37,820,417	111,145,729	2,436
2007	3,519	66,344,078	36,981,262	103,325,340	2,447
2006	3,496	62,035,964	37,415,868	99,451,832	2,371
2005	3,170	57,597,478	37,292,444	94,889,922	2,494
2004	3,246	58,162,337	40,953,597	99,115,934	2,545
2003	2,910	51,857,629	39,030,503	90,888,132	2,603
2002	2,849	48,074,985	38,612,634	86,687,619	2,536
2001	2,683	46,025,004	39,320,224	85,345,228	2,651
2000	2,028	33,880,062	30,858,662	64,738,724	2,660
1999	1,696	26,594,478	25,800,794	52,395,272	2,574
1998	1,677	26,028,846	26,508,613	52,537,459	2,611
1997	1,628	23,878,750	25,988,359	49,867,109	2,553
1996	1,542	22,664,221	26,141,101	48,805,322	2,638
1995	1,191	15,960,160	19,256,965	35,217,125	2,464
1994	1,024	13,437,633	16,987,395	30,425,028	2,476
1993	1,046	14,261,760	19,283,692	33,545,452	2,673
1992	1,035	13,824,061	19,431,991	33,256,052	2,678
1991	529	6,496,326	9,747,245	16,243,571	2,559
1990	519	5,463,511	8,521,138	13,984,649	2,245
1989	190	1,688,084	2,722,169	4,410,253	1,934
1988 & Prior	1,411	11,634,448	22,768,485	34,402,933	2,032
Totals	115,890	$2,243,067,034	$875,444,857	$3,118,511,891	$2,242

Schedule D: Detailed Tabulations of the Data

Schedule of Retired Members by Type of Retirement

Benefits Payable June 30, 2023

Amount of Monthly Benefit**	Number of Rets.	Ret. Type 1*	Ret. Type 2*	Ret. Type 3*
$1-$500	20,755	15,546	739	4,470
501-1,000	22,533	17,128	1,990	3,415
1,001-1,500	20,066	16,496	1,588	1,982
1,501-2,000	17,292	15,303	948	1,041
2,001-2,500	13,451	12,395	468	588
2,501-3,000	8,396	7,875	202	319
3,001-3,500	5,307	4,984	99	224
3,501-4,000	2,942	2,780	55	107
4,001-4,500	1,882	1,771	36	75
4,501-5,000	1,013	967	10	36
Over 5,000	2,253	2,150	18	85
Totals	115,890	97,395	6,153	12,342

*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, 2023

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	20,755	14,999	644	2,524	221	205	426	1,712	135	24	568	457	2,058
501-1,000	22,533	15,859	647	2,944	240	301	901	1,612	624	29	948	656	2,226
1,001-1,500	20,066	13,157	616	3,055	246	384	1,088	1,481	792	39	947	792	3,158
1,501-2,000	17,292	10,816	472	2,809	177	436	1,195	1,368	354	19	835	875	3,764
2,001-2,500	13,451	8,105	327	2,255	114	333	1,185	1,119	97	13	881	752	3,229
2,501-3,000	8,396	5,118	181	1,303	56	252	760	716	38	10	651	506	1,865
3,001-3,500	5,307	3,194	123	858	30	152	509	437	14	4	516	373	1,022
3,501-4,000	2,942	1,784	63	494	18	70	274	239	8	0	291	198	516
4,001-4,500	1,882	1,061	30	333	6	69	231	152	3	0	189	127	348
4,501-5,000	1,013	590	15	174	6	31	123	74	1	0	95	49	190
Over 5,000	2,253	1,105	26	510	10	117	316	169	2	0	191	105	352
Totals	115,890	75,788	3,144	17,259	1,124	2,350	7,008	9,079	2,068	138	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

Schedule D: Detailed Tabulations of the Data

Retirant and Beneficiary Information June 30, 2023
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					431	$2,372,764	431	$2,372,764
20 – 24					141	1,018,350	141	1,018,350
25 – 29					70	750,880	70	750,880
30 – 34			2	40,955	129	1,331,483	131	1,372,438
35 – 39			29	514,736	184	2,208,920	213	2,723,656
40 – 44	17	437,886	109	2,066,966	286	3,333,196	412	5,838,048
45 – 49	530	16,203,619	237	4,925,631	353	4,371,142	1,120	25,500,392
50 – 54	2,917	94,052,259	521	10,980,177	534	7,702,033	3,972	112,734,469
55 – 59	5,322	175,895,316	853	18,859,943	654	9,336,268	6,829	204,091,527
60 – 64	12,997	349,967,553	1,211	25,839,088	1,057	17,597,988	15,265	393,404,629
65 – 69	20,507	541,084,226	1,248	27,349,297	1,371	25,978,558	23,126	594,412,081
70 – 74	21,490	604,040,928	988	20,800,294	1,777	37,220,175	24,255	662,061,397
75 – 79	16,590	479,424,304	578	12,548,397	1,809	41,373,835	18,977	533,346,536
80 – 84	9,776	278,281,702	236	5,070,184	1,604	39,916,466	11,616	323,268,352
85 – 89	4,699	131,565,338	114	2,067,064	1,175	32,941,363	5,988	166,573,765
90 – 94	1,917	52,961,830	24	318,543	578	14,727,112	2,519	68,007,485
95	195	4,928,225	1	14,184	51	1,107,891	247	6,050,300
96	146	3,746,681	1	12,157	42	983,107	189	4,741,945
97	98	2,498,368			31	777,690	129	3,276,058
98	70	1,844,857			25	774,179	95	2,619,036
99	47	977,204			8	240,145	55	1,217,349
100 & Over	77	2,273,322	1	22,869	32	834,243	110	3,130,434
Totals	97,395	$2,740,183,618	6,153	$131,430,485	12,342	$246,897,788	115,890	$3,118,511,891

Average Age:	71.1 years
Average Age at Retirement:	59.3 years
Average Age at Death:	80.8 years
Average Years Since Retirement:	12.7 years

Schedule D: Detailed Tabulations of the Data

Total Active Members as of June 30, 2023
Tabulated by Attained Ages and Years of Service

Attained Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Over	Total No.	Total Payroll
Under 20	352							352	$ 8,552,735
20 to 24	6,368	42						6,410	220,103,726
25 to 29	10,887	2,182	22					13,091	544,537,472
30 to 34	7,581	6,142	1,559	35				15,317	695,683,096
35 to 39	6,213	4,349	4,855	1,773	38			17,228	851,505,742
40 to 44	5,593	3,716	3,464	5,240	1,743	22		19,778	1,033,641,780
45 to 49	4,705	3,302	2,820	3,418	4,286	988	13	19,532	1,053,425,035
50 to 54	4,579	3,023	2,699	3,140	3,223	2,296	461	19,421	1,022,704,580
55 to 59	3,704	2,660	2,200	2,607	2,546	1,527	979	16,223	783,788,139
60 to 64	2,473	2,170	1,661	1,743	1,690	1,076	944	11,757	550,169,913
65 to 69	1,113	931	666	562	480	289	409	4,450	199,094,529
70 & Over	642	461	357	324	234	159	249	2,426	102,212,457
Total Count	54,210	28,978	20,303	18,842	14,240	6,357	3,055	145,985	$ 7,065,419,204

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

Age:	45.2 years
Service:	10.2 years
Entry Age:	35 years
Annual Payroll:	$48,398

Schedule E: Analysis of Financial Experience

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

Type of Activity	$ Gain (or Loss) For Year Ending 6/30/2023	$ Gain (or Loss) For Year Ending 6/30/2022
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	$ 26.3	$ 0.2
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(1.6)	(1.9)
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(1.7)	(2.7)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(122.5)	(97.2)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(935.3)	(376.9)
New Members. Additional unfunded accrued liability will produce a loss.	(132.0)	(97.7)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	(217.2)	281.7
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	16.5	33.6
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	(104.0)	(119.4)
Gain (or Loss) During Year From Financial Experience	$ (1,471.5)	$ (380.3)
Non-Recurring Items. Adjustments for plan amendments, software changes, assumption changes, or method changes.	(3,769.2)	0.0
Composite Gain (or Loss) During Year	$ (5,240.7)	$ (380.3)

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

Schedule F: Funding Policy of PERS

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 7.55% (-7.55%) 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.

Schedule F: Funding Policy of PERS

  - **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.

Schedule G: History of PERS Plan Provisions

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

Schedule G: History of PERS Plan Provisions

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

Schedule G: History of PERS Plan Provisions

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.