Mississippi Highway Safety Patrol Retirement System

Annual Valuation Report

Prepared as of June 30, 2024

CavMac
Actuarial Consulting Services

December 7, 2024

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

Ladies and Gentlemen:

Presented in this report are the results of the annual actuarial valuation of the Mississippi Highway Safety Patrol Retirement System (HSPRS). The purpose of the valuation is to:

- Measure the System's funding progress as of the valuation date,
- To determine the unfunded actuarial accrued liability amortization period beginning July 1, 2024 using the Fixed Contribution Rate (FCR) of 49.08% of payroll,
- To determine the actuarially determined contribution (ADC) for the fiscal year beginning July 1, 2026 using the assumptions and methods in the Board's funding policy,
- To project the System's funding progress for the next thirty years and provide clear reporting and risk analysis of the funding metrics as outlined in the Board's funding policy using a "Signal Light" approach, and
- To assist the Board in determining whether an increase or decrease is needed in the Fixed Contribution Rate.

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

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

Your attention is directed particularly to the presentation of valuation results on page 1 and the projection results on page 6. Since none of the funding policy metrics are in the Red Status, we do not recommend an increase in the Fixed Contribution Rate (FCR) of 49.08% of annual compensation at this time. However, if there is any negative experience in the near future, the Fixed Contribution Rate may need to be increased.

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

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

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

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

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

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

Respectfully submitted,

Edward J. Koebel

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

Ben Mobley

Ben Mobley, ASA, FCA, MAAA
Consulting Actuary

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

VALUATION DATE	June 30, 2024	June 30, 2023
Investment Return Assumption	**7.00%**	**7.00%**
Active members included in valuation		
Number	504	507
Annual compensation	$ 34,644,780	$ 34,845,681
Retirees		
Number	806	792
Annual allowances	$ 40,445,454	$ 38,778,092
Assets		
Market related actuarial value	$ 439,688,000	$ 429,909,000
Market value of assets (MVA)	$ 438,476,000	$ 416,724,000
Unfunded actuarial accrued liability (UAAL)	$ 231,088,761	$ 227,309,721
Funded Ratio based on actuarial value	65.5%	65.4%
Employer Fixed Contribution Rate (FCR)		
Normal Cost*	19.61%	19.36%
Accrued liability	29.47	29.72
Total	49.08%	49.08%
Payment period based on the FCR	33.0 years	30.6 years
Actuarially Determined Contribution (ADC) Rate		
Normal Cost*	19.61%	19.36%
Accrued liability	33.48	32.26
Total	53.09%	51.62%
Amortization Period for ADC	24.3 years	25.0 years
ADC Ratio to Fixed Contribution Rate	108.17%	105.18%
Unfunded actuarial accrued liability based on MVA	$ 232,300,761	$ 240,494,721
Funded Ratio based on market value	65.4%	63.4%

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

2. The valuation balance sheet showing the results and liabilities of the valuation is given in Section III.

3. Comments on the valuation results are provided 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. Due to Senate Bill No. 2659 enacted in 2004 and House Bill No. 1015 enacted April 25, 2013, additional contributions, classified as Motor Vehicle Replacement (MVR) fees are being made to the System and are expected to continue in the future. For the 2024 fiscal year, the total additional fees were $3,293,000. We have lowered our expected contributions from these sources from $3,400,000 to $3,300,000 based on the average of actual monies received over the past three fiscal years and the expectation from these sources in the future. The employers are also required to contribute the employer contribution rate as determined based on the funding policy. The funding period of the Unfunded Actuarial Accrued Liability (UAAL) of 33.0 years shown on the previous page reflects the additional contributions from Senate Bill No. 2659 and House Bill No. 1015. Without these additional contributions, the funding period would have been 60.6 years on the current employer rate basis.

5. Schedule A of this report presents the development of the assets. The estimated investment return for the plan year ending June 30, 2024 on a market value of assets basis was 10.46% and on an actuarial value of assets basis was 7.28%. These can be compared to the assumed rate of return for the same period of 7.00%. The market value of assets basis return may be slightly different than what PERS reports as this estimated return is assuming cash flow as of the middle of the year.

6. Schedule B details the actuarial assumptions and methods employed. There have been no changes since the previous valuation.

7. Schedule C gives a summary of the benefit and contribution provisions of the Plan. There have been no changes since the previous valuation.

8. The funded ratio shown in the Summary of Principal Results is the ratio of actuarial value of assets to the actuarial accrued liability. The funded status 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.

9. The employer contribution rate, or Fixed Contribution Rate (FCR), of 49.08% of annual compensation has been the contribution rate for employers since July 1, 2018. As shown on page 1 of the report, the amortization period to pay off the UAAL using the FCR of 49.08% is just over 30 years, which is a snapshot view of the UAAL as of the valuation date of June 30, 2024.

10. In addition, as shown on page 1 of the report, the Actuarially Determined Contribution (ADC) Rate for the 2024 valuation year is 53.09% of annual compensation and the ratio of the ADC to the FCR (53.09% to 49.08%) is calculated at 108.17% as of June 30, 2024. Per the Board's Funding Policy, which is provided in Schedule F, this actuarial metric is in the Yellow Status as the ratio is between 100% and 110%.

11. 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 HSPRS' 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.

12. For HSPRS, 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 90% in 2047
Yellow	Funded Ratio between 70% and 90% in 2047
Red	Funded Ratio below 70% 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

13. 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. More details will be shown beginning in Section IX but as you can see from the first table below, based on current funding levels, the funded ratio and cash flow percentage is expected to remain relatively stable while the ADC/FCR ratio increases over the next five years.

Valuation Year	UAAL ($ in Thousands)	Funded Ratio	Cash Flow %	ADC/FCR Ratio
2024	$231,089	65.5%	(4.07)%	108.2%
2025	$227,882	66.7%	(3.94)%	108.0%
2026	$241,334	66.5%	(4.03)%	113.9%
2027	$239,689	66.4%	(4.10)%	114.9%
2028	$237,927	67.3%	(4.18)%	116.0%
2029	$238,865	67.8%	(4.21)%	118.1%

Metrics	2024 Baseline Projection	Status
Funding Ratio in 2047	80.5%	Yellow
Cash Flow as a Percentage of Assets	(4.42)%	Green
ADC/FCR Ratio from 2024 Valuation	108.2%	Yellow
ADC/FCR Ratio from 2025 Valuation	108.0%	Yellow

As shown above, none of the metrics are in the "Red Status" for the valuation and baseline projections. Therefore, we recommend to the PERS Board that the Fixed Contribution Rate (FCR) continue at a rate of 49.08% of annual compensation for HSPRS at this time. However, as you can see from the last column in the first table, the ADC/FCR Ratio is expected to increase to more than 110% within the next 5 years. Therefore, an increase in the Fixed Contribution Rate may be needed soon, especially if there is negative experience. 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.

Comparative Schedule

	Active Members				Retired Lives				Valuation Results ($ thousands)		
Valuation Date June 30	Number	Payroll ($ in thousands)	Average Salary	% increase from previous year	Number	Active/ Retired Ratio	Annual Benefits ($ thousands)	Benefits as % of Payroll	Actuarial Accrued Liability	Valuation Assets	UAAL
2015	518	$25,505	$49,237	(4.6)%	724	0.7	$28,076.5	110.1%	$477,803	$316,149	$161,654
2016	484	27,380	56,571	14.9	724	0.7	28,782.0	105.1	494,101	324,894	169,207
2017	470	28,845	61,373	8.5	726	0.6	29,563.8	102.5	497,992	339,114	158,878
2018	511	29,555	57,838	(5.8)	725	0.7	30,614.5	103.6	527,428	352,415	175,013
2019	522	31,811	60,941	5.4	734	0.7	31,814.9	100.0	541,925	362,591	179,334
2020	511	32,346	63,299	3.9	740	0.7	33,344.1	103.1	561,662	373,511	188,151
2021	478	29,780	62,302	(1.6)	761	0.6	35,443.9	119.0	573,134	403,748	169,386
2022	478	33,759	70,625	13.4	785	0.6	37,420.2	110.8	604,084	419,219	184,865
2023	507	34,846	68,729	(2.7)	792	0.6	38,778.1	111.3	657,219	429,909	227,310
2024	504	34,645	68,740	0.0	806	0.6	40,445.5	116.7	670,777	439,688	231,089

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, 2024 upon which the valuation was based. Detailed tabulations of the data are given in Schedule D.

Active Members

				Group Averages		
Employers	Number of Employers	Number	Payroll	Salary	Age	Benefit Service
State Agencies	1	504	$ 34,644,780	$68,740	39.7	10.8

Of the 504 active members, 337 are vested and 167 are non-vested.

Retired Lives

			Group Averages	
Type of Benefit Payment	No.	Annual Benefits	Benefit	Age
Retirement	612	$34,920,898	$57,060	67.9
Disability	12	363,244	30,270	62.3
Survivor	182	5,161,312	28,359	73.6
Total in HSPRS	806	$40,445,454	$50,180	69.1

Deferred Vested/Inactive Lives

Type of Member	No.	Annual Deferred Benefits	Outstanding Balance
Deferred Vested – Benefit Included	41	$607,500	N/A
Inactive	35	N/A	$395,082
Total in HSPRS	76	$607,500	$395,082

For the liability in this valuation, deferred vested participants with benefits provided are valued assuming a retirement age of 55 and for inactive members, account balances are multiplied by 1.50 to estimate liabilities and interest in the future.

SECTION III – VALUATION BALANCE SHEET

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

VALUATION BALANCE SHEET
SHOWING THE ASSETS AND LIABILITIES OF THE
MISSISSIPPI HIGHWAY SAFETY PATROL RETIREMENT SYSTEM

	JUNE 30, 2024	JUNE 30, 2023
ASSETS		
Current actuarial value of assets:		
Annuity Savings Account	$ 23,429,832	$ 22,994,515
Annuity Reserve	55,646,623	52,715,398
Employers' Accumulation Account	360,611,545	354,199,087
Total current assets	$ 439,688,000	$ 429,909,000
Future member contributions to Annuity Savings Account	$ 23,626,501	$ 23,726,003
Prospective contributions to Employer's Accumulation Account		
Normal contributions	$ 61,659,645	$ 61,467,175
Unfunded actuarial accrued liability contributions	231,088,761	227,309,721
Total prospective contributions	$ 292,748,406	$ 288,776,896
Total assets	$ 756,062,907	$ 742,411,899
LIABILITIES		
Present value of benefits payable on account of present retired members and beneficiaries	$ 502,105,082	$ 480,925,045
Present value of benefits payable on account of inactive members for service rendered before the valuation date	5,675,555	11,683,975
Present value of benefits payable on account of active members	$ 248,282,270	$ 249,802,879
Total liabilities	$ 756,062,907	$ 742,411,899

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

	Total Liability	Actuarial Accrued Liability
Active Members		
Retirement	$ 235,458,437	$ 161,535,020
Death	3,986,918	281,908
Disability	919,434	99,918
Termination	7,917,481	1,079,278
Total	$ 248,282,270	$ 162,996,124
Retirees		
Retirement	$ 452,142,543	$ 452,142,543
Survivor	45,717,733	45,717,733
Disability	4,244,806	4,244,806
Total	$ 502,105,082	$ 502,105,082
Deferred Vested Members	5,082,932	5,082,932
Inactive Members	592,623	592,623
Total Actuarial Values	$ 756,062,907	$ 670,776,761
Actuarial Value of Assets		439,688,000
Unfunded Actuarial Accrued Liability		$ 231,088,761

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

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

Total Assets

The Annuity Savings Account is the fund to which are credited contributions made by members together with interest thereon. When a member retires, the amount of his or her accumulated contributions is transferred from the Annuity Savings Account to the Annuity Reserve. The Employer's Accumulation Account is the fund to which are credited employer contributions and investment income, and from which are paid all employer-provided benefits under the system. 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 $23,429,832. The assets credited to the Annuity Reserve were $55,646,623 and the assets credited to the Employer's Accumulation Account totaled $360,611,545. Current actuarial assets as of the valuation date equaled the sum of these three funds, $439,688,000. Future member contributions to the Annuity Savings Account were valued to be $23,626,501. Prospective contributions to the Employer's Accumulation Account were calculated to be $292,748,406 of which $61,659,645 is attributable to service rendered after the valuation date (normal contributions) and $231,088,761 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 $756,062,907 as of June 30, 2024.

Total Liabilities

The present value of benefits payable on account of presently retired members and beneficiaries totaled $502,105,082 as of the valuation date. The present value of future benefit payments on behalf of active members amounted to $248,282,270. In addition, the present value of benefits for inactive members, due to service rendered before the valuation date, was calculated to be $5,675,555.

Therefore, the balance sheet shows the present value for all prospective benefit payments under the System to be $756,062,907 as of June 30, 2024.

Section 25-11-7 of State law requires that active members contribute the current rate of 7.25% of annual compensation to the System.

Section 25-11-123(c) requires that the State contribute a certain percentage of the annual compensation of members to cover the normal contributions and a certain percentage to cover the accrued liability contributions of the System. These individual contribution percentages are established in accordance with an actuarial valuation. Based on the funding policy adopted by the PERS Board in 2023, the PERS Board and the MHSPRS Administrative Board adopted an employer contribution rate of 49.08% of annual compensation effective July 1, 2018 and the amortization period is calculated on an open basis. The amortization period for the June 30, 2024 valuation is 33.0 years, compared to 30.6 years for the previous valuation. The primary reason for the increase in the amortization period is due to the contribution shortfall or difference between the Actuarially Determined Contribution (ADC) rate and the Fixed Contribution Rate (FCR).

There was a loss on the unfunded actuarial accrued liability for the fiscal year ending June 30, 2024 of approximately $2,856.4 thousand (shown on the next page) which was due to contribution deficiency and turnover (retirements and withdrawals) from active service. These losses were offset by gains in investment experience and salary experience (increases in salaries less than expected).

See page 16 for a reconciliation of the amortization period. See Schedule E for a complete analysis of the Financial Experience.

SECTION V – DERIVATION OF EXPERIENCE GAINS & LOSSES

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

		2024 Valuation $ Thousands	2023 Valuation $ Thousands
(1)	UAAL* as of beginning of year	$ 227,309.7	$ 184,865.2
(2)	Total normal cost from last valuation	8,900.9	7,492.7
(3)	Total contributions	23,684.0	23,458.0
(4)	Interest Rate (Beginning of Year)	7.00%	7.55%
(5)	Interest accrual: [[(1) + (2)] x (4)] - [(3) x ((4) / 2)]	15,705.8	13,637.5
(6)	Expected UAAL before changes: (1) + (2) – (3) + (5)	$ 228,232.4	$ 182,537.3
(7)	Change due to plan amendments	0.0	0.0
(8)	Change due to actuarial assumptions or methods	0.0	42,719.5
(9)	Expected UAAL after changes: (6) + (7) + (8)	$ 228,232.4	$ 225,256.8
(10)	Actual UAAL as of end of year	$ 231,088.8	$ 227,309.7
(11)	Gain/(loss): (9) – (10)	$ (2,856.4)	$ (2,052.9)
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year.	(0.4)%	(0.3)%

*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2019	(0.6)%
2020	(1.9)
2021	3.8
2022	(0.7)
2023	(0.3)
2024	(0.4)

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 Investment Return Assumption	2024 Valuation 7.00%	2023 Valuation 7.00%
Total Normal Cost:		
Service retirement benefits	24.54%	24.32%
Disability benefits	0.24	0.24
Survivor benefits	1.08	1.05
Total	25.86%	25.61%
Less Member Contributions:	7.25%	7.25%
Employer Normal Cost	18.61%	18.36%
Administrative Expense Load	1.00%	1.00%
Total Employer Normal Cost Rate	19.61%	19.36%
Unfunded Actuarial Accrued Liabilities (33.0 year level % of payroll amortization*)	29.47%	29.72%
Total Employer Fixed Contribution Rate (FCR)	49.08%	49.08%

* Amortization period a year ago was 30.6 years.

2. The current funding policy has set the employer contribution rate to 49.08% of payroll and kept the amortization period open-ended. Thirty-year projections are completed to determine if an increase or decrease in the employer contribution rate is warranted according to the metrics set forth in the funding policy. Please see Schedule F for the current funding policy.

3. The components of the change in the computed unfunded actuarial accrued liability amortization period from 30.6 years to 33.0 years are as follows:

Previously Reported Period	30.6 years
Change due to:	
Normal amortization	(1.0)
Actuarial experience	0.9
MVR fee assumption change	0.4
Assumption changes	0.0
Contribution Shortfall/(Excess)	2.1
Computed Period	33.0 years

The table below shows the development of the amortization period of 33.0 years ($ in thousands):

Year	UAAL BOY	Amortization Payment	MVR Fees	UAAL EOY
1	$231,089	$10,654	$3,300	$232,915
2	232,915	10,936	3,300	234,579
3	234,579	11,226	3,300	236,063
4	236,063	11,524	3,300	237,344
5	237,344	11,829	3,300	238,402
6	238,402	12,143	3,300	239,212
7	239,212	12,464	3,300	239,749
8	239,749	12,795	3,300	239,984
9	239,984	13,134	3,300	239,888
10	239,888	13,482	3,300	239,427
11	239,427	13,839	3,300	238,568
12	238,568	14,206	3,300	237,272
13	237,272	14,582	3,300	235,499
14	235,499	14,969	3,300	233,205
15	233,205	15,365	3,300	230,343
16	230,343	15,773	3,300	226,863
17	226,863	16,190	3,300	222,710
18	222,710	16,620	3,300	217,827
19	217,827	17,060	3,300	212,149
20	212,149	17,512	3,300	205,610
21	205,610	17,976	3,300	198,136
22	198,136	18,452	3,300	189,651
23	189,651	18,941	3,300	180,070
24	180,070	19,443	3,300	169,302
25	169,302	19,959	3,300	157,252
26	157,252	20,488	3,300	143,816
27	143,816	21,030	3,300	128,882
28	128,882	21,588	3,300	112,330
29	112,330	22,160	3,300	94,032
30	94,032	22,747	3,300	73,851
31	73,851	23,350	3,300	51,639
32	51,639	23,969	3,300	27,236
33	27,236	24,604	3,300	473
34	473	25,256	3,300	(28,832)

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, 2023 (Transitional UAAL) will be amortized as a level percentage of payroll over a closed 25-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

Date Established	Original UAAL Balance	Remaining UAAL Balance	Remaining Amortization Period	Amortization Payment*
June 30, 2023	$227,309,721	$227,907,671	24 years	$15,196,657
June 30, 2024	3,181,090	3,181,090	25 years	207,180
Total		$231,088,761		$15,403,837
MVR Fee Reduction				$(3,300,000)
Total Amortization Payment				$12,103,837
Estimated Payroll				$36,152,335
UAAL Amortization Contribution Rate				33.48%

* *The amortization payment reflects the impact of the additional contributions from Senate Bill No. 2659 and House Bill No. 1015.*

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

Funding Policy ADC Metric Test		
Valuation Date June 30	**2024**	**2023**
Actuarially Determined Contribution (ADC) rate		
Normal Cost*	19.61%	19.36%
Accrued liability	33.48	32.26
Total	53.09%	51.62%
Fixed Contribution Rate (FCR)	49.08%	49.08%
Ratio of ADC to FCR	108.17%	105.18%
Funding Policy Metric Status	Yellow	Yellow
Anticipated accrued liability payment period	24.3 years	25 years

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

Since the Ratio of ADC to FCR is between 100% and 110% and the Metric Status is in the "Yellow Status" for the 2024 valuation, per the Funding Policy, we recommend no change in the Fixed Contribution Rate of 49.08% of annual compensation at this time. However, the ADC/FCR Ratio is approaching 110% and expected to increase to more than 110% within the next 5 years. Therefore, an increase in the Fixed Contribution Rate may be needed soon, especially if there is negative experience. 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.

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

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

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	806
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	76
Active Participants	504
Total	1,386

2. Another such item is the schedule of funding progress as shown below. As can be seen in the table below, the funded ratio has remained in a narrow range over the previous 9 years with a decrease last year due to the assumption changes, including the change in the investment return assumption from 7.55% to 7.00%.

SCHEDULE OF FUNDING PROGRESS
($ Thousands)

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Funded Status (1)/(2)	(4) Unfunded AAL (2) – (1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4)/(5)
06/30/2015#	$316,149	$477,803	66.2%	$161,654	$25,505	633.8%
06/30/2016	324,894	494,101	65.8	169,207	27,380	618.0
06/30/2017#	339,114	497,992	68.1	158,878	28,845	550.8
06/30/2018	352,415	527,428	66.8	175,013	29,555	592.2
06/30/2019#	362,591	541,925	66.9	179,334	31,811	563.7
06/30/2020	373,511	561,662	66.5	188,151	32,346	581.7
06/30/2021#	403,748	573,134	70.4	169,386	29,780	568.8
06/30/2022	419,219	604,084	69.4	184,865	33,759	547.6
06/30/2023#	429,909	657,219	65.4	227,310	34,846	652.3
06/30/2024	439,688	670,777	65.5	231,089	34,645	667.0

After change in actuarial assumptions.

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

Valuation date	6/30/2024
Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, closed
Remaining amortization period on ADC Basis	24.3 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return (discount rate)*	7.00%
Projected salary increases*	3.50% - 5.00%
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)
6/30/2015	$24,827	$338,459	$114,517	$316,149	100.0%	86.1%	0.0%
6/30/2016	25,791	343,635	124,675	324,894	100.0	87.0	0.0
6/30/2017	26,922	349,850	121,219	339,114	100.0	89.2	0.0
6/30/2018	27,581	358,342	141,506	352,415	100.0	90.6	0.0
6/30/2019	27,244	372,526	142,156	362,591	100.0	90.0	0.0
6/30/2020	26,382	389,269	146,010	373,511	100.0	89.2	0.0
6/30/2021	24,844	417,468	130,821	403,748	100.0	90.8	0.0
6/30/2022	23,951	442,965	137,168	419,219	100.0	89.2	0.0
6/30/2023	22,995	480,925	153,300	429,909	100.0	84.6	0.0
6/30/2024	23,430	502,105	145,242	439,688	100.0	82.9	0.0

As can be seen from the table above, the HSPRS plan assets currently cover 100% of the active member contribution account balances as of the valuation date but only cover about 82.9% of the retiree liability. There remains zero assets to cover any employer financed active liabilities.

Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Active Members Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
2015	1	518	$25,504,676	$49,237	(4.6)%
2016	1	484	27,380,162	56,571	14.9
2017	1	470	28,845,478	61,373	8.5
2018	1	511	29,555,411	57,838	(5.8)
2019	1	522	31,811,231	60,941	5.4
2020	1	511	32,345,730	63,299	3.9
2021	1	478	29,780,428	62,302	(1.6)
2022	1	478	33,758,750	70,625	13.4
2023	1	507	34,845,681	68,729	(2.7)
2024	1	504	34,644,780	68,740	0.0

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

	Fiscal Year Ended June 30									
Item	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Beginning of Year	720	724	724	726	725	734	740	761	785	792
Added	22	26	22	17	28	21	39	35	26	29
Removed	(18)	(26)	(20)	(18)	(19)	(15)	(18)	(11)	(19)	(15)
End of Year	724	724	726	725	734	740	761	785	792	806

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

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

Year Ending	2018	2019	2020	2021	2022	2023	2024
Beginning of Year	$29,563,842	$30,614,457	$31,814,897	$33,344,108	$35,443,890	$37,420,188	$38,778,092
Added	787,728	1,186,864	1,202,084	2,196,435	2,117,341	1,372,960	1,758,088
Removed	(494,512)	(812,457)	(613,918)	(1,029,029)	(1,072,205)	(1,073,822)	(1,142,543)
Benefit increase due to annual COLA	757,399	826,033	941,045	932,376	931,161	1,058,766	1,051,817
Benefit increase due to plan amendments	0	0	0	0	0	0	0
End of Year	$30,614,457	$31,814,897	$33,344,108	$35,443,890	$37,420,188	$38,778,092	$40,445,454

Schedule of Average Benefit Payments

	Years of Credited Service								
	0-9	**10-14**	**15-19**	**20-24**	**25**	**26-29**	**30**	**31+**	**TOTAL**
July 1, 2023 to June 30, 2024									
Average Monthly Benefit		$749.20	$2,972.46	$4,276.05	$4,282.52	$5,347.35	$7,534.58	$8,714.30	$4,287.33
Average Final Salary		$30,569.22	$72,664.46	$86,439.13	$73,197.60	$93,369.35	$117,532.44	$132,503.28	$83,130.15
Number of Active Retirants		2	6	11	1	7	1	1	29
July 1, 2022 to June 30, 2023									
Average Monthly Benefit	$957.08		$2,656.24	$3,894.76		$4,182.44	$5,379.02		$3,854.25
Average Final Salary	$56,835.36		$66,853.44	$55,733.13		$70,713.58	$99,199.52		$64,061.35
Number of Active Retirants	1		2	12		10	1		26
July 1, 2021 to June 30, 2022									
Average Monthly Benefit			$2,755.98	$3,826.83	$4,384.68	$5,445.38		$5,345.90	$4,418.34
Average Final Salary			$68,698.46	$54,434.52	$54,702.08	$77,452.96		$84,017.5	$67,728.47
Number of Active Retirants			6	8	6	10		5	35
July 1, 2020 to June 30, 2021									
Average Monthly Benefit		$2,073.24	$2,071.18	$3,751.11	$5,041.93	$4,935.28	$4,757.01	$6,336.18	$4,693.24
Average Final Salary		$63,446.28	$85,505.28	$46,027.48	$61,917.84	$70,663.19	$24,044.20	$59,803.05	$58,435.91
Number of Active Retirants		1	2	10	3	12	3	8	39
July 1, 2019 to June 30, 2020									
Average Monthly Benefit		$2,246.54	$2,672.54	$3,796.62	$3,751.11			$6,126.68	$4,770.17
Average Final Salary		$70,328.04	$72,279.84	$73,364.66	$72,571,38			$91,719.95	$81,757.91
Number of Active Retirants		1	1	5	4			10	21

Schedule of Average Benefit Payments

	Years of Credited Service								
	0-9	10-15	16-20	21-24	25	26-29	30	31+	TOTAL
July 1, 2018 to June 30, 2019									
Average Monthly Benefit		$455.07	$2,111.54	$3,374.59	$3,943.38	$4,902.10	$5,823.91	$5,690.03	$3,532.33
Average Final Salary		$56,573.88	$53,477.12	$77,543.75	$75,695.64	$84,403.44	$93,541.20	$82,712.42	$72,182.33
Number of Active Retirants		3	6	9	1	1	1	7	28
July 1, 2017 to June 30, 2018									
Average Monthly Benefit		$1,307.49	$2,490.53	$3,100.20		$3,562.34	$4,826.30	$5,100.57	$3,976.96
Average Final Salary		$31,379.76	$68,832.18	$60,334.20		$68,125.68	$77,928.36	$75,940.20	$68,584.98
Number of Active Retirants		1	2	4		1	2	7	17
July 1, 2016 to June 30, 2017									
Average Monthly Benefit	$337.90	$996.04	$556.17	$2,927.97	$1,186.14	$2,670.20	$4,606.06	$3,493.16	$2,716.76
Average Final Salary	$19,659.72	$45,533.40	$22,015.92	$67,682.80	$28,912.20	$54,518.06	$72,101.25	$47,949.84	$55,208.79
Number of Active Retirants	1	1	1	6	2	6	4	1	22
July 1, 2015 to June 30, 2016									
Average Monthly Benefit	$314.65			$2,078.23		$3,012.97	$1,729.45	$5,059.27	$2,672.66
Average Final Salary	$53,305.68			$45,947.58		$37,841.45	$50,692.08	$51,223.20	$43,534.73
Number of Active Retirants	3			6		13	1	3	26
July 1, 2014 to June 30, 2015									
Average Monthly Benefit			$1,831.19	$1,719.04	$1,978.03	$4,054.02		$4,758.40	$3,371.84
Average Final Salary			$45,652.04	$30,832.33	$36,844.69	$51,499.73		$67,377.63	$49,438.65
Number of Active Retirants			3	3	2	10		4	22

SECTION IX – PROJECTION RESULTS

Annual actuarial valuations are performed for HSPRS 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. HSPRS 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 Plan'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 Plan'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 Plan or the Plan's ability to pay benefits in the future and do not provide any guarantee of future financial soundness of the Plan. 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

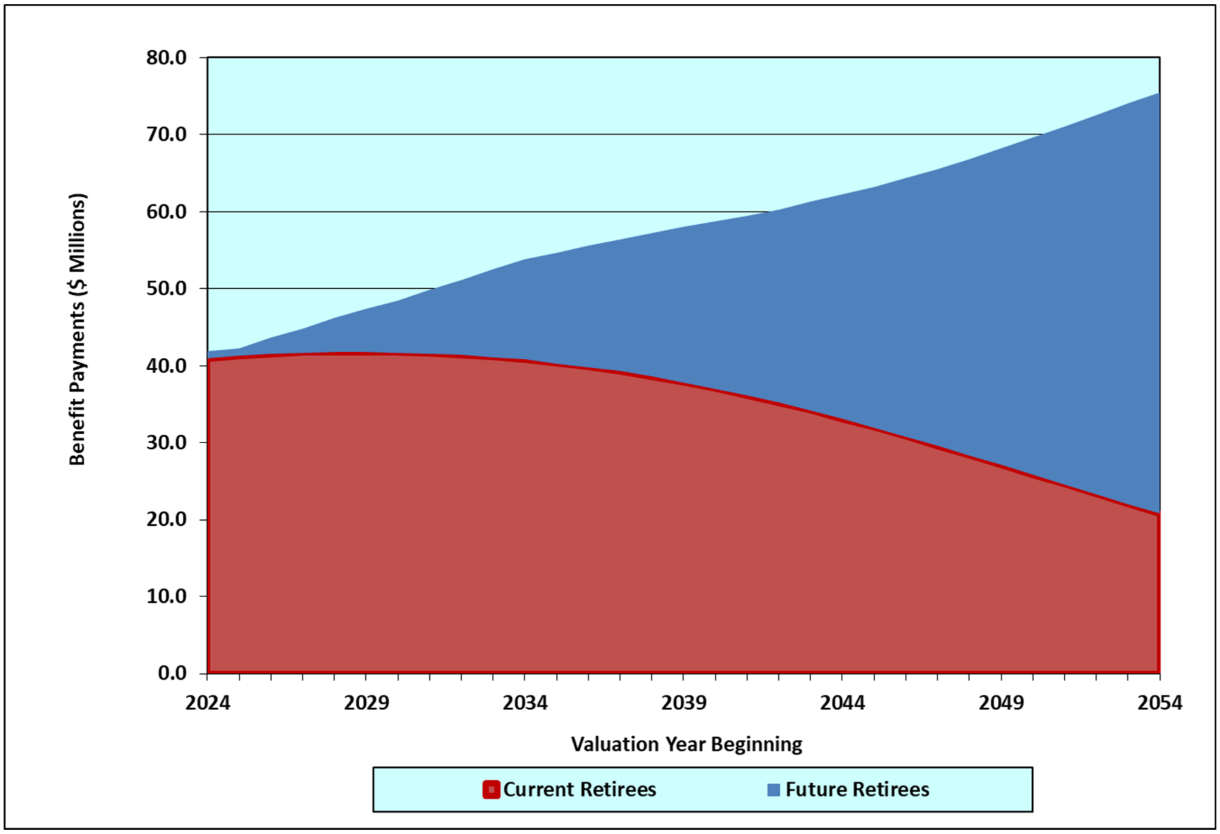
In addition to the regular valuation assumptions used in performing the annual actuarial valuations of HSPRS, additional assumptions must be made that are unique to projections. The first of these is what, if any, change in the overall active membership will be anticipated. For this projection study, 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 in the last three years prior to the projection start date of June 30, 2024. The new entrant profile is summarized in the table below.

Age	Average Pay	Percent Male	Weight
22	$52,000	100%	14%
25	$52,000	93%	29%
28	$52,000	93%	18%
32	$52,000	88%	22%
37	$52,000	100%	6%
43	$52,000	90%	7%
49	$52,000	100%	4%

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, 2024 would remain in place for the following 30 years. The following graph shows the projection of benefit payments of HSPRS 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. HSPRS currently pays approximately $41 million in benefit payments to its retirees but over the 30-year period, that amount is expected to nearly double.



FUTURE MEMBERSHIP

The following chart and graph show the headcounts of active participants and retired members over the projection period. The actives are broken down into those existing as of June 30, 2024 and those who are hired after June 30, 2024. For baseline projection purposes, we have continued the active membership at its current population of 504 active members over the projected period. In Section XI of this report, we provide some sensitivity analysis around this static assumption.

Member	2024	2029	2034	2044	2047	2054
Active – Existing Employees	504	372	260	106	65	9
Active – New Entrants	0	132	244	398	439	495
Retirees	612	693	783	926	949	1,035
Beneficiaries	182	196	210	207	207	207
Disableds	12	9	9	11	12	15
Vested Terminations	41	35	47	62	67	72
Total	1,351	1,437	1,553	1,710	1,739	1,833

PROJECTION RESULTS

The baseline projection results shown below use the same actuarial assumptions as used the June 30, 2024 actuarial valuation report. Please note that contributions from SB 2659 and HB 1015 are assumed to continue to provide an additional $3,300,000 annually throughout the projection period under all scenarios. These dollars are in addition to the employer contributions as a percentage of payroll shown below. In addition, the projection results using a different long-term investment return assumptions for future valuations (6.50%) is included.

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

	2024	2029	2034	2044	2047	2054
Total Payroll	$34,645	$39,030	$42,995	$54,821	$58,761	$69,327
UAL	231,089	238,865	240,941	219,857	201,740	124,763
Normal Cost Rate	19.61%	20.20%	20.61%	20.95%	21.03%	21.26%
UAL Rate	29.47%	28.88%	28.47%	28.13%	28.05%	27.82%
FCR Rate	49.08%	49.08%	49.08%	49.08%	49.08%	49.08%
Funded Ratio	65.5%	67.8%	70.3%	77.4%	80.5%	89.6%
Amortization Period	33 years	28 years	25 years	16 years	13 years	6 years
ADC	53.09%	57.97%	63.84%	79.61%	86.92%	41.45%
ADC Ratio	108.2%	118.1%	130.1%	162.3%	177.1%	84.4%
Cash Flow %	(4.1)%	(4.2)%	(4.4)%	(3.6)%	(3.3)%	(2.9)%

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

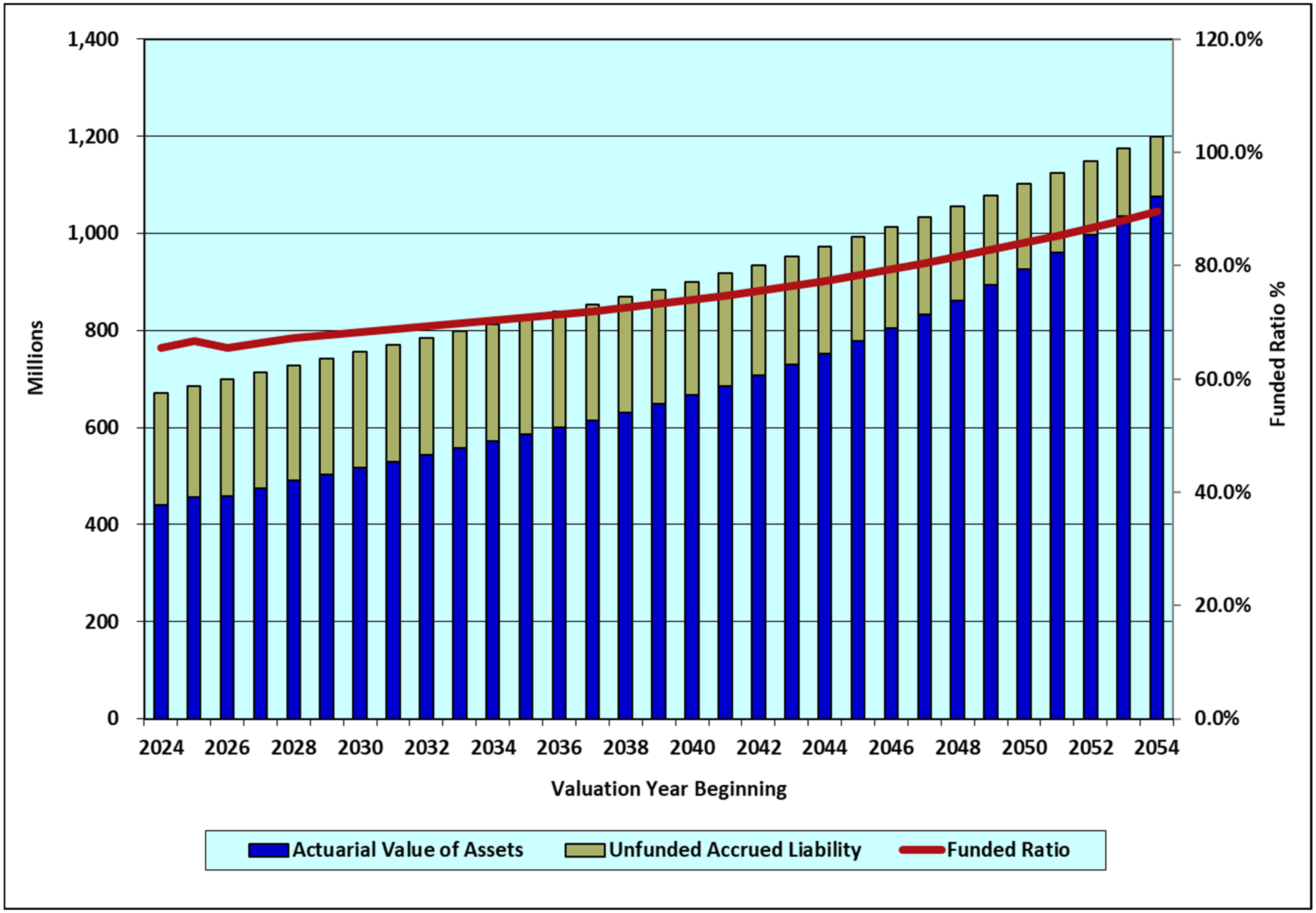
	2024	2029	2034	2044	2047	2054
Total Payroll	$34,645	$39,030	$42,995	$54,821	$58,761	$69,327
UAL	271,438	295,779	321,390	381,268	400,755	448,983
Normal Cost Rate	23.26%	23.90%	24.37%	24.78%	24.88%	25.17%
UAL Rate	25.82%	25.18%	24.71%	24.30%	24.20%	23.91%
FCR Rate	49.08%	49.08%	49.08%	49.08%	49.08%	49.08%
Funded Ratio	61.8%	62.4%	62.6%	63.0%	63.4%	64.7%
Amortization Period	45 years	49 years	52 years	51 years	50 years	48 years
ADC	61.68%	69.82%	80.17%	109.30%	122.44%	73.42%
ADC Ratio	125.7%	142.3%	163.4%	222.7%	249.5%	149.6%
Cash Flow %	(4.1)%	(4.3)%	(4.7)%	(4.1)%	(4.0)%	(3.8)%

SECTION IX – PROJECTION RESULTS

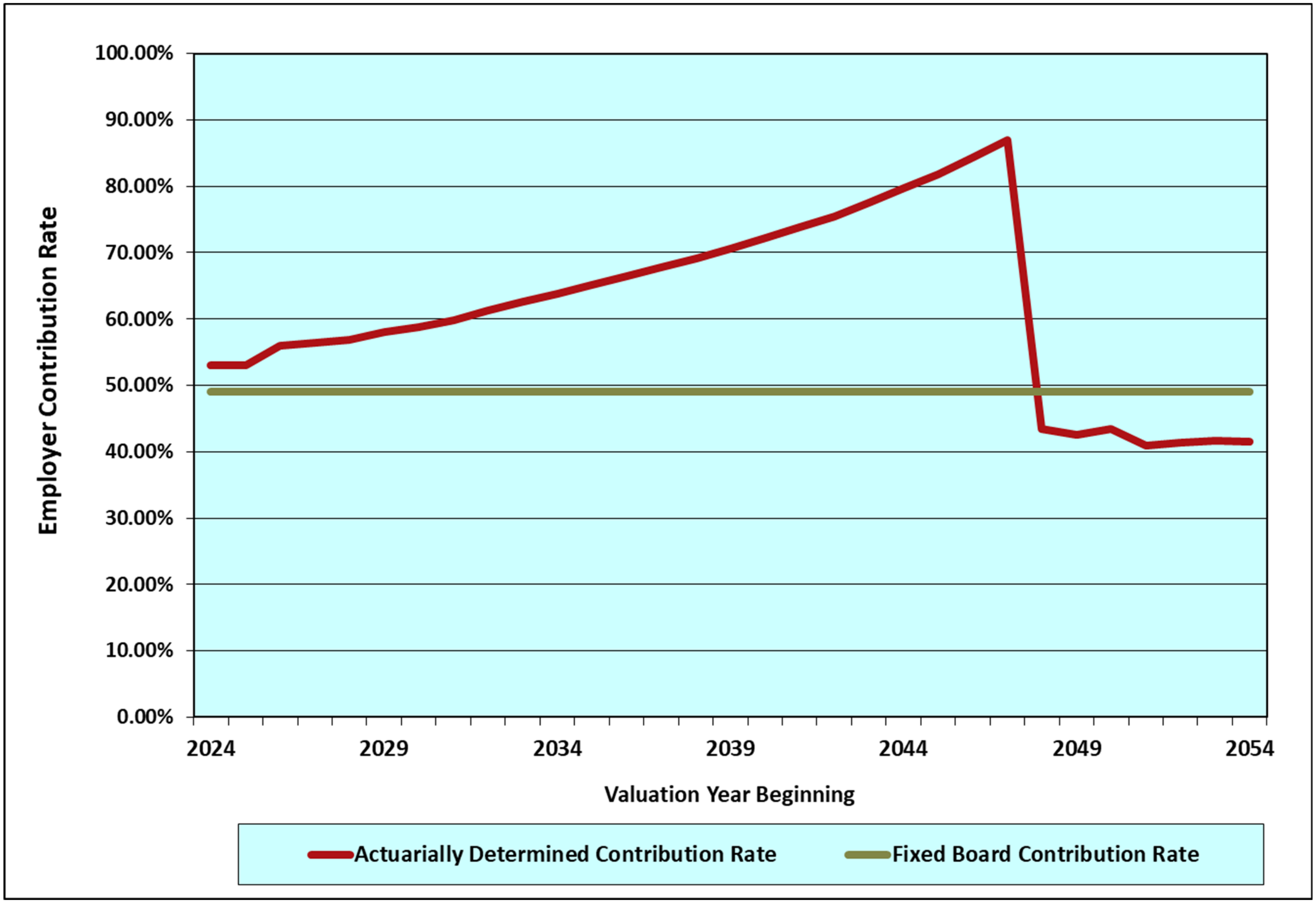
The first graph that follows shows the projection of the Unfunded Accrued Liability (UAL), Actuarial Value of Assets and the Funded Ratio under the baseline valuation (assuming 7.00%) from the amounts shown in the baseline table on the previous page. As you can see from the graph, under the current assumptions, the funded ratio is expected to slightly increase each year during the projection period. However, it only reaches about 90% by the end of the projection period.

The second graph shows the projection of the calculated Actuarially Determined Contribution (ADC) based on the Board's Funding Policy and the current Fixed Contribution Rate (FCR) of 49.08% under the baseline valuation. As you can see from the graph, the ADC is expected to increase even further for the remaining projection period, as the valuation results continue to include contribution deficiency shortfalls due to the difference between the ADC and FCR. The drop in the ADC near the end of the projection period is a result of the initial 2023 UAL base of $227 Million being paid off, based on the closed amortization period per the Board's Funding Policy.

Mississippi PERS – HSPRS Plan
30 Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2024 Valuation Results



Mississippi PERS – HSPRS Plan
30 Year Projection of Employer Contribution Rates
Based on June 30, 2024 Valuation Results



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 HSPRS, have negative cash flow, where benefit payments paid out of the trust are more than the contributions being collected by employers and employees.

For the fiscal year ending June 30, 2025, we are projecting HSPRS to have a negative cash flow of approximately $17.8 Million (benefit payments of $41.9 Million and contributions of $24.1 Million). With a market value of assets of $438 Million as of June 30, 2023, the cash flow as a percentage of assets is estimated to be negative 4.07% for the 2025 fiscal year. While the market value of assets is assumed to earn 7.00% each year, the difference between the investment return assumption and the negative cash flow percentage is positive, meaning assets are projected to grow for the 2025 fiscal year. When assets do not earn a positive return enough to cover this negative cash flow percentage, assets are expected to decline for the year. If the negative cash flow percentage does not grow more than the assumed investment return assumption, the System's assets will continue to increase, and sustainability of the plan may be achieved.

SECTION X – CASH FLOW PROJECTIONS

The tables on the following pages demonstrate the open group projection of cash flow on (1), the baseline assumption, and then (2), a sensitivity analysis, using a one-year return of negative 5.00% for the fiscal year ending June 30, 2025. These results demonstrate the projection of this metric if HSPRS 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 38, the cash flow as a percentage of market value of assets does not at any point get less than negative 4.42% on the baseline assumptions, meaning that HSPRS assets should continue to increase as long as all baseline actuarial assumptions are met.

If there is a significant negative investment experience in one of the next five years (as seen on the table on page 39), the negative cash flow will be less than the baseline cash flow, however, HSPRS will not have a decrease in their assets at any point during the remaining 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 HSPRS assets during the projection period.

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

Projection of Cash Flow

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

Valuation Year Beginning July 1	Expected Short-term Investment Return	Valuation Annual Payroll	Market Value of Assets July 1	Total Contributions	Projected Benefit Payments	Ratio of Cash Flow to MVA	Expected Investment Return	Net Cash Flow	Market Value of Assets June 30	Valuation Year Ending June 30
2024	7.00%	36,152,335	438,476,000	24,071,903	(41,930,754)	-4.07%	30,078,832	12,219,981	450,695,981	**2025**
2025	7.00%	36,905,419	450,695,981	24,504,599	(42,283,577)	-3.94%	30,936,979	13,158,001	463,853,982	**2026**
2026	7.00%	37,655,549	463,853,982	24,935,598	(43,611,418)	-4.03%	31,827,180	13,151,361	477,005,342	**2027**
2027	7.00%	38,340,570	477,005,342	25,329,188	(44,865,813)	-4.10%	32,718,157	13,181,532	490,186,874	**2028**
2028	7.00%	39,029,625	490,186,874	25,725,096	(46,200,945)	-4.18%	33,608,547	13,132,698	503,319,572	**2029**
2029	7.00%	39,752,538	503,319,572	26,140,457	(47,344,146)	-4.21%	34,502,793	13,299,104	516,618,675	**2030**
2030	7.00%	40,709,167	516,618,675	26,690,103	(48,426,761)	-4.21%	35,415,391	13,678,733	530,297,409	**2031**
2031	7.00%	41,584,889	530,297,409	27,193,263	(49,794,459)	-4.26%	36,343,156	13,741,960	544,039,369	**2032**
2032	7.00%	42,243,148	544,039,369	27,571,477	(51,184,313)	-4.34%	37,270,284	13,657,447	557,696,816	**2033**
2033	7.00%	42,994,666	557,696,816	28,003,273	(52,487,701)	-4.39%	38,196,316	13,711,888	571,408,704	**2034**
2034	7.00%	43,878,753	571,408,704	28,511,240	(53,784,451)	-4.42%	39,129,008	13,855,797	585,264,501	**2035**
2035	7.00%	44,820,329	585,264,501	29,052,237	(54,691,509)	-4.38%	40,086,318	14,447,046	599,711,547	**2036**
2036	7.00%	45,972,737	599,711,547	29,714,372	(55,631,237)	-4.32%	41,088,060	15,171,194	614,882,741	**2037**
2037	7.00%	47,091,081	614,882,741	30,356,934	(56,452,546)	-4.24%	42,143,893	16,048,281	630,931,022	**2038**
2038	7.00%	48,374,299	630,931,022	31,094,227	(57,268,828)	-4.15%	43,264,555	17,089,955	648,020,977	**2039**
2039	7.00%	49,571,183	648,020,977	31,781,916	(58,029,131)	-4.05%	44,458,353	18,211,138	666,232,115	**2040**
2040	7.00%	50,838,885	666,232,115	32,510,295	(58,749,983)	-3.94%	45,733,392	19,493,704	685,725,819	**2041**
2041	7.00%	52,184,564	685,725,819	33,283,476	(59,482,620)	-3.82%	47,099,346	20,900,203	706,626,021	**2042**
2042	7.00%	53,528,120	706,626,021	34,055,438	(60,296,129)	-3.71%	48,560,931	22,320,240	728,946,261	**2043**
2043	7.00%	54,820,952	728,946,261	34,798,255	(61,331,234)	-3.64%	50,113,290	23,580,312	752,526,572	**2044**
2044	7.00%	56,030,632	752,526,572	35,493,296	(62,222,201)	-3.55%	51,757,171	25,028,266	777,554,839	**2045**
2045	7.00%	57,433,998	777,554,839	36,299,622	(63,223,393)	-3.46%	53,502,444	26,578,673	804,133,512	**2046**
2046	7.00%	58,760,841	804,133,512	37,061,981	(64,390,871)	-3.40%	55,349,012	28,020,122	832,153,634	**2047**
2047	7.00%	60,072,853	832,153,634	37,815,819	(65,567,003)	-3.33%	57,295,890	29,544,706	861,698,340	**2048**
2048	7.00%	61,513,877	861,698,340	38,643,782	(66,790,613)	-3.27%	59,350,406	31,203,575	892,901,915	**2049**
2049	7.00%	62,937,876	892,901,915	39,461,964	(68,227,280)	-3.22%	61,513,376	32,748,060	925,649,975	**2050**
2050	7.00%	64,409,495	925,649,975	40,307,506	(69,565,974)	-3.16%	63,788,772	34,530,304	960,180,279	**2051**
2051	7.00%	66,019,923	960,180,279	41,232,803	(71,069,591)	-3.11%	66,185,994	36,349,206	996,529,485	**2052**
2052	7.00%	67,616,664	996,529,485	42,150,236	(72,546,969)	-3.05%	68,711,172	38,314,439	1,034,843,924	**2053**
2053	7.00%	69,327,460	1,034,843,924	43,133,201	(74,019,837)	-2.98%	71,376,326	40,489,690	1,075,333,614	**2054**
2054	7.00%	71,068,998	1,075,333,614	44,133,830	(75,526,610)	-2.92%	74,193,189	42,800,409	1,118,134,023	**2055**

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

Projection of Cash Flow

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

Valuation Year Beginning July 1	Expected Short-term Investment Return	Valuation Annual Payroll	Market Value of Assets July 1	Total Contributions	Projected Benefit Payments	Ratio of Cash Flow to MVA	Expected Investment Return	Net Cash Flow	Market Value of Assets June 30	Valuation Year Ending June 30
2024	-5.00%	36,152,335	438,476,000	24,071,903	(41,930,754)	-4.07%	(21,471,604)	(39,330,455)	399,145,545	2025
2025	7.00%	36,905,419	399,145,545	24,504,599	(42,283,577)	-4.45%	27,328,448	9,549,470	408,695,015	2026
2026	7.00%	37,655,549	408,695,015	24,935,598	(43,611,418)	-4.57%	27,966,053	9,290,234	417,985,248	2027
2027	7.00%	38,340,570	417,985,248	25,329,188	(44,865,813)	-4.67%	28,586,750	9,050,125	427,035,373	2028
2028	7.00%	39,029,625	427,035,373	25,725,096	(46,200,945)	-4.79%	29,187,942	8,712,093	435,747,466	2029
2029	7.00%	39,752,538	435,747,466	26,140,457	(47,344,146)	-4.87%	29,772,745	8,569,056	444,316,521	2030
2030	7.00%	40,709,167	444,316,521	26,690,103	(48,426,761)	-4.89%	30,354,241	8,617,583	452,934,105	2031
2031	7.00%	41,584,889	452,934,105	27,193,263	(49,794,459)	-4.99%	30,927,724	8,326,528	461,260,633	2032
2032	7.00%	42,243,148	461,260,633	27,571,477	(51,184,313)	-5.12%	31,475,773	7,862,936	469,123,569	2033
2033	7.00%	42,994,666	469,123,569	28,003,273	(52,487,701)	-5.22%	31,996,189	7,511,761	476,635,330	2034
2034	7.00%	43,878,753	476,635,330	28,511,240	(53,784,451)	-5.30%	32,494,871	7,221,660	483,856,990	2035
2035	7.00%	44,820,329	483,856,990	29,052,237	(54,691,509)	-5.30%	32,987,792	7,348,520	491,205,510	2036
2036	7.00%	45,972,737	491,205,510	29,714,372	(55,631,237)	-5.28%	33,492,637	7,575,771	498,781,281	2037
2037	7.00%	47,091,081	498,781,281	30,356,934	(56,452,546)	-5.23%	34,016,791	7,921,179	506,702,460	2038
2038	7.00%	48,374,299	506,702,460	31,094,227	(57,268,828)	-5.17%	34,568,555	8,393,955	515,096,415	2039
2039	7.00%	49,571,183	515,096,415	31,781,916	(58,029,131)	-5.10%	35,153,634	8,906,419	524,002,834	2040
2040	7.00%	50,838,885	524,002,834	32,510,295	(58,749,983)	-5.01%	35,777,342	9,537,654	533,540,488	2041
2041	7.00%	52,184,564	533,540,488	33,283,476	(59,482,620)	-4.91%	36,446,373	10,247,230	543,787,717	2042
2042	7.00%	53,528,120	543,787,717	34,055,438	(60,296,129)	-4.83%	37,162,249	10,921,558	554,709,275	2043
2043	7.00%	54,820,952	554,709,275	34,798,255	(61,331,234)	-4.78%	37,916,701	11,383,723	566,092,997	2044
2044	7.00%	56,030,632	566,092,997	35,493,296	(62,222,201)	-4.72%	38,706,821	11,977,916	578,070,914	2045
2045	7.00%	57,433,998	578,070,914	36,299,622	(63,223,393)	-4.66%	39,538,570	12,614,799	590,685,713	2046
2046	7.00%	58,760,841	590,685,713	37,061,981	(64,390,871)	-4.63%	40,407,666	13,078,776	603,764,489	2047
2047	7.00%	60,072,853	603,764,489	37,815,819	(65,567,003)	-4.60%	41,308,650	13,557,466	617,321,955	2048
2048	7.00%	61,513,877	617,321,955	38,643,782	(66,790,613)	-4.56%	42,244,059	14,097,228	631,419,183	2049
2049	7.00%	62,937,876	631,419,183	39,461,964	(68,227,280)	-4.56%	43,209,585	14,444,269	645,863,452	2050
2050	7.00%	64,409,495	645,863,452	40,307,506	(69,565,974)	-4.53%	44,203,715	14,945,247	660,808,699	2051
2051	7.00%	66,019,923	660,808,699	41,232,803	(71,069,591)	-4.52%	45,229,983	15,393,195	676,201,894	2052
2052	7.00%	67,616,664	676,201,894	42,150,236	(72,546,969)	-4.50%	46,288,240	15,891,507	692,093,401	2053
2053	7.00%	69,327,460	692,093,401	43,133,201	(74,019,837)	-4.46%	47,383,789	16,497,153	708,590,554	2054
2054	7.00%	71,068,998	708,590,554	44,133,830	(75,526,610)	-4.43%	48,521,175	17,128,395	725,718,949	2055

SENSITIVITY ANALYSIS

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

- Investment Risk – the potential that actual investment returns will be different than expected.

- Longevity and Other Demographic Risks – the potential that mortality or other demographic experience will be different than expected.

- Interest Rate Risk – to the extent market rates of interest affect the expected return on assets, there is a risk of changing to the discount rate which determines the present value of liabilities and actuarial valuation results.

- Contribution Risk – the potential that actual contributions are different than the fixed contribution rates.

- Liquidation Risk - the potential that the plan (or all covered employment) ended on the valuation date and all of the accrued benefits had to be paid with cash-flow matched bonds.

Investment Risk

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

Projected Funded Ratios in 2047

Single Year Event	2024 Valuation	2023 Valuation
• 1.00% for the next fiscal year	69.4%	67.5%
• 3.00% for the next fiscal year	73.1%	71.2%
• 5.00% for the next fiscal year	76.8%	74.9%
• **7.00% for the next fiscal year (Baseline)**	**80.5%**	**78.6%**
• 9.00% for the next fiscal year	84.2%	82.3%
• 11.00% for the next fiscal year	87.9%	86.0%
• 13.00% for the next fiscal year	91.5%	89.7%
• Simulate 2008 loss using -15% for the next fiscal year	40.0%	38.0%
Average Returns over next 10-Year Period (Simulated returns using mean and standard deviations from PERS' Investment Consultant's Capital Market Assumptions)*	**2024 Valuation**	**2023 Valuation**
• 6.00%	65.5%	63.4%
• 7.00%	80.7%	78.8%
• 8.00%	100.4%	98.6%

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

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

Demographic Risk

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

For HSPRS, there have been significant fluctuations in active membership since 2008. In the baseline projections we assume a static population of 504 active members. 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 HSPRS, a 0.50% decrease in active population each year of the projection results in the active population dropping to 433. In the table below, we review these alternatives to the static active membership growth:

Projected Funded Ratio in 2047

Active Membership Growth	2024 Valuation	2023 Valuation
• Increase 0.50% each year	83.5%	82.2%
• Increase 0.25% each year	82.0%	80.4%
• **Static Population (Baseline Assumption)**	**80.5%**	**78.6%**
• Decrease 0.25% each year	79.0%	76.9%
• Decrease 0.50% each year	77.6%	75.1%

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 a 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 Ratios in 2047

Scenario	Price Inflation	Discount Rate	Wage Inflation	2024 Valuation	2023 Valuation
1 - Baseline	2.40%	7.00%	2.65%	**80.5%**	**78.6%**
2	2.40%	6.75%	2.65%	71.5%	69.7%
3	2.10%	6.75%	2.35%	68.5%	68.9%

Contribution Risk

To demonstrate the contribution risk of making the Fixed Contribution Rates (FCR) for HSPRS, 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 Ratios in 2047

Change in Fixed Contribution Rate (FCR)	2024 Valuation	2023 Valuation
• Baseline	**80.5%**	**78.6%**
• 1.00% increase in FCR	82.7%	81.0%
• 1.00% decrease in FCR	78.3%	76.2%

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

Liquidation Risk

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

This measure uses the unit credit cost method and reflects all the assumptions and provisions of the funding valuation except that the discount rate is derived from considering low-default-risk fixed income securities. We considered the FTSE Pension Discount Curve based on market bond rates published by the Society of Actuaries as of June 30, 2024 and with the 30-year spot rate used for all durations beyond 30. Using these assumptions, we calculate a low-default-risk obligation measure liability of approximately $772,120,000.

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 metrics based on the funding policy for HSPRS and with a fixed contribution rate as a percentage of annual compensation of 49.08% of payroll, the projection results for 2024 for HSPRS show that none of the funding policy metrics are in the Red Status. Therefore, we do not recommend an increase in the Fixed Contribution Rate (FCR) of 49.08% of annual compensation at this time. However, the ADC/FCR ratio is expected to increase to more than 110% within the next 5 years. Therefore, an increase in the Fixed Contribution Rate may be needed soon, especially if there is negative experience.

Metrics	2024 Baseline Projection	2024 Status
Funding Ratio in 2047	80.5%	Yellow
Cash Flow as a Percentage of Assets	(4.42)%	Green
ADC/FCR Ratio from 2024 Valuation	108.2%	Yellow
ADC/FCR Ratio from 2025 Valuation	108.0%	Yellow

SCHEDULE A – DEVELOPMENT OF ASSETS

($ thousands)

	Valuation Date June 30:	2023	2024	2025	2026	2027	2028
A.	Actuarial Value Beginning of Year	$419,219	$429,909				
B.	Market Value End of Year	416,724	438,476				
C.	Market Value Beginning of Year	405,372	416,724				
D.	Cash Flow						
	D1. Contributions	20,299	20,391				
	D2. Other Revenue	3,159	3,293				
	D3. Benefit Payments	(41,122)	(43,960)				
	D4. Refunds	(161)	(143)				
	D5. Administrative Expenses	(359)	(350)				
	D6. Net	(18,184)	(20,769)				
E.	Investment Income						
	E1. Market Total: B.-C.-D6.	29,536	42,521				
	E2. Assumed Rate	7.55%	7.00%				
	E3. Amount for Immediate Recognition	29,919	28,444				
	E4. Amount for Phased-In Recognition	(383)	14,077				
F.	Phased-In Recognition of Investment Income						
	F1. Current Year: 0.20*E4.	(77)	2,815				
	F2. First Prior Year	(14,937)	(77)	2,815			
	F3. Second Prior Year	17,632	(14,937)	(77)	2,815		
	F4. Third Prior Year	(3,334)	17,632	(14,937)	(77)	2,815	
	F5. Fourth Prior Year	(329)	(3,329)	17,630	(14,938)	(75)	2,817
	F6. Total Recognized Investment Gain	(1,045)	2,104	5,431	(12,200)	2,740	2,817
G.	Actuarial Value End of Year: A + D6. + E3. + F6.	$429,909	$439,688				
H.	Difference Between Market & Actuarial Values	$(13,185)	$(1,212)	$(6,643)	$5,557	$2,817	$0

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

Asset Summary June 30, 2024 ($ in Thousands)		
	Market Value	**Actuarial Value**
(1) Assets at June 30, 2023	$416,724	$429,909
(2) Contributions and Misc. Revenue	23,684	23,684
(3) Investment Increment	42,521	30,548
(4) Benefit Payments	(43,960)	(43,960)
(5) Refunds	(143)	(143)
(6) Administrative Expenses	(350)	(350)
(7) Assets at June 30, 2024 (1)+(2)+(3)+(4)+(5)+(6)	$438,476	$439,688
(8) Net Investment Return [2 x (3)] / [(7) + (1) – (3)]	10.46%	7.28%

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

INTEREST RATE: 7.00% per annum, compounded annually (net of investment expenses 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 annual rates of separation from active service are as follows:

	Withdrawal		Death*		Disability		
Age	Less than 20 years of service	20 or more years of service	Males	Females	Duty and Non-Duty	Service	Service Retirement**
25	7.000%		0.0567%	0.0189%	0.0191%	5	7.5%
30	4.000		0.0630	0.0259	0.0259	10	7.5%
35	2.750	1.375%	0.0714	0.0350	0.0383	15	7.5%
40	2.000	1.000	0.0893	0.0483	0.0506	20	9.0%
45	2.000	1.000	0.1218	0.0665	0.0675	25	24.0%
50	2.000	1.000	0.1764	0.0917	0.1035	30	25.0%
55	0.000	0.000	0.2594	0.1274	0.1744	35	35.0%
60	0.000	0.000	0.3980	0.1757	0.2914	40+	100.0%

* Adjusted Base Rates.
** The annual rate of service retirement is 100% at age 63.

It is assumed that a member will be granted 1¾ years of service credit for unused leave at termination of employment. In addition, it is assumed that, on average, ½ year of service credit for peace-time military service will be granted to each member.

SCHEDULE B – ACTUARIAL ASSUMPTIONS AND METHODS

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
0-4	2.35%	2.65%	5.00%
5-7	2.10	2.65	4.75
8-13	1.60	2.65	4.25
14-20	1.35	2.65	4.00
21-24	1.10	2.65	3.75
25	0.85	2.65	3.50

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

PAYROLL GROWTH: 2.65% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 1.00% of payroll.

TIMING OF DECREMENT AND PAY INCREASES: Middle of Year.

ASSUMED INTEREST RATE ON EMPLOYEE CONTRIBUTIONS: 2.00%

MARRIAGE ASSUMPTION: 100% married with the husband three years older than his wife.

SURVIVING CHILD BENEFITS ASSUMPTION: A small load is applied for surviving children.

MAXIMUM COVERED EARNINGS ASSUMPTION GROWTH: 2.65%

MODIFIED CASH REFUND: Benefits were valued with a twelve-year certain period for retirees and five years certain for active members to estimate the value of the modified cash refund feature.

SCHEDULE B – ACTUARIAL ASSUMPTIONS AND METHODS

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

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

a. Existing UAAL on June 30, 2023 – 25 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 HSPRS 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 accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses. The accrued liability contribution amortizes the balance of the unfunded actuarial accrued liability over a period of years from the valuation date.

Schedule C – Main Benefit and Contribution Provisions

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

DEFINITIONS

Average Compensation	Average annual covered earnings of an employee during the four highest consecutive years of service.
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 July 1, 1958, active duty military service, and retroactive service

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

EMPLOYER AND EMPLOYEE RATES OF CONTRIBUTION AND MAXIMUM COVERED EARNINGS

Fiscal Date From	Fiscal Date To	Employer Rate	Employee Rate	Maximum Covered Earnings*
7/1/2013	6/30/2018	37.00%	7.25%	
7/1/2018	6/30/2024	49.08%	7.25%	

* Maximum covered earnings equal wages paid, not to exceed wages paid to the Commissioner of the Department of Public Safety (currently $190,175).

Effective July 1, 2024, additional contributions from SB 2659 and HB 1015 are estimated to be $3,300,000 combined.

BENEFITS

Superannuation Retirement

Condition for Retirement	A retirement allowance is payable to any member who retires and has attained age 55 and completed at least five years of membership service or has attained age 45 and completed at least 20 years of creditable service or has completed 25 years of creditable service regardless of age. Any member who has attained age 63 shall be retired forthwith. Effective July 1, 2011, the Commissioner of Public Safety is authorized to allow a member who has attained age 63 to continue in active service. Such continued service may be authorized annually until the member attains age 65.
Amount of Allowance	The annual retirement allowance payable to a retired member 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. An employer's annuity which, together with the member's annuity, is equal to 2-1/2% of his or her average compensation for each year of membership service, plus 3. A prior service annuity equal to 2-1/2% of average compensation for each year of prior service. The aggregate amounts of (2) and (3) above shall not exceed 100% of average compensation, regardless of service, for retirements on or after January 1, 2000.

The minimum allowance for both service and disability retirement based on the following table for each year of creditable service, reduced if necessary, as indicated below.

Service	Monthly Benefit
Less than 10 years	$250
10-15 years	$300
15 or more years	$500

The annual retirement allowance payable to a member who retires under condition (a) above prior to age 55 is computed in accordance with the above formula except that the employer's annuity and prior service annuity are reduced actuarially based on mortality table and interest rate used in the valuation.

Deferred Vested

Condition for Vesting

Any member who withdraws from service prior to his or her attainment of age 55 but after having completed five or more years of creditable service is entitled to receive, in lieu of a refund of his or her accumulated contributions, a retirement allowance commencing at age 55.

Amount of Allowance

The annual retirement allowance payable at age 55 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. An employer's annuity which, together with the member's annuity, is equal to 2-1/2% of his or her average compensation for each year of membership service, plus

3. A prior service annuity equal to 2-1/2% of average compensation for each year of prior service.

The aggregate amounts of (2) and (3) above shall not exceed 100% of average compensation, regardless of service, for retirements on or after January 1, 2000; 85% for retirements prior to January 1, 2000.

The minimum allowance for both service and disability retirement based on the following table for each year of creditable service, reduced if necessary as indicated below.

Service	Monthly Benefit
Less than 10 years	$250
10-15 years	$300
15 or more years	$500

Disability Retirement

Non-Duty-Related

Non-duty related disability benefits are available to vested members under the age of 55. Vested members age 55 or older are not eligible for disability benefits but may apply for service retirement benefits. For purposes of disability benefits, average annual compensation is calculated using the last two years of salary before retirement.

Duty-Related

If the member becomes permanently disabled due to sickness or injury caused or sustained as a direct result of duty, they may be eligible for duty-related disability retirement. They are covered for this benefit from the first day of employment if they have not reached age 55, regardless of their years of service. Duty-related disability retirement benefits are calculated at either 50 percent of average compensation of the last two years of salary before retirement (this portion is not taxable) or the non-duty-related disability retirement amount, whichever provides the higher benefit.

Death Benefits

Non-Duty-Related

If the member is vested, their spouse and dependent children may be eligible to receive certain statutory benefits. Claims for non-duty-related death benefits are calculated at 2.5 percent of average compensation for each year of service credit, as calculated under Option 9, Maximum Benefit. Under this option, 50 percent of the accrued benefit is payable to the member's spouse until death, with 25 percent of the accrued benefit payable to one dependent child and 50 percent of the accrued benefit payable for two or more dependent children (under age 19 and never married or under age 23 if a full-time student and never married). Upon application and approval by the Medical Board, benefits to a physically or mentally disabled child may continue as long as the disability exists.

Duty-Related

Coverage for duty-related death benefits begins on the first day of employment and is available to the member's spouse and dependent children regardless of their vesting status. If they are vested, their spouse and dependent children may be eligible to receive benefits under either non-duty or duty-related death benefit provisions, whichever provided the higher benefit.

Claims for duty-related death benefits are calculated at 50 percent of average compensation, payable to the member's spouse until death, with 25 percent of average compensation payable to one dependent child and 50 percent of average compensation payable for two or more dependent children (under age 19 and never married or under age 23 if a full-time student and never married). Upon application and approval by the Medical Board, benefits to a physically or mentally disabled child may continue as long as the disability exists.

Death After Retirement

Upon the death of a highway patrolman who has retired for service or disability and who has not elected any other optional form of benefit, his widow or her widower is eligible for a benefit equal to 50% of his or her retirement allowance and each child (but not more than 2) who has not attained age 19 (23 if a full-time student) is eligible for a benefit equal to 25% of his or her retirement allowance. The benefit to the widow is payable for life and to children until they attain age 19 (23 if a full-time student) or for life if they are totally and permanently disabled.

Refund of Contributions

Upon a member's termination of employment for any reason before retirement, his or her accumulated contributions, together with regular interest thereon, are refunded. Upon the death of a member who is not eligible for any other death benefit, his or her accumulated contributions, together with regular interest thereon, are paid to his or her beneficiary.

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

For single retirees, the normal form of benefit is an allowance payable during the life of the member. For married retirees, the normal form of benefit is an allowance payable as described in Option 9 below. Upon death the benefits described above are payable.

Optional Benefits

A member upon retirement may elect to receive his 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 HSPRS 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.

Option 9. Upon his or her death, spouse will receive 50% of the benefit member was receiving for life. Each dependent child (under age 19 and never married or under age 23 if a full-time student and never married) will receive 25% of the benefit member was receiving with a maximum of 50% for the support and care of two or more children. Any contribution and interest remaining after member death and after all monthly benefits due to spouse and children have been paid will be refunded to designated beneficiaries. If the member marries after retirement while receiving benefits under this option, they may apply to Pop-Down to Option 2 to provide 100% beneficiary protection to new spouse, or Pop-down to Option 4 or Option 4A for other beneficiary protections for the new spouse. PLSO is available with this option, if eligible.

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 who qualifies for an unreduced retirement allowance may 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 either 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 this 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.

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 60*, plus (b) 3% compounded for each year thereafter beginning with the fiscal year in which the member turns age 60*.

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.

Those members who retired on or before July 1, 1999 received an ad hoc benefit increase in the amount of $3.50 per month per each full fiscal year of retirement through June 30, 1999 plus $1.00 per month for each year of credited service. The benefits were increased on July 1, 1999.

*this age will be reduced in five phases to age 55 if the actuary certifies that reducing the age will not result in the amortization period of the unfunded actuarial accrued liability exceeding 20 years.

RECONCILIATION OF DATA RECEIVED FROM PERS

Reconciliation of Data received from PERS	Active File			Pensioner File			Total
	Active	Inactives	Deferred Vested	Retirees	Disableds	Survivors	
From PERS	541	39	41	628	14	194	1,457
Refunded	(8)	(4)					(12)
Deceased				(16)	(2)	(10)	(28)
Retiree Deceased							
Certain Period End						(2)	(2)
Inactive							
Deferred Vested							
Duplicate*	(29)						(29)
Retired							
For Valuation	504	35	41	612	12	182	1,386

*Also included in Pensioner File

STATUS RECONCILIATION FROM 2023 TO 2024

Reconciliation of Data from Last Year to This Year	Actives	Retirees	Disableds	Survivors	Deferred Vested	Inactives	Total
As of June 30, 2023	507	600	13	179	45	34	1,378
Retirement	(17)	28			(11)		
Disabled	(1)		1				
Death with Survivor		(12)		15			3
Terminated Def Vested	(9)				15	(6)	
Inactives	(7)				(5)	12	
Return to Active Svc	2				(1)		1
Refunded					(2)	(5)	(7)
Death No Survivor		(4)	(2)	(10)			(16)
Benefit Ended				(2)			(2)
Removed/Cleanup							
New / Pick-up	29						29
As of June 30, 2024	504	612	12	182	41	35	1,386

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

Valuation Year of Retirement Ending June 30	No.	Total Annual Benefits, excluding COLA	COLA	Total Annual Benefits	Average Monthly Total Benefit
2024	29	$1,491,990	$0	$1,491,990	$4,287
2023	35	1,561,893	13,532	1,575,425	3,751
2022	40	2,140,564	99,097	2,239,661	4,666
2021	29	1,517,661	119,576	1,637,237	4,705
2020	23	1,301,690	138,455	1,440,145	5,218
2019	26	1,172,818	163,611	1,336,429	4,283
2018	16	764,989	130,520	895,509	4,664
2017	18	802,918	156,147	959,065	4,440
2016	10	396,469	92,852	489,321	4,078
2015	15	703,343	192,091	895,434	4,975
2014	21	941,868	277,790	1,219,658	4,840
2013	16	644,831	211,380	856,211	4,459
2012	18	749,564	267,811	1,017,375	4,710
2011	20	883,693	353,558	1,237,251	5,155
2010	45	1,797,872	800,073	2,597,945	4,811
2009	29	1,232,432	578,669	1,811,101	5,204
2008	14	499,641	261,135	760,776	4,528
2007	20	671,391	354,442	1,025,833	4,274
2006	18	574,517	334,196	908,713	4,207
2005	18	576,778	359,729	936,507	4,336
2004	18	672,565	447,675	1,120,240	5,186
2003	9	198,337	133,018	331,355	3,068
2002	23	651,501	495,894	1,147,395	4,157
2001	20	584,165	460,888	1,045,053	4,354
2000	13	421,153	352,885	774,038	4,962
1999	14	400,097	356,838	756,935	4,506
1998	28	808,776	725,940	1,534,716	4,568
1997	26	655,771	631,766	1,287,537	4,127
1996	19	436,902	432,062	868,964	3,811
1995	15	372,059	397,154	769,213	4,273
1994	13	272,342	288,536	560,878	3,595
1993	17	325,355	365,308	690,663	3,386
1992	3	53,655	62,952	116,607	3,239
1991	4	35,948	29,575	65,523	1,365
1990	10	143,659	194,083	337,742	2,815
1989	0	0	0	0	0
1988	1	14,712	24,497	39,209	3,267
1987 and Prior	113	1,448,687	2,219,113	3,667,800	2,705
TOTAL	806	$27,922,606	$12,522,848	$40,445,454	$4,182

Schedule of Retired Members by Type of Retirement

Benefits Payable June 30, 2024

Amount of Original Monthly Benefit	Number of Rets.	Ret Type 1*	Ret Type 2*	Ret Type 3*
$1 – $500	21	2		19
501 – 1,000	87	7	3	77
1,001 – 1,500	70	20	1	49
1,501 – 2,000	79	62	5	12
2,001 – 2,500	98	85	1	12
2,501 – 3,000	95	90	2	3
3,001 – 3,500	102	98		4
3,501 – 4,000	72	69		3
4,001 – 4,500	60	58		2
4,501 – 5,000	31	31		
Over 5,000	91	90		1
Totals	806	612	12	182

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

Schedule of Retired Members by Type of Option
Benefits Payable June 30, 2024

Amount of Original Monthly Benefit	Number of Rets.	Life	Option 1	Option 2	Option 3	Option 4	Option 4A	Option 4B	Option 4C*	Option 9	PLSO* 1 Year	PLSO* 2 Years	PLSO* 3 Years
$1 – $500	17			2			1	1		13			
501 – 1,000	87	1		2	1		1	7	1	75		1	1
1,001 – 1,500	69			5			2	2	4	60	3		8
1,501 – 2,000	79	6		11	2		2	3	2	55	1	1	9
2,001 – 2,500	98	4		12				2	1	80	11	3	13
2,501 – 3,000	97	5		14	1		3	4	2	70	6	6	33
3,001 – 3,500	103	8	1	15		1	1	2		75	9	6	36
3,501 – 4,000	74	3		3	1	2	5	4		56	9	9	22
4,001 – 4,500	60		2	6			3	2		47	5	6	21
4,501 – 5,000	31			2						29	5	2	14
Over 5,000	91	1	1	1	1					87	10	9	25
Totals	806	28	4	73	6	3	18	27	10	647	59	43	182

<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. 9	-	Maximum Benefit with Pop-Down Provision
PLSO	-	Partial Lump Sum* (Reflects reduced monthly benefit)

*Included in other options

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

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20					7	$68,002	7	$68,002
20 – 24								
25 – 29					1	$13,043	1	$13,043
30 – 34								
35 – 39					5	$112,211	5	$112,211
40 – 44			1	$30,290	1	$25,442	2	$55,732
45 – 49	13	$627,994	2	$31,305	1	$9,539	16	$668,838
50 – 54	61	$3,086,939			9	$217,649	70	$3,304,588
55 – 59	59	$3,197,247	2	$77,916	4	$147,980	65	$3,423,143
60 – 64	96	$5,394,580	3	$90,491	8	$289,926	107	$5,774,997
65 – 69	140	$8,610,614			9	$333,118	149	$8,943,732
70 – 74	91	$5,245,615	2	$70,907	23	$616,424	116	$5,932,946
75 – 79	82	$4,715,242	1	$37,685	37	$1,288,304	120	$6,041,231
80 – 84	48	$2,763,723	1	$24,650	39	$1,050,174	88	$3,838,547
85 – 89	17	$1,008,466			22	$535,914	39	$1,544,380
90 – 94	5	$270,478			11	$318,945	16	$589,423
95					3	$78,826	3	$78,826
96					1	$35,978	1	$35,978
97								
98								
99								
100 & Over					1	$19,837	1	$19,837
Totals	612	$34,920,898	12	$363,244	182	$5,161,312	806	$40,445,454

Average Age: 69.1 years
Average Age at Retirement: 50.4 years

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

Attained Age	Completed Years of Service									Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Over	No.	Payroll
Under 25	13	10								23	$ 1,176,588
25 to 29	9	67	14							90	5,137,835
30 to 34	7	29	31	2						69	3,985,154
35 to 39	1	17	31	13	9					71	4,615,289
40 to 44	1	5	18	16	47	2				89	6,519,253
45 to 49		5	8	3	31	26	2			75	5,899,626
50 to 54		3	6	3	19	15	13	1		60	4,952,244
55 to 59			2		3	9	6	1	1	22	1,897,901
60 to 64						2	2	1		5	460,890
65 to 69											0
70 & Over											0
Total Count	31	136	110	37	109	54	23	3	1	504	$ 34,644,780

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

Age: 39.7 years
Service: 10.8 years
Annual Pay: $68,740

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

Type of Activity	$ Gain (or Loss) For Year Ending 6/30/2024	$ Gain (or Loss) For Year Ending 6/30/2023
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	$ (885.6)	$ (427.3)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	92.1	59.5
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	148.9	112.6
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(778.3)	770.3
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	756.6	1,386.4
New Members / Rehires. Additional unfunded actuarial accrued liability will produce a loss.	(19.5)	(382.6)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	1,181.3	(2,090.6)
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	6.4	1,136.6
Other. Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	(3,358.3)	(2,617.8)
Gain (or Loss) During Year From Financial Experience	$ (2,856.4)	$ (2,052.9)
Non-Recurring Items. Adjustments for plan amendments, software changes, assumption changes, or method changes.	0.0	(42,719.5)
Composite Gain (or Loss) During Year	$ (2,856.4)	$ (44,772.4)

SCHEDULE F – FUNDING POLICY OF HSPRS

The purpose of the funding policy is to state the overall funding goals and objectives for the Mississippi Highway Safety Patrol Retirement System (HSPRS), 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 HSPRS 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 HSPRS 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, HSPRS will strive to meet the following goals:

- Preservation of the defined benefit structure for providing lifetime benefits to the HSPRS 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 HSPRS 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 HSPRS' 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 HSPRS must consider contribution increases

If any one of the metrics are in the Red Signal Light status in conjunction with the annual valuation report and the projection report, the actuary will determine and recommend to the Board an employer contribution rate increase to consider that is sufficient enough to get all three metrics back into the Green Signal Light status. The employer contribution rate increase would be effective beginning 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 90% in 2047
Yellow	Funded Ratio between 70% and 90% in 2047
Red	Funded Ratio below 70% in 2047

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

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

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

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

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

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

If all of the metrics are in the Greed Signal Light status in conjunction with the annual valuation report and the projection report and the following additional criteria is met for two consecutive valuation and projection cycles, the actuary may recommend to the Board an employer contribution rate decrease to consider. The additional criteria is based on the actuary's long-term investment return assumption recommended by the actuary in the most recent experience study and is as follows:

- Funded Ratio in 2047 is above 110%,
- Cash Flow as a percentage of assets is above negative 3.5% during the projection period, and
- ADC Ratio is below 90% for all years of the projection period.

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 HSPRS' 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, 2023 – 25 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 HSPRS 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 HSPRS' 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 HSPRS' 30-year projection report, which will include the actuarial metrics and Signal Light status for each metric over a 30-year period.
- **Experience Analysis (performed every two years on a rolling four-year)** – The Board is responsible for ensuring that an experience analysis is performed as prescribed, review of the results of the study, and approving the actuarial assumptions and methodologies to be used for all actuarial purposes relating to the defined benefit pension plan.
- **Actuarial Audit (performed at least every five years)** – The Board is responsible for the review of an audit report performed by a new actuarial firm to provide a critique of the reasonableness of the actuarial methods and assumptions in use and the resulting actuarially computed liabilities and contribution rates.
- **Funding Policy Review (performed at least annually)** – The Board is responsible for the periodic review of this policy, but at least annually following the Projection Report and biennially following the Experience Analysis.

V. Glossary of Funding Policy Terms

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

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

SCHEDULE G – HISTORY OF HSPRS PLAN PROVISIONS

Since 1958, the benefit structure of the Highway Safety Patrol Retirement System (HSPRS) of Mississippi has undergone significant changes as noted in the table below.

Fiscal Year Beginning	Benefit Modifications
July 1, 1958	• Mississippi Highway Safety Patrol Retirement System created.
July 1, 1966	• Removed limit of $200 per month for disability retirement payments. • Eliminated reduction in retirement benefits resulting from Social Security payments. • Provided same survivor benefits to disability retirant's beneficiaries as those provided for service retirant's beneficiaries.
July 1, 1974	• Authorized military service credit (not to exceed 4 years maximum unless proof furnished member was retained by causes beyond his control).
July 1, 1975	• Provided additional benefit payments (13th Checks) to retired patrolmen. • Authorized payment of benefits to spouses and families of patrolmen who die after serving minimum period or who are killed in line of duty.
July 1, 1976	• Provided benefits to widows of highway patrolmen who were killed in line of duty prior to enactment of highway patrol retirement system.
July 1, 1977	• Provided that a highway patrolman who reenters service with the highway safety patrol may receive retirement credit for prior years upon repayment of amount refunded and interest from date of refund to repayment.
July 1, 1979	• Provided guaranty of benefits and maximum retirement allowance in the highway safety patrol retirement system.
July 1, 1980	• Provided a minimum service and disability retirement benefit for members of MHSPRS. • Provided any member who served in maritime service during periods of hostility in WWII shall be allowed credit for maritime service. • Provided all members who served in armed forces during war or military conflict or in maritime service during periods of hostility in WWII shall be allowed credit regardless of when they retired.
July 1, 1982	• Provided employer pickup of member contributions. • Increases additional payment (13th check) to 1/2 of annual percentage change of CPI not to exceed 2 1/2%.
July 1, 1984	• Provided that unused leave shall be treated as creditable service under MHSPRS.
July 1, 1985	• Increased 13th check to an amount equal to 2 1/2% of annual percentage change in CPI for years thru 6-30-85; and for subsequent years 100% of annual percentage change in CPI not to exceed 2 1/2%; provided an additional amount could be paid in increments of 1/4 of 1% to a maximum of 1 1/2% provided there were sufficient gains in excess of accrued liability.
July 1, 1986	• Reduced to 5 years the required years to qualify to retire at age 55. • Provided full retirement with 30 years creditable service regardless of age.

Fiscal Year Beginning	Benefit Modifications
	• Reduced the number of years which determine average compensation to 4 highest consecutive years. • 3% reduction in retirement allowance shall apply to the lesser of: each year of age below age 55 or each year less 30 years of creditable service. • Provided retirement allowance shall not exceed 85% of average compensation. • Provided mandatory retirement and termination of membership at age 60. • Provided no monthly benefit payment may be made for a period of time in excess of that allowed by federal law. • Provided an ad hoc increase of 3% to retirees who retired prior to July 1, 1986, and average compensation was based on 5 consecutive years of earned compensation instead of 4. • Provided that a retiree may elect by an irrevocable agreement to receive additional payment (13th check) in equal installments not to exceed 6 months. • Amended section 25-13-13 on death benefits to conform to section 25-13-11 allowing 5-year vesting by deleting 10-year requirement. • Provided a one-time early retirement for any member who had at least 20 years of creditable service; exempted early service retirement allowance from the 3% reduction if member is below age 55; allowance was based on current fiscal year's salary.
July 1, 1989	• Provided survivor benefits from day one of employment to a spouse and/or dependent children of a member who is either killed in the line of performance of duty or dies as a direct result.
July 1, 1990	• Amended section 25-13-11 to reduce from 30 to 25 numbers of years required for full retirement regardless of age. • Provided a 10% ad hoc increase in annual retirement allowance to retired members and beneficiaries with minimum benefits of $500.00 if retired with 15 or more years of service credit; $300.00 per month if retired with 10 or more but less than 15 years credit; $250.00 per month to anyone with less than 10 years credit; beneficiaries to receive a minimum of $250.00 per month. • Established options for service and disability retirees retiring 7-1-90 or later. • Provided an active member qualified for retirement may pre-select an option. • Provided option selection will take precedence over automatic survivor benefits.
July 1, 1991	• Allowed sworn agents of MS Bureau of Narcotics, who were employed by such bureau prior to December 1, 1990, regardless of age, may be employed as enforcement officers, if they meet all other qualifications. Those employed retain all compensatory, personal, and sick leave accrued. • Provided cost-of-living payment (13th check) shall be cumulative to conform to PERS law. • Provided regular interest shall be credited annually to member's employee contribution account.

Fiscal Year Beginning	Benefit Modifications
July 1, 1992	• Provided benefits to dependent children to age 23 if they remain in school.
July 1, 1997	• Allowed retired Highway Patrolmen to irrevocably elect to have COLA (13th check) paid in twelve (12) equal installments.
July 1, 1999	• Provide that if the member and beneficiary die before having received in benefits an amount equal to the total of the contributions and accrued interest of the member at the time of death, that the balance will be refunded to the designated beneficiary or by statutory succession. • Provided that payment of death benefits shall be in accordance with the statutory provisions set forth as of the date of death of the member. • Authorized a retiree who retired before or after July 1, 1999, to be eligible for the same "pop-up" and "pop-down" provisions of PERS; and recalculates the benefits of those retirees who selected Option 5 "pop-up" protection. • Authorized an ad hoc benefit adjustment to each member of the Mississippi Highway Safety Patrol Retirement System (MHSPRS) retired on or before July 1, 1999, in the amount of $3.50 per month for each full fiscal year of retirement through June 30, 1999, plus $1.00 per month for each year of service credit used in the calculation of benefits. • Removed from consideration in the base COLA the requirement that the Consumer Price Index (CPI) have increased by at least 2 ½%. • Provided that a prorated portion of the annual adjustment will be paid to the beneficiary or estate of any member or beneficiary who is receiving the annual adjustment in a lump sum, but who dies between July 1 and December 1 in those cases where no more monthly benefits will be paid after the member's or beneficiary's death. This prorated portion will be equal to the amount that such recipient would have received had he or she elected to receive the annual adjustment for the year on a monthly basis.
July 1, 2000	• Deleted the maximum option where no additional benefits are payable after death. The statute retains Option 9, which provides a maximum option with a 50% survivor benefit with no reduction in the member's retirement allowance. • Provided for a new retirement option that would allow a member who is eligible for an <u>unreduced retirement benefit</u> to select a partial lump-sum option at retirement. • Allowed the Cost of Living Adjustment to be calculated on <u>all</u> full fiscal years in retirement, not just the years since the retirant's last retirement. • Provided for the same service credit for active duty, as is allowed in PERS and is no longer limited to active duty service during times of conflict. This amendment applies to all persons who have retired from the Highway Patrol and who qualify for such credit, whether they retired before or after July 1, 2000. This provision, however, did not require any back payments.

Fiscal Year Beginning	Benefit Modifications
	• Changed the maximum limitation on the retirement benefit from 85% of the average compensation regardless of the years of service to 100% of the average compensation.
July 1, 2002	• Provided that Option 4-C, Social Security Leveling Option, will no longer be available to members retiring on or after July 1, 2004. • Provided that any member who has five years of service (reduced from 10 years) may apply for a regular non-duty related disability retirement allowance. • Provided for a compounded COLA, based on 3% of the retirement allowance for each full fiscal year in retirement with the 3% compounding beginning at age 60; to further provide that the age at which the compounding begins will be reduced gradually to age 55 as such can be accomplished without causing the unfunded accrued liability amortization period to exceed 20 years; to further provide that a pro-rated share of the lump-sum COLA will be paid if a benefit terminates before December 1 of the fiscal year. Also, allows the Board to grant a change in the manner the COLA is paid if a hardship is shown.
July 1, 2004	• Conformed the MHSPRS COLA section (except for the age of compounding) to the provisions in PERS. • Eliminated the re-marriage penalty which terminates a spouse's benefit, currently provided in subsections (1) and (3), upon his/her remarriage. This amendment also allows those spouses whose benefits have been previously terminated to apply to have the benefits reinstated prospectively.
July 1, 2008	• Allowed a retroactive effective date (up to 3 months) for retirees who revert from Option 2 or Option 4A to the maximum option following the death of the named beneficiary.
July 1, 2011	• Option 4, a 75% joint and survivor annuity, made available to members who retire on or after July 1, 2011 • For members hired on or after July 1, 2011, the mandatory retirement age was increased from age 60 to age 63.
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. • The early retirement formula shall be reduced by an actuarially determined percentage or factor (rather than a fixed 3%) for each year of age below 55 or for each year of service below 25, whichever is less.