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Report on Thirty-Year Projections of the Mississippi Highway Safety Patrol Retirement System (HSPRS) and Supplemental Legislative Retirement System (SLRP)

Prepared as of June 30, 2021

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December 8, 2021

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 30-year projections of the Mississippi Highway Safety Patrol Retirement System (HSPRS) and the Mississippi Supplemental Legislative Retirement Plan (SLRP). The purpose of the projection study is to develop a forecast of the Systems' funding progress over time, to review the funding goals and benchmarks outlined in the funding policies that were adopted by the Board of Trustees and provide the status of the metrics/targets in the funding policies that determines whether or not a contribution rate increase should be recommended.

The projections are based on the June 30, 2021 actuarial valuations of HSPRS and SLRP. Membership was projected over a 30-year period from that date and actuarial valuations were performed annually for each of the 30 years to measure the Systems' funding progress. In order to prepare the results in this report, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

The Executive Summary provides a summary of the main projection results. We certify that we are members of the American Academy of Actuaries and that we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Respectfully submitted,

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

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Consulting Actuary

EJK/BM:mjn

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Section I - Executive Summary

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 (13^{th} 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.
July 1, 1992	• Provided benefits to dependent children to age 23 if they remain in school.

Section I - Executive Summary

Fiscal Year Beginning	Benefit Modifications
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 unreduced retirement benefit to select a partial lump-sum option at retirement. • Allowed the Cost of Living Adjustment to be calculated on all 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. • 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.

Section I - Executive Summary

Fiscal Year Beginning	Benefit Modifications
	• 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.

Section I - Executive Summary

History of Contributions

HSPRS

In 2012, the Board adopted a Fixed Contribution Rate approach, and the employer contribution remained level at 37.00% of annual compensation for several years. But the amortization period to pay off the Unfunded Accrued Liability was increasing each year and in 2018, the Board chose to increase the employer contribution rate to 49.08% of annual compensation effective July 1, 2018.

The employee contribution rate has remained at 7.25% for many years.

SLRP

In 2012, the Board adopted a Fixed Contribution Rate approach, and the employer contribution has remained level at 7.40% of annual compensation since.

The employee contribution rate has also remained at 3.00% for many years.

History of Investment Experience

The assets for all Systems under PERS are commingled and invested similarly. Since 1986, PERS' assets have experienced better than assumed investment returns overall. As you can see from the table below, for the period ending June 30, 2021, the annualized returns for each rolling period is above the current assumption of 7.55%. The historical rolling returns are as follows (these returns are gross returns):

Period Ending June 30	10-Year Annualized Rate of Return	20-Year Annualized Rate of Return	25-Year Annualized Rate of Return	30-Year Annualized Rate of Return
2018	7.4%	6.2%	7.8%	8.5%
2019	10.5	6.0	8.1	8.3
2020	9.4	5.8	7.5	8.0
2021	10.1	7.7	8.1	8.7

Section I - Executive Summary

The following report is being provided to the Board of Trustees of the Highway Safety Patrol Retirement System and the Supplemental Legislative Retirement Plan of Mississippi to develop a forecast of the Systems' funding progress over time, to review the funding goals and benchmarks outlined in the funding policies that were adopted by the Board of Trustees and provide the status of the metrics/targets in the funding policies that determines whether or not a contribution rate increase should be recommended.

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

- To maintain an increasing ratio of System assets to accrued liabilities and reach an 80 percent minimum funded ratio in 2042;
- To maintain adequate asset levels to finance the benefits promised to members;
- To develop a pattern of stable contribution rates when expressed as a percentage of member payroll as measured by valuations prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board, with a minimum employer contribution equal to the normal cost determined under the Entry Age Normal funding method;
- To provide intergenerational equity for taxpayers with respect to system costs; and
- To fund benefit improvements through increases in contribution rates in accordance with Article 14, § 272A, of the Mississippi Constitution.

To track progress in achieving the previously outlined funding goals, the following benchmarks will be measured annually as of the actuarial valuation date (with due recognition that a single year's results may not be indicative of long-term trends):

- **Funded ratio -** The funded ratio, defined as the actuarial value of System assets divided by the System's actuarial accrued liability, should be increasing over time before adjustments for changes in benefits, actuarial methods, and/or actuarial assumptions, with a target of at least 80 percent in 2042.

- **Unfunded Actuarial Accrued Liability (UAAL) amortization period –** The amortization period for the System's UAAL should be declining over time.

For HSPRS, the employer contribution rate as a percentage of annual compensation was increased from 37.00% to 49.08% as of July 1, 2018. The funding policy still reads that if the projected funded ratio is less than 60% in 2042 or less than 70% following three consecutive projection reports, a contribution rate increase will be determined that is sufficient to generate a funded ratio of 90% in 2042. If a funded ratio of 100% or more is attained and is projected to remain above 100% for the ensuing 30 years following three consecutive annual projection reports, a reduced contribution pattern will be established provided the funded ratio remains at or above 100% in every future year. Please note that the projections for HSPRS include additional contributions estimated at $3.7 million to be made in perpetuity due to Senate Bill No. 2659 (enacted in 2004) and House Bill No. 1015 (enacted in 2013).

For SLRP, if the projected funded ratio is less than 60% in 2042 or less than 75% following two consecutive projection reports, a contribution rate increase will be determined that is sufficient to generate a funded ratio of 85% in 2042. If a funded ratio of 100% or more is attained and is projected to remain above 100% for the ensuing 30 years following two consecutive annual projection reports, a reduced contribution pattern will be established provided the funded ratio remains at or above 100% in every future year.

Section I - Executive Summary

The results of the 30-year projections for each of the HSPRS and SLRP plans are shown in the next 5 sections of the report.

Regular actuarial valuations measure the Systems present financial position and contribution adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and retired members and their survivors. However, valuations do not produce information regarding future changes in the makeup of the covered group or the amounts of benefits to be paid or investment income to be received – actuarial projections do provide this information.

Whereas valuations provide a snapshot of the System as of a given date, projections provide a moving forecast. Projected active and retired groups are developed from year to year by the application of assumptions regarding pre-retirement withdrawal from service, retirements, deaths, disabilities, and the addition of new members. Projected information regarding the retired life group leads to assumed future benefit payouts. Performing actuarial valuations every year during the projection period generates expected contribution rates and unfunded accrued liability (UAL) amortization periods. Combining future benefit payments with assumed contributions based on periodic valuations of the projected membership and expected investment earnings produces the net cash flow of the System each year, and thus end of year asset levels. Finally, the valuation results permit the development of the funded ratio trend line for the entire projection period.

Projections are used for many purposes. Among them are (i) developing cash flow patterns for investment policy and asset mix consideration, (ii) exploring the effect of alternative assumptions about future experience, and (iii) analyzing the impact on plan funding progress of changes in the workforce.

Projection results are useful in demonstrating changing relationships among key elements affecting plan financial activity (e.g., how benefits payable and plan assets will grow in future decades). Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. For instance, cash flow projected to occur 10 years in the future will not be exact (except by coincidence) but understanding the changed relationship between future benefit payout and future investment income can be very useful.

The projection of System finances over 30 years requires an assumption regarding future new entrants to the Systems as well as the regular valuation assumptions used to estimate the timing of future events for current members. As members are assumed to terminate service for any reason, they are replaced with a sufficient number of new entrants to keep the active population constant in number. Valuations are then performed on the projected active and retired membership for each of the thirty years of the study.

Section I - Executive Summary

The main results from the study (details can be found in the following sections of this report) are noted on the following pages.

For HSPRS:

- Utilizing the funding policy for HSPRS, with a fixed contribution rate of 49.08% of payroll for the length of the projection period, the projection results for this study show that the Plan will have a funded ratio of 128.5% in 2042. During last year's study, the funded ratio in 2042 was 88.3%. The main reason for the increase was due to the favorable investment experience for the 2021 fiscal year. The increase was slightly offset by the change in the actuarial assumptions, including the decrease in the investment return assumption from 7.75% to 7.55%. We have assumed that the fund will earn 7.55% for each of the projection years and that the actuarial assumptions in the back of this report are experienced.

- **This result meets the funding goals and benchmarks set by the Board in the current funding policy and <u>no change in the employer contribution rate</u> from 49.08% is necessary at this time.**

For SLRP:

- Utilizing the funding policy for SLRP, with a fixed contribution rate of 7.40% of payroll for the length of the projection period, the projection results for this study show that the Plan will have a funded ratio of 129.8% in 2042. During last year's study, the funded ratio in 2042 was 88.3%. The main reason for the increase was due to the favorable investment experience. The increase was slightly offset by the change in the actuarial assumptions, including the decrease in the investment return assumption from 7.75% to 7.55%. We have assumed that the fund will earn 7.55% for each of the projection years and that the actuarial assumptions in the back of this report are experienced.

- **This result meets the funding goals and benchmarks set by the Board in the current funding policy and <u>no change in the employer contribution rate</u> from 7.40% is necessary at this time.**

It must be kept in mind that projections do not purport to show exact numerical results over the entire period under study. They do however provide a good basis for drawing conclusions about the likely position of the Systems and the relative impact changes over the years will have on System finances. Below are tables showing the summary of the funded ratios in 2042 for each of the two plans.

2021 Summary of Funded Ratios in 2042

System	7.55% Assumption	7.25% Assumption	7.00% Assumption
HSPRS	128.5%	114.1%	103.3%
SLRP	129.8%	114.8%	103.4%

Reconciliation of Projected Funded Ratio in 2042 from 2020 to 2021

Below is a reconciliation of the projected funded ratio for both plans.

	HSPRS	SLRP
2020 Projected Funded Ratio in 2042	**88.3%**	**88.3%**
Change in Employer Contribution Rate	**0.0%**	**0.0%**
Assumption Changes	**(8.6)%**	**(7.9)%**
Investment Experience	**47.2%**	**50.9%**
Method Change	**0.0%**	**0.0%**
Demographic Experience	**1.6%**	**(1.5)%**
2021 Projected Funded Ratio in 2042	**128.5%**	**129.8%**

SPECIAL ASSUMPTIONS

In addition to the regular valuation assumptions used in performing the annual actuarial valuations of HSPRS (all assumptions utilized in the projection study are outlined in Appendix A), 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 (2019, 2020 and 2021). That profile is summarized in the table below.

Age	Average Pay	Percent Male	Weight
23	$42,000	90%	14%
25	$43,000	95%	32%
29	$41,000	94%	23%
32	$42,000	80%	14%
38	$43,000	99%	7%
41	$43,000	99%	6%
48	$44,000	99%	4%

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, 2021 would remain in place for the following 30 years.

Section II – HSPRS Projection Results

FUTURE MEMBERSHIP

The following chart and graph show the headcounts of active participants and retired members over the projection period. The actives are broken down into those existing as of June 30, 2021 and those who are hired after June 30, 2021. Although the active membership as of the last valuation date was lower than the previous year, PERS staff has confirmed that a new class of officers graduated subsequent to the valuation date. Therefore, we have assumed the active membership will continue at a population of 515 active members over the projected period, which is similar to last year's projection analysis.

Member	2021	2026	2031	2042	2051
Active – Existing Employees	478	358	246	70	8
Active – New Entrants	0	157	269	445	507
Retirees	575	678	774	937	1,050
Beneficiaries	173	195	212	211	215
Disableds	13	11	11	12	17
Vested Terminations	40	33	45	64	74
Total	1,279	1,432	1,557	1,739	1,871

Section II – HSPRS Projection Results

PROJECTION RESULTS

The baseline projection results shown below use the same actuarial assumptions as used the June 30, 2021 actuarial valuation report. Please note that contributions from SB 2659 and HB 1015 are assumed to continue to provide an additional $3,700,000 annually throughout the projection period under all scenarios. These dollars are in addition to the employer contributions as a percent of payroll shown below. In addition, the projection results using different long-term investment return assumptions for future valuations (7.25% and 7.00%) are included.

Baseline Projection Results (7.55%)
($000's)

	2021	2026	2031	2042	2051
Total Payroll	$29,780	$34,542	$37,016	$45,816	$57,202
UAL	$169,386	$74,505	$17,635	$0	$0
Normal Cost Rate	16.29%	16.40%	16.44%	16.50%	16.65%
UAL Rate	32.79%	32.68%	32.64%	32.58%	32.43%
Total Rate	49.08%	49.08%	49.08%	49.08%	49.08%
Funding Ratio	70.4%	88.3%	97.5%	100.0%	100.0%
Amortization Period	21 years	6 years	1 year	0 years	0 years
Cash Flow %	(3.70)%	(3.46)%	(3.61)%	(2.79)%	(1.83)%

Projection Results Assuming 7.25% (Long-Term Investment Return)
($000's)

	2021	2026	2031	2042	2051
Total Payroll	$29,780	$34,542	$37,016	$45,816	$57,202
UAL	$169,386	$101,588	$61,243	$0	$0
Normal Cost Rate	16.29%	18.36%	18.41%	18.50%	18.68%
UAL Rate	32.79%	30.72%	30.67%	30.58%	30.40%
Total Rate	49.08%	49.08%	49.08%	49.08%	49.08%
Funding Ratio	70.4%	84.6%	91.5%	100.0%	100.0%
Amortization Period	21 years	9 years	5 years	0 years	0 years
Cash Flow %	(3.70)%	(3.51)%	(3.73)%	(3.03)%	(2.08)%

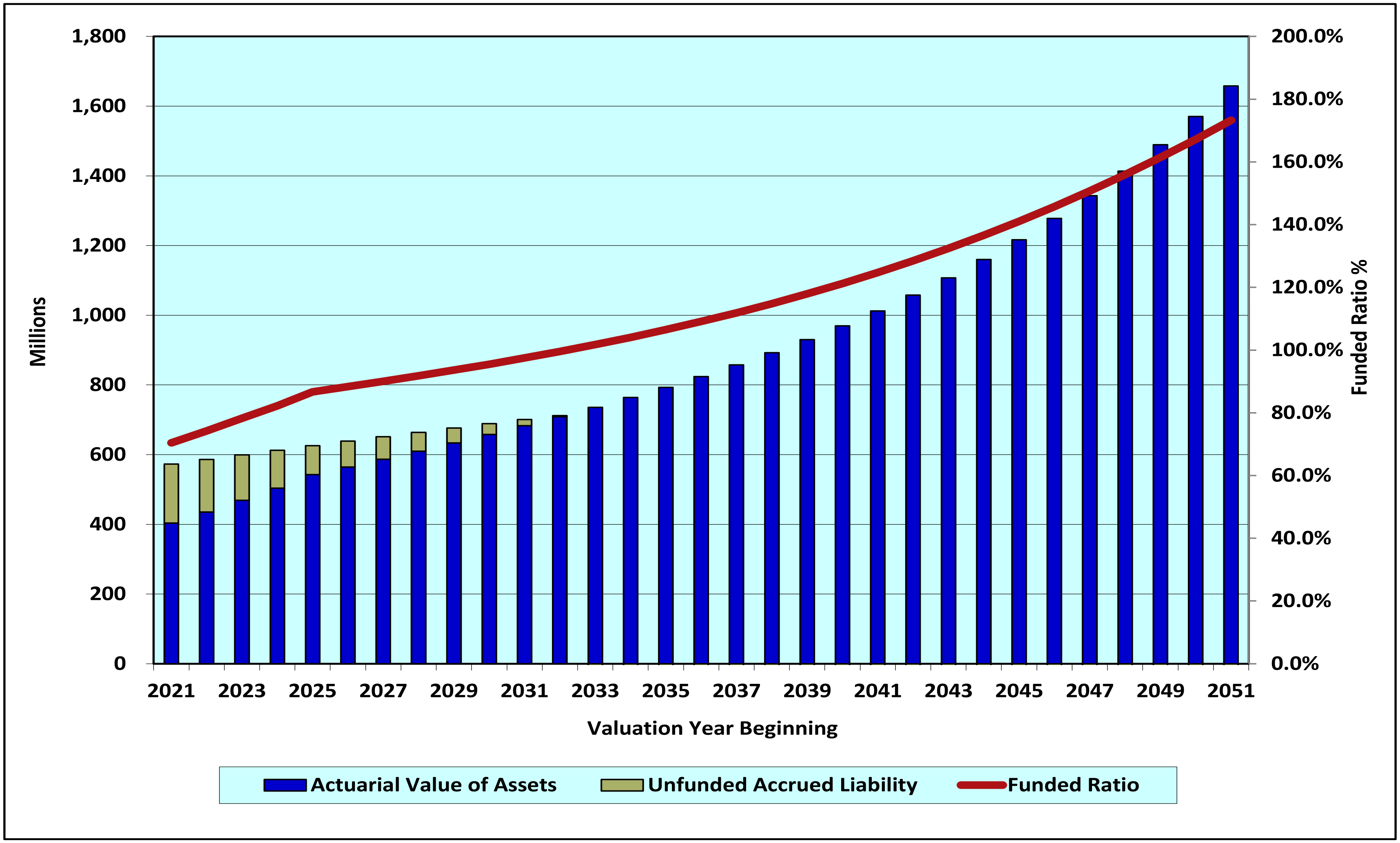
Section II – HSPRS Projection Results

Projection Results Assuming 7.00% (Long-Term Investment Return)
($000's)

	2021	2026	2031	2042	2051
Total Payroll	$29,780	$34,542	$37,016	$45,816	$57,202
UAL	$169,386	$124,276	$97,371	$0	$0
Normal Cost Rate	16.29%	19.96%	20.02%	20.14%	20.35%
UAL Rate	32.79%	29.12%	29.06%	28.94%	28.73%
Total Rate	49.08%	49.08%	49.08%	49.08%	49.08%
Funding Ratio	70.4%	81.7%	86.9%	100.0%	100.0%
Amortization Period	21 years	12 years	8 years	0 years	0 years
Cash Flow %	(3.70)%	(3.56)%	(3.83)%	(3.25)%	(2.33)%

The 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 7.55%) from the amounts shown in the table on page 13. As you can see, under the current assumptions, the funded ratio shows a steady increase during the projection period reaching 100% in 2033.

Mississippi PERS – HSPRS Plan
30 Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2021 Valuation Results



Section III – SLRP Projection Results

SPECIAL ASSUMPTIONS

In addition to the regular valuation assumptions used in performing the annual actuarial valuations of SLRP (all assumptions utilized in the projection study are outlined in Appendix B), 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.

Since we assume active members will leave the system through termination, death, disability, or retirement, we need to make some assumptions as to the composition of new hires that will replace departing members in order to maintain the membership at a constant number. The new entrant profile we developed was based on the new hires over the 4-year period prior to the projection start date of June 30, 2021.

It is important to note that an eligibility service load of 2.50 years was included in the new entrant profile as the census data shows more and more active members in SLRP are entering the Plan with service from the PERS plan. Please also note that while the annual compensation for active members of SLRP was significantly higher for the fiscal year ending June 30, 2021 than in past years due to more legislative sessions, we have assumed going forward that annual compensation will return to more normal levels. The new entrant profile is summarized in the table below.

Age	Average Pay	Percent Male	Weight
29	$41,000	80%	15%
40	$41,000	80%	15%
44	$41,000	80%	26%
52	$41,000	80%	18%
57	$41,000	80%	15%
67	$41,000	80%	11%

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, 2021 would remain in place for the following 30 years.

Section III – SLRP Projection Results

FUTURE MEMBERSHIP

The following chart and graph show the headcounts of active participants and retired members over the projection period. The actives are broken down into those existing as of June 30, 2021 and those who are hired after June 30, 2021. Although the 2021 active headcounts were at 173 actives, we have assumed the active membership will continue at the current maximum population of 174 active members over the projected period. As can be seen from the chart below, the retiree and deferred vested headcount begins to drop as retiree deaths outnumber new retirees.

Member	2021	2026	2031	2042	2051
Active – Existing Employees	173	115	72	18	5
Active – New Entrants	0	59	102	156	169
Retired/Deferred Vesteds	266	280	274	234	199
Total	439	454	448	408	373

PROJECTION RESULTS

The baseline projection results shown below use the same actuarial assumption as used in the June 30, 2021 actuarial valuation report. In addition, the projection results using different long-term investment return assumptions for future valuations (7.25% and 7.00%) are included.

Baseline Projection Results (7.55%)
($000's)

	2021	2026	2031	2042	2051
Total Payroll	$8,030	$7,676	$8,814	$11,952	$15,198
UAL	$5,422	$243	$0	$0	$0
Normal Cost Rate	2.85%	3.46%	3.61%	3.67%	3.52%
UAL Rate	4.55%	3.94%	3.79%	3.73%	3.88%
Total Rate	7.40%	7.40%	7.40%	7.40%	7.40%
Funding Ratio	78.7%	99.1%	100.0%	100.0%	100.0%
Amortization Period	25 years	1 year	0 years	0 years	0 years
Cash Flow %	(4.02)%	(4.68)%	(4.98)%	(3.08)%	(2.22)%

Section III – SLRP Projection Results

Projection Results Assuming 7.25% Long-Term Investment Return
($000's)

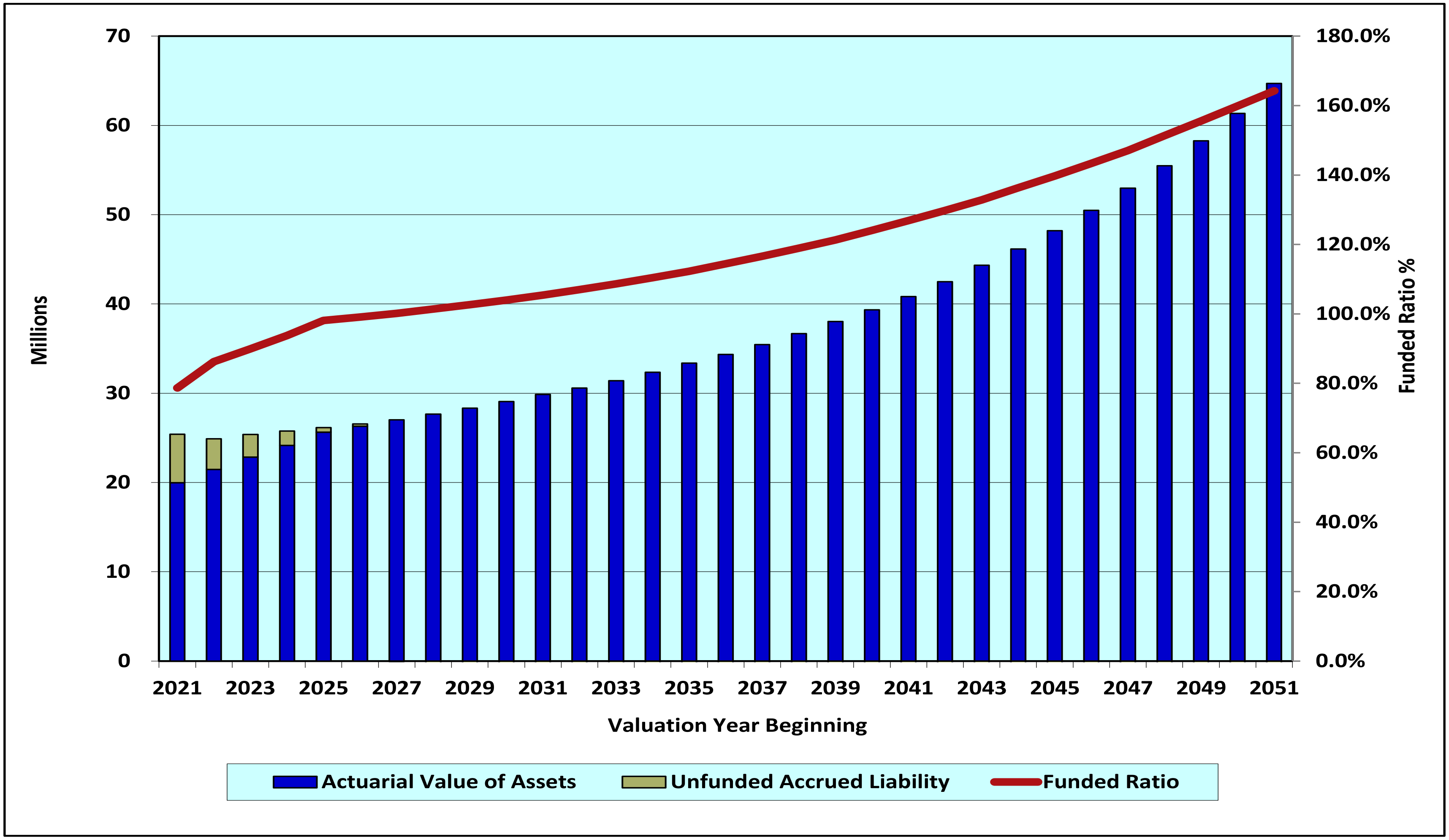
	2021	2026	2031	2042	2051
Total Payroll	$8,030	$7,676	$8,814	$11,952	$15,198
UAL	$5,422	$1,244	$195	$0	$0
Normal Cost Rate	2.85%	3.85%	4.01%	4.07%	3.91%
UAL Rate	4.55%	3.55%	3.39%	3.33%	3.49%
Total Rate	7.40%	7.40%	7.40%	7.40%	7.40%
Funding Ratio	78.7%	95.4%	99.3%	100.0%	100.0%
Amortization Period	25 years	5 years	1 year	0 years	0 years
Cash Flow %	(4.02)%	(4.76)%	(5.16)%	(3.38)%	(2.57)%

Projection Results Assuming 7.00% Long-Term Investment Return
($000's)

	2021	2026	2031	2042	2051
Total Payroll	$8,030	$7,676	$8,814	$11,952	$15,198
UAL	$5,422	$2,079	$1,617	$0	$0
Normal Cost Rate	2.85%	4.17%	4.34%	4.40%	4.24%
UAL Rate	4.55%	3.23%	3.06%	3.00%	3.16%
Total Rate	7.40%	7.40%	7.40%	7.40%	7.40%
Funding Ratio	78.7%	92.5%	94.6%	100.0%	100.0%
Amortization Period	25 years	10 years	7 years	0 years	0 years
Cash Flow %	(4.02)%	(4.82)%	(5.32)%	(3.66)%	(2.92)%

The 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 7.55%) from the amounts shown in the table on page 17. As you can see, under the current assumptions, the funded ratio shows a steady increase during the projection period reaching 100% in 2027.

Mississippi PERS – SLRP Plan
30 Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2021 Valuation Results



Section IV – Cash Flow Analysis

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 and SLRP, 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, 2022, we are projecting HSPRS to have a negative cash flow of approximately $17 Million (benefit payments of $39 Million and contributions of $22 Million). With a market value of assets of $464 Million as of June 30, 2021, the cash flow as a percentage of assets is estimated to be negative 3.70% for the 2022 fiscal year. While the market value of assets is assumed to earn 7.55% 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 2022 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.

For the fiscal year ending June 30, 2022, we are projecting SLRP to have a negative cash flow of approximately $0.9 Million (benefit payments of $1.8 Million and contributions of $0.9 Million). With a market value of assets of $22.9 Million as of June 30, 2021, the cash flow as a percentage of assets is estimated to be negative 4.02% for the 2022 fiscal year.

Section IV – Cash Flow Analysis

The tables on the following pages demonstrate the open group projection of cash flow on the baseline assumption and then a sensitivity analysis, using a one-year return of negative 7.00% for the fiscal year ending June 30, 2022. This demonstrates the projection of this metric if either System 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 tables on pages 22 and 24, the cash flow as a percentage of market value of assets does not at any point get less than negative 5.1% on the baseline assumptions, meaning that HSPRS and SLRP 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 tables on pages 23 and 25), the negative cash flow will be less than the baseline cash flow, however, neither Plan will have a decrease in their assets at any point during the remaining projection period.

Mississippi PERS
30-year Open Group Projection of Cash Flow
HSPRS Plan
Based on June 30, 2021 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
2021	7.55%	31,012,146	463,984,000	21,518,525	(38,695,482)	-3.70%	34,394,160	17,217,203	481,201,203	2022
2022	7.55%	32,970,828	481,201,203	22,643,917	(38,791,193)	-3.36%	35,732,222	19,584,946	500,786,149	2023
2023	7.55%	33,482,045	500,786,149	22,937,645	(39,632,409)	-3.33%	37,190,593	20,495,829	521,281,977	2024
2024	7.55%	34,044,778	521,281,977	23,260,972	(40,841,119)	-3.37%	38,705,213	21,125,065	542,407,043	2025
2025	7.55%	34,542,474	542,407,043	23,546,931	(42,077,347)	-3.42%	40,264,936	21,734,520	564,141,563	2026
2026	7.55%	35,053,953	564,141,563	23,840,810	(43,360,355)	-3.46%	41,869,232	22,349,687	586,491,249	2027
2027	7.55%	35,553,395	586,491,249	24,127,772	(44,545,893)	-3.48%	43,523,329	23,105,208	609,596,457	2028
2028	7.55%	36,068,514	609,596,457	24,423,742	(45,940,812)	-3.53%	45,227,042	23,709,972	633,306,429	2029
2029	7.55%	36,492,089	633,306,429	24,667,114	(47,278,964)	-3.57%	46,976,569	24,364,719	657,671,148	2030
2030	7.55%	37,016,002	657,671,148	24,968,136	(48,542,491)	-3.58%	48,780,432	25,206,077	682,877,225	2031
2031	7.55%	37,596,795	682,877,225	25,301,840	(49,929,646)	-3.61%	50,644,446	26,016,640	708,893,864	2032
2032	7.55%	38,097,578	708,893,864	25,589,573	(51,319,166)	-3.63%	52,567,867	26,838,274	735,732,138	2033
2033	7.55%	38,640,921	735,732,138	25,901,759	(52,476,079)	-3.61%	54,562,848	27,988,528	763,720,667	2034
2034	7.55%	39,411,603	763,720,667	26,344,567	(53,603,505)	-3.57%	56,650,608	29,391,670	793,112,337	2035
2035	7.55%	40,218,750	793,112,337	26,808,326	(54,516,878)	-3.49%	58,853,015	31,144,463	824,256,799	2036
2036	7.55%	41,085,510	824,256,799	27,306,337	(55,458,337)	-3.42%	61,187,986	33,035,986	857,292,785	2037
2037	7.55%	41,952,589	857,292,785	27,804,531	(56,355,862)	-3.33%	63,667,403	35,116,073	892,408,858	2038
2038	7.55%	42,864,458	892,408,858	28,328,460	(57,319,616)	-3.25%	66,302,365	37,311,209	929,720,067	2039
2039	7.55%	43,751,128	929,720,067	28,837,911	(58,123,610)	-3.15%	69,108,444	39,822,745	969,542,812	2040
2040	7.55%	44,768,974	969,542,812	29,422,730	(58,900,899)	-3.04%	72,107,928	42,629,760	1,012,172,572	2041
2041	7.55%	45,815,505	1,012,172,572	30,024,031	(59,557,121)	-2.92%	75,324,440	45,791,350	1,057,963,922	2042
2042	7.55%	46,995,460	1,057,963,922	30,701,993	(60,204,662)	-2.79%	78,782,814	49,280,145	1,107,244,067	2043
2043	7.55%	48,145,988	1,107,244,067	31,363,048	(61,022,852)	-2.68%	82,497,641	52,837,837	1,160,081,905	2044
2044	7.55%	49,224,301	1,160,081,905	31,982,610	(61,857,027)	-2.58%	86,478,943	56,604,526	1,216,686,430	2045
2045	7.55%	50,421,444	1,216,686,430	32,670,447	(62,530,730)	-2.45%	90,753,109	60,892,826	1,277,579,257	2046
2046	7.55%	51,737,072	1,277,579,257	33,426,363	(63,217,147)	-2.33%	95,353,093	65,562,309	1,343,141,565	2047
2047	7.55%	53,084,027	1,343,141,565	34,200,277	(64,033,559)	-2.22%	100,301,472	70,468,190	1,413,609,755	2048
2048	7.55%	54,379,762	1,413,609,755	34,944,762	(64,891,432)	-2.12%	105,617,618	75,670,948	1,489,280,704	2049
2049	7.55%	55,781,115	1,489,280,704	35,749,932	(65,709,387)	-2.01%	111,330,301	81,370,846	1,570,651,549	2050
2050	7.55%	57,201,755	1,570,651,549	36,566,184	(66,694,775)	-1.92%	117,467,531	87,338,940	1,657,990,489	2051
2051	7.55%	58,614,182	1,657,990,489	37,377,716	(67,677,547)	-1.83%	124,055,274	93,755,443	1,751,745,932	2052

Mississippi PERS
30-year Open Group Projection of Cash Flow
HSPRS Plan
Based on June 30, 2021 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
2021	-7.00%	31,012,146	463,984,000	21,518,525	(38,695,482)	-3.70%	(31,866,780)	(49,043,737)	414,940,263	2022
2022	7.55%	32,970,828	414,940,263	22,643,917	(38,791,193)	-3.89%	30,729,521	14,582,245	429,522,508	2023
2023	7.55%	33,482,045	429,522,508	22,937,645	(39,632,409)	-3.89%	31,810,189	15,115,425	444,637,932	2024
2024	7.55%	34,044,778	444,637,932	23,260,972	(40,841,119)	-3.95%	32,918,588	15,338,440	459,976,373	2025
2025	7.55%	34,542,474	459,976,373	23,546,931	(42,077,347)	-4.03%	34,041,420	15,511,004	475,487,377	2026
2026	7.55%	35,053,953	475,487,377	23,840,810	(43,360,355)	-4.11%	35,175,841	15,656,296	491,143,672	2027
2027	7.55%	35,553,395	491,143,672	24,127,772	(44,545,893)	-4.16%	36,324,587	15,906,466	507,050,138	2028
2028	7.55%	36,068,514	507,050,138	24,423,742	(45,940,812)	-4.24%	37,484,795	15,967,725	523,017,863	2029
2029	7.55%	36,492,089	523,017,863	24,667,114	(47,278,964)	-4.32%	38,649,782	16,037,932	539,055,795	2030
2030	7.55%	37,016,002	539,055,795	24,968,136	(48,542,491)	-4.37%	39,824,972	16,250,617	555,306,412	2031
2031	7.55%	37,596,795	555,306,412	25,301,840	(49,929,646)	-4.43%	41,012,850	16,385,044	571,691,455	2032
2032	7.55%	38,097,578	571,691,455	25,589,573	(51,319,166)	-4.50%	42,209,085	16,479,492	588,170,947	2033
2033	7.55%	38,640,921	588,170,947	25,901,759	(52,476,079)	-4.52%	43,421,978	16,847,658	605,018,606	2034
2034	7.55%	39,411,603	605,018,606	26,344,567	(53,603,505)	-4.51%	44,668,602	17,409,664	622,428,270	2035
2035	7.55%	40,218,750	622,428,270	26,808,326	(54,516,878)	-4.45%	45,966,368	18,257,816	640,686,085	2036
2036	7.55%	41,085,510	640,686,085	27,306,337	(55,458,337)	-4.39%	47,328,397	19,176,397	659,862,482	2037
2037	7.55%	41,952,589	659,862,482	27,804,531	(56,355,862)	-4.33%	48,761,415	20,210,085	680,072,567	2038
2038	7.55%	42,864,458	680,072,567	28,328,460	(57,319,616)	-4.26%	50,270,975	21,279,819	701,352,386	2039
2039	7.55%	43,751,128	701,352,386	28,837,911	(58,123,610)	-4.18%	51,866,685	22,580,986	723,933,372	2040
2040	7.55%	44,768,974	723,933,372	29,422,730	(58,900,899)	-4.07%	53,564,415	24,086,247	748,019,619	2041
2041	7.55%	45,815,505	748,019,619	30,024,031	(59,557,121)	-3.95%	55,380,892	25,847,802	773,867,421	2042
2042	7.55%	46,995,460	773,867,421	30,701,993	(60,204,662)	-3.81%	57,333,528	27,830,859	801,698,280	2043
2043	7.55%	48,145,988	801,698,280	31,363,048	(61,022,852)	-3.70%	59,428,934	29,769,130	831,467,411	2044
2044	7.55%	49,224,301	831,467,411	31,982,610	(61,857,027)	-3.59%	61,668,549	31,794,132	863,261,542	2045
2045	7.55%	50,421,444	863,261,542	32,670,447	(62,530,730)	-3.46%	64,069,530	34,209,247	897,470,790	2046
2046	7.55%	51,737,072	897,470,790	33,426,363	(63,217,147)	-3.32%	66,654,904	36,864,120	934,334,909	2047
2047	7.55%	53,084,027	934,334,909	34,200,277	(64,033,559)	-3.19%	69,436,570	39,603,288	973,938,197	2048
2048	7.55%	54,379,762	973,938,197	34,944,762	(64,891,432)	-3.07%	72,422,416	42,475,746	1,016,413,944	2049
2049	7.55%	55,781,115	1,016,413,944	35,749,932	(65,709,387)	-2.95%	75,628,861	45,669,406	1,062,083,349	2050
2050	7.55%	57,201,755	1,062,083,349	36,566,184	(66,694,775)	-2.84%	79,070,632	48,942,041	1,111,025,390	2051
2051	7.55%	58,614,182	1,111,025,390	37,377,716	(67,677,547)	-2.73%	82,759,409	52,459,578	1,163,484,968	2052

Mississippi PERS
30-year Open Group Projection of Cash Flow
SLRP Plan
Based on June 30, 2021 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
2021	7.55%	8,242,456	22,950,000	874,360	(1,796,260)	-4.02%	1,698,556	776,656	23,726,656	2022
2022	7.55%	7,032,896	23,726,656	746,050	(1,816,675)	-4.51%	1,751,682	681,056	24,407,712	2023
2023	7.55%	7,226,720	24,407,712	766,610	(1,939,869)	-4.81%	1,799,298	626,040	25,033,752	2024
2024	7.55%	7,470,551	25,033,752	792,476	(2,026,016)	-4.93%	1,844,329	610,789	25,644,541	2025
2025	7.55%	7,676,392	25,644,541	814,312	(2,043,729)	-4.79%	1,890,597	661,180	26,305,721	2026
2026	7.55%	7,885,896	26,305,721	836,536	(2,068,702)	-4.68%	1,940,414	708,248	27,013,969	2027
2027	7.55%	8,093,350	27,013,969	858,543	(2,213,020)	-5.01%	1,989,353	634,875	27,648,844	2028
2028	7.55%	8,345,868	27,648,844	885,330	(2,244,716)	-4.92%	2,037,105	677,719	28,326,563	2029
2029	7.55%	8,576,959	28,326,563	909,844	(2,263,225)	-4.78%	2,088,495	735,114	29,061,677	2030
2030	7.55%	8,813,979	29,061,677	934,987	(2,280,327)	-4.63%	2,144,294	798,954	29,860,631	2031
2031	7.55%	9,058,686	29,860,631	960,945	(2,447,432)	-4.98%	2,199,384	712,898	30,573,529	2032
2032	7.55%	9,346,979	30,573,529	991,528	(2,415,073)	-4.66%	2,255,540	831,995	31,405,523	2033
2033	7.55%	9,600,888	31,405,523	1,018,462	(2,399,003)	-4.40%	2,319,950	939,409	32,344,933	2034
2034	7.55%	9,861,429	32,344,933	1,046,100	(2,404,851)	-4.20%	2,391,683	1,032,932	33,377,865	2035
2035	7.55%	10,130,775	33,377,865	1,074,673	(2,575,245)	-4.50%	2,464,413	963,841	34,341,706	2036
2036	7.55%	10,439,692	34,341,706	1,107,443	(2,531,416)	-4.15%	2,540,022	1,116,048	35,457,754	2037
2037	7.55%	10,724,267	35,457,754	1,137,630	(2,541,479)	-3.96%	2,625,029	1,221,181	36,678,935	2038
2038	7.55%	11,012,136	36,678,935	1,168,167	(2,533,209)	-3.72%	2,718,667	1,353,626	38,032,561	2039
2039	7.55%	11,308,332	38,032,561	1,199,588	(2,708,544)	-3.97%	2,815,532	1,306,575	39,339,136	2040
2040	7.55%	11,640,190	39,339,136	1,234,791	(2,655,242)	-3.61%	2,917,458	1,497,007	40,836,143	2041
2041	7.55%	11,952,265	40,836,143	1,267,896	(2,637,355)	-3.35%	3,032,372	1,662,913	42,499,056	2042
2042	7.55%	12,273,495	42,499,056	1,301,972	(2,612,436)	-3.08%	3,160,109	1,849,645	44,348,701	2043
2043	7.55%	12,603,583	44,348,701	1,336,988	(2,812,164)	-3.33%	3,293,652	1,818,476	46,167,177	2044
2044	7.55%	12,958,671	46,167,177	1,374,656	(2,762,726)	-3.01%	3,434,176	2,046,105	48,213,282	2045
2045	7.55%	13,305,829	48,213,282	1,411,482	(2,739,413)	-2.75%	3,590,885	2,262,954	50,476,236	2046
2046	7.55%	13,661,907	50,476,236	1,449,255	(2,710,603)	-2.50%	3,764,206	2,502,858	52,979,094	2047
2047	7.55%	14,028,192	52,979,094	1,488,111	(2,920,668)	-2.70%	3,946,826	2,514,268	55,493,362	2048
2048	7.55%	14,417,468	55,493,362	1,529,405	(2,877,830)	-2.43%	4,139,772	2,791,347	58,284,709	2049
2049	7.55%	14,802,888	58,284,709	1,570,290	(2,861,356)	-2.22%	4,352,645	3,061,580	61,346,289	2050
2050	7.55%	15,197,954	61,346,289	1,612,199	(2,833,924)	-1.99%	4,586,364	3,364,639	64,710,928	2051
2051	7.55%	15,601,852	64,710,928	1,655,044	(3,089,807)	-2.22%	4,832,498	3,397,735	68,108,663	2052

Section IV – Cash Flow Analysis

Mississippi PERS
30-year Open Group Projection of Cash Flow
SLRP Plan
Based on June 30, 2021 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
2021	*-7.00%*	*8,242,456*	*22,950,000*	*874,360*	*(1,796,260)*	-4.02%	*(1,573,648)*	*(2,495,548)*	*20,454,452*	**2022**
2022	*7.55%*	*7,032,896*	*20,454,452*	*746,050*	*(1,816,675)*	-5.23%	*1,504,630*	*434,004*	*20,888,456*	**2023**
2023	*7.55%*	*7,226,720*	*20,888,456*	*766,610*	*(1,939,869)*	-5.62%	*1,533,594*	*360,336*	*21,248,792*	**2024**
2024	*7.55%*	*7,470,551*	*21,248,792*	*792,476*	*(2,026,016)*	-5.81%	*1,558,565*	*325,025*	*21,573,817*	**2025**
2025	*7.55%*	*7,676,392*	*21,573,817*	*814,312*	*(2,043,729)*	-5.70%	*1,583,257*	*353,840*	*21,927,657*	**2026**
2026	*7.55%*	*7,885,896*	*21,927,657*	*836,536*	*(2,068,702)*	-5.62%	*1,609,870*	*377,704*	*22,305,361*	**2027**
2027	*7.55%*	*8,093,350*	*22,305,361*	*858,543*	*(2,213,020)*	-6.07%	*1,633,854*	*279,376*	*22,584,737*	**2028**
2028	*7.55%*	*8,345,868*	*22,584,737*	*885,330*	*(2,244,716)*	-6.02%	*1,654,765*	*295,379*	*22,880,116*	**2029**
2029	*7.55%*	*8,576,959*	*22,880,116*	*909,844*	*(2,263,225)*	-5.92%	*1,677,288*	*323,907*	*23,204,023*	**2030**
2030	*7.55%*	*8,813,979*	*23,204,023*	*934,987*	*(2,280,327)*	-5.80%	*1,702,041*	*356,701*	*23,560,724*	**2031**
2031	*7.55%*	*9,058,686*	*23,560,724*	*960,945*	*(2,447,432)*	-6.31%	*1,723,741*	*237,255*	*23,797,979*	**2032**
2032	*7.55%*	*9,346,979*	*23,797,979*	*991,528*	*(2,415,073)*	-5.98%	*1,743,986*	*320,441*	*24,118,419*	**2033**
2033	*7.55%*	*9,600,888*	*24,118,419*	*1,018,462*	*(2,399,003)*	-5.72%	*1,769,773*	*389,232*	*24,507,652*	**2034**
2034	*7.55%*	*9,861,429*	*24,507,652*	*1,046,100*	*(2,404,851)*	-5.54%	*1,799,968*	*441,217*	*24,948,869*	**2035**
2035	*7.55%*	*10,130,775*	*24,948,869*	*1,074,673*	*(2,575,245)*	-6.01%	*1,828,024*	*327,452*	*25,276,321*	**2036**
2036	*7.55%*	*10,439,692*	*25,276,321*	*1,107,443*	*(2,531,416)*	-5.63%	*1,855,585*	*431,611*	*25,707,932*	**2037**
2037	*7.55%*	*10,724,267*	*25,707,932*	*1,137,630*	*(2,541,479)*	-5.46%	*1,888,918*	*485,070*	*26,193,002*	**2038**
2038	*7.55%*	*11,012,136*	*26,193,002*	*1,168,167*	*(2,533,209)*	-5.21%	*1,926,979*	*561,938*	*26,754,940*	**2039**
2039	*7.55%*	*11,308,332*	*26,754,940*	*1,199,588*	*(2,708,544)*	-5.64%	*1,964,071*	*455,114*	*27,210,054*	**2040**
2040	*7.55%*	*11,640,190*	*27,210,054*	*1,234,791*	*(2,655,242)*	-5.22%	*2,001,713*	*581,262*	*27,791,316*	**2041**
2041	*7.55%*	*11,952,265*	*27,791,316*	*1,267,896*	*(2,637,355)*	-4.93%	*2,047,488*	*678,029*	*28,469,345*	**2042**
2042	*7.55%*	*12,273,495*	*28,469,345*	*1,301,972*	*(2,612,436)*	-4.60%	*2,100,866*	*790,402*	*29,259,747*	**2043**
2043	*7.55%*	*12,603,583*	*29,259,747*	*1,336,988*	*(2,812,164)*	-5.04%	*2,154,436*	*679,260*	*29,939,007*	**2044**
2044	*7.55%*	*12,958,671*	*29,939,007*	*1,374,656*	*(2,762,726)*	-4.64%	*2,208,949*	*820,878*	*30,759,885*	**2045**
2045	*7.55%*	*13,305,829*	*30,759,885*	*1,411,482*	*(2,739,413)*	-4.32%	*2,273,154*	*945,223*	*31,705,108*	**2046**
2046	*7.55%*	*13,661,907*	*31,705,108*	*1,449,255*	*(2,710,603)*	-3.98%	*2,346,986*	*1,085,638*	*32,790,746*	**2047**
2047	*7.55%*	*14,028,192*	*32,790,746*	*1,488,111*	*(2,920,668)*	-4.37%	*2,422,606*	*990,048*	*33,780,794*	**2048**
2048	*7.55%*	*14,417,468*	*33,780,794*	*1,529,405*	*(2,877,830)*	-3.99%	*2,500,473*	*1,152,048*	*34,932,842*	**2049**
2049	*7.55%*	*14,802,888*	*34,932,842*	*1,570,290*	*(2,861,356)*	-3.70%	*2,589,579*	*1,298,514*	*36,231,356*	**2050**
2050	*7.55%*	*15,197,954*	*36,231,356*	*1,612,199*	*(2,833,924)*	-3.37%	*2,690,186*	*1,468,461*	*37,699,817*	**2051**
2051	*7.55%*	*15,601,852*	*37,699,817*	*1,655,044*	*(3,089,807)*	-3.81%	*2,793,159*	*1,358,396*	*39,058,213*	**2052**

Section V – Sensitivity Analysis

As mentioned earlier in the report, the intended purpose of the Projection Report 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 Report 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 Report process, like other actuarial modeling, is not intended to provide absolute results. The intended purpose of the Projection Report 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 Report 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.

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 change 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.

Section V – Sensitivity Analysis

Annual actuarial valuations are performed for HSPRS and SLRP 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 and SLRP also have 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.

Section V – Sensitivity Analysis

Investment Risk

In this section of the report, we will demonstrate the variability in achieving funding goals based on sensitivity around the three key variables listed above. Earlier in this section, we reviewed the projections if the long-term investment return assumption was lowered to rates below 7.55%. In this section, we keep the long-term investment return assumption at 7.55% but review the sensitivity of short-term investment returns as a single year event (and then 7.55% for all years thereafter) and simulate the next 10-year periods of return (and then 7.55% for all years thereafter).

Projected Funded Ratios in 2042

Single Year Event	HSPRS	SLRP
• 1.55% in 2022	114.3%	112.1%
• 3.55% in 2022	119.0%	118.0%
• 5.55% in 2022	123.7%	123.9%
• **7.55% in 2022 (Baseline)**	**128.5%**	**129.8%**
• 9.55% in 2022	133.2%	135.7%
• 11.55% in 2022	138.0%	141.6%
• 13.55% in 2022	142.7%	147.5%
• Simulate 2008 loss using -15% in 2022	75.0%	63.4%
Average Returns over next 10-Year Period (Simulated returns using mean and standard deviations from PERS' Investment Consultant's Capital Market Assumptions)*		
• 6.00%	98.5%	94.6%
• 7.00%	117.6%	117.3%
• 8.00%	141.9%	147.4%

* *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 an impact to the funding of these Plans in the long-term, especially another repeat of the Great Recession of 2008. We believe it demonstrates the importance of these continued projection reports and the continued monitoring of this sensitivity analysis because short-term differences in investment returns can have a major impact on the projection of funded ratios.

Section V – Sensitivity Analysis

Demographic Risk

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

For HSPRS, there have been significant fluctuations in active membership since 2008. In the baseline projections we assume a static population, meaning the active membership will be the same in each of the projections than it is in 2021. 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. Since SLRP has a set number of active legislative members and should remain static over the projection period, we have not reviewed the sensitivity around this assumption. In the table below, we review these alternatives to the static active membership growth:

Projected Funded Ratio in 2042

Active Membership Growth	HSPRS
• Increase 0.50% each year	130.3%
• Increase 0.25% each year	129.4%
• **Static Population (Baseline Assumption)**	**128.5%**
• Decrease 0.25% each year	127.6%
• Decrease 0.50% each year	126.7%

Section V – Sensitivity Analysis

Assumption Risk

We also performed a sensitivity analysis for the wage inflation assumption. As a result of the experience study presented in April 2021, the Board adopted a reduction in the wage inflation assumption from 3.00% to 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 7.30% 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 7.30%.

Projected Funded Ratios in 2042

Scenario	Price Inflation	Discount Rate	Wage Inflation	HSPRS	SLRP
1 - Baseline	2.40%	7.55%	2.65%	**128.5%**	**129.8%**
2	2.40%	7.30%	2.65%	116.4%	117.2%
3	2.10%	7.30%	2.35%	114.9%	116.4%

Section V – Sensitivity Analysis

Contribution Risk

To demonstrate the contribution risk of making the Fixed Contribution Rates (FCR) for all three plans, we have calculated the projected funded ratios if the FCRs were 1% higher or 1% lower than the current rates for all future years beginning on July 1, 2023.

Projected Funded Ratios in 2042

Change in Fixed Contribution Rate (FCR)	HSPRS	SLRP
• Baseline	**128.5%**	**129.8%**
• 1.00% increase in FCR	130.4%	141.1%
• 1.00% decrease in FCR	126.6%	118.4%

As can be seen in the table above, the contribution risk has a much bigger impact for SLRP than for HSPRS.

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

Section VI – Conclusion

2021 Summary of Funded Ratios in 2042

System	7.55% Assumption	7.25% Assumption	7.00% Assumption
HSPRS	128.5%	114.1%	103.3%
SLRP	129.8%	114.8%	103.4%

HSPRS

Utilizing the funding policy for HSPRS, with a fixed contribution rate of 49.08% of payroll for the length of the projection period, the projection results for 2021 show that the Plan will have a funded ratio of 128.5% in 2042 at a 7.55% assumption. **This result meets the funding goals and benchmarks set by the Board in the current funding policy and no change in the HSPRS employer contribution rate is necessary at this time.**

SLRP

Utilizing the funding policy for SLRP, with a fixed contribution rate of 7.40% of payroll for the length of the projection period, the projection results for 2021 show that the Plan will have a funded ratio of 129.8% in 2042 at a 7.55% assumption. **This result meets the funding goals and benchmarks set by the Board in the current funding policy and no change in the SLRP employer contribution rate is necessary at this time.**

Going forward, short-term variations, both positive and negative, are to be expected given the volatility inherent in the actual investment return from year to year and should not elicit extreme concern without further analysis. With the addition of several actuarial metrics and sensitivity to the projection results, the Board now has more information on the trend of funded ratios for each of the Systems when making decisions in the future.

INTEREST RATE: 7.55% per annum, compounded annually (net of investment expenses only). The expected return on assets consists of 2.40% price inflation and 5.15% 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	Non-Duty	Duty	Service	Service Retirement**
25	7.000%		0.0567%	0.0189%	0.0360%	0.0023%	5	7.5%
30	4.000		0.0630	0.0259	0.0450	0.0068	10	7.5%
35	2.750	1.375%	0.0714	0.0350	0.0585	0.0180	15	7.5%
40	2.000	1.000	0.0893	0.0483	0.0765	0.0248	20	7.5%
45	2.000	1.000	0.1218	0.0665	0.1125	0.0225	25	20.0%
50	2.000	1.000	0.1764	0.0917	0.1890	0.0180	30	15.0%
55	0.000	0.000	0.2594	0.1274	0.3420	0.0068	35	35.0%
60	0.000	0.000	0.3980	0.1757	0.5805	0.0023	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, ¼ year of service credit for peace-time military service will be granted to each member.

Appendix A – HSPRS Actuarial Assumptions and Methods

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

		Annual Rates of	
Age	Merit & Seniority	Base (Economy)	Increase Next Year
20	5.91%	2.65%	8.56%
25	2.66	2.65	5.31
30	1.84	2.65	4.49
35	1.84	2.65	4.49
40	1.84	2.65	4.49
45	1.35	2.65	4.00
50	0.85	2.65	3.50
55	0.85	2.65	3.50
60	0.35	2.65	3.00

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.

PAYROLL GROWTH: 2.65% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.28% 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.

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.

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.

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 7.55%). 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.

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

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

Appendix B – SLRP Actuarial Assumptions and Methods

INTEREST RATE: 7.55% per annum, compounded annually (net of investment expenses only). The expected return on assets consists of 2.40% price inflation and 5.15% real rate of return.

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

	Annual Rate of		
	Death*		
Age	**Male**	**Female**	**Disability****
20	0.0483%	0.0126%	0.04%
25	0.0567	0.0189	0.05
30	0.0630	0.0259	0.07
35	0.0714	0.0350	0.11
40	0.0893	0.0483	0.17
45	0.1218	0.0665	0.23
50	0.1764	0.0917	0.30
55	0.2594	0.1274	0.35
60	0.3980	0.1757	0.40
65	0.6353	0.2429	0.00
70	1.1655	0.4739	0.00
75	2.1389	0.9247	0.00

* Adjusted Base rates.
** 93% are presumed to be non-duty related, and 7% are assumed to be duty related.

WITHDRAWAL AND VESTING: 15% in an election year, 2% in a non-election year.

SERVICE RETIREMENT: 30% in an election year, 2.5% in a non-election year. All members are assumed to retire no later than age 80.

It is assumed that a member will be granted 2.5 years of service credit for unused leave at termination of employment.

SALARY INCREASES: 2.65% per annum, for all ages.

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.

PAYROLL GROWTH: 2.65% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.28% of payroll.

TIMING OF DECREMENTS AND PAY INCREASES: Middle of Year.

ASSUMED INTEREST RATE ON EMPLOYEE CONTRIBUTIONS: 2.00%

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

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.

MAXIMUM COVERED EARNINGS ASSUMPTION GROWTH: 2.65%

Appendix B – SLRP Actuarial Assumptions and Methods

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

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 7.55%). 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 SLRP are determined following a level funding approach and consist of a normal contribution and an accrued liability contribution.

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

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

Appendix C – Board Funding Policies

Funding Policy for HSPRS

The purpose of the funding policy is to state the overall funding goals for the Mississippi Highway Safety Patrol Retirement System (System), the benchmarks that will be used to measure progress in achieving those goals, and the methods and assumptions that will be employed to develop the benchmarks.

The policy refers to pension benefits and does not address retiree healthcare benefits that may be provided under statute in the future. In addition to periodic reviews of this policy, the Board will amend the policy if retiree healthcare benefits become payable.

I. Funding Goals

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

- To maintain an increasing ratio of System assets to accrued liabilities and reach an 80 percent minimum funded ratio in 2042;
- To maintain adequate asset levels to finance the benefits promised to members;
- To develop a pattern of stable contribution rates when expressed as a percentage of member payroll as measured by valuations prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board, with a minimum employer contribution equal to the normal cost determined under the Entry Age Normal funding method;
- To provide intergenerational equity for taxpayers with respect to system costs; and
- To fund benefit improvements through increases in contribution rates in accordance with Article 14, § 272A, of the Mississippi Constitution.

II. Benchmarks

To track progress in achieving the previously outlined funding goals, the following benchmarks will be measured annually as of the actuarial valuation date (with due recognition that a single year's results may not be indicative of long-term trends):

- **Funded ratio -** The funded ratio, defined as the actuarial value of System assets divided by the System's actuarial accrued liability, should be increasing over time before adjustments for changes in benefits, actuarial methods, and/or actuarial assumptions, with a target of at least 80 percent in 2042. If the funded ratio is projected to be less than 60 percent in 2042 or if the funded ratio is projected to be less than 70 percent following three consecutive annual projection reports, a contribution rate increase will be determined that is sufficient to generate a funded ratio of 90 percent in 2042. If a funded ratio of 100 percent or more is attained and is projected to remain above 100 percent for the ensuing 30 years following three consecutive annual projection reports, a reduced contribution pattern will be established provided the projected funded ratio remains at or above 100 percent in every future year.

- **Contribution rate history -** Employer and member contribution rates should be level from year to year when expressed as a percent of active member payroll unless the projected funded reaches a level that triggers a change in contribution rates. The initial employer contribution rate set under this policy as revised June 19, 2013 is 37.00 percent of active member payroll effective July 1, 2013. This contribution rate will increase to 49.08 percent of active member payroll effective July 1, 2018.

- **Unfunded Actuarial Accrued Liability (UAAL) amortization period -** The amortization period for the System's UAAL should be declining over time.

III. Methods and Assumptions

The actuarial funding method used to develop the benchmarks will be entry age normal. The method used to develop the actuarial value of assets will recognize the underlying market value of the assets by spreading each year's unanticipated investment income (gains and losses) over a five-year smoothing period (20 percent per year), as adopted by the Board of Trustees of the Public Employees' Retirement System of Mississippi (PERS).

The actuarial assumptions used will be those last adopted by the PERS Board based upon the advice and recommendation of the System's actuary. The actuary shall conduct an investigation into the System's experience at least every two years on a rolling four-year basis and utilize the results of the investigation to form the basis for those recommendations.

The PERS Board will have an audit of the System's actuarial valuation results conducted by an independent actuary at least every six years. The purpose of such a review is to provide a critique of the reasonableness of the actuarial methods and assumptions in use and the resulting actuarially computed liabilities and contribution rates.

IV. Funding Policy Review

The funding policy components and triggers will be reviewed annually following the annual actuarial valuation and in conjunction with the annual projection report and will be amended as necessary following each experience investigation conducted by the Board.

Appendix C – Board Funding Policies

Funding Policy for SLRP

The purpose of the funding policy is to state the overall funding goals for the Supplemental Legislative Retirement Plan (referred to as "System" in this policy), the benchmarks that will be used to measure progress in achieving those goals, and the methods and assumptions that will be employed to develop the benchmarks.

The policy refers to pension benefits and does not address retiree healthcare benefits that may be provided under statute in the future. In addition to periodic reviews of this policy, the Board will amend the policy if retiree healthcare benefits become payable.

I. Funding Goals

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

- To maintain an increasing ratio of system assets to accrued liabilities and reach an 80 percent minimum funded ratio in 2042;
- To maintain adequate asset levels to finance the benefits promised to members;
- To develop a pattern of stable contribution rates when expressed as a percentage of member payroll as measured by valuations prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board, with a minimum employer contribution equal to the normal cost determined under the Entry Age Normal funding method;
- To provide intergenerational equity for taxpayers with respect to System costs; and
- To fund benefit improvements through increases in contribution rates in accordance with Article 14, § 272A, of the Mississippi Constitution.

II. Benchmarks

To track progress in achieving the previously outlined funding goals, the following benchmarks will be measured annually as of the actuarial valuation date (with due recognition that a single year's results may not be indicative of long-term trends):

- **Funded ratio** - The funded ratio, defined as the actuarial value of System assets divided by the System's actuarial accrued liability, should be increasing over time, before adjustments for changes in benefits, actuarial methods, and/or actuarial assumptions, with a target of at least 80 percent in 2042. If the projected funded ratio is less than 60 percent in 2042 or if the projected funded ratio is projected to be less than 75 percent in 2042 following two consecutive annual projection reports, a contribution rate increase will be determined that is sufficient to generate a funded ratio of 85 percent in 2042. If a funded ratio of 100 percent or more is attained and is projected to remain above 100 percent for the ensuing 30 years following two consecutive annual projection reports, a reduced contribution pattern will be established provided the projected funded ratio remains at or above 100 percent in every future year.

Appendix C – Board Funding Policies

- **Contribution rate history -** Employer and member contribution rates should be level from year to year when expressed as a percent of active member payroll unless the projected funded ratio reaches a level that triggers a change in contribution rates. The initial employer contribution rates for the Supplemental Legislative Retirement Plan (SLRP) set under this policy, as revised October 23, 2012, will be 7.40 percent of active member payroll effective July 1, 2013.

- **Unfunded Actuarial Accrued Liability (UAAL) amortization period -** The amortization period for the System's UAAL should be declining over time.

III. Methods and Assumptions

The actuarial funding method used to develop the benchmarks will be entry age normal. The method used to develop the actuarial value of assets will recognize the underlying market value of the assets by spreading each year's unanticipated investment income (gains and losses) over a five-year smoothing period (20 percent per year) as adopted by the Board.

The actuarial assumptions used will be those last adopted by the Board based upon the advice and recommendation of the System's actuary. The actuary shall conduct an investigation into the system's experience at least every two years on a rolling four-year basis and utilize the results of the investigation to form the basis for those recommendations.

The Board will have an audit of the System's actuarial valuation results conducted by an independent actuary at least every six years. The purpose of such a review is to provide a critique of the reasonableness of the actuarial methods and assumptions in use and the resulting actuarially computed liabilities and contribution rates.

IV. Funding Policy Review

The funding policy components and triggers will be reviewed annually following the annual actuarial valuation and in conjunction with the annual projection report and will be amended as necessary following each experience investigation conducted by the Board.