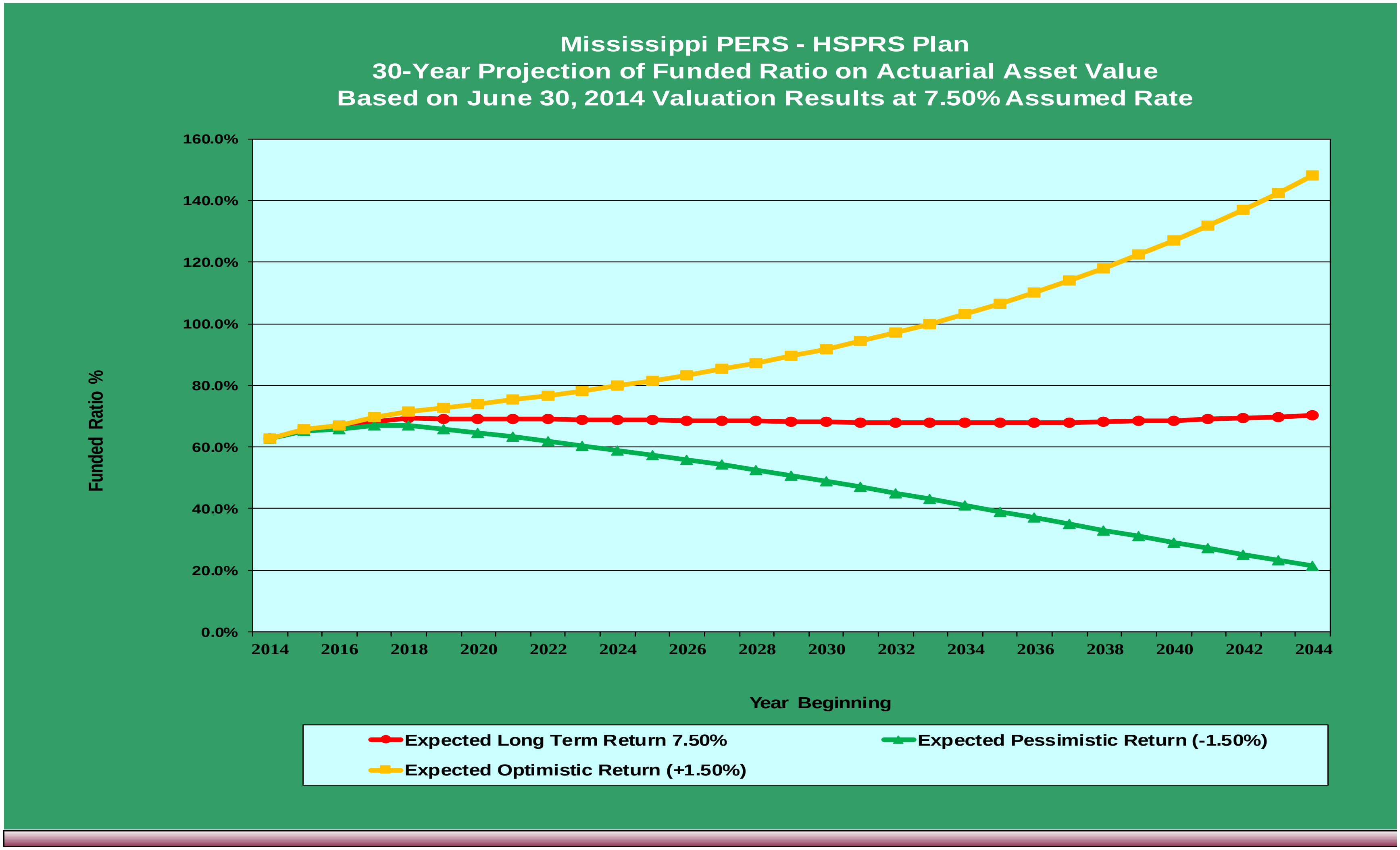
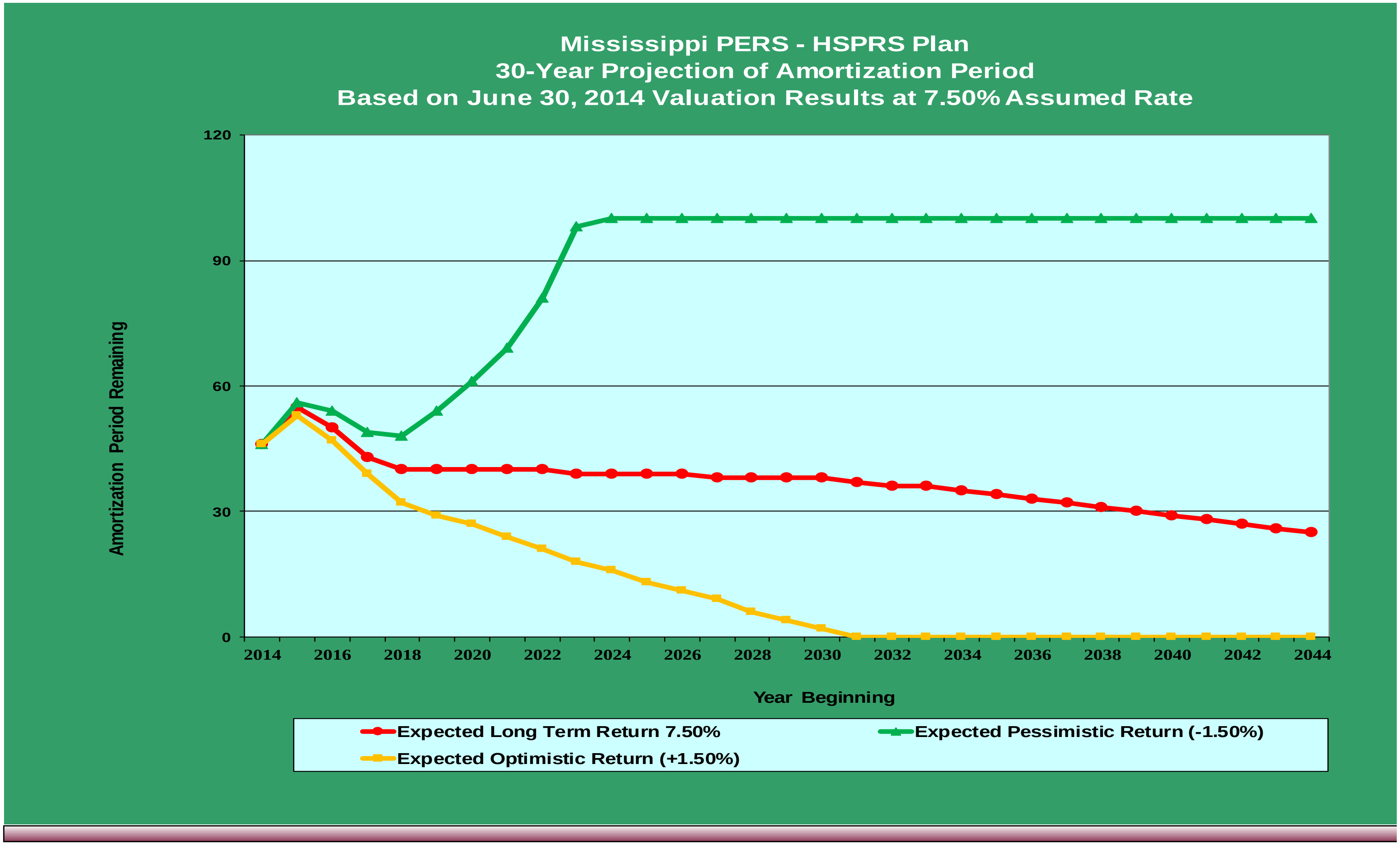
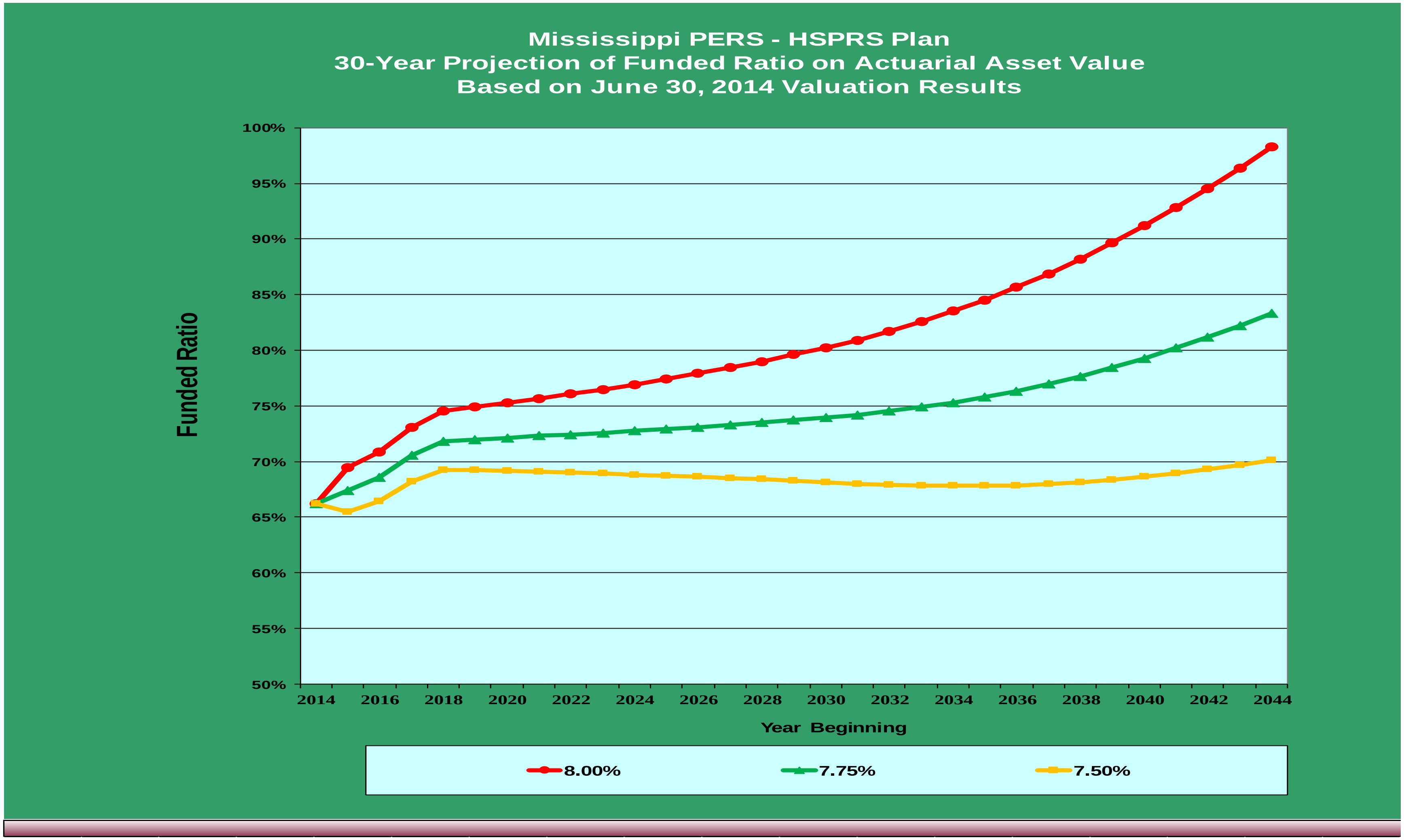
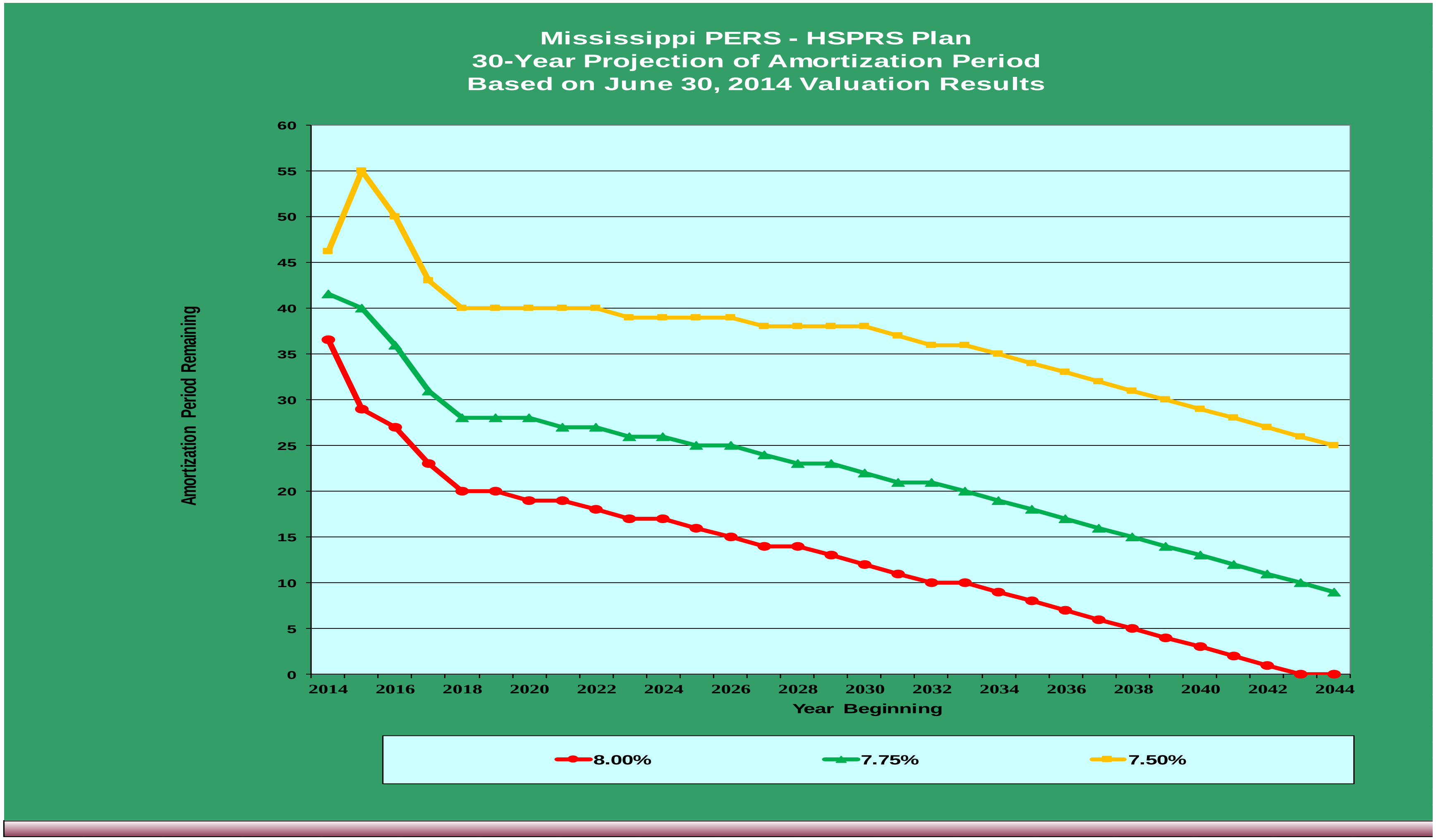

Mississippi PERS - HSPRS Plan
30-Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2014 Valuation Results at 7.50% Assumed Rate
160.0%
140.0%
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
Funded Ratio %
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
Expected Long Term Return 7.50%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)


Mississippi PERS - HSPRS Plan
30-Year Projection of Amortization Period
Based on June 30, 2014 Valuation Results at 7.50% Assumed Rate
Amortization Period Remaining
120
90
60
30
0
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
Expected Long Term Return 7.50%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)


Mississippi PERS - HSPRS Plan
30-Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2014 Valuation Results
Funded Ratio
100%
95%
90%
85%
80%
75%
70%
65%
60%
55%
50%
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
8.00%
7.75%
7.50%



Mississippi PERS - HSPRS Plan
30-Year Projection of Amortization Period
Based on June 30, 2014 Valuation Results
Amortization Period Remaining
0
5
10
15
20
25
30
35
40
45
50
55
60
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
8.00%
7.75%
7.50%

## 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 D), 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 3 year period prior to the projection start date of June 30, 2014. That profile is summarized in the table below.

| Age | Average Pay | Percent Male | Weight |
|---|---|---|---|
| 32 | $40,000 | 80.0% | 15.0% |
| 38 | 40,000 | 80.0 | 20.0 |
| 42 | 40,000 | 80.0 | 20.0 |
| 47 | 40,000 | 80.0 | 20.0 |
| 52 | 40,000 | 80.0 | 13.0 |
| 58 | 40,000 | 80.0 | 12.0 |

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, 2014 would remain in place for the following 30 years.

In addition to projections run with the current 8.0% discount rate, we are providing projections using discount rates of 7.75% and 7.50%. This enables a comparison of the operation of the funding policy under alternative investment return assumptions.

### 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, 2014 and those who are hired after June 30, 2014. We have assumed the active membership will continue at the current maximum population of 175 active members over the projected period. After about 7 years, the retiree headcount begins to drop as less current and future active members are expected to reach retirement eligibility.

| Member | 2014 | 2019 | 2024 | 2034 | 2044 |
|---|---|---|---|---|---|
| Active – Existing Employees | 175 | 116 | 57 | 20 | 4 |
| Active – New Entrants | 0 | 59 | 118 | 155 | 171 |
| Retired | 187 | 200 | 202 | 151 | 109 |
| Total | 362 | 375 | 377 | 326 | 284 |

### RESULTS

The projection of payroll, UAL, Employer normal cost rates, UAL Rate, Total Rate and Funding Ratios follows for the baseline assumptions according to the new funding policy. In addition, the projection results using different long-term investment return assumptions for future valuations (7.75% and 7.50%) are included.

**Baseline Projection Results**
**($000’s)**

| | 2014 | 2019 | 2024 | 2034 | 2044 |
|---|---|---|---|---|---|
| Total Payroll | $6,918 | $8,554 | $10,476 | $15,671 | $23,217 |
| UAL | $5,341 | $3,842 | $3,085 | $(2,435) | $(19,083) |
| Normal Cost Rate | 2.67% | 2.49% | 2.39% | 2.33% | 2.21% |
| UAL Rate | 4.73% | 4.91% | 5.01% | 5.07% | 5.19% |
| Total Rate | 7.40% | 7.40% | 7.40% | 7.40% | 7.40% |
| Funding Ratio | 73.6% | 83.7% | 88.3% | 107.5% | 144.3% |
| Amortization Period | 25 years | 12 years | 7 years | 0 years | 0 years |

**Projection Results Assuming 7.75% Long-Term Investment Return**
**($000's)**

| | 2014 | 2019 | 2024 | 2034 | 2044 |
|---|---|---|---|---|---|
| Total Payroll | $6,918 | $8,554 | $10,476 | $15,671 | $23,217 |
| UAL | $5,341 | $4,648 | $4,355 | $678 | $(11,532) |
| Normal Cost Rate | 2.67% | 2.77% | 2.67% | 2.60% | 2.47% |
| UAL Rate | 4.73% | 4.63% | 4.73% | 4.80% | 4.93% |
| Total Rate | 7.40% | 7.40% | 7.40% | 7.40% | 7.40% |
| Funding Ratio | 73.6% | 80.7% | 83.9% | 98.0% | 126.1% |
| Amortization Period | 25 years | 16 years | 11 years | 1 year | 0 years |

**Projection Results Assuming 7.50% Long-Term Investment Return**
**($000's)**

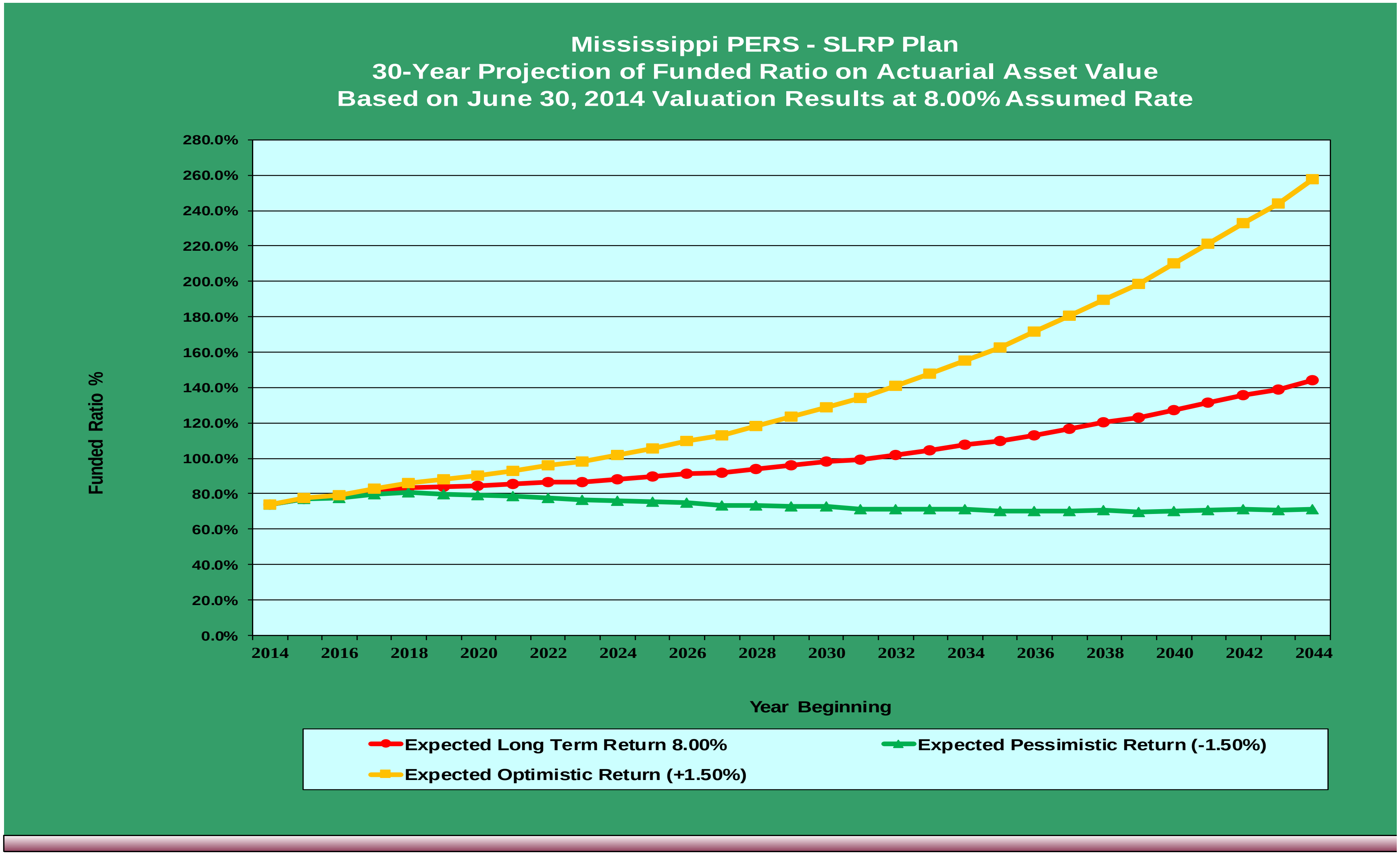
| | 2014 | 2019 | 2024 | 2034 | 2044 |
|---|---|---|---|---|---|
| Total Payroll | $6,918 | $8,554 | $10,476 | $15,671 | $23,217 |
| UAL | $5,341 | $5,451 | $5,611 | $3,675 | $(4,477) |
| Normal Cost Rate | 2.67% | 3.05% | 2.93% | 2.86% | 2.73% |
| UAL Rate | 4.73% | 4.35% | 4.47% | 4.54% | 4.67% |
| Total Rate | 7.40% | 7.40% | 7.40% | 7.40% | 7.40% |
| Funding Ratio | 73.6% | 77.9% | 79.7% | 89.2% | 109.9% |
| Amortization Period | 25 years | 20 years | 16 years | 6 years | 0 years |

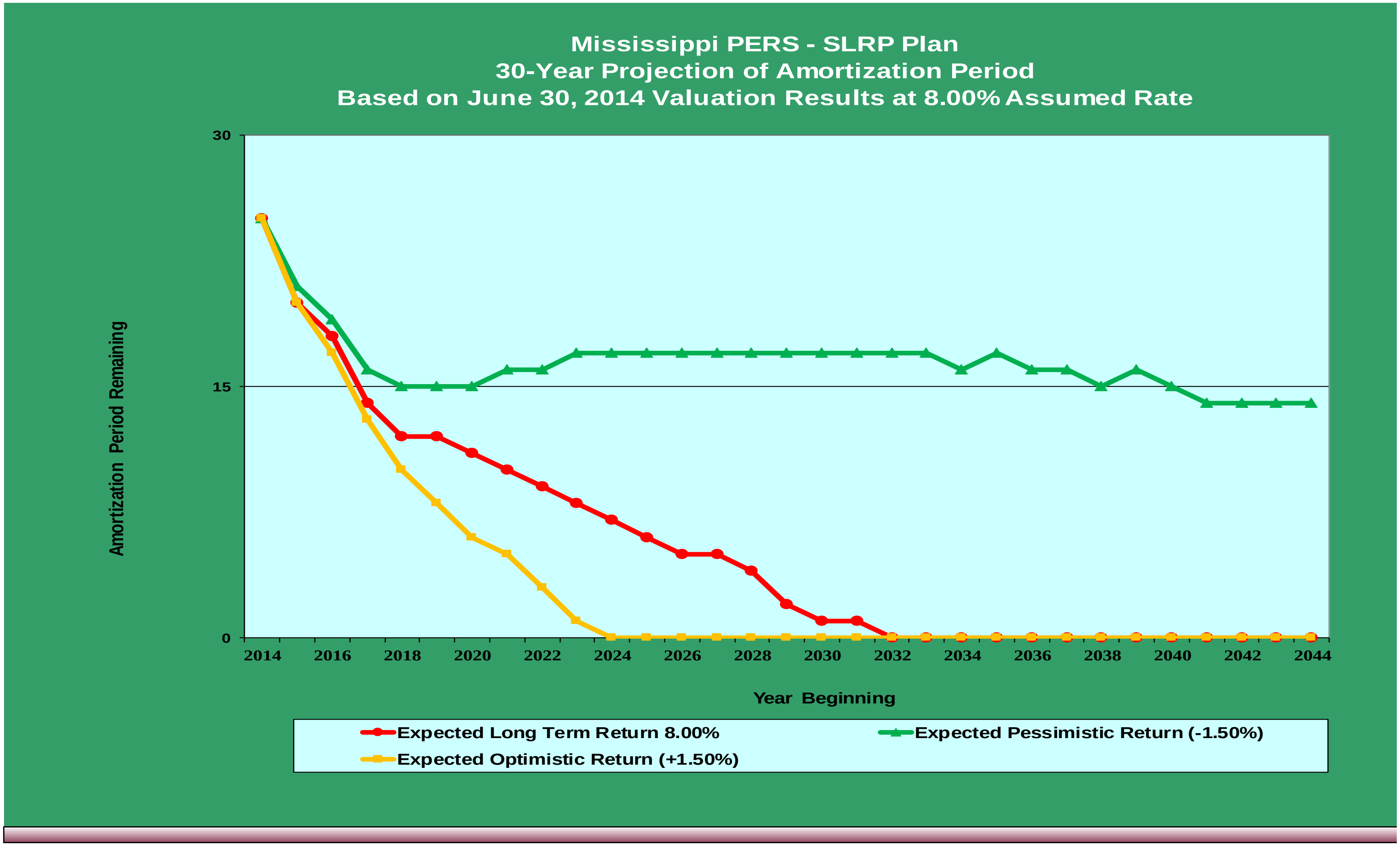
## Section IV – SLRP Projection Results

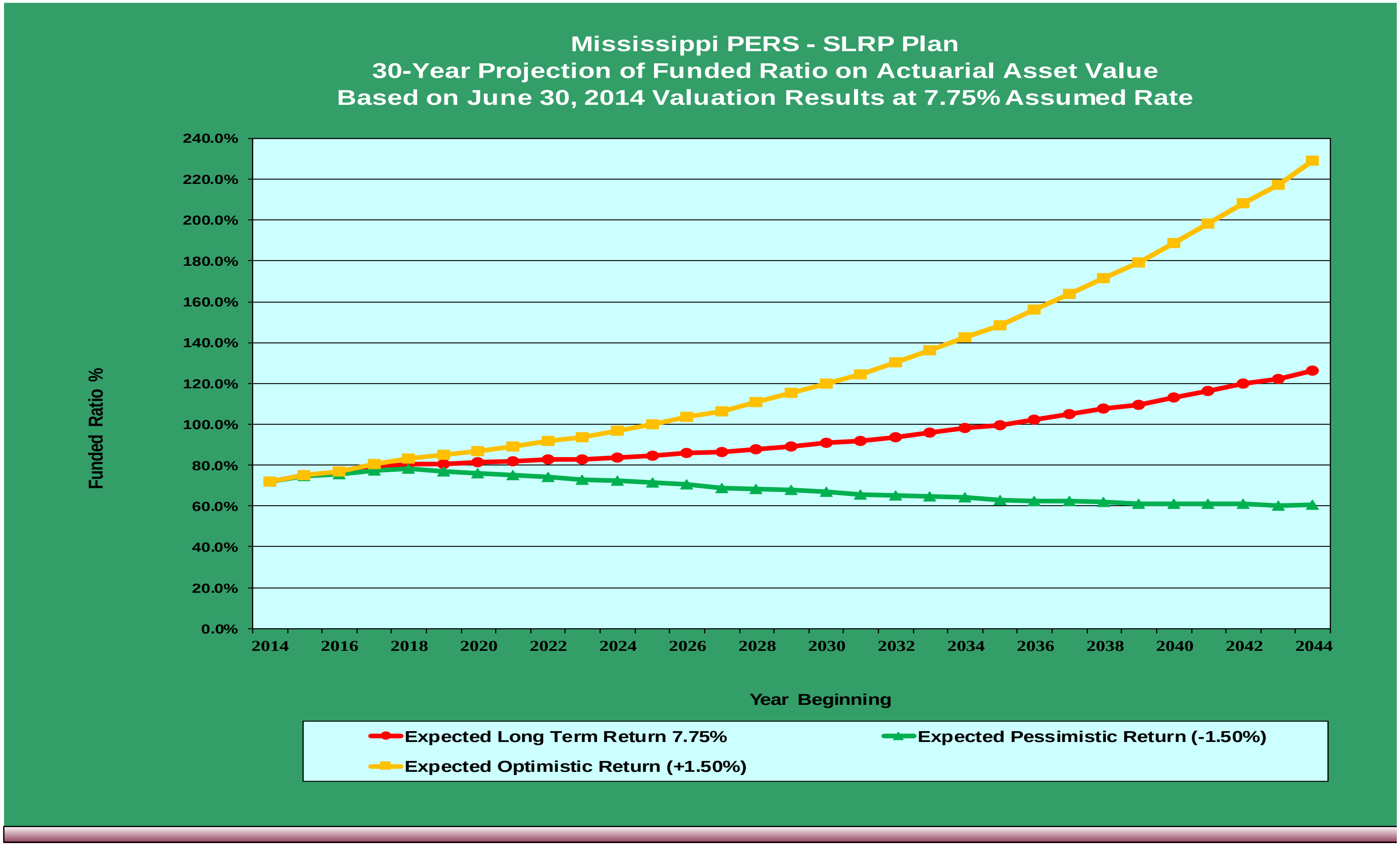
The following graphs show a comparison of the projected funding ratios and amortization periods for the baseline valuation and two alternative investment return scenarios to show an optimistic view if the fund earns 1.50% above the assumed rate each year of the projection study and a pessimistic view if the fund earns 1.50% less than the assumed rate each year of the projection study. As can be seen from the graphs, even under a pessimistic view of investment returns, the Plan remains solvent over the length of the projection period.

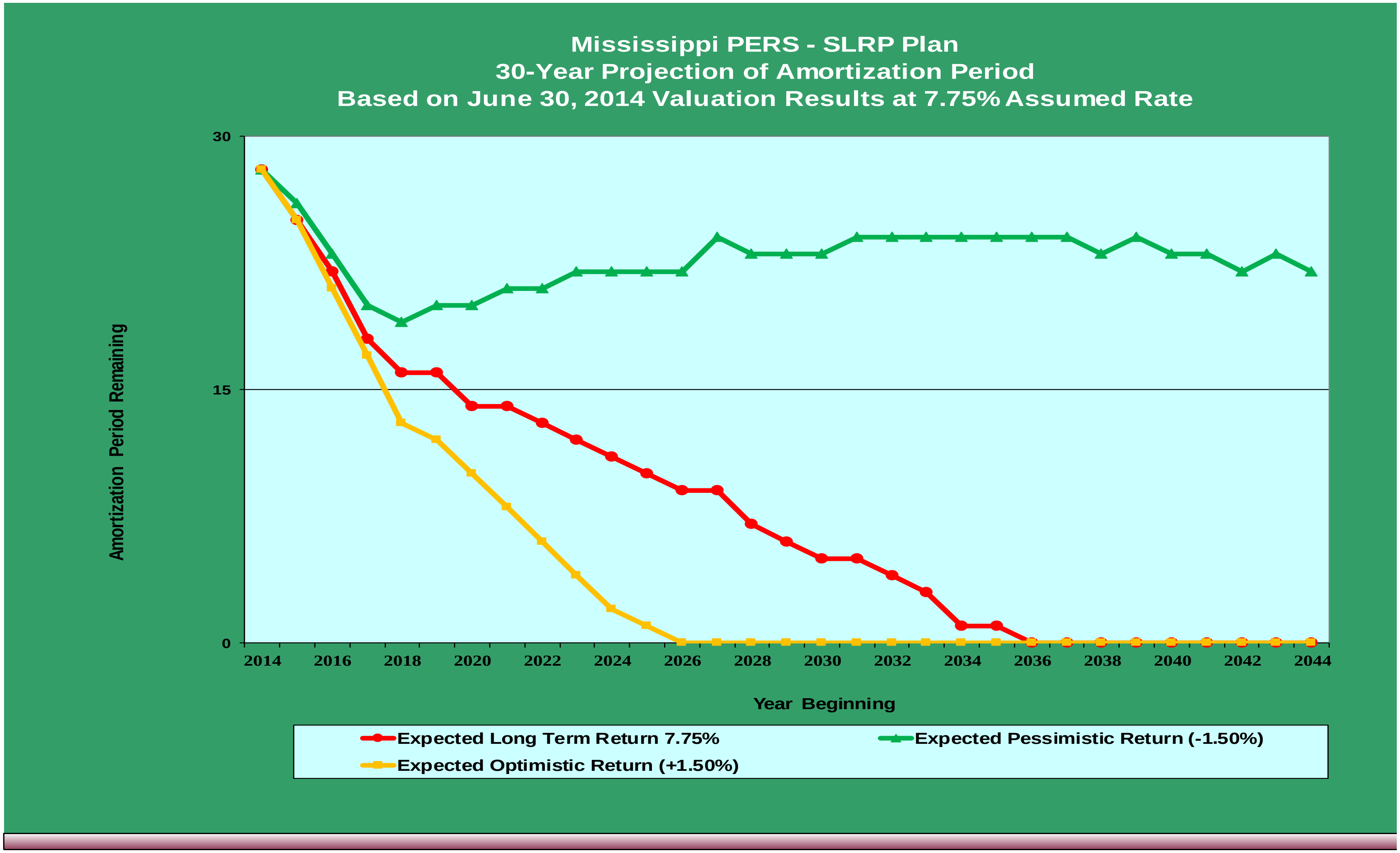
In the first two graphs, the assumed long-term investment return for the projection period is 8.00%, the current assumption from the June 30, 2014 actuarial valuation. To provide the Board a full perspective of financial impact, we have included two other sets of projections that show the System's projected funding ratios and amortization periods if the long term investment return assumption is lowered to 7.75% or 7.50%. Finally two graphs are provided that compare the funded ratios and amortization periods under the three different investment return assumptions, 8.00%, 7.75% and 7.50%.

Please note that a 100 year amortization period on any of the graphs represents an infinite amortization period, meaning that the current employer rate would never pay off the Unfunded Accrued Liability.

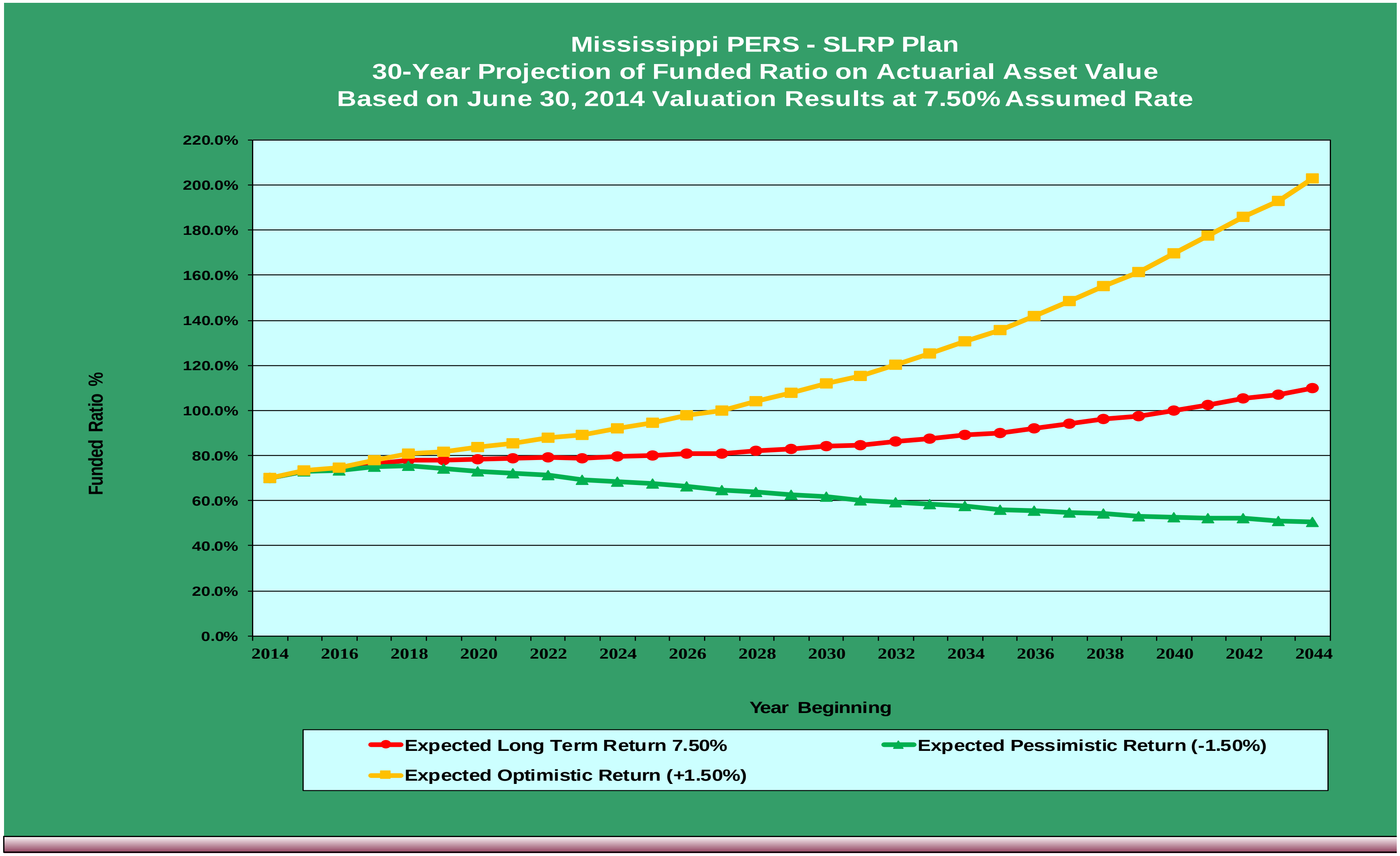

Mississippi PERS - SLRP Plan
30-Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2014 Valuation Results at 8.00% Assumed Rate
Funded Ratio %
280.0%
260.0%
240.0%
220.0%
200.0%
180.0%
160.0%
140.0%
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
Expected Long Term Return 8.00%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)


Mississippi PERS - SLRP Plan
30-Year Projection of Amortization Period
Based on June 30, 2014 Valuation Results at 8.00% Assumed Rate
30
15
0
Amortization Period Remaining
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
Expected Long Term Return 8.00%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)

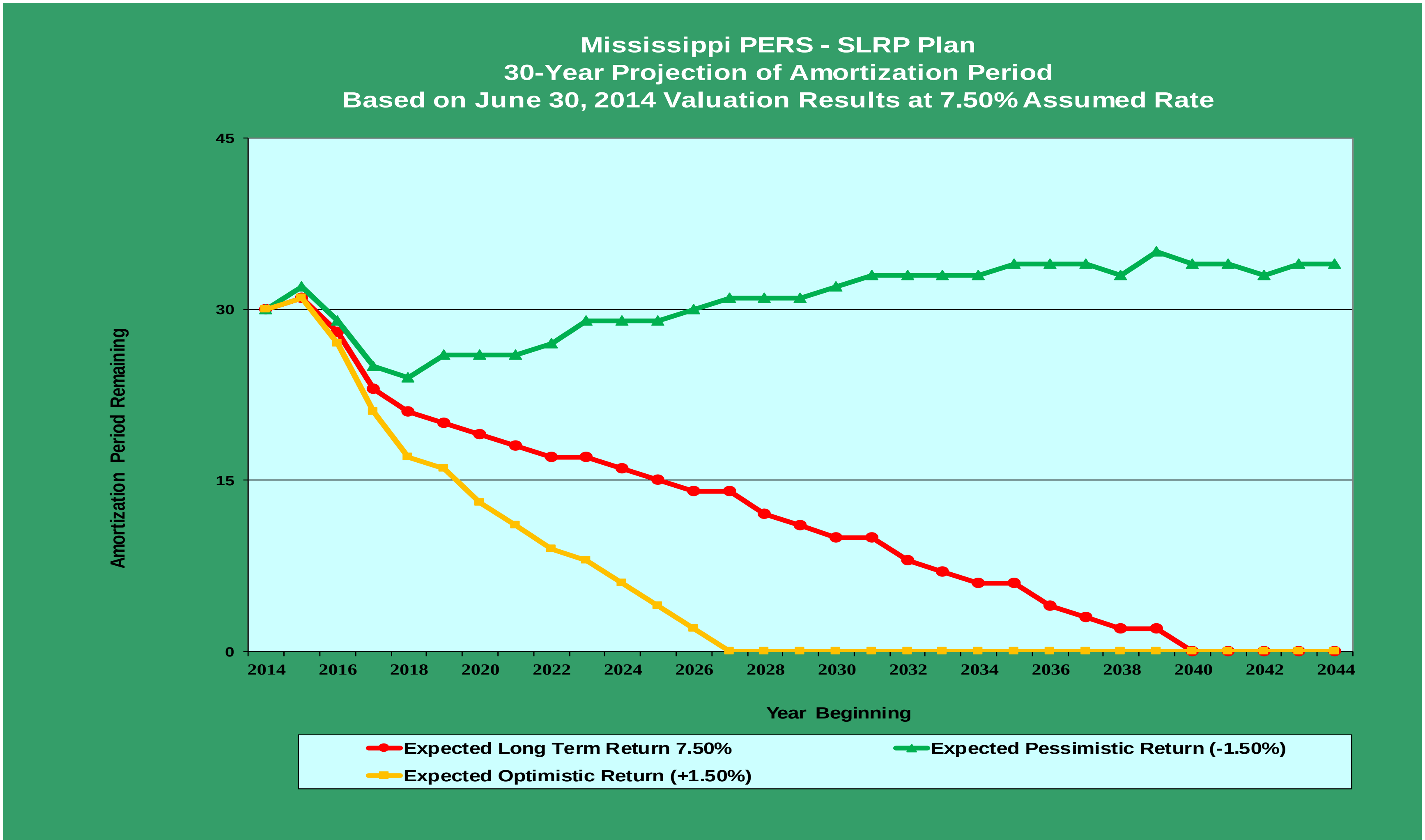

Mississippi PERS - SLRP Plan
30-Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2014 Valuation Results at 7.75% Assumed Rate
Funded Ratio %
240.0%
220.0%
200.0%
180.0%
160.0%
140.0%
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
Expected Long Term Return 7.75%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)

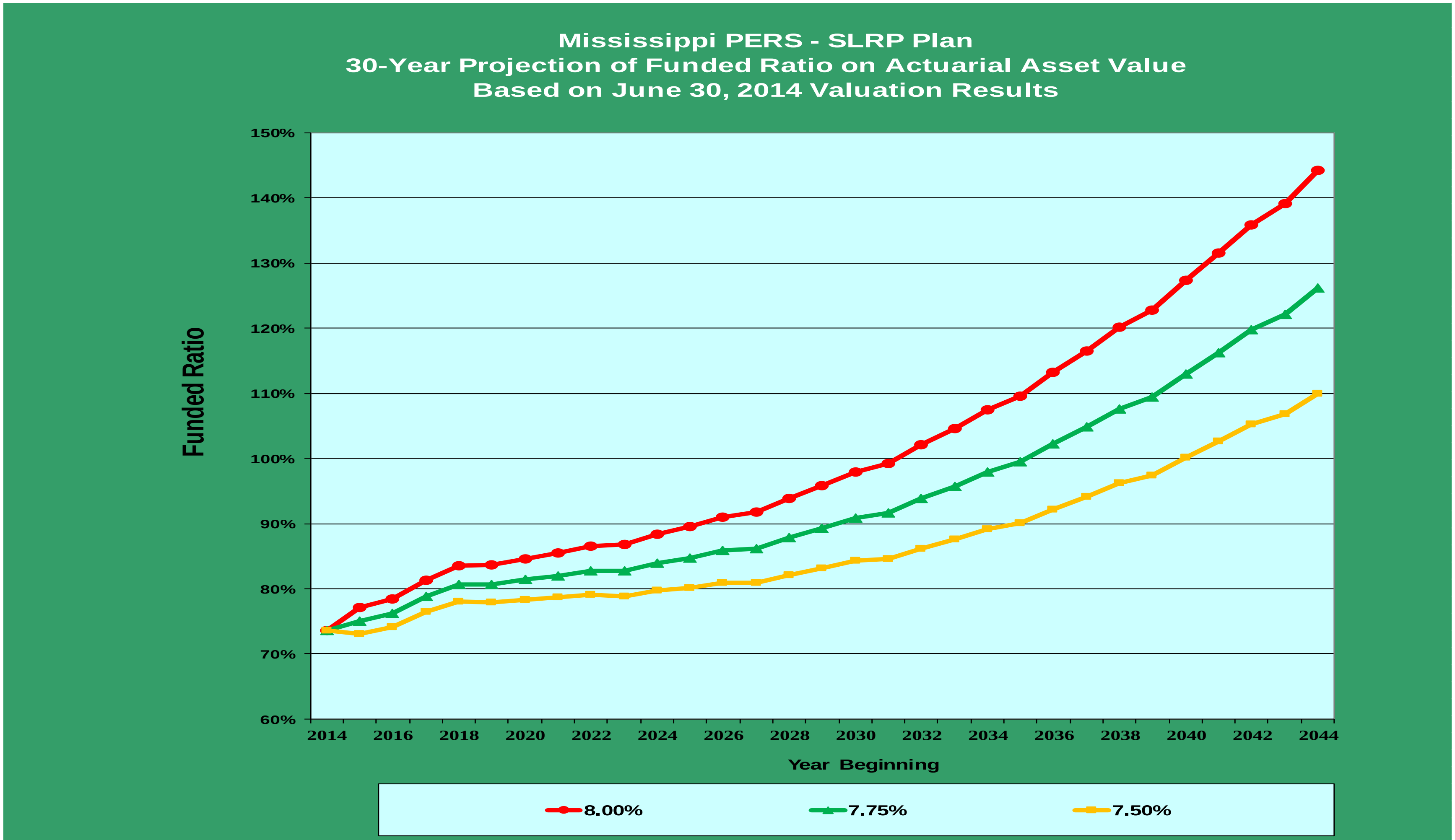


Mississippi PERS - SLRP Plan
30-Year Projection of Amortization Period
Based on June 30, 2014 Valuation Results at 7.75% Assumed Rate
30
15
0
Amortization Period Remaining
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
Expected Long Term Return 7.75%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)

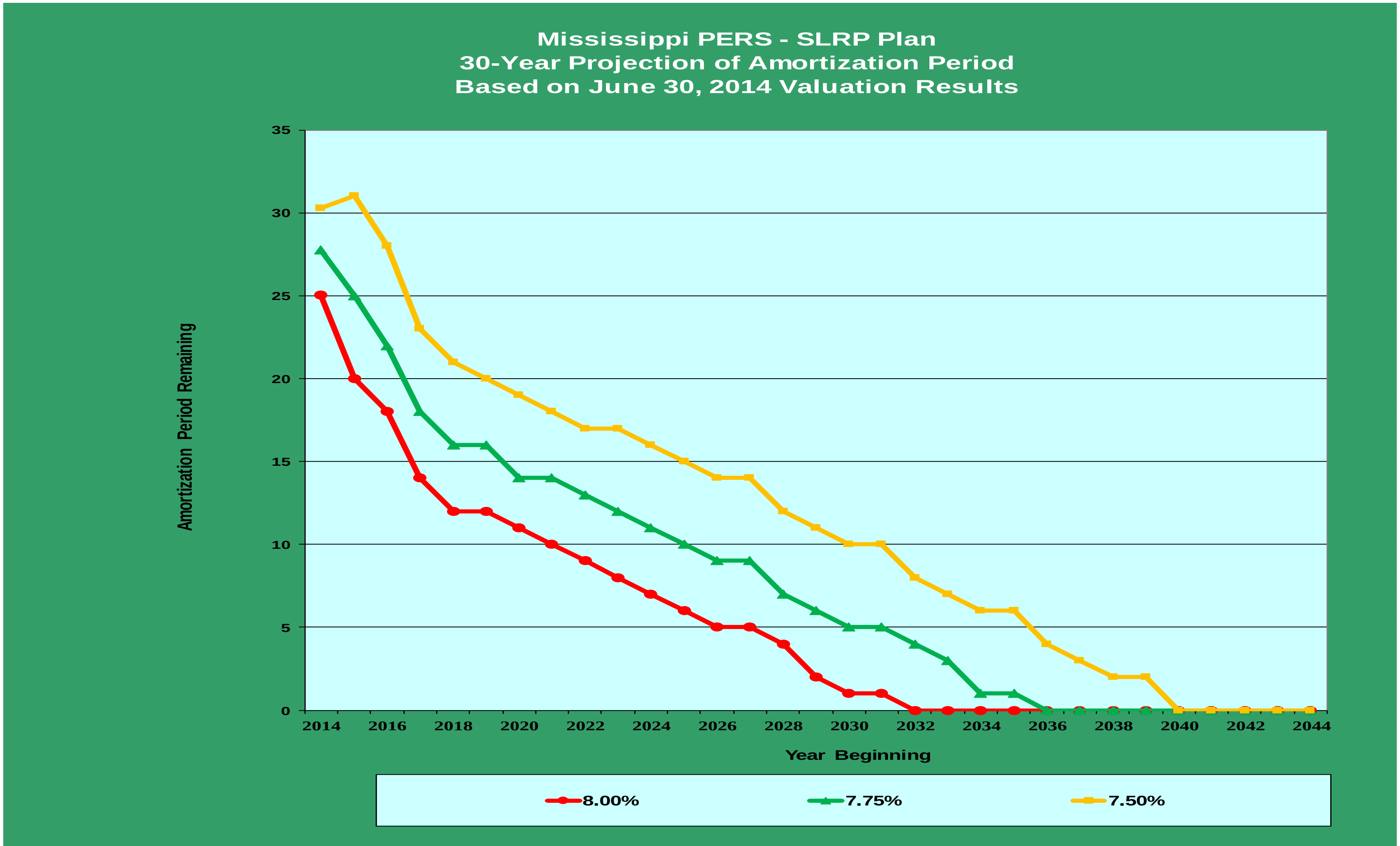


Mississippi PERS - SLRP Plan
30-Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2014 Valuation Results at 7.50% Assumed Rate
Funded Ratio %
220.0%
200.0%
180.0%
160.0%
140.0%
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
2014 2016 2018 2020 2022 2024 2026 2028 2030 2032 2034 2036 2038 2040 2042 2044
Year Beginning
Expected Long Term Return 7.50%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)


Mississippi PERS - SLRP Plan
30-Year Projection of Amortization Period
Based on June 30, 2014 Valuation Results at 7.50% Assumed Rate
Amortization Period Remaining
45
30
15
0
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
Expected Long Term Return 7.50%
Expected Pessimistic Return (-1.50%)
Expected Optimistic Return (+1.50%)



Mississippi PERS - SLRP Plan
30-Year Projection of Funded Ratio on Actuarial Asset Value
Based on June 30, 2014 Valuation Results
Funded Ratio
150%
140%
130%
120%
110%
100%
90%
80%
70%
60%
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
8.00%
7.75%
7.50%


Mississippi PERS - SLRP Plan
30-Year Projection of Amortization Period
Based on June 30, 2014 Valuation Results
Amortization Period Remaining
0
5
10
15
20
25
30
35
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
Year Beginning
8.00%
7.75%
7.50%

**INTEREST RATE:** 8.00% per annum, compounded annually (net of investment expense only).

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

| | Annual Rates of | | | | | |
|---|---|---|---|---|---|---|
| | Withdrawal and Vesting* | | Death** | | Disability** | |
| Age | Male | Female | Male | Female | Male | Female |
| 20 | 22.0% | 25.0% | .01% | .01% | .01% | .01% |
| 25 | 15.0 | 15.5 | .01 | .01 | .02 | .01 |
| 30 | 10.0 | 10.5 | .02 | .01 | .02 | .02 |
| 35 | 7.5 | 8.0 | .03 | .02 | .04 | .02 |
| 40 | 6.0 | 6.0 | .04 | .02 | .12 | .09 |
| 45 | 5.5 | 5.0 | .07 | .04 | .22 | .15 |
| 50 | 5.5 | 5.0 | .14 | .05 | .32 | .23 |
| 55 | 5.5 | 5.0 | .19 | .05 | .52 | .40 |
| 60 | 5.5 | 5.0 | .22 | .08 | .38 | .32 |
| 65 | 5.5 | 5.0 | .40 | .10 | | |
| 70 | 5.5 | 5.0 | .40 | .10 | | |
| 74 | 5.5 | 5.0 | .40 | .10 | | |

| | Annual Rates of Service Retirements | | | |
|---|---|---|---|---|
| | Male | | Female | |
| Age | Under 25 Years of Service*** | 25 Years of Service and Over*** | Under 25 Years of Service*** | 25 Years of Service and Over*** |
| 45 | | 18.0% | | 14.0% |
| 50 | | 13.0 | | 11.0 |
| 55 | | 17.0 | | 18.0 |
| 60 | 10.0% | 20.0 | 12.5% | 22.0 |
| 62 | 19.0 | 33.0 | 18.0 | 36.0 |
| 65 | 22.0 | 30.0 | 27.0 | 42.0 |
| 70 | 19.0 | 25.0 | 21.0 | 22.0 |
| 75 | 100.0 | 100.0 | 100.0 | 100.0 |

* For all ages, rates of 32% for 1st year of employment and 22% for 2nd year.
** 94% are presumed to be non-duty related, and 6% are assumed to be duty related.
*** For Tier 4 members, 30 years of service.

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

| | | Annual Rates of | |
|---|---|---|---|
| Service | Merit & Seniority | Base (Economy) | Increase Next Year |
| 0 | 15.25% | 4.25% | 19.50% |
| 1 | 5.25 | 4.25 | 9.50 |
| 2 | 2.75 | 4.25 | 7.00 |
| 3 | 1.75 | 4.25 | 6.00 |
| 4 | 1.25 | 4.25 | 5.50 |
| 5 | 0.75 | 4.25 | 5.00 |
| 10 | 0.25 | 4.25 | 4.50 |
| 15 | 0.25 | 4.25 | 4.50 |
| 20 | 0.25 | 4.25 | 4.50 |
| 25 | 0.25 | 4.25 | 4.50 |
| 30 | 0.00 | 4.25 | 4.25 |
| 35 | 0.00 | 4.25 | 4.25 |

**PAYROLL GROWTH:** 4.25% per annum, compounded annually.

**PRICE INFLATION:** 3.50% per annum, compounded annually.

**TIMING OF DECREMENTS AND PAY INCREASES:** Middle of Year.

**DEATH AFTER RETIREMENT:** The mortality table, for post-retirement mortality, used in evaluating allowances to be paid is the RP-2000 Combined Mortality Table Projected with Scale AA to 2025 set forward two years for males. The RP-2000 Disabled Mortality Table (set back 3 years for males and set forward 2 years for females) was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 7% greater than expected under the selected table.

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

**UNUSED SICK LEAVE:** 0.50 years at retirement.

**MILITARY SERVICE:** 0.25 years at retirement.

**DEFERRED VESTEDS:** 30% of vested participants will forfeit their accrued benefit and receive their employee contributions with interest.

**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 8.00%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

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

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 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 PERS. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.

**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.

**INTEREST RATE:** 8.00% per annum, compounded annually (net of investment expenses only).

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

| | | | Disability | | | |
|---|---|---|---|---|---|---|
| Age | Withdrawal and Vesting* | Death | Non-Duty | Duty | Service | Service Retirement* |
| 25 | 4.0% | .03% | .09% | .01% | 5 | 5% |
| 30 | 3.5 | .04 | .12 | .02 | 10 | 5% |
| 35 | 2.5 | .05 | .16 | .04 | 15 | 5% |
| 40 | 1.0 | .07 | .20 | .07 | 20 | 10% |
| 45 | 1.0 | .11 | .30 | .06 | 25 | 15% |
| 50 | 0.5 | .16 | .50 | .05 | 30 | 25% |
| 55 | 0.0 | .21 | .91 | .02 | 35 | 25% |

* The annual rate of service retirement is 100% at age 60.

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.

**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 | 5.59% | 4.25% | 9.84% |
| 25 | 2.32 | 4.25 | 6.57 |
| 30 | 1.50 | 4.25 | 5.75 |
| 35 | 1.50 | 4.25 | 5.75 |
| 40 | 1.50 | 4.25 | 5.75 |
| 45 | 1.00 | 4.25 | 5.25 |
| 50 | 0.50 | 4.25 | 4.75 |
| 55 | 0.50 | 4.25 | 4.75 |

**PAYROLL GROWTH:** 4.25% per annum, compounded annually.

**PRICE INFLATION:** 3.50% per annum, compounded annually.

**TIMING OF DECREMENT AND PAY INCREASES:** Middle of Year.

**DEATH AFTER RETIREMENT:** The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the RP-2000 Combined Mortality Table Projected to 2025 by Scale AA (set forward 2 years for males). The RP-2000 Disabled Mortality Table (set back 3 years for males and set forward 2 years for females) was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 7% greater than expected under selected table.

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

**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 8.00%). 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.

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 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 accrued liability over a period of years from the valuation date.

**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.

## MISSISSIPPI HIGHWAY SAFETY PATROL RETIREMENT SYSTEM
## History of Benefit Improvements

| Fiscal Year Beginning | Benefit Improvement |
|---|---|
| **July 1, 1958** | • Mississippi Highway Safety Patrol Retirement System created. |
| **July 1, 1966** | • Removed limit of $200 per month for disability retirement payments.<br>• Eliminated reduction in retirement benefits resulting from Social Security payments.<br>• Provided same survivor benefits to disability retirant's beneficiaries as those provided for service retirant's beneficiaries. |
| **July 1, 1974** | • Authorized military service credit (not to exceed 4 years maximum unless proof furnished member was retained by causes beyond his control). |
| **July 1, 1975** | • Provided additional benefit payments (13$^{th}$ Checks) to retired patrolmen.<br>• 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.<br>• Provided any member who served in maritime service during periods of hostility in WWII shall be allowed credit for maritime service.<br>• 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.<br>• 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.<br>• Provided full retirement with 30 years creditable service regardless of age. |

## Appendix C – HSPRS History of Benefit Improvements

| Fiscal Year Beginning | Benefit Improvement |
|---|---|
| | • Reduced the number of years which determine average compensation to 4 highest consecutive years.<br>• 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.<br>• Provided retirement allowance shall not exceed 85% of average compensation.<br>• Provided mandatory retirement and termination of membership at age 60.<br>• Provided no monthly benefit payment may be made for a period of time in excess of that allowed by federal law.<br>• 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.<br>• Provided that a retiree may elect by an irrevocable agreement to receive additional payment (13th check) in equal installments not to exceed 6 months.<br>• Amended section 25-13-13 on death benefits to conform to section 25-13-11 allowing 5 year vesting by deleting 10 year requirement.<br>• 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.<br>• 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.<br>• Established options for service and disability retirees retiring 7-1-90 or later.<br>• Provided an active member qualified for retirement may pre-select an option.<br>• 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;<br>• Provided cost-of-living payment (13th check) shall be cumulative to conform to PERS law. |

## Appendix C – HSPRS History of Benefit Improvements

| Fiscal Year Beginning | Benefit Improvement |
|---|---|
| | • 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. |
| **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.<br>• 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.<br>• 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.<br>• 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.<br>• Removed from consideration in the base COLA the requirement that the Consumer Price Index (CPI) have increased by at least 2 ½%.<br>• 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.<br>• 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.<br>• **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.**<br>• 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 |

## Appendix C – HSPRS History of Benefit Improvements

| Fiscal Year Beginning | Benefit Improvement |
|---|---|
| | and who qualify for such credit, whether they retired before or after July 1, 2000. This provision, however, did not require any back payments.<br>• 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.<br>• 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.<br>• 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.<br>• 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. |

**INTEREST RATE:** 8.00% per annum, compounded annually (net of investment expenses only).

**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 | .02% | .01% | .04% |
| 25 | .03 | .02 | .05 |
| 30 | .04 | .02 | .07 |
| 35 | .05 | .03 | .11 |
| 40 | .08 | .04 | .17 |
| 45 | .13 | .06 | .23 |
| 50 | .24 | .10 | .30 |
| 55 | .39 | .15 | .35 |
| 60 | .60 | .25 | .40 |
| 65 | .96 | .43 | |
| 70 | 1.61 | .72 | |

* 94% are presumed to be non-duty related, and 6% are assumed to be duty related.

**WITHDRAWAL AND VESTING:** 20% in an election year, none in a non-election year.

**SERVICE RETIREMENT:** 25% in an election year, none in a non-election year. All members are assumed to retire no later than age 75. It is assumed that a member will be granted 2.5 years of service credit for unused leave at termination of employment.

**PRICE INFLATION:** 3.50% per annum, compounded annually.

**PAYROLL GROWTH:** 4.25% per annum, compounded annually.

**TIMING OF DECREMENTS AND PAY INCREASES:** Middle of Year.

**SALARY INCREASES:** 4.25% per annum, for all ages

**DEATH AFTER RETIREMENT:** The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the RP-2000 Combined Mortality Table Projected to 2025 by Scale AA (set forward 2 years for males). The RP-2000 Disabled Mortality Table (set back 3 years for males and set forward 2 years for females) was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 7% greater than expected under the selected table.

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

**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 8.00%). 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 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 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 accrued liability over a period of years from the valuation date.

**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.