Gabriel Roeder Smith & Company
Consultants & Actuaries

# STATE POLICE RETIREMENT BENEFITS TRUST
# STATE OF RHODE ISLAND

## ACTUARIAL VALUATION REPORT

## AS OF JUNE 30, 2014

GRS
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December 17, 2014

Retirement Board
40 Fountain Street, First Floor
Providence, RI 02903-1854

Dear Members of the Board:

**Subject: Actuarial Valuation of the SPRBT as of June 30, 2014**

This is the June 30, 2014 actuarial valuation of the State Police Retirement Benefits Trust (SPRBT). This report describes the current actuarial condition of the SPRBT, determines the recommended employer contribution rate, and analyzes changes in the contribution rate. Valuations are prepared annually, as of June 30, the last day of the SPRBT plan year. Benefits for State police officers hired before July 1, 1987 are funded by the State from general assets, on a pay-as-you-go basis, and are not included in this valuation.

Under Rhode Island General Laws, the employer contribution rate for the SPRBT is certified annually by the State of Rhode Island Retirement Board. This rate is determined actuarially, based on the plan provisions in effect as of the valuation date and the actuarial assumptions and methods adopted by the Board or set by statute. The Board's current policy is that the contribution rate determined by a given actuarial valuation becomes effective two years after the valuation date. For example, the rate determined by the June 30, 2014 actuarial valuation will be applicable for the year beginning July 1, 2016 and ending June 30, 2017.

**Financing objectives and funding policy**

The actuarial cost method and the amortization periods are set by statute. Normal cost rate (as a percent of pay) and actuarial accrued liabilities are computed using the Entry Age Normal actuarial cost method. The employer contribution rate is the sum of two pieces: the employer normal cost rate and the amortization rate. The employer normal cost rate is the difference between the normal cost rate and the member contribution rate. The amortization rate, also determined as a level percent of pay, is the amount required to amortize the unfunded actuarial accrued liability over a closed period (21 years remaining as of June 30, 2014). The amortization rate is adjusted for the two-year deferral in contribution rates.

**Progress toward realization of financing objectives**

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements, it should increase over time, until it reaches 100%. The funded ratio, as can be seen in Table 4 of this report, increased from 90.9% to 95.6% between the valuations. The funded ratio increased from the prior valuation primarily due to liability gains resulting from fewer retirements than expected and lower salary increases than assumed as well as the return on the actuarial value of assets being greater than assumed (8.7% compared to 7.5% assumed). If the market value of assets were used, rather than the actuarial value, the funded ratio would be 100.1%.

The employer contribution rate decreased from 17.22% to 13.43% for fiscal year 2017.

An analysis of the changes in the employer contribution rate appears on Table 11a of this report. An analysis of the changes in the unfunded actuarial accrued liability appears on Table 11c.

Additional information regarding these assumptions changes is provided further below and in the body of this report.

**Benefit provisions**

The benefit provisions reflected in this valuation are those which were in effect on June 30, 2014. No changes in the benefit provisions were made since the preceding valuation. The benefit provisions are summarized in Appendix B.

**Assumptions and methods**

On June 18, 2014, significant changes were made to the wage inflation, salary increases for individual members, and the overall payroll growth assumptions. More detail on the changes adopted as a result of the experience study is on page 7 in the discussion section of this report.. We believe the assumptions are internally consistent and are reasonable, based on the actual experience of the SPRPT.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities and the calculated contribution rates.

All assumptions and methods are described in Appendix A. The actuarial assumptions and methods used in this report comply with the parameters for disclosure that appear in GASB 67.

**Data**

The System's staff supplied data for active, inactive, and retired members as of June 30, 2014. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. The System's staff also supplied asset data as of June 30, 2014.

**Certification**

All of our work conforms with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Rhode Island state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries. All are Enrolled Actuaries and Members of the American Academy of Actuaries. They all meet the Qualification Standards of the American Academy of Actuaries, and they are experienced in performing valuations for large public retirement systems.

Respectfully submitted,

Joseph P. Newton, FSA, MAAA, EA
Senior Consultant

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Executive Vice President

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Consultant

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| Item | Valuation Date: June 30, 2014 | June 30, 2013 New Assumption | June 30, 2013 Valuation |
|---|---|---|---|
| **Membership** | | | |
| • Number of | | | |
| - Active members | 250 | 222 | 222 |
| - Retirees and beneficiaries | 26 | 19 | 19 |
| - Inactive members | 25 | 10 | 10 |
| - Total | 301 | 251 | 251 |
| • Payroll for benefits | $ 20,814,621 | $ 19,856,516 | $ 19,904,363 |
| **Contribution rates** | | | |
| • Member | 8.75% | 8.75% | 8.75% |
| • State | 13.43% | 16.58% | 17.22% |
| **Assets** | | | |
| • Market value | $ 109,678,379 | $ 92,034,792 | $ 92,034,792 |
| • Actuarial value | 104,781,384 | 92,916,758 | 92,916,758 |
| • Return on market value | 15.0% | 10.7% | 10.7% |
| • Return on actuarial value | 8.7% | 6.8% | 6.8% |
| • Employer contribution | $ 3,330,889 | $ 2,103,209 | $ 2,103,209 |
| • Ratio of actuarial value to market value | 95.5% | 101.0% | 101.0% |
| **Actuarial Information** | | | |
| • Employer normal cost % | 12.56% | 13.47% | 13.98% |
| • Unfunded actuarial accrued liability (UAAL) | $ 4,840,363 | $ 8,978,403 | $ 9,342,680 |
| • Amortization rate | 0.87% | 3.11% | 3.24% |
| • Funding period | 21 years | 22 years | 22 years |
| • GASB funded ratio | 95.6% | 91.2% | 90.9% |
| **Projected employer contribution** | | | |
| • Fiscal year ending June 30, | 2017 | 2016 | 2016 |
| • Projected payroll for contributions | $ 27,269,987 | $ 21,425,181 | $ 21,528,560 |
| • Projected employer contribution | 3,662,359 | 3,552,295 | 3,707,218 |

## Contribution Rates

The employer contribution rate for the SPRBT is determined actuarially. The rate determined in each valuation becomes effective two years after the valuation date, in this case as of July 1, 2016. The rate consists of two pieces: the employer's normal cost rate and the amortization rate. The normal cost rate is the employer's Entry Age Normal cost expressed as a percent of pay. The unfunded actuarial accrued liability (UAAL) is amortized as a level percent of payroll over a closed period. The period is 25 years as measured from June 30, 2010, or 21 years as of the current valuation date for the existing UAAL. Beginning with the June 30, 2014 actuarial valuation, new experience gains and losses are amortized over individual closed periods of 20 years using the process of "laddering". The amortization rate is adjusted for the fact that the contribution rate set by this valuation is deferred for two years, and other amortization rates may apply for the next two years. Should the SPRBT become overfunded, the UAAL will be amortized using a single base over a period of 20 years.

The decrease in the employer contribution rate, from 17.22% to 13.43% of payroll, was primarily due to liability gains resulting fewer retirements than expected and from salaries increasing less than expected, the impact of the assumption change, and the return on the actuarial value of assets being greater than expected. In addition, there was a significant payroll gain and a decrease in the employer normal cost as a result of a large cohort of new entrants duirng the year.

An analysis of the changes in the employer contribution rate appears in Table 11a of this report and a history of the employer contribution rates appears in Table 11b. Table 11c shows a reconciliation of the UAAL.

## Financial Data and Experience

Assets for the SPRBT are held in trust and are commingled with those of several other plans and programs—including the Employees' Retirement System of Rhode Island—for investment purposes. The State Treasurer is responsible for setting the asset allocation policy and for investing the funds.

Table 6 shows the net plan assets for the SPRBT. Table 7 shows a reconciliation of the assets between the previous valuation and this valuation. Table 8 shows the development of the actuarial value of assets. Table 9 shows the distribution of investments by category — over 78% of assets are held in equities, including real estate and private equity — and Table 10 shows a historical summary of the return rates. As can be seen, the market value rate of return was 15.0% for the year ended June 30, 2014, and the return on an actuarial asset basis was 8.7%.

The average annual return based on the market value of assets over the last ten years (July 1, 2004 – June 30, 2014) was 6.8%. This is less than the current 7.50% annual investment return assumption. The average annual return based on the actuarial value of assets over the same period was 6.4%.

All returns above are net of both investment and administrative expenses,and may differ from other information provided by the General Treasurer's office or the investment managers and advisors.

The System's staff provided all of the financial information used in this report.

## Member Data

The System's staff supplied member data as of June 30, 2014. While we did not audit this data, we did perform various tests to ensure that it was internally consistent, consistent with the prior year's data, and was reasonable overall. Information provided for active members includes: name, identification number, sex, a code indicating whether the member was active or inactive, date of birth, service, salary, date of last contribution, and accumulated member contributions without interest. For retired members, data includes: name, an identification number, sex, date of birth, date of retirement, amount of benefit (original, COLA, gross), a code indicating the option elected and the type of retiree (service retiree, disabled retiree, beneficiary), and if applicable, the joint pensioner's date of birth and sex.

Table 12 and Table 13 show information and statistics about the members. Table 14 shows the distribution of active members by age and service.

The total number of active members is 250, which is an increase in 28 active members compared to this time last year. Total compensation used for determining benefits increased from $19.904 million to $20.814 million.

Since the last valuation, there have been the following changes in active membership:

- 1 member terminated
- 7 members retired

The total payroll shown on the statistical tables as of June 30, 2012 is the amount that is used for determining benefits, and includes 400 hours of overtime and other adjustments. Effective June 30, 2013, the total payroll shown on the statistical tables is the amount only including holiday pay and clothing allowance but excluding 400 hours of overtime and other adjustments. An overtime adjustment (if applicable) was applied when determining benefits.

## Benefit Provisions

Appendix B includes a summary of the benefit provisions for the SPRBT. The benefit provisions reflected in this valuation are those which were in effect on June 30, 2014. There were now changes in benefits since the prior valuation.

There are no ancillary benefits—e.g., cost of living benefits—that are currently provided by a source independent of the SPRBT but that might be deemed a liability of the SPRBT if continued beyond the availability of funding by the current funding source.

The COLA provided to retired members is contingent on the investment performance and funded status of the System. The amount of the COLA is determined based on the plan's five-year average investment rate of return minus 5.5% and will range from zero to 4.0%. This calculation produces a 2.73% COLA for Calendar Year 2015. The COLA will be limited and this limit will be indexed annually to increase in the same manner as COLAs, with the known values of $25,000 for 2014, $25,168 for 2015, and $25,855 for 2016.

Furthermore, the COLA will be suspended for all state employees, teachers, BHDDH nurses, correctional officers, judges and state police until the aggregate funding level of their plans exceeds 80%; however, an interim COLA may be granted in five-year intervals, based on investment performance, while the COLA is suspended. The first interim COLA may begin January 1, 2018.

## Actuarial Methods and Assumptions

Appendix A of this report includes a summary of the actuarial assumptions and methods used in this valuation. Costs are determined using the Entry Age Normal actuarial cost method. This method was initially adopted effective June 30, 1999 and was modified, effective June 30, 2011, to be consistent with the Act and the standards outlined in the GASB Statement No. 67 exposure draft, which has now been finalized.

The method used to determine the actuarial value of assets is the five-year smoothed market method. This technique is further described in Section III of Appendix A. The development of the actuarial value of assets utilizing this method is shown on Table 8.

**Discussion of the Experience Study**

Between the June 30, 2013 actuarial valuation and this report, the Retirement Board, as required by the Rhode Island General Law, asked GRS to analyze the assumptions and methods used in the ERSRI actuarial valuation. The experience study was performed for the period June 30, 2007 to June 30, 2013. The study examined the assumptions used for expected investment rate, inflation rate, retirement, mortality, termination, disability, salary increases, payroll growth, and other miscellaneous assumptions. As the results, we lowered future expectations of overall wage inflation, including increases for individual members and overall payroll growth in aggregate.

All of the changes recommended by GRS were adopted by the Board on June 18, 2014. We believe the assumptions are internally consistent and are reasonable, based on the actual experience of the SPRBT.

**Development of Contribution Rate (State Police)**

| | | June 30, 2014 | June 30, 2013 New Assumption | June 30, 2013 Valuation |
|---|---|---|---|---|
| | | (1) | (2) | (3) |
| 1. | Base Pay from prior fiscal year supplied by ERSRI | $ 23,051,150 | $ 19,759,109 | $ 19,759,109 |
| 2. | Compensation projected to next fiscal year | 25,334,289 | 19,856,516 | 19,904,363 |
| 3. | Actuarial accrued liability | 109,621,747 | 101,895,161 | 102,259,438 |
| 4. | Actuarial value of assets | 104,781,384 | 92,916,758 | 92,916,758 |
| 5. | Unfunded actuarial accrued liability (UAAL) (3 - 4) | 4,840,363 | 8,978,403 | 9,342,680 |
| 6. | Remaining amortization period at valuation date | 21 | 22 | 22 |
| 7. | Contribution effective for fiscal year ending: | June 30, 2017 | June 30, 2016 | June 30, 2016 |
| 8. | Total pay projected for two-year delay | 27,269,987 | 21,425,181 | 21,528,560 |
| 9. | Amortization of UAAL | 237,598 | 665,057 | 696,524 |
| 10. | Normal cost | | | |
| | (a) Total normal cost rate | 21.31% | 22.22% | 22.73% |
| | (b) Employee contribution rate | 8.75% | 8.75% | 8.75% |
| | (c) Employer normal cost rate ( a - b ) | 12.56% | 13.47% | 13.98% |
| 11. | Employer contribution rate as percent of payroll | | | |
| | (a) Employer normal cost rate | 12.56% | 13.47% | 13.98% |
| | (b) Amortization payments ( 9 / 8 ) | 0.87% | 3.11% | 3.24% |
| | (c) Total ( a + b ) | 13.43% | 16.58% | 17.22% |
| 12. | Estimated employer contribution amount (8 * 11(c)) | $ 3,662,359 | $ 3,552,295 | $ 3,707,218 |

## Summary of Unfunded Liability

| Purpose | Remaining Balance as of June 30, 2014 | Fiscal Year 2017 Amortization Payment | Years Remaing Beginning with Fiscal Year 2017 |
|---|---|---|---|
| Original 2011 RIRSA Base | 9,449,494 | 689,997 | 19 |
| New Base This Fiscal Year | (4,609,131) | (452,399) | 20 |
| Unfunded Actuarial Accrued Liability | $ 4,840,363 | $ 237,598 | |

## Actuarial Present Value of Future Benefits

| | | | June 30, 2014 (1) | June 30, 2013[1] (2) |
|---|---|---|---|---|
| 1. | Active members | | | |
| | a. | Service retirement benefits | $ 111,610,675 | $ 109,363,520 |
| | b. | Deferred termination benefits | 0 | 0 |
| | c. | Refunds | 169,734 | 158,604 |
| | d. | Pre-retirement death benefits | 907,987 | 861,542 |
| | e. | Disability retirement benefits | 8,584,054 | 8,030,868 |
| | f. | Total | $ 121,272,450 | $ 118,414,534 |
| 2. | Retired members | | | |
| | a. | Service retirements | $ 20,351,175 | $ 12,757,557 |
| | b. | Disability retirements | 2,295,187 | 1,824,699 |
| | c. | Beneficiaries | 1,504,033 | 1,510,216 |
| | d. | Post-retirement death benefits | 0 | 0 |
| | e. | Total | $ 24,150,395 | $ 16,092,472 |
| 3. | Inactive members | | $ 27,020 | $ 213,535 |
| 4. | Total actuarial present value of future benefits | | $ 145,449,865 | $ 134,720,541 |
| 5. | Determination of actuarial accrued liability | | | |
| | a. | Total actuarial present value of future benefits | $ 145,449,865 | $ 134,720,541 |
| | b. | Less present value of future normal costs | (35,828,118) | (32,825,380) |
| | c. | Actuarial accrued liability (a + b) | $ 109,621,747 | $ 101,895,161 |

[1] Restated to reflect recommended salary scale assumption

## Schedule of Funding Progress
## (As required by GASB #25)

| Valuation Date (1) | Actuarial Value of Assets (AVA) (2) | Actuarial Accrued Liability (3) | Unfunded Actuarial Accrued Liability (UAAL) (3)-(2) (4) | Funded Ratio (2)/(3) (5) | Annual Covered Payroll (6) | UAAL as % of Payroll (4)/(6) (7) |
|---|---|---|---|---|---|---|
| June 30, 1999 | 8,480,657 | 10,841,544 | 2,360,887 | 78.2% | 7,502,433 | 31.5% |
| June 30, 2000 | 11,336,596 | 13,917,343 | 2,580,747 | 81.5% | 8,916,914 | 28.9% |
| June 30, 2001 | 14,386,064 | 16,649,820 | 2,263,756 | 86.4% | 9,139,418 | 24.8% |
| June 30, 2002 | 17,770,149 | 23,527,125 | 5,756,976 | 75.5% | 10,933,360 | 52.7% |
| June 30, 2003 | 20,966,294 | 28,443,717 | 7,477,423 | 73.7% | 11,286,365 | 66.3% |
| June 30, 2004 | 24,767,014 | 32,689,173 | 7,922,160 | 75.8% | 11,421,880 | 69.4% |
| June 30, 2005 | 29,616,896 | 37,510,992 | 7,894,096 | 79.0% | 13,225,400 | 59.7% |
| June 30, 2006 | 36,314,689 | 42,216,142 | 5,901,453 | 86.0% | 13,474,588 | 43.8% |
| June 30, 2007 [1] | 45,996,910 | 60,427,947 | 14,431,037 | 76.1% | 15,836,354 | 91.1% |
| June 30, 2008 | 54,927,390 | 69,029,513 | 14,102,123 | 79.6% | 16,698,764 | 84.5% |
| June 30, 2009 | 60,232,045 | 75,480,005 | 15,247,960 | 79.8% | 17,096,202 | 89.2% |
| June 30, 2010 | 65,760,284 | 94,300,302 | 28,540,018 | 69.7% | 19,715,070 | 144.8% |
| June 30, 2010 [2] | 65,760,284 | 73,048,680 | 7,288,396 | 90.0% | 19,715,070 | 37.0% |
| June 30, 2011 | 73,151,768 | 74,185,705 | 1,033,937 | 98.6% | 19,711,694 | 5.2% |
| June 30, 2012 | 84,293,968 | 94,031,687 | 9,737,719 | 89.6% | 23,669,619 | 41.1% |
| June 30, 2013 | 92,916,758 | 102,259,438 | 9,342,680 | 90.9% | 19,904,363 | 46.9% |
| June 30, 2014 | 104,781,384 | 109,621,747 | 4,840,363 | 95.6% | 20,814,621 | 23.3% |

[1] Restated for Article 22 (2008).

[2] Restated after reflecting the Rhode Island Retirement Security Act of 2011.

## Notes to Required Supplementary Information
## (as required by GASB #25)

| | |
|---|---|
| Valuation date | June 30, 2014 |
| Actuarial cost method | Entry Age Normal |
| Amortization method | Level percentage, closed |
| Remaining amortization period | 21 years |
| Asset valuation method | 5-Year smoothed market |
| Actuarial assumptions: | |
| Investment rate of return * | 7.50% |
| Projected salary increase * | 3.75% to 8.00% |
| Cost of living adjustment ** | 2.00% |

* Includes inflation at 2.75%.

** COLAs are currently suspended for all state employees, teachers, BHDDH nurses, correctional officers, judges and state police until the aggregate funding level of their plans exceeds 80%. It is assumed that the COLAs will be suspended for 13 years due to the current funding level of the plans; however, an interim COLA may be granted in five-year intervals while the COLA is suspended.

## Plan Net Assets
## (Assets at Market or Fair Value)

| Item | June 30, 2014 | June 30, 2013 |
|---|---|---|
| (1) | (2) | (3) |
| 1. Cash and cash equivalents | $ 256,549 | $ 167,049 |
| 2. Receivables: | | |
| a. Employer and member contributions | $ 193,733 | $ 135,388 |
| b. Transfers receivable | 0 | 0 |
| c. Miscellaneous | 21,838 | 0 |
| d. Total receivables | $ 215,571 | $ 135,388 |
| 3. Investments | | |
| a. Pooled trust | $ 109,271,953 | $ 91,763,532 |
| b. Plan specific investments | 0 | 0 |
| c. Total | $ 109,271,953 | $ 91,763,532 |
| 4. Invested securities lending collateral | $ 0 | $ 0 |
| 5. Property and equipment (net of depreciation) | $ 0 | $ 0 |
| 6. Total assets | $ 109,744,073 | $ 92,065,969 |
| 7. Liabilities | | |
| a. Other post-employment benefit liability, net | $ 0 | $ 0 |
| b. Securities lending liability | 0 | 0 |
| c. Other reserves and payables | 65,694 | 31,177 |
| d. Total liabilities | $ 65,694 | $ 31,177 |
| 8. Total market value of assets available for benefits Total (Item 6 - Item 7) | $ 109,678,379 | $ 92,034,792 |

## Reconciliation of Plan Net Assets

| | | June 30, 2014 | June 30, 2013 |
|---|---|---|---|
| 1. | Market value of assets as of beginning of year | | |
| | a. Market value of assets as of beginning of year | $ 92,034,792 | $ 80,472,894 |
| | b. Adjustment for market value of assets | (1) | 0 |
| | c. Adjusted market value of assets as of beginning of year | $ 92,034,791 | $ 80,472,894 |
| 2. | Contributions | | |
| | a. Members | $ 2,016,976 | $ 1,662,425 |
| | b. State | 3,330,889 | 2,103,209 |
| | c. Service purchases | 22,108 | 49,691 |
| | d. Miscellaneous revenue | 0 | 0 |
| | e. Total | $ 5,369,973 | $ 3,815,325 |
| 3. | Investment earnings, net of investment and administrative expenses | $ 14,040,919 | $ 8,784,730 |
| 4. | Expenditures for the year | | |
| | a. Benefit payments | $ (1,627,883) | $ (1,006,657) |
| | b. Cost-of-living adjustments | (31,500) | (31,500) |
| | c. Death benefits | 0 | 0 |
| | d. Social security supplements | 0 | 0 |
| | e. Supplemental pensions | 0 | 0 |
| | f. Refunds | (107,921) | 0 |
| | g. Total expenditures | $ (1,767,304) | $ (1,038,157) |
| 5. | Transfers and other adjustments | $ 0 | $ 0 |
| 6. | Market value of assets at end of year | $ 109,678,379 | $ 92,034,792 |

## Development of Actuarial Value of Assets

| | Year Ending June 30, 2014 |
|---|---|
| 1. Market value of assets at beginning of year | $ 92,034,791 |
| 2. Net new investments | |
| a. Contributions | $ 5,369,973 |
| b. Benefits paid | (1,659,383) |
| c. Refunds | (107,921) |
| e. Subtotal | 3,602,669 |
| 3. Market value of assets at end of year | $ 109,678,379 |
| 4. Net earnings (3-1-2) (includes misc revenues) | $ 14,040,919 |
| 5. Assumed investment return rate for fiscal year | 7.50% |
| 6. Expected return | $ 7,037,709 |
| 7. Excess return (4-6) | $ 7,003,210 |

8. Development of amounts to be recognized as of June 30, 2014:

| Fiscal Year End | Remaining Deferrals of Excess (Shortfall) of Investment Income* | Offsetting of Gains/(Losses) | Net Deferrals Remaining | Years Remaining | Recognized for this valuation | Remaining after this valuation |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) = (1) + (2) | (4) | (5) = (3) / (4) | (6) = (3) - (5) |
| 2010 | $ 0 | $ 0 | $ 0 | 1 | $ 0 | $ 0 |
| 2011 | 0 | 0 | 0 | 2 | 0 | 0 |
| 2012 | (881,966) | 881,966 | 0 | 3 | 0 | 0 |
| 2013 | 0 | 0 | 0 | 4 | 0 | 0 |
| 2014 | 7,003,210 | (881,966) | 6,121,244 | 5 | 1,224,249 | 4,896,995 |
| Total | $ 6,121,244 | $ 0 | $ 6,121,244 | | $ 1,224,249 | $ 4,896,995 |

| | |
|---|---|
| 9. Actuarial value of assets as of June 30, 2014 (Item 3 - Item 8) | $ 104,781,384 |
| 10. Ratio of actuarial value to market value | 95.5% |

*****Values of $0 result from the beginning balance being offset by future gains or losses in the opposite direction.

## Distribution of Assets at Market Value
## (Percentage of Total Investments)

| Item<br>(1) | June 30, 2014<br>(2) | June 30, 2013<br>(3) |
|---|---|---|
| Cash & cash equivalents | 4.2% | 5.1% |
| U.S. government & agency securities | 11.1% | 11.3% |
| Corporate bonds & notes | 5.4% | 5.7% |
| Foreign bonds | 1.4% | 1.8% |
| U.S. equity securities | 25.1% | 24.4% |
| Foreign equity securities | 24.9% | 22.9% |
| Real estate, venture capital, other | 27.9% | 28.8% |
| Total investments | 100.0% | 100.0% |

# History of Investment Return Rates

| Year Ending June 30 of | Market | Actuarial |
|---|---|---|
| (1) | (2) | (3) |
| 1995 | 17.0% | 10.2% |
| 1996 | 13.7% | 13.7% |
| 1997 | 19.1% | 19.1% |
| 1998 | 16.1% | 16.5% |
| 1999 | 10.1% | 14.7% |
| 2000 | 9.1% | 8.8% |
| 2001 | -11.0% | 4.9% |
| 2002 | -8.4% | 0.9% |
| 2003 | 4.5% | 1.5% |
| 2004 | 18.0% | 4.2% |
| 2005 | 10.2% | 5.9% |
| 2006 | 11.6% | 8.8% |
| 2007 | 18.1% | 12.2% |
| 2008 | -5.9% | 9.0% |
| 2009 | -19.1% | 2.0% |
| 2010 | 12.8% | 1.6% |
| 2011 | 19.0% | 3.8% |
| 2012 | 1.8% | 5.9% |
| 2013 | 10.7% | 6.8% |
| 2014 | 15.0% | 8.7% |
| | | |
| Average Returns: | | |
| Last 5 Years | 11.7% | 5.3% |
| Last 10 Years | 6.8% | 6.4% |
| Since 1995 | 7.5% | 7.8% |

## Analysis of Change in Employer Cost

| | Basis | Employer Cost |
|---|---|---|
| 1. | Employer contribution rates from prior valuation | 17.22% |
| 2. | Impact of changes, gains and losses | |
| a. | Non-salary liability experience (gain)/loss | -1.54% |
| b. | Salary (gain)/loss | -0.82% |
| c. | Total payroll growth (gain)/loss | -0.43% |
| d. | Investment experience (gain)/loss | -0.36% |
| e. | Changes in assumptions | -0.64% |
| f. | Changes in plan provisions | 0.00% |
| g. | Total | -3.79% |
| 3. | Employer contribution rates from current valuation | 13.43% |

# History of Employer Contribution Rates

| Valuation Date as of June 30, | Effective for Fiscal Year Ending June 30, | Employer Contribution Rate |
|---|---|---|
| (1) | (2) | (3) |
| 1998 | 2001 | 25.89% |
| 1999 | 2002 | 27.67% |
| 2000 | 2003 | 27.48% |
| 2001 | 2004 | 26.77% |
| 2002 | 2005 | 28.87% |
| 2003 | 2006 | 31.35% |
| 2004 | 2007 | 31.78% |
| 2005 | 2008 | 31.00% |
| 2006 | 2009 | 26.03%[1] |
| 2007 | 2010 | 26.03%[1] |
| 2008 | 2011 | 24.58% |
| 2009 | 2012 | 25.39% |
| 2010 | 2013 | 11.07%[2] |
| 2011 | 2014 | 14.45% |
| 2012 | 2015 | 17.24% |
| 2013 | 2016 | 17.22% |
| 2014 | 2017 | 13.43% |

[1] Revised pursuant to Article 22 (2008).

[2] Restated after reflecting the Rhode Island Retirement Security Act of 2011.

## Analysis of Change in UAAL

| Basis<br>(1) | | June 30, 2014<br>(2) |
|---|---|---|
| 1. UAAL as of June 30, 2013 | $ | 9,343 |
| 2. Impact of changes, gains and losses | | |
| a. Interest at 7.50% for one year | | 701 |
| b. Expected amortization payments | | (595) |
| c. Investment experience (gain)/loss | | (1,158) |
| d. Salary (gain)/loss | | (2,148) |
| e. Non-salary liability experience (gain)/loss | | (1,303) |
| f. Changes in assumptions | | (365) |
| g. Changes in plan provisions | | 0 |
| i. Total | $ | (4,503) |
| 3. UAAL as of June 30, 2014 | $ | 4,840 |

Note: All dollar figures are shown in thousands.

## Membership Data (State Police)

| | | | June 30, 2014 (1) | June 30, 2013 (2) |
|---|---|---|---|---|
| 1. | Active members | | | |
| | a. | Number | 250 | 222 |
| | b. | Number vested | 42 | 48 |
| | c. | Total payroll supplied by State (for benefits) | $ 20,814,621 | $ 19,904,363 |
| | d. | Average salary | $ 83,258 | $ 89,659 |
| | e. | Average age | 39.1 | 40.3 |
| | f | Average service | 11.6 | 12.6 |
| 2. | Inactive members | | | |
| | a. | Number | 25 | 10 |
| 3. | Service retirees | | | |
| | a. | Number | 21 | 14 |
| | b. | Total annual benefits | $ 1,543,209 | $ 1,021,275 |
| | c. | Average annual benefit | 73,486 | 72,948 |
| | d. | Average age | 50.3 | 49.6 |
| 4. | Disabled retirees | | | |
| | a. | Number | 3 | 3 |
| | b. | Total annual benefits | $ 183,225 | $ 183,225 |
| | c. | Average annual benefit | 61,075 | 61,075 |
| | d. | Average age | 48.4 | 47.4 |
| 5. | Beneficiaries and spouses | | | |
| | a. | Number | 2 | 2 |
| | b. | Total annual benefits | $ 112,696 | $ 112,696 |
| | c. | Average annual benefit | 56,348 | 56,348 |
| | d. | Average age | 47.6 | 46.6 |

**Historical Summary of Active Member Data**

| | Active Members | | Covered Payroll* | | Average Salary* | | | |
|---|---|---|---|---|---|---|---|---|
| Valuation as of June 30, | Number | Percent Increase | Amount | Percent Increase | Amount | Percent Increase | Average Age | Average Service |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| 1996 | 97 | --- | $4,948,746 | --- | $51,018 | --- | 31.1 | 3.8 |
| 1997 | 96 | -1.0% | $5,370,985 | 8.5% | $55,948 | 9.7% | 32.2 | 4.8 |
| 1998 | 130 | 35.4% | $7,211,874 | 34.3% | $55,476 | -0.8% | 32.3 | 4.4 |
| 1999 | 130 | 0.0% | $7,502,433 | 4.0% | $57,711 | 4.0% | 33.3 | 5.4 |
| 2000 | 152 | 16.9% | $8,916,914 | 18.9% | $58,664 | 1.7% | 33.7 | 5.5 |
| 2001 | 151 | -0.7% | $9,139,418 | 2.5% | $60,526 | 3.2% | 34.7 | 6.6 |
| 2002 | 150 | -0.7% | $10,933,360 | 19.6% | $72,889 | 20.4% | 35.5 | 7.5 |
| 2003 | 150 | 0.0% | $11,286,365 | 3.2% | $75,242 | 3.2% | 36.6 | 8.4 |
| 2004 | 148 | -1.3% | $11,421,880 | 1.2% | $77,175 | 2.6% | 37.6 | 9.5 |
| 2005 | 181 | 22.3% | $13,225,400 | 15.8% | $73,069 | -5.3% | 36.9 | 8.6 |
| 2006 | 179 | -1.1% | $13,474,588 | 1.9% | $75,277 | 3.0% | 37.9 | 9.6 |
| 2007 | 179 | 0.0% | $15,836,354 | 17.5% | $88,471 | 17.5% | 38.9 | 10.6 |
| 2008 | 177 | -1.1% | $16,698,764 | 5.4% | $94,343 | 6.6% | 39.9 | 11.6 |
| 2009 | 176 | -0.6% | $17,096,202 | 2.4% | $97,138 | 3.0% | 40.9 | 12.6 |
| 2010 | 211 | 19.9% | $19,715,070 | 15.3% | $93,436 | -3.8% | 39.5 | 11.5 |
| 2011 | 206 | -2.4% | $19,711,694 | 0.0% | $95,688 | 2.4% | 40.7 | 12.6 |
| 2012 | 231 | 12.1% | $23,669,619 | 20.1% | $102,466 | 7.1% | 39.6 | 12.0 |
| 2013 | 222 | -3.9% | $19,904,363 | -15.9% | $89,659 | -12.5% | 40.3 | 12.6 |
| 2014 | 250 | 12.6% | $20,814,621 | 4.6% | $83,258 | -7.1% | 39.1 | 11.6 |

*Based on salary used for benefits prior to year 2012. Effective 2013, only base salary, holiday pay and clothing allowance are recorded in salary.

## Distribution of Active Members by Age and by Years of Service
## As of June 30, 2014

| | Years of Credited Service | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35 & Over | Total |
| Attained Age | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. | Count & Avg. Comp. |
| Under 25 | 0 | 12 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| | $0 | $45,519 | $0 | $67,634 | $72,222 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $52,293 |
| 25-29 | 0 | 14 | 0 | 17 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| | $0 | $45,785 | $0 | $67,295 | $78,085 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $62,194 |
| 30-34 | 0 | 10 | 0 | 7 | 14 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| | $0 | $45,653 | $0 | $67,538 | $79,342 | $95,864 | $0 | $0 | $0 | $0 | $0 | $0 | $71,974 |
| 35-39 | 0 | 0 | 0 | 2 | 6 | 10 | 5 | 0 | 0 | 0 | 0 | 0 | 23 |
| | $0 | $0 | $0 | $66,807 | $74,804 | $95,828 | $98,834 | $0 | $0 | $0 | $0 | $0 | $88,473 |
| 40-44 | 0 | 0 | 0 | 0 | 0 | 14 | 6 | 14 | 2 | 0 | 0 | 0 | 36 |
| | $0 | $0 | $0 | $0 | $0 | $92,737 | $96,445 | $111,904 | $121,753 | $0 | $0 | $0 | $102,421 |
| 45-49 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 35 | 20 | 1 | 0 | 0 | 64 |
| | $0 | $0 | $0 | $0 | $0 | $92,313 | $103,193 | $115,921 | $141,264 | $152,034 | $0 | $0 | $122,474 |
| 50-54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 12 | 3 | 0 | 0 | 23 |
| | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $112,639 | $138,214 | $138,299 | $0 | $0 | $129,329 |
| 55-59 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 3 | 1 | 0 | 0 | 8 |
| | $0 | $0 | $0 | $0 | $0 | $0 | $97,784 | $126,232 | $145,613 | $126,562 | $0 | $0 | $126,429 |
| 60-64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| 65 & Over | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Total | 0 | 36 | 0 | 30 | 30 | 34 | 19 | 59 | 37 | 5 | 0 | 0 | 250 |
| | $0 | $45,660 | $0 | $67,364 | $77,820 | $94,357 | $99,345 | $114,872 | $139,573 | $138,698 | $0 | $0 | $94,920 |

# SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

## I. Valuation Date

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

## II. Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial accrued liability (UAAL).

1. First, the actuarial present value of future benefits is determined by discounting the projected benefits for each member back to the valuation date using the assumed investment return rate as the discount rate. For active members, the projected benefits are based on the member's age, service, sex and compensation, and based on the actuarial assumptions. The calculations take into account the probability of the member's death, disability, or termination of employment prior to becoming eligible for a retirement benefit, as well as the possibility of the member will remain in service and receive a service retirement benefit. Future salary increases are anticipated. The present value of the expected benefits payable to all active members is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits. Liabilities for future members are not included.

2. The employer contributions required to support the benefits are determined as a level percentage of salary, and consist of a normal contribution and an amortization contribution.

3. The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the rate of contribution which, if applied to the compensation of each individual member during the entire period of anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. The salary-weighted average of these rates is the normal cost rate. This calculation reflects the plan provisions that apply to each individual member.

4. The employer normal cost rate is equal to (i) the normal cost rate, minus (ii) the member contribution rate.

5. The actuarial accrued liability is equal to the present value of all benefits less the present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is then determined as (i) the actuarial accrued liability, minus (ii) the actuarial value of assets.

6. The amortization contribution rate is the level percentage of payroll required to reduce the UAAL to zero over the remaining amortization period. The employer contribution rate determined by this valuation will not be effective until two years after the valuation date. The determination of the contribution rate reflects this deferral. The unfunded actuarial accrued liability (UAAL) and covered payroll are projected forward for two years, and we then determine the amortization charge required to amortize the UAAL over the remaining amortization period from that point. In projecting the UAAL, we increase the UAAL for interest at the assumed rate and we decrease it for the amortization payments. The amortization payments for these two years are determined by subtracting the current employer normal cost from the known contribution rates for these years, based on the two prior actuarial valuations. Contributions are assumed to be made monthly throughout the year.

   The UAAL was initially being amortized over the remainder of a closed 30-year period from June 30, 1999. In conjunction with The Rhode Island Retirement Security Act of 2011, the amortization period was reset to 25 years as of June 30, 2010 for the UAAL that existed at that time. After the period for the original base decreases to less than 20 years, new gains and losses each year will be amortized over individual 20 year periods. At any time that the System is in an overfunded status, the amortization schedule will be a rolling 20 year amortization of any surplus.

III. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses.

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.50% per year, compounded annually, composed of an assumed 2.75% inflation rate and a 4.75% net real rate of return. This rate represents the assumed return, net of all investment and administrative expenses.

2. Salary increase rate: The sum of (i) a 3.75% wage inflation assumption (composed of a 2.75% price inflation assumption and a 1.00% additional general increase), and (ii) a service-related component as shown below:

| Years of Service | Service-Related Component | Total Increase |
|---|---|---|

| | | |
|---|---|---|
| 0 | 4.25% | 8.00% |
| 1 | 4.00 | 7.75 |
| 2 | 4.00 | 7.75 |
| 3 | 8.00 | 11.75 |
| 4 | 5.00 | 8.75 |
| 5 | 3.25 | 7.00 |
| 6 | 1.25 | 5.00 |
| 7 | 1.25 | 5.00 |
| 8 | 1.00 | 4.75 |
| 9 | 1.00 | 4.75 |
| 10-14 | 0.75 | 4.50 |
| 15-19 | 0.50 | 4.25 |
| 20-24 | 0.25 | 4.00 |
| 25&up | 0.00 | 3.75 |

Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, increased by the salary increase assumption.

3. Payroll growth rate: In the amortization of the unfunded frozen liability, payroll is assumed to increase 3.75% per year. This assumption includes no allowance for future membership growth.

4. Post-retirement benefit increases: Post-retirement benefit increases are assumed to be 2%, per annum, while the plan has a funding level that exceeds 80%; however, an interim COLA may be granted in five-year intervals while the COLA is suspended. The first such COLA will be applicable in Calendar Year 2018. As of June 30, 2014, it is assumed that the COLAs will be suspended for 13 years due to the current funding level of the plans. The actual COLA will be determined based on the plan's five-year average investment rate of return (return on actuarial assets) minus 5.5% and will range from zero to 4.0%.

B. Demographic Assumptions

1. Post-termination mortality rates

    a. Healthy males – 115% of RP-2000 Combined Healthy for Males with White Collar adjustments, projected with Scale AA from 2000.

    b. Healthy females - 95% of RP-2000 Combined Healthy for Females with White Collar adjustments, projected with Scale AA from 2000.

c. Disabled males – 60% of the PBGC Table Va for disabled males eligible for Social Security disability benefits

d. Disabled females – 60% of the PBGC Table VIa for disabled females eligible for Social Security disability benefits.

2. Pre-retirement mortality: 75% of the RP-2000 Combined tables with white-collar adjustment for males and females. 15% of active member deaths are occupational.

3. Disability rates – Rates are applied, with 75% of disabilities considered work related, and no recoveries assumed once disabled:

| Age | Rate |
|---|---|
| 20 | 0.12% |
| 25 | 0.17 |
| 30 | 0.22 |
| 35 | 0.29 |
| 40 | 0.44 |
| 45 | 0.72 |
| 50 | 1.21 |

Disabilities that are not work-related are assumed to result in a refund. The disability rates for non work-related causes stop once the member is eligible for retirement.

4. Termination rates – None

5. Retirement rates – State police are assumed to retire after completion of 20 years of service if employed before July 1, 2007 or after completion of 25 years of service if hired on or after July 1, 2007, in accordance with the probabilities as shown below. For Employees whose first eligible to retire after June 30, 2012, any member of the State police, other than the superintendent of State police may retire at any time subsequent to the date the member's retirement allowance equals or exceeds 50% of average compensation, provided that a member shall retire upon the first to occur of (i) the date the member's retirement allowance equals 65%; or (ii) the later of the attainment of age 62 or completion of 5 years of service. However, any current member as of June 30, 2012 who has not accrued 50% upon attaining the age of 62 shall retire upon accruing 50%. 100% are assumed to retire at the attainment of a 65% benefit multiplier if still active.

| State Police Employed Before July 1, 2007 | |
|---|---|
| Service | Ret. Rate |
| 20 | 25.0% |
| 21 | 15.0% |
| 22 | 10.0% |
| 23 | 20.0% |
| 24+ | 30.0% |

| State Police Employed On or After July 1, 2007 | |
|---|---|
| Service | Ret. Rate |
| 25 | 35.0% |
| 26 | 25.0% |
| 27 | 20.0% |
| 28 | 30.0% |
| 29+ | 40.0% |

C. Other Assumptions

1. Percent married: 85% of employees are assumed to be married.

2. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

3. Remarriage: It is assumed that no surviving spouse will remarry and there will be no children's benefit.

4. Investment and administrative expenses: The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses.

5. Overtime: Members eligible for overtime are assumed to work and contribute on 400 hours of overtime during their final averaging period.

V. Participant Data

Participant data was supplied in electronic files for active and retired members. The data for active members included birth date, sex, service, salary and employee contribution account balance. For retired members and beneficiaries, the data included date of birth, sex, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and a form of payment code.

# Summary of Benefit Provisions

1. Effective Date and Authority: The State Police Retirement Benefits Trust (SPRBT) became effective on July 1, 1989 for State police officers originally hired on or after July 1, 1987. Benefits are described in Rhode Island General Laws, Title 42, Chapter 28.

2. Plan Year: A twelve-month period ending June 30th.

3. Administration: The State Police Retirement Benefits Trust is administered by the State of Rhode Island Retirement Board. However, the State Treasurer is responsible for the investment of the trust assets, including the establishment of the asset allocation policy. Assets are commingled for investment purposes with those of the Employees' Retirement System of Rhode Island and various other plans and programs.

4. Type of Plan: The State Police Retirement Benefits Trust is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is a single-employer plan.

5. Eligibility: All State police officers, and the Superintendent of State Police, hired on or after July 1, 1987, participate in this plan. Benefits for State police officers hired before July 1, 1987 are being paid by the State from the general assets of the State, on a pay-as-you-go basis. Eligible employees become members at their date of employment.

6. Salary for Contribution Purposes: Salary includes the member's base earnings plus any payments under a regular longevity or incentive plan. Salary excludes, unused sick and vacation leave, severance pay, and other extraordinary compensation. Members may contribute on up to 400 hours of overtime during their final averaging period to be included in the determination of their benefit. Certain amounts that are excluded from taxable wages, such as amounts sheltered under a Section 125 plan or amounts picked up by the employer under IRC Section 414(h), are not excluded from salary.

7. Employee Contributions: State police officers contribute 8.75% of their salary per year. The State "picks up" the members' contributions for its employees under the provisions of Internal Revenue Code (IRC) Section 414(h).

8. Employer Contributions: The State contributes an actuarially determined percentage of the member's annual salary. Contributions determined in a given actuarial valuation go into effect two years after the actuarial valuation.

9. Service: Employees receive credit for service while a member. In addition, a member may purchase credit for certain periods by making an additional contribution to purchase the additional service. Special rules and limits govern the purchase of additional service and the contribution required.

10. Final Salary (Salary for Benefit Purposes): Final Salary includes base pay, longevity increases, up to 400 hours of overtime pay, holiday pay and the member's clothing allowance. For members who work more than 25 years, their Final Salary shall not be more than the Final Salary in the $25^{th}$ year.

11. Final Average Compensation (FAC): For members eligible to retire after June 30, 2012, their FAC will be based on the average of the highest five consecutive years of compensation, which includes base pay, longevity, up to 400 hours of overtime pay and holiday pay.

12. Retirement

    a. Eligibility:
        (i) Members other than Superintendent of State Police can retire on or after the attainment of a 50% benefit multiplier.
        (ii) The Superintendent of State Police may retire on or after age 60 if he has credit for 10 years of service.

    b. Monthly Benefit:
        (i) For members hired before June 30, 1, 2007:
            (1) For members eligible to retire as of June 30, 2012, their benefit multiplier will be two and one half percent (2.5%) for a member's first twenty (20) total years, plus three percent (3%) for years after 20. Their monthly benefit will be Final Salary times the benefit multiplier divided by 12.
            (2) For members who become eligible to retire after July 1, 2012, their benefit multiplier will be two and one half percent (2.5%) for a member's years of service prior to July 1, 2012, plus two percent (2%) for years thereafter. Their monthly benefit will be FAC times the benefit multiplier divided by 12.

(ii) The Superintendent of State Police receives a minimum benefit of 50% of FAC. The member also earns an additional 3% of FAC for each year of service in excess of 25.
(iii) In no event shall a member's original retirement allowance exceed sixty-five percent (65%) of FAC.
(iv) Benefits accrued as of June 30, 2012 are protected.

c. Payment Form: Benefits are paid as a monthly life annuity. There are no optional forms of payment available.

d. Death benefit: After the death of a retired member, if the member was married, a benefit will be paid to the spouse equal to 2.00% of the member's Final Salary for each year of service. There is a minimum benefit of 25% of Final Salary. Benefits are increased one-third for each dependent child. The maximum benefit is 50% of Final Salary. Benefits may not begin before the spouse is age 40, and benefits stop upon the spouse's death or remarriage. Effective July 1, 2012, death benefits will be based on FAC, and not Final Salary.

13. Disability Retirement

a. Eligibility: A member is eligible if the disability is work-related. (Non work-related disabilities result in a refund.)

b. Occupational Disability Benefit: 75% of Final Salary.

c. Payment Form: The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity. The same provisions that apply upon the death of a retired member apply upon the death of a disabled member.

14. Refunds

a. Eligibility: All members leaving covered employment prior to eligibility for other benefits.

b. Benefit: A lump-sum payment equal to the sum of his/her employee contributions. No interest is credited on these contributions.

15. Death Benefit of Active Members

a. Eligibility: Death must have occurred from a service-related cause, or the member must have 10 or more years of service.

b. Ordinary Benefit: After the death of an active member, if the member was married, a benefit will be paid to the spouse equal to 2.00% of the member's Final Salary for each year of service. There is a minimum benefit of 25% of Final Salary. Benefits are increased one-third for each dependent child. The maximum benefit is 50% of Final Salary. Benefits may not begin before the spouse is age 40 without a dependent child, and benefits stop upon the spouse's death or remarriage. Effective July 1, 2012, death benefits will be based on FAC, and not Final Salary.

c. Duty-related Death Benefit: 75% of Final Salary, paid to the spouse or other dependent relative. Benefits cease when the spouse or other relatives die or are no longer dependent.

16. Post-retirement Benefit Increase:

a. Members receive an increase of $1,500 per year ($125.00 per month) beginning on the January 1 next following the third anniversary date of the retirement, and in every year thereafter. The increase applies to service retirement, disability retirement and death benefits. This increase is not tied in any way to actual increases in the cost of living.

b. Effective July 1, 2012, members will receive cost of living increases at the later of the member's third anniversary of retirement or when the member reaches age 55.
   (i) The COLA will be suspended for all State employees, teachers, BHDDH nurses, correctional officers, judges and State police until the aggregate funding level of their plans exceeds 80%; however, an interim COLA may be granted in five-year intervals while the COLA is suspended.
   (ii) The COLA will be determined based on the plan's five-year average investment rate of return minus 5.5% and will range from zero to 4.0%.
   (iii) The COLA will be limited to the first $25,000 of the member's annual pension benefit. This limit will be indexed annually to increase in the same manner as COLAs.

# Glossary

***Actuarial Accrued Liability (AAL):*** That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

***Actuarial Assumptions:*** Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

***Actuarial Cost Method*** or ***Funding Method:*** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ARC.

***Actuarial Gain*** or ***Actuarial Loss:*** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

***Actuarially Equivalent:*** Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

***Actuarial Present Value (APV):*** The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and

c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

***Actuarial Present Value of Future Plan Benefits:*** The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

***Actuarial Valuation***: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB 25, such as the funded ratio and the ARC.

***Actuarial Value of Assets*** or ***Valuation Assets:*** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ARC.

***Actuarially Determined:*** Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

***Amortization Method:*** A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

***Amortization Payment:*** That portion of the pension plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

***Annual Required Contribution (ARC):*** The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under GASB 25. The ARC consists of the Employer Normal Cost and the Amortization Payment.

***Closed Amortization Period:*** A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

***Decrements:*** Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

***Defined Benefit Plan:*** A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

***Defined Contribution Plan:*** A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

***Employer Normal Cost:*** The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

***Experience Study:*** A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

***Funded Ratio:*** The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA, although GASB 25 reporting requires the use of the AVA.

***Funding Period*** or ***Amortization Period:*** The term "Funding Period" is used it two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ARC. This funding period is chosen by the Board of Trustees. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

***GASB***: Governmental Accounting Standards Board.

***GASB 25*** and ***GASB 27***: Governmental Accounting Standards Board Statements No. 25 and No. 27. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 25 sets the rules for the systems themselves.

***Normal Cost:*** That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

***Open Amortization Period:*** An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

***Unfunded Actuarial Accrued Liability:*** The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

***Valuation Date or Actuarial Valuation Date:*** The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.