# City Of Charles Town, West Virginia Policemen’s Pension and Relief Fund

**Actuarial Valuation Report for the Year Beginning July 1, 2017**

September 17, 2018

Mr. Daryl Hennessy
City Manager
101 E. Washington Street
Charles Town, WV 25414

Ms. Amanda J. Gerstell
Pension Board Secretary
City of Charles Town Policemen's Pension and Relief Fund

**Subject: City of Charles Town Policemen's Pension and Relief Fund
Actuarial Valuation Report for the Year Beginning July 1, 2017**

Dear Mr. Hennessy and Ms. Gerstell:

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Charles Town, West Virginia Policemen's Pension and Relief Fund ("Fund" or "Plan"). This actuarial valuation has been performed in accordance with the West Virginia Code Chapter 8, Article 22, Sections 16 through 28, inclusive.

In accordance with West Virginia Code §8-22-20, this actuarial valuation report provides information on:

- The sponsor's funding requirements for the fiscal year ending June 30, 2019, based on the selected funding policy, i.e. the Standard funding policy as defined in West Virginia Code §8-22-20
- The Fund's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2019
- The Fund's eligibility to provide supplemental benefits for the plan year beginning July 1, 2019

West Virginia Code §8-22-20 (c)(4), requires (1) a review of the actuarial assumptions and methods at least once every five years and (2) that the Actuary shall provide a report to the oversight board with recommendations on any changes to the actuarial process. Consequently, an experience review was performed for the period July 1, 2009, through June 30, 2014. The actuarial assumptions and methods were recommended by the actuary, in the report *2016 Experience Review for the Years July 1, 2009, to July 1, 2014*, approved by the Municipal Pensions Oversight Board, and became effective for the actuarial valuation as of July 1, 2015.

This actuarial valuation is based upon:

**Plan Member Data –** Data for active members and persons receiving benefits from the Fund as of June 30, 2017, was provided by the Fund's staff. We have tested this data for reasonableness.

**Asset Values –** A reconciliation of market value of assets during the plan year ending June 30, 2017, and a list of assets held as of June 30, 2017, by investment category, were provided by the Fund.

**Plan Provisions –** A summary of the key plan provisions valued are set forth in Section VII of the report: Summary of Principal Plan Provisions.

**Actuarial Methods –** Fund liabilities were measured using the Entry-Age Normal Actuarial Cost Method. The actuarial valuation was based on the market value of assets. The actuarial methods used in the actuarial valuation are set forth in Section VI of the report: Actuarial Assumptions and Methods.

**Actuarial Assumptions –** The actuarial assumptions used include a discount rate of 5.00%. The actuarial assumptions used in the actuarial valuation are set forth in Section VI of the report: Actuarial Assumptions and Methods.

The actuarial valuation results disclosed in this report are based on the data and actuarial assumptions and methods described above, and upon the provisions of the Plan as of the actuarial valuation date. Based on these items, we certify these results to be true and correct.

To the best of our knowledge, this actuarial statement is complete and accurate, and has been prepared in accordance with generally accepted actuarial principles and practices.

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

This report should not be relied on for any purpose other than the purpose stated.

The signing actuaries are independent of the plan sponsor.

Alex Rivera and Lance Weiss are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Sincerely,

| | |
|---|---|
| Alex Rivera, FSA, EA, MAAA, FCA | Lance Weiss, EA, MAAA, FCA |
| Senior Consultant | Senior Consultant |

# Table of Contents

# SECTION I

## ACTUARIAL VALUATION RESULTS AS OF JULY 1, 2017

# Executive Summary

Upon the request of the Municipal Pensions Oversight Board, we have performed an actuarial valuation as of July 1, 2017, for the City of Charles Town, West Virginia Policemen's Pension and Relief Fund ("Fund" or "Plan").

In accordance with West Virginia Code §8-22-20, this report provides information on:

- The sponsor's funding requirements for the fiscal year ending June 30, 2019.
- The Fund's eligibility to receive an allocation of the premium tax for the fiscal year ending June 30, 2019.
- The Fund's eligibility to provide supplemental benefits for the plan year beginning July 1, 2019.

This report is based on the sponsor's election to finance benefit obligations using the Standard funding policy as defined in West Virginia Code §8-22-20 (c)(1).

The key features of the Standard funding policy include:

- The employer contribution equals the normal cost, net of employee contributions, plus a 40-year amortization of the unfunded actuarial accrued liability less the allocable portion of the state premium tax fund for municipal pension and relief funds. The amortization is based on a 40-year closed period commencing on July 1, 1991.

- The employer contribution cannot be less than the net normal cost.

- If the City continues to contribute the standard minimum amount in each plan year, by the year 2031 the funded ratio is expected to increase to 100%.

- The Plan also receives premium tax allocation assigned to the Fund for the plan year.

The sponsor has closed the Plan to new members.

The following table provides the Plan's funded status:

| Funded Status as of: | July 1, 2017 |
|---|---|
| Assets | $462,989 |
| Actuarial Accrued Liability | $1,312,560 |
| Unfunded Actuarial Accrued Liability | $849,571 |
| Funded Ratio | 35.27% |

The following table provides the estimated employer contributions for the fiscal year ending June 30, 2018, under the Standard funding policy, based on the July 1, 2016 actuarial valuation produced by GRS:

| Employer Contributions for FYE: | June 30, 2018 |
|---|---|
| Estimated Payroll for PYE 06/30/2017 | $0 |
| Employer Expenses for PYE 06/30/2017 | $374 |
| Employer Normal Cost Rate for PYE 06/30/2017 | NA |
| Amortization of Unfunded Actuarial Liability for PYE 06/30/2017 | $98,586 |
| State Insurance Premium Tax Allocation for FYE 06/30/2018 | $13,454 |
| Employer Contribution for FYE 06/30/2018 [a] | $85,506 |

The following table provides the estimated employer contributions for the fiscal year ending June 30, 2019, under the Standard funding policy, based on the July 1, 2017 actuarial valuation produced by GRS:

| Estimated Employer Contributions for FYE: | June 30, 2019 |
|---|---|
| Estimated Payroll for PYE 06/30/2018 | $0 |
| Employer Expenses for PYE 06/30/2018 | $1,074 |
| Employer Normal Cost Rate for PYE 06/30/2018 | NA |
| Amortization of Unfunded Actuarial Liability for PYE 06/30/2018 | $83,759 |
| State Insurance Premium Tax Allocation for FYE 06/30/2019 | $10,109 |
| Estimated Employer Contribution for FYE 06/30/2019 [a] | $74,724 |

[a] *The Employer Contribution cannot be less than the Employer Expenses.*

## Commentary on Premium Tax Allocation

Under §8-22-19 of the West Virginia Code, the plan sponsor is required to deposit the statutory contribution on a monthly basis at a rate of one-twelfth of the annual requirement, in order to receive the premium tax allocation from the Municipal Pensions Security Fund. Revenues which are specifically collected for the Fund, including employee payroll contributions, must be deposited within five days of receipt.

Based upon discussions with the Municipal Pensions Oversight Board (MPOB), we understand the annual premium tax allocation is determined by September 1st each year. Municipalities can begin invoicing the MPOB for their share of the premium tax allocation after receiving their state provided actuarial study and after the municipality has made employer contributions to the local Plan. Each municipal treasurer shall use the invoice template provided by the MPOB to begin drawing down the state allocation for the municipal pension plan. This July 1, 2017, Actuarial Report from GRS is to be used by municipal pension plans to draw down the September 1, 2018, State Premium Tax Allocation which is allocated in Fiscal Year 2019. *The actuarial valuation and projection results assume the sponsor will make the statutory contributions on a monthly basis in accordance with statutes, and will be eligible to receive the premium tax allocation.*

## Commentary on Solvency Projections and Supplemental Benefits

Under § 8-22-26a of the West Virginia Code, all retirees, surviving spouses, and disabled pensioners are eligible for Supplemental Benefits that include automatic cost-of-living benefits commencing on the first day of July following two years of retirement. The benefit equals the percentage increase in the Consumer Price Index, limited to 4.0 percent (2.0 percent for certain disabled pensioners), multiplied by the sum of the allowable amount (first $15,000 of initial benefits paid) and the accumulated supplemental pensions paid in prior years.

The Court of Appeals decision requires that Supplemental Benefits be provided on "the allowable amount of the first $15,000 of the total annual pension paid in addition to the accumulated supplemental pension from the previous years." The decision implies that compound cost-of-living increases should be applied to both the allowable amount of $15,000 and the accumulated supplemental pension amounts for prior years. Additional Supplemental Benefits are payable only if the Plan satisfies the minimum standard for actuarial soundness as defined in West Virginia Code § 8-22-20. This minimum standard requires that the fund remain "solvent" over the next 15-year projection period. Based on discussions with the West Virginia Municipal Pensions Oversight Board, and our understanding of the administrative practices of other local police and fire pension funds in West Virginia, the "solvency" requirement generally means that the fund's market value of assets is projected to be greater than zero for all plan years prior to the end of the 15-year projection period. The projection is based on the most recent actuarial valuation and assumes the plan sponsor will make contributions according to the funding policy elected by the sponsor as defined by West Virginia Code, including any additional amounts needed to satisfy the 15-year solvency test on a closed group projection basis. *Although the 15-year solvency test may satisfy the minimum standard for actuarial soundness under the statutes, it is not necessarily consistent with generally accepted actuarial principles.*

# Executive Summary (Continued)

The City of Charles Town has elected to fund benefits using the Standard funding policy of financing as defined in West Virginia Code §8-22-20(c)(1). Under this funding methodology, the fund's market value of assets is projected to be greater than zero for all plan years prior to the end of the 15-year projection period. Accordingly, this contribution methodology satisfies the minimum standard for actuarial soundness, as defined in the statutes.

The Supplemental benefits for plan year beginning July 1, 2019, will be based on the Consumer Price Index for calendar year 2018, and the projected results of the July 1, 2017, actuarial valuation.

## Additional Remarks on the Actuarial Valuation Results

Following are additional remarks on the actuarial valuation results as of July 1, 2017:

- The actuarial assumptions and methods were recommended by the actuary, in the report *2016 Experience Review for the Years July 1, 2009, to July 1, 2014*, and approved by the Municipal Pensions Oversight Board and became effective beginning with the actuarial valuation as of July 1, 2015. The key actuarial assumptions are fully disclosed in Section V of the report.

- The interest rate used to discount liabilities remained the same for the July 1, 2016 and July 1, 2017 actuarial valuations.
    - The interest rate assumption was developed by reviewing the Plan's current funded ratio, the 15-year projected funded ratio, the ratio of assets to benefits, the percentage of assets allocated to equities and the funding policy selected. The details of the methodology used to select the discount rate are presented in Section V of the report. As of July 1, 2017, the Plan's funded ratio of 39% (using a testing interest rate of 6.00% for all plans using the Standard funding policy), ratio of assets to benefits of 5.03, equity allocation of 32%, and 15-year projected funded ratio of 100%, resulted in a discount rate assumption of 5.00%.
- The Fund experienced an approximate annualized return of 5.20% on the market value of assets during the plan year ending June 30, 2017, which compares to the expected annualized return of 5.00%. The difference in actual versus expected return produced an asset (gain)/loss of ($858).

- An actuarial valuation is based on the expectation of certain events such as salary increases, retirement, disability, mortality, termination and cost of living increases. Demographic or liability experience (gains)/losses are generated when the actual occurrence of such events differs from the expectation. During the plan year ending June 30, 2017, the fund experienced a net liability (gain)/loss of ($150,063) due to these events.

## Standard Funding

Following are additional remarks on the actuarial valuation projections under the current funding policy:

Based on the closed group projections shown in Table 1, page II-1 and assuming the sponsor makes the statutory contributions, if all actuarial assumptions are realized in the future, including an investment return of 5.00%:

- Employer contributions are projected to decrease from $74,724 for the fiscal year end June 30, 2019, to $71,821 for fiscal year end June 30, 2031, when the plan reaches 100% funding.
- The funded ratio is projected to increase from 35% in 2017, to 55% in 2024, and to 100% in 2031.

*The Standard funding policy contribution policy is consistent with generally accepted actuarial principles.*

Under the Standard funding policy, the following experience could cause City contributions to change during the year:

- If the actual return on assets is *less* than the assumed return of 5.00%, then contributions will generally *increase*. Conversely, if the actual return is *greater* than the assumed return, contributions will generally *decrease*.
- If retired members die *later* than expected, contributions will increase. If retired members die *sooner* than expected, contributions will decrease.
- If the general inflation is *greater* than assumed, supplemental benefits will be greater than assumed and contributions will *increase*. Conversely, if general inflation is *lower* than assumed, contributions will *decrease*.

At least once every five years, GRS performs an experience review analysis and updates the actuarial valuation assumptions. For example, if salary increases were consistently lower than assumed during the experience period, then the salary increase rate would likely be lowered. Or if more members retired than assumed, then the retirement rates would likely be increased. Any change in actuarial assumption will also impact the City's funded ratio. The objective of a change in assumptions is to reduce the level of experience gains and losses in future actuarial valuations.

# Schedule A: Summary of Key Valuation Results

| | | | | |
|---|---|---|---|---|
| Valuation Date | | **July 1, 2016** | | **July 1, 2017** |
| Valuation Interest Rate | | 5.00% | | 5.00% |
| Cost-of-Living Adjustment | | 2.75% | | 2.75% |
| Wage Inflation | | 3.75% | | 3.75% |
| Expected Payroll | | $0 | | $0 |
| Average Pay | | $0 | | $0 |
| Expected Benefit Payments | | $108,607 | | $92,017 |
| 1. Actuarial Accrued Liability | No. | | No. | |
| (a) Actives | 0 | $0 | 0 | $0 |
| (b) Retirees | 2 | $760,451 | 2 | $745,980 |
| (c) Survivors | 4 | $735,373 | 2 | $566,580 |
| (d) Disabled Members | 0 | $0 | 0 | $0 |
| (e) Deferred Vested Members | 0 | $0 | 0 | $0 |
| (f) Total | 6 | $1,495,824 | 4 | $1,312,560 |
| 2. Present Value of Future Normal Costs | | $0 | | $0 |
| 3. Present Value of Benefits (1(f) + 2) | | $1,495,824 | | $1,312,560 |
| 4. Market Value of Assets | | $447,261 | | $462,989 |
| 5. Unfunded Actuarial Accrued Liability (1(f) - 4) | | $1,048,563 | | $849,571 |
| 6. Funded Ratio (4 / 1(f)) | | 29.90% | | 35.27% |
| 7. Net Employer Normal Cost | | | | |
| (a) Normal Cost | | $0 | | $0 |
| (b) Administrative Expenses | | $374 | | $1,074 |
| (c) Gross Normal Cost (a + b) | | $374 | | $1,074 |
| (d) Employee Contribution Rate [a] | | NA | | NA |
| (e) Expected Employee Contributions | | $0 | | $0 |
| (f) Net Employer Normal Cost (c - e) | | $374 | | $1,074 |
| ( % of Compensation) | | NA | | NA |
| 8. Estimated Minimum Employer Contribution [b] | | **FYE 2018** | | **FYE 2019** |
| (a) Expected Payroll | | $0 | | $0 |
| (b) Estimated Employer Expenses | | $374 | | $1,074 |
| (c) Employer Normal Cost Rate | | NA | | NA |
| (d) Amortization of Unfunded Actuarial Liability | | $98,586 | | $83,759 |
| (e) State Insurance Premium Tax Allocation | | $13,454 | | $10,109 |
| (f) Estimated Employer Contribution[c] (b + d - e) | | **$85,506** | | **$74,724** |

[a] *The Plan is closed to new members and has no active members.*

[b] *Estimated Minimum Employer Contribution is based on Standard funding policy and is assumed to be made in plan year end June 30, 2019. The actual Minimum Employer Contribution will be based on actual payroll for plan year end June 30, 2018.*

[c] *The Employer Contribution cannot be less than the Estimated Employer Expenses.*

# Schedule B: (Gain)/Loss Analysis

**Experience (Gain)/Loss for Plan Year Ended June 30, 2017**

| | | |
|---|---|---|
| 1. | (a) Actuarial Accrued Liability as of 7/1/2016 | $1,495,824 |
| | (b) Normal Cost due 7/1/2016 | $0 |
| | (c) Interest on (a) and (b) to 6/30/2017 | $74,791 |
| | (d) Benefit Payments with interest to 6/30/2017 | $107,992 |
| | (e) Effect of Assumption Changes | $0 |
| | (f) Expected Liability at 7/1/2017 [(a) + (b) + (c) - (d) + (e)] | $1,462,623 |
| | (g) Actual Liability at 7/1/2017 | $1,312,560 |
| | (h) Liability (Gain)/Loss [(g) - (f)] | **($150,063)** |
| 2. | (a) Market Value of Assets as of 7/1/2016 | $447,261 |
| | (b) Interest on (a) to 6/30/2017 | $22,363 |
| | (c) Contributions with interest to 6/30/2017 | $100,499 |
| | (d) Benefit Payments with interest to 6/30/2017 | $107,992 |
| | (e) Expected Assets at 6/30/2017 [(a) + (b) + (c) - (d)] | $462,131 |
| | (f) Actual Assets at 7/1/2017 | $462,989 |
| | (g) Asset (Gain)/Loss [(e) - (f)] | **($858)** |
| 3. | Total (Gain)/Loss [1(h) + 2(g)] | **($150,921)** |

# SECTION II

## ACTUARIAL PROJECTIONS

### CURRENT FUNDING POLICY – STANDARD

# Actuarial Projections, Standard Funding, Table 1

| Valuation Plan Year End 30-Jun | Number Active | Number Pay Status | Total Payroll | Total Assets: Assets (boy) | Benefit Payments | Expenses | Employer Contributions | Employee Contributions | Premium Tax Allocation Contributions | Investment Income | Assets (eoy) | Actuarial Accrued Liability | Unfunded Liability | Funded Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2017 | 0 | 4 | $0 | $447,261 | $105,358 | $1,045 | $83,964 | $0 | $14,084 | $24,083 | $462,989 | $1,312,560 | $849,571 | 35% |
| 2018 | 0 | 4 | 0 | 462,989 | 92,017 | 1,074 | 85,506 | 0 | 13,454 | 23,294 | 492,152 | 1,283,899 | 791,747 | 38% |
| 2019 | 0 | 4 | 0 | 492,152 | 92,536 | 1,086 | 74,724 | 0 | 10,109 | 24,390 | 507,753 | 1,253,273 | 745,520 | 41% |
| 2020 | 0 | 4 | 0 | 507,753 | 92,927 | 1,097 | 72,989 | 0 | 10,352 | 25,124 | 522,194 | 1,220,715 | 698,521 | 43% |
| 2021 | 0 | 4 | 0 | 522,194 | 93,175 | 1,106 | 72,616 | 0 | 10,567 | 25,836 | 536,932 | 1,186,275 | 649,343 | 45% |
| 2022 | 0 | 4 | 0 | 536,932 | 93,261 | 1,113 | 72,418 | 0 | 10,756 | 26,570 | 552,302 | 1,150,024 | 597,722 | 48% |
| 2023 | 0 | 4 | 0 | 552,302 | 93,168 | 1,118 | 72,258 | 0 | 10,922 | 27,341 | 568,536 | 1,112,056 | 543,520 | 51% |
| 2024 | 0 | 3 | 0 | 568,536 | 92,878 | 1,120 | 72,113 | 0 | 11,072 | 28,159 | 585,882 | 1,072,487 | 486,605 | 55% |
| 2025 | 0 | 3 | 0 | 585,882 | 92,373 | 1,120 | 71,997 | 0 | 11,191 | 29,040 | 604,617 | 1,031,457 | 426,840 | 59% |
| 2026 | 0 | 3 | 0 | 604,617 | 91,639 | 1,117 | 71,910 | 0 | 11,278 | 29,995 | 625,044 | 989,128 | 364,084 | 63% |
| 2027 | 0 | 3 | 0 | 625,044 | 90,664 | 1,111 | 71,845 | 0 | 11,340 | 31,040 | 647,494 | 945,681 | 298,187 | 68% |
| 2028 | 0 | 3 | 0 | 647,494 | 89,439 | 1,102 | 71,802 | 0 | 11,377 | 32,193 | 672,325 | 901,317 | 228,992 | 75% |
| 2029 | 0 | 3 | 0 | 672,325 | 87,957 | 1,090 | 71,785 | 0 | 11,383 | 33,471 | 699,917 | 856,254 | 156,337 | 82% |
| 2030 | 0 | 3 | 0 | 699,917 | 86,216 | 1,075 | 71,811 | 0 | 11,340 | 34,894 | 730,671 | 810,722 | 80,051 | 90% |
| 2031 | 0 | 3 | 0 | 730,671 | 84,224 | 1,057 | 71,821 | 0 | 11,263 | 36,479 | 764,954 | 764,954 | 0 | 100% |
| 2032 | 0 | 3 | 0 | 764,954 | 81,994 | 1,035 | 1,035 | 0 | 0 | 36,223 | 719,183 | 719,183 | 0 | 100% |
| 2033 | 0 | 2 | 0 | 719,183 | 79,545 | 1,011 | 1,012 | 0 | 0 | 33,995 | 673,633 | 673,633 | 0 | 100% |
| 2034 | 0 | 2 | 0 | 673,633 | 76,898 | 984 | 984 | 0 | 0 | 31,783 | 628,518 | 628,518 | 0 | 100% |
| 2035 | 0 | 2 | 0 | 628,518 | 74,076 | 955 | 954 | 0 | 0 | 29,597 | 584,038 | 584,038 | 0 | 100% |
| 2036 | 0 | 2 | 0 | 584,038 | 71,101 | 924 | 923 | 0 | 0 | 27,446 | 540,383 | 540,383 | 0 | 100% |
| 2037 | 0 | 2 | 0 | 540,383 | 67,994 | 890 | 890 | 0 | 0 | 25,340 | 497,729 | 497,729 | 0 | 100% |
| 2038 | 0 | 2 | 0 | 497,729 | 64,770 | 855 | 855 | 0 | 0 | 23,287 | 456,246 | 456,246 | 0 | 100% |
| 2039 | 0 | 2 | 0 | 456,246 | 61,445 | 818 | 818 | 0 | 0 | 21,295 | 416,095 | 416,095 | 0 | 100% |

# Actuarial Projections, Standard Funding, Table 2

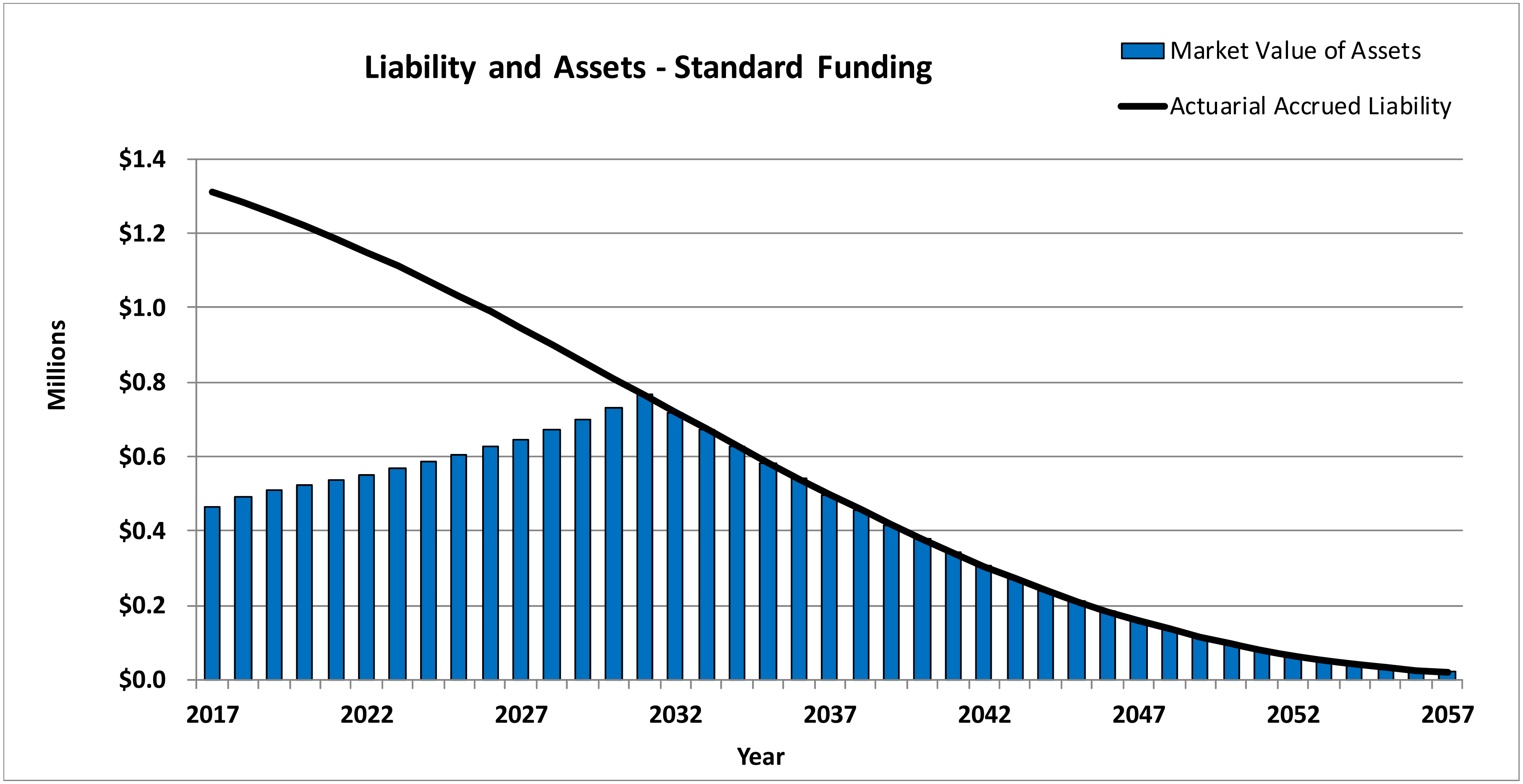
## Employer Contributions

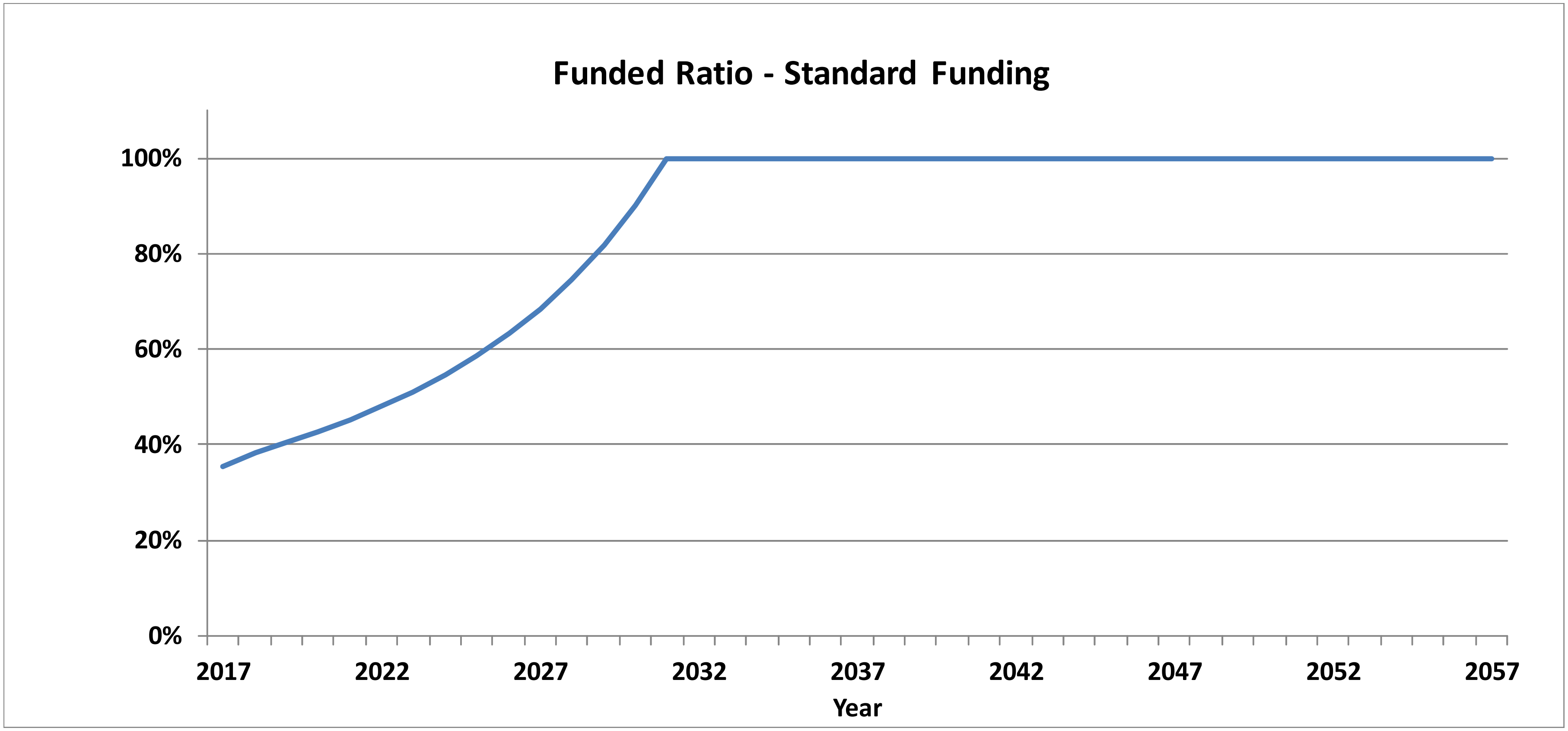
| Valuation Plan Year End 30-Jun [a] | Closed Group Payroll | New Entrant Payroll | Total Payroll | Employee Contributions | Gross Normal Cost | Net Employer Normal Cost | Amortization of UAAL | Premium Tax Allocation Contributions | Net Employer Amortization | Expenses | Employer Contribution Closed Plan |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2018 | $0 | $0 | $0 | $0 | $0 | $0 | $83,759 | $10,109 | $73,650 | $1,074 | $74,724 |
| 2019 | 0 | 0 | 0 | 0 | 0 | 0 | 82,255 | 10,352 | 71,903 | 1,086 | 72,989 |
| 2020 | 0 | 0 | 0 | 0 | 0 | 0 | 82,086 | 10,567 | 71,519 | 1,097 | 72,616 |
| 2021 | 0 | 0 | 0 | 0 | 0 | 0 | 82,068 | 10,756 | 71,312 | 1,106 | 72,418 |
| 2022 | 0 | 0 | 0 | 0 | 0 | 0 | 82,066 | 10,922 | 71,144 | 1,113 | 72,258 |
| 2023 | 0 | 0 | 0 | 0 | 0 | 0 | 82,067 | 11,072 | 70,995 | 1,118 | 72,113 |
| 2024 | 0 | 0 | 0 | 0 | 0 | 0 | 82,068 | 11,191 | 70,877 | 1,120 | 71,997 |
| 2025 | 0 | 0 | 0 | 0 | 0 | 0 | 82,068 | 11,278 | 70,790 | 1,120 | 71,910 |
| 2026 | 0 | 0 | 0 | 0 | 0 | 0 | 82,068 | 11,340 | 70,728 | 1,117 | 71,845 |
| 2027 | 0 | 0 | 0 | 0 | 0 | 0 | 82,068 | 11,377 | 70,691 | 1,111 | 71,802 |
| 2028 | 0 | 0 | 0 | 0 | 0 | 0 | 82,066 | 11,383 | 70,683 | 1,102 | 71,785 |
| 2029 | 0 | 0 | 0 | 0 | 0 | 0 | 82,061 | 11,340 | 70,721 | 1,090 | 71,811 |
| 2030 | 0 | 0 | 0 | 0 | 0 | 0 | 82,052 | 11,263 | 70,789 | 1,075 | 71,821 |
| 2031 | 0 | 0 | 0 | 0 | 0 | 0 | 82,028 | 0 | 70,877 | 1,057 | 1,035 [b] |
| 2032 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,035 | 1,012 [b] |
| 2033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,011 | 984 [b] |
| 2034 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 984 | 954 [b] |
| 2035 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 955 | 923 [b] |
| 2036 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 924 | 890 [b] |
| 2037 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 890 | 855 [b] |
| 2038 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 855 | 818 [b] |

[a] *Assumes employer makes contributions for the applicable valuation plan year in the following fiscal year. Assumes the Premium Tax allocation is contributed in the following fiscal year.*

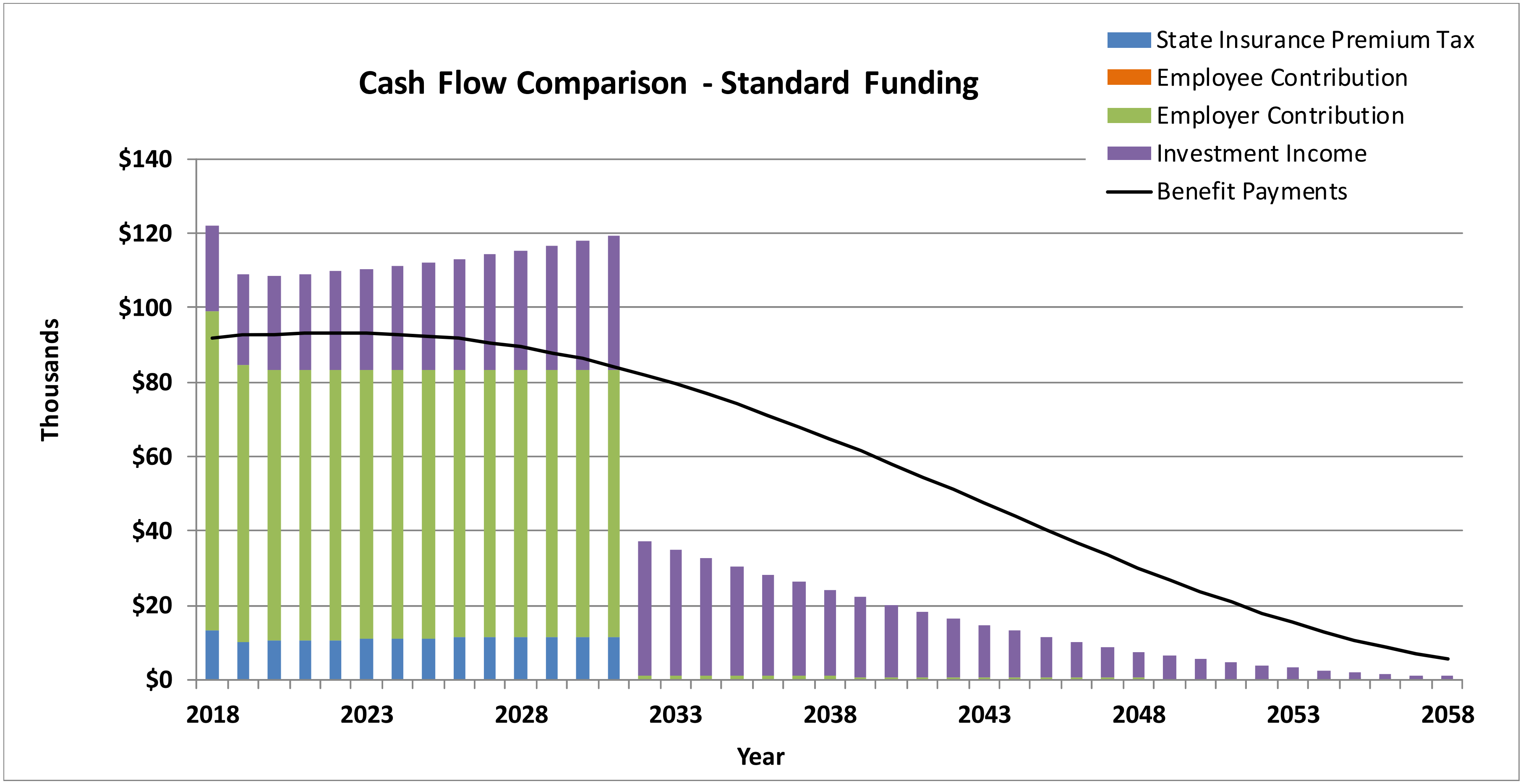
[b] *Amount required to remain at 100% funded.*

## Actuarial Projections, Standard Funding, Graph 1




Funded Ratio - Standard Funding
100%
80%
60%
40%
20%
0%
2017
2022
2027
2032
2037
2042
2047
2052
2057
Year

# Actuarial Projections, Standard Funding, Graph 3



# SECTION III

## ACTUARIALLY DETERMINED CONTRIBUTION FOR GASB STATEMENT NOS. 67. AND 68 REPORTING

# Actuarially Determined Contribution for GASB Statement Nos. 67 and 68 Reporting
# Schedule C: Funding Progress and Employer Contributions

| | | |
|---|---|---|
| Valuation Date | **July 1, 2015** | **July 1, 2016** |
| Valuation Interest Rate | 5.00% | 5.00% |
| Cost-of-Living Adjustment | 2.75% | 2.75% |
| Wage Inflation | 3.75% | 3.75% |
| Actuarial Value of Assets | Market | Market |
| Actuarial Cost Method | Entry Age Normal | Entry Age Normal |
| Remaining Amortization Period [a] | 16 Years, Level Dollar | 15 Years, Level Dollar |
| **Schedule of Funding Progress** | | |
| Actuarial Valuation Date | **July 1, 2015** | **July 1, 2016** |
| 1. Market Value of Assets | $462,469 | $447,261 |
| 2. Actuarial Accrued Liability | $1,539,348 | $1,495,824 |
| 3. Unfunded Actuarial Accrued Liability (2 - 1) | $1,076,879 | $1,048,563 |
| 4. Funded Ratio (1/2) | 30% | 30% |
| 5. Expected Payroll | $0 | $0 |
| 6. UAAL as Percentage of Covered Payroll (3/5) | NA | NA |
| **Schedule of Employer Contributions [c]** | **FYE 2017** | **FYE 2018** |
| 1. Actuarially Determined Contribution | | |
| (a) Employer Normal Cost | $1,079 | $374 |
| (b) Amortization of Unfunded Actuarial Accrued Liability | $96,969 | $98,586 |
| (c) Actuarially Determined Contribution (ADC) (a + b) | $98,048 | $98,960 |
| 2. Employer Contribution | $83,964 | $85,506 [b] |
| 3. Premium Tax Allocation | $14,084 | $13,454 |
| 4. Percentage of ADC Contributed [ (2 + 3)/1(c)] | 100% | 100% |

[a] *Suggested amortization policy to comply with GASB Statement Nos. 67 and 68 Standards.*

[b] *Estimated employer contribution for fiscal year end June 30, 2018. Employer Contribution cannot be less than net Employer Normal Cost.*

[c] *Satisfies the Actuarially Determined Contribution as defined by GASB Statement Nos. 67 and 68.*

# SECTION IV

## ACTUARIAL VALUATION DATA AS OF JULY 1, 2017

# Actuarial Valuation Data as of July 1, 2017
## Schedule D: Reconciliation of Assets

| **Plan Year Ending** | **June 30, 2016** | **June 30, 2017** |
|---|---|---|
| A. Market Value of Assets Beginning of Year | $462,469 | $447,261 |
| Adjustment to Market Value of Assets at Beginning of Year | $0 | $0 |
| Market Value of Assets Beginning of Year | $462,469 | $447,261 |
| 1. Revenue During Fiscal Year | | |
| (a) Employee Contribution | $0 | $0 |
| (b) Governmental Contribution | | |
| (i) From Local Government | $73,086 | $83,964 |
| (ii) From State Government | $12,785 | $14,084 |
| (iii) Reallocation from State Government | $0 | $0 |
| (iv) Total | $85,871 | $98,048 |
| (c) Earnings on Investments | | |
| (i) Net Appreciation/(Depreciation) | $0 | $0 |
| (ii) Bond Interest | $6,594 | $6,834 |
| (iii) Dividends | $2,698 | $2,480 |
| (iv) Net Realized Gain (Loss) on Sale/Exchange | ($3,922) | $13,524 |
| (v) Other | $208 | $120 |
| (vi) Less Investment Expense | ($16) | ($3,795) |
| (vii) Total | $5,562 | $19,163 |
| (d) Other Revenue | $5,390 | $4,920 |
| (e) Receivable Investment Income/(Expense) | $0 | $0 |
| (f) Receivable Contribution [a] | | |
| (i) From Employee Contributions | $0 | $0 |
| (ii) From Local Government | $0 | $0 |
| (iii) From State Government | $0 | $0 |
| (iv) Total | $0 | $0 |
| (g) Total Revenue (sum of (a) through (f)) | $96,823 | $122,131 |
| 2. Expenditures During Fiscal Year | | |
| (a) Benefits Paid | $109,553 | $105,358 |
| (b) Withdrawals | $0 | $0 |
| (c) Administrative Expenses | $2,478 | $1,045 |
| (d) Payable Benefits and Withdrawals | $0 | $0 |
| (e) Payable Administrative Expenses | $0 | $0 |
| (f) Total Expenditures (sum of (a) through (e)) | $112,031 | $106,403 |
| B. Market Value of Assets End of Year [A + 1(g) - 2(f)] | $447,261 | $462,989 |
| C. Approximate Return on Assets | 1.89% | 5.20% |

[a] *Receivable contributions for each respective plan year ending.*

# Actuarial Valuation Data as of July 1, 2017
## Schedule E: Assets Held by Category

| Plan Year Ending | June 30, 2016 | | June 30, 2017 | |
|---|---|---|---|---|
| 1. Cash and Short-term Investments | $99,441 | 22% | $91,882 | 20% |
| 2. Government Securities | | | | |
| (a) US Treasury Bills, Notes and Bonds | $93,825 | | $111,413 | |
| (b) US State and Local Governmental Debt Securities | $0 | | $0 | |
| (c) Foreign Governmental Debt Securities | $0 | | $0 | |
| (d) Other | $0 | | $0 | |
| (e) Total Government Securities (sum of (a) through (d) ) | $93,825 | 21% | $111,413 | 24% |
| 3. Corporate Fixed Income | | | | |
| (a) US Bonds | $126,929 | | $112,198 | |
| (b) US Mortgage or other Asset Backed Securities | $0 | | $0 | |
| (c) US Mutual Fund Shares (Bonds) | $0 | | $0 | |
| (d) US Exchange Traded Funds (Bonds) | $0 | | $0 | |
| (e) International Bonds | $0 | | $0 | |
| (f) International Mutual Fund Shares (Bonds) | $0 | | $0 | |
| (g) International Exchange Traded Funds (Bonds) | $0 | | $0 | |
| (h) Total Corporate Fixed Income (sum of (a) through (g) ) | $126,929 | 29% | $112,198 | 24% |
| 4. Corporate Equity | | | | |
| (a) US Equity | $0 | | $0 | |
| (b) US Mutual Fund Shares (Equity) | $0 | | $0 | |
| (c) US Exchange Traded Funds (Equity) | $98,025 | | $114,305 | |
| (d) International Equity | $0 | | $0 | |
| (e) International Mutual Fund Shares (Equity) | $0 | | $0 | |
| (f) International Exchange Traded Funds (Equity) | $29,041 | | $33,191 | |
| (g) Total Corporate Equity (sum of (a) through (f) ) | $127,066 | 28% | $147,496 | 32% |
| 5. Alternative Investments | | | | |
| (a) Real Estate Investment Trust | $0 | | $0 | |
| (b) Private Equity Fund | $0 | | $0 | |
| (c) Hedge Funds | $0 | | $0 | |
| (d) Other Alternative Investments | $0 | | $0 | |
| (e) Total Alternative Investments (sum of (a) through (d) ) | $0 | 0% | $0 | 0% |
| 6. Other | $0 | 0% | $0 | 0% |
| 7. Receivable Contributions | $0 | | | |
| (a) From Employee Contributions | $0 | | $0 | |
| (b) From Local Government | $0 | | $0 | |
| (c) From State Government | $0 | | $0 | |
| (d) Total Receivable Contributions (sum of (a) through (c) ) | $0 | 0% | $0 | 0% |
| 8. Accruals | | | | |
| (a) Receivable (other than State and Local Contributions) | $0 | | $0 | |
| (b) Less Payable | $0 | | $0 | |
| (c) Total | $0 | 0% | $0 | 0% |
| **Market Value of Assets End of Year [ sum of (1) through (8) ]** | **$447,261** | | **$462,989** | |

# Actuarial Valuation Data as of July 1, 2017
## Schedule F: Summary of Participant Activity

| | Actives | Retirees | Disabled | Deferred Vested | Spouses and Beneficiaries | Totals |
|---|---|---|---|---|---|---|
| **Total Participants July 1, 2016:** | **0** | **2** | **0** | **0** | **4** | **6** |
| New Actives: | | | | | | **0** |
| Returned to Actives Status: | | | | | | **0** |
| Data Corrections/Other Changes: | | | | | | **0** |
| Vested Terminations: | | | | | | **0** |
| Non-Vested Terminations: | | | | | | **0** |
| Disabled: | | | | | | **0** |
| Retirements: | | | | | | **0** |
| Deaths with Beneficiary: | | | | | | **0** |
| Deaths w/o Beneficiary: | | | | | (2) | **(2)** |
| Expired Annuity or Stop Payment: | | | | | | **0** |
| Net Changes: | 0 | 0 | 0 | 0 | (2) | **(2)** |
| **Total Participants June 30, 2017:** | **0** | **2** | **0** | **0** | **2** | **4** |

# Actuarial Valuation Data as of July 1, 2017
## Schedule G: Participants Summary

| Inactive Participants | July 1, 2016 | | July 1, 2017 | |
|---|---|---|---|---|
| Type | No. | Annual Benefit | No. | Annual Benefit |
| Retirees | 2 | $54,306 | 2 | $55,012 |
| Survivors | 4 | $55,356 | 2 | $37,695 |
| Disabled Members | 0 | $0 | 0 | $0 |
| Deferred Vested Members | 0 | $0 | 0 | $0 |

# SECTION V

## ACTUARIAL ASSUMPTIONS AND METHODS

**Discount Rate**

The following table outlines the factors used to determine the discount rate:

| Funded Ratio as of Valuation Date [1] | Liquidity Ratio [2] | Equity Exposure [3] | Projected Funded Ratio after 15 Years [1] | Discount Rate |
|---|---|---|---|---|
| 60% or more | 10 | 50% or more | 70% or more | 6.5% |
| 40% or more | 8 | 40% or more | 60% or more | 6.0% |
| 30% or more | 6 | 30% or more | 50% or more | 5.5% |
| 15% or more | 4 | n/a | 40% or more | 5.0% |
| Less than 15% | n/a | n/a | 15% or more | 4.5% |
| Less than 15% | n/a | n/a | Less than 15% | 4.0% |

[1] Funded ratios based on a 6.0% investment return assumption for plans using an actuarially sound policy (standard or optional) and a 5.5% investment return assumption for other plans (alternative or conservation).
[2] Liquidity ratio equals assets as of the actuarial valuation date divided by expected benefit payments for the year.
[3] Based on investment policy.

| As of June 30, 2017 | |
|---|---|
| Assets | $462,989 |
| Liabilities using a 6.00% discount rate | $1,191,288 |
| Funded Ratio | 39% |
| Expected Benefit Payments | $92,017 |
| Liquidity Ratio | 5.03 |
| Equity Exposure | 32% |
| Projected Funded Ratio after 15 years | 100% |

| | |
|---|---|
| Discount Rate | 5.00% |

# Actuarial Assumptions and Methods Used in the Valuation as of July 1, 2017 (Continued)

**The premium tax allocation is projected using the following methodology:**

(1) The Base Allocation for all Pension and Relief Funds is a fixed amount equal to $8,709,689 in all future years. This amount is allocated to each individual Pension and Relief Fund in proportion to the number of eligible members, which includes active members covered in either the Pension and Relief Fund or the statewide plan, Municipal Police Officers and Firefighters Retirement System ("MPFRS").

(2) The Excess Allocation is equal to the excess of the current year premium tax assigned to all Pension and Relief Funds over the total Base Allocation. This amount is allocated to each individual Pension and Relief Fund in proportion to the number of eligible active and retired members covered in either the Pension and Relief Fund or the MPFRS.

(3) We have assumed all Pension and Relief Funds will make the minimum statutory contribution requirement and will receive 100% of both the Base Allocation and the Excess Allocation assigned to the individual plan. Consequently, the projections do not include any reallocation of Expired Premium Tax Allocation for plan years beginning on and after July 1, 2019.

(4) The total available premium tax allocation, net of expenses, as of September 1, 2018, includes a Base Allocation of $8,709,689, an Excess Allocation of $9,570,473, and an Expired Premium Tax Allocation of $237,031.

(5) For the plan year ending June 30, 2018, all Pension and Relief Funds reported a total of 1,717 eligible active members and 2,165 eligible retired members. The City of Charles Town Policemen's Pension and Relief Fund reported 0 eligible active members and 4 eligible retired members, based on the average number of plan participants for the 12-month period ending June 30, 2018. The Fund is eligible to receive a premium tax allocation of $10,109 for the fiscal year ending June 30, 2019.

(6) The total premium tax allocation was assumed to increase by 2.75% in calendar years ending on and after 2019.

# Actuarial Assumptions and Methods
# Used in the Valuation as of July 1, 2017 (Continued)

| | |
|---|---|
| General Inflation | 2.75% |
| Expected Salary Increase<br><br><br><br><br><br>Service-based Increase: | General Inflation:<br>2.75% *plus*<br><br>Wage Inflation Increment:<br>1.00% *plus*<br><br>Years of<br><u>Service</u> — <u>Increase</u><br>1 — 20.00%<br>2 — 6.50%<br>3 — 3.50%<br>4 — 2.75%<br>5-9 — 2.50%<br>10-29 — 2.00%<br>30-34 — 1.25%<br>after 34 years of service — 0.00% |
| Post-retirement COLA | 2.75% on first $15,000 of Annual Benefit and on the accumulated supplemental pension amounts for prior years. Assumed to be payable to all members receiving payments. |
| Increase in State Insurance Premium Tax Allocation | 2.75% on and after year 1 |
| Cost Method | Entry-Age-Normal, Level-Percentage-of-Pay |
| *Amortization Policies:* | |
| Alternative Plans and former Alternative Plans that selected the Conservation Policy | For GASB 67/68 Accounting: 30 – Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017). |
| Standard Plans and former Standard Plans that selected the Optional Policy | For funding and GASB 67/68 Accounting: 40-Year Closed Level-Dollar Amortization (from July 1, 1991 – 14 years remaining as of July 1, 2017) |
| Former Alternative Plans that selected the Optional Policy | For funding: 40-Year Closed Level-Dollar Amortization (from January 1, 2010 – 32.5 years remaining as of July 1, 2017). For GASB 67/68 Accounting: 30-Year Closed Level-Percentage-of-Pay Amortization (from July 1, 2010 – 23 years remaining as of July 1, 2017) |

# Actuarial Assumptions and Methods
# Used in the Valuation as of July 1, 2017 (Continued)

| | |
|---|---|
| Asset Method | Market Value |
| Turnover | Sample Rates –<br>Age / Rates<br>25 / 9%<br>35 / 4%<br>45 / 2%<br>50 / 0% |
| Retirement | Age / Rates<br>50 / 45%<br>51-55 / 30%<br>56-59 / 35%<br>60 / 100% |
| Mortality | Active:<br>RP-2014 Blue Collar Healthy Employee[b]<br><br>Post-Retirement:<br>RP-2014 Blue Collar Healthy Annuitant<br><br>Disabled:<br>RP-2014 Blue Collar Healthy Annuitant set forward four years<br><br>Tables above incorporate generational mortality improvement using MP-2014 2-dimensional mortality improvement scales<br>[b]*Assumes 10% of deaths are duty-related and 90% are non-duty related.* |
| Disability | Sample Rates –<br>Age / Rates[c]<br>30 / 0.22%<br>40 / 0.50%<br>50 / 0.79%<br>[c] *Assumes 60% duty related and 40% non-duty related. Also assumes 10% of non-duty disabled members receive a 20% reduction in benefits due to gainful employment.* |
| Percent Married | 90% |
| Spouse Age | Females 3 years younger than males |

# Actuarial Assumptions and Methods
# Used in the Valuation as of July 1, 2017 (Continued)

| | |
|---|---|
| Administrative Expenses | Plan year end June 30, 2018, expense based on plan year end June 30, 2017 expense increased by general inflation assumption. Future expenses assumed to increase by the general inflation assumption. |
| Refunds Paid | Assumes non-vested inactive members as of July 1, 2017, with accumulated member contribution balances will receive a refund of their contributions during plan year end June 30, 2018. |
| Data Adjustments and Assumptions | None |
| Child Beneficiaries | Future survivor widow benefits are loaded by 12% to estimate impact of benefits provided to survivor children.<br>The load assumes 90% of members are married with two children at time of death, and benefits for each child are paid for approximately 8 years. |
| General Projection Methodology | Closed group projections assume:<br>(i) Members will decrement as specified in the actuarial assumption section.<br>(ii) Assets grow at the assumed rate of return.<br>(iii) The sponsor makes the statutory required contribution on a timely basis.<br>Non-vested members with accumulated plan balances as of July 1, 2016, will receive a refund during plan year end June 30, 2017. |
| Decrement Timing | Mid-Year |

# SECTION VI

## SUMMARY OF PRINCIPAL PLAN PROVISIONS

# Summary of Principal Plan Provisions
# Actuarial Valuation as of July 1, 2017

**Employee Eligibility** — All compensated employees of the Police Department are eligible to participate in the Policemen's Pension and Relief Fund.

**Average Annual Compensation** — The average of any three twelve-consecutive-month periods of employment which produces the highest average annual compensation.

Each twelve-consecutive-month annual compensation is limited to 120% of the *Average Adjusted Salary* received by the member in the two consecutive twelve-consecutive-month periods immediately preceding the twelve-consecutive-month period used in determining benefits.

The *Average Adjusted Salary* is base salary (exclusive of all overtime and other pay) of the year used in determining benefits multiplied by the ratio of total salary (includes all overtime and other pay) to base salary from the respective preceding twelve-consecutive-month period.

**Determining Years of Service Credit (**Credited Service**)** — The number of years that the member has contributed to the employees retirement and benefit fund.

*Prior Military Service* — A city may provide that members who have been honorably discharged from the military shall receive up to two years prior service credit for military service prior to their employment with the city.

*Current Military Service* — Any current member who has been on qualified military service in the armed forces of the United States with an honorable discharge may, within six months from his or her date of discharge, be given credit for continuous service in the paid police or fire department.

Any member who has served in active duty with the armed forces of the United States, whether prior to or subsequent to becoming a member of a paid police or fire department, shall receive one additional percent for each year so served in active military duty, up to a maximum of four additional percent.

Absence from the service because of sickness or injury for a period of two years or less shall not be construed as time out of service.

**Contributions** — Participating employees contribute 7.0% of compensation. Participating employees hired on or after January 1, 2010, contribute 9.5% of pay. The municipality has elected to contribute the minimum employer contribution under the Standard funding policy.

**Normal Retirement** — Members are eligible at the earlier of age 50 with 20 years of credited service or age 65.

**Benefit Commencement** — Annual retirement pension benefits commence upon retirement or upon the member attaining age fifty, whichever is later, payable in twelve monthly installments.

**Accrued Benefit** — The annual retirement benefit equals 60% of average annual compensation, not less than $6,000, plus an additional percentage of average annual compensation for service over 20 years equal to 2% for each year of service between 20 and 25 and 1% for each year of service between 25 and 30 years. Employees serving in the military are eligible for an additional 1% of average annual compensation for each year of military service up to four years. The maximum benefit is limited to 75% of average annual compensation. Benefits continue for life.

**Disability Retirement** — Members are eligible after earning five years of service. No service requirement if disability is service related.

The monthly disability benefit equals the greater of 60% of monthly salary at disability or $500. Employees serving in the military are eligible for an additional benefit of 1% of monthly salary at disability for each year of military service up to four years. Disability benefits, when aggregated with monthly state workers compensation benefits, shall not exceed 100% of the member's monthly compensation at the time of disability. Benefits continue for life or until recovery.

**Death Benefits** — Members are eligible after earning five years of service. No service requirement if death is service related. Retirees and terminated vested participants are also eligible.

The benefit is equal to 60% of the participant's benefit, but not less than $300 per month, payable to the spouse until death or remarriage. Other dependents (children, parents, brothers and sisters) are also eligible for death benefits. To each dependent child, 20 percent of the participant's benefit until the child attains eighteen or marries; to each dependent orphaned child, 25 percent of the participant's benefit until the child attains 18 or marries; to each dependent parent, 10 percent of the participant's benefit for life and to each dependent brother or sister, the sum of $50 per month (but a total not to exceed $100 per month) until such individual attains the age of 18 years or marries.

In no case shall the payments to the surviving spouse and children be reduced below 65 percent of the total amount paid to all dependents.

**Supplemental Pension Benefits** — All retirees, surviving beneficiaries and disability pensioners are eligible for automatic cost-of-living benefits commencing on the first day of July following two years of retirement. The benefits equal the percentage increase in the Consumer Price Index, limited to 4% (2% for some disability retirees), multiplied by the sum of the allowable amount which is the first $15,000 of the total annual benefits paid and the accumulated supplemental pension amounts for prior years.

**Termination Benefits** — Any member who terminates employment prior to retirement will be entitled to a refund of contributions without interest.

**Refunds** — Any member who terminates from their department without receiving a retirement pension shall be refunded all deductions made from his salary, without interest.