# THE CITY OF NEWPORT, RHODE ISLAND FIRE PENSION SYSTEM

## ACTUARIAL VALUATION REPORT

JULY 1, 2019

hooker & holcombe

# Table of Contents

Executive Summary ........ 1
Valuation Results and Highlights ........ 2
- Purpose of the Valuation ........ 2
- Information Available in the Valuation Report ........ 2
- Changes Reflected in the Valuation ........ 2
- Cash Contribution for Fiscal Year Ending 2021 ........ 2
- Liability Experience During Period Under Review ........ 2
- Asset Experience During Period Under Review ........ 3
- Assessment and Measurement of Risks ........ 3

Certification ........ 6
Development of Unfunded Accrued Liability and Funded Ratio ........ 7
Determination of Normal Cost and Actuarially Determined Employer Contribution ........ 9
Determination of Actuarial Gain/Loss ........ 11
Development of Asset Values ........ 12
Target Allocation and Expected Rate of Return ........ 15
Amortization of Unfunded Liability ........ 16
Member Data ........ 17
Active Member Count by Age and Years of Service ........ 20
Description of Actuarial Methods ........ 21
Description of Actuarial Assumptions ........ 22
Summary of Plan Provisions ........ 25

## Report Prepared By:

Steve A. Lemanski
Vice President, Practice Leader, Consulting Actuary
860.856.2073
SLemanski@hhconsultants.com

Ellen Kucenski
Practice Leader, Consulting Actuary
860.856.2053
EKucenski@hhconsultants.com

Robert P. Lessard
Team Leader, Actuarial Specialist
860.856.2106
RLessard@hhconsultants.com

# Executive Summary

| | July 1, 2019 | July 1, 2018 |
|---|---|---|
| **Number of members** | | |
| Active employees | 95 | 95 |
| Terminated vested members | 0 | 0 |
| Retired, disabled and beneficiaries | 120 | 119 |
| Total | 215 | 214 |
| **Covered employee payroll** | 6,844,043 | 6,533,050 |
| **Average plan salary** | 72,043 | 68,769 |
| **Actuarial present value of future benefits** | 128,190,093 | 123,557,191 |
| **Actuarial accrued liability** | 113,225,837 | 109,316,065 |
| **Plan assets** | | |
| Market value of assets | 62,523,396 | 59,334,972 |
| Actuarial value of assets | 63,474,304 | 59,088,528 |
| **Unfunded accrued liability** | 49,751,533 | 50,227,537 |
| **Funded ratio** | 56.1% | 54.1% |
| **Actuarially determined employer contribution (ADEC)** | | |
| Fiscal year ending | 2021 | 2020 |
| ADEC | 6,752,128 | 6,412,242 |

# Valuation Results and Highlights

**Purpose of the Valuation**

The purpose of the valuation is to develop the Actuarially Determined Employer Contribution (ADEC).

The ultimate cost of a pension plan is based primarily on the level of benefits promised by the plan. The pension fund's investment earnings serve to reduce the cost of plan benefits and expenses. Thus,

Ultimate cost = Benefits Paid + Expenses Incurred – Investment Return – Employee Contributions

The actuarial cost method distributes this ultimate cost over the working lifetime of current plan participants. By means of this budgeting process, costs are allocated to both past and future years, and a cost is assigned to the current year. The current year's allocated cost, or normal cost, is the building block upon which the actuarially determined employer contribution is developed. The July 1, 2019 valuation produces the contribution for the fiscal year ending 2021.

**Information Available in the Valuation Report**

The Executive Summary is intended to emphasize the notable results of the valuation from the perspective of the Plan Sponsor. Supporting technical detail is documented in Results of the Valuation, Supporting Exhibits and Description of Actuarial Methods and Assumptions. A concise summary of the principal provisions of the Plan is outlined in Summary of Plan Provisions.

**Changes Reflected in the Valuation**

The mortality assumption was updated to better reflect anticipated experience. In addition, the amortization method to calculate the actuarial determined employer contribution (ADEC) was revised to create new 15-year (level dollar) bases to amortize future unfunded liabilities. The impact of these changes was an increase in both actuarial accrued liability and the ADEC of approximately $1,168,000 and $156,000, respectively.

**Cash Contribution for Fiscal Year Ending 2021**

| | |
|---|---|
| The City cost is: | 2021 Fiscal Year |
| | $6,752,128 |

**Liability Experience During Period Under Review**

The plan experienced a net actuarial gain on liabilities of approximately $250,000 since the prior valuation.

The primary source of this gain was due to COLAs that were less than expected, partially offset by mortality losses.

**Asset Experience During Period Under Review**

The plan's assets provided the following rates of return during the past fiscal year:

| | 2019 Fiscal Year |
|---|---|
| Market Value Basis | 4.2% |
| Actuarial Value Basis | 6.2% |

The Actuarial Value of assets, rather than the Market Value, is used to determine plan contributions. The Actuarial Value spreads the asset volatility over 5 years, thereby smoothing out fluctuations that are inherent in the Market Value.

**Assessment and Measurement of Risks**

**Financial Significance of Plan**

It is important to understand the size of the pension plan compared to the size of the sponsor of that plan. Additional pension contributions may be required at inopportune times for the plan sponsor. In general, a plan sponsor with assets or revenue that are much larger than the liabilities in its pension plans will be better able to withstand increases in required pension contributions.

**Plan Maturity Measurements**

| | July 1, 2019 | July 1, 2018 |
|---|---|---|
| Actuarial accrued liability for members currently in pay status as a percentage of the total actuarial accrued liability | 71.8% | 73.1% |

• A lower percentage results in greater volatility as the investment return assumption changes.

• A higher percentage results in greater demand on cash due to a proportionately higher percentage of benefits being in pay status.

| | July 1, 2019 |
|---|---|
| Duration of benefit payments using an investment rate of return of 7.25% | 14.5 years |

• A higher duration will occur if the plan's percentage of members in pay status decreases. A plan with a higher duration will have a liability that is more sensitive to changes in the investment return assumption.

| | July 1, 2019 | July 1, 2018 |
|---|---|---|
| Ratio of market value of assets to covered payroll | 9.1 | 9.1 |

• A higher ratio is more typical of relatively mature plans with a larger percentage of inactive members and may cause more potential contribution volatility as pension fund assets fluctuate.

**Risks to Assess**

**Overriding Minimum Contribution**

| | Fiscal Year Ending 2021 |
|---|---|
| Actuarially determined employer contribution (ADEC) | 6,752,128 |
| Overriding minimum contribution (OMC)* | 6,436,551 |
| Surplus (deficit) - ADEC vs. OMC | 315,577 |

• A deficit suggests that a plan's current funding policy contribution approach may result in little to no progress being made towards: (1) reducing the plan's unfunded liability; and (2) improving the plan's funded ratio in the near-term.

*As defined in "Public Pension Plan Funding Policy" (Society of Actuaries, 2010).

**Estimated Impact of a 5% Reduction in Market Value of Assets**

| | Fiscal Year Ending 2021 |
|---|---|
| Increase in actuarially determined employer contribution (ADEC) | 71,548 |

• Plans would generally be subject to a larger amortization payment if the market value of assets were 5% smaller. As a result, the ADEC would generally be higher for up to 15 years.

Due to the asset smoothing method, the ADEC will additionally increase by the same amount in each of the next few years. Each of these additional contributions will continue for up to 15 years.

**Estimated Impact of a 1 Year Increase in Life Expectancies**

| | Fiscal Year Ending 2021 |
|---|---|
| Increase in actuarially determined employer contribution (ADEC) | 294,253 |

• If members live longer than expected, it generally results in larger benefits and/or additional benefit payments made. As a result, the ADEC would generally be higher for up to 15 years.

**Historical Results**

| Valuation Year Beginning | Investment Return Assumption | Annual Effective Rate of Return on Market Value of Assets | Market Value of Assets as a % of Actuarial Accrued Liability | Benefit Payments as a % of Market Value of Assets |
|---|---|---|---|---|
| 2019 | 7.25% | N/A | 55.2% | N/A |
| 2018 | 7.25% | 4.2% | 54.3% | 10.7% |
| 2017 | 7.25% | 9.1% | 50.3% | 11.5% |
| 2016 | 7.25% | 12.6% | 45.1% | 12.6% |
| 2015 | 7.50% | -3.0% | 48.3% | 12.2% |

# Certification

This report presents the results of the July 1, 2019 Actuarial Valuation for The City of Newport, Rhode Island Fire Pension System (the Plan) for the purpose of estimating the funded status of the Plan and determining the Actuarially Determined Employer Contribution (ADEC) for the fiscal year ending June 30, 2021. This report may not be appropriate for any other purpose.

The valuation has been performed in accordance with generally accepted actuarial principles and practices. It is intended to comply with all applicable Actuarial Standards of Practice.

I certify that the actuarial assumptions and methods that were selected by me and represent my best estimate of anticipated actuarial experience under the Plan.

In preparing this valuation, I have relied on employee data provided by the Plan Sponsor, and on asset and contribution information provided by the Trustee. I have audited neither the employee data nor the financial information, although I have reviewed them for reasonableness.

The results in this valuation report are based on the Plan as summarized in the *Summary of Plan Provisions* section of this report and the actuarial assumptions and methods detailed in the *Description of Actuarial Methods and Assumptions* section of this report.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, 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. Due to the limited scope of this report, an analysis of the potential range of such future measurements has not been performed.

I have no relationship with the employer or the Plan that would impair, or appear to impair, my objectivity in performing the work presented in this report. I am a member of the American Academy of Actuaries and meet its Qualification Standards to render the actuarial opinion contained herein.

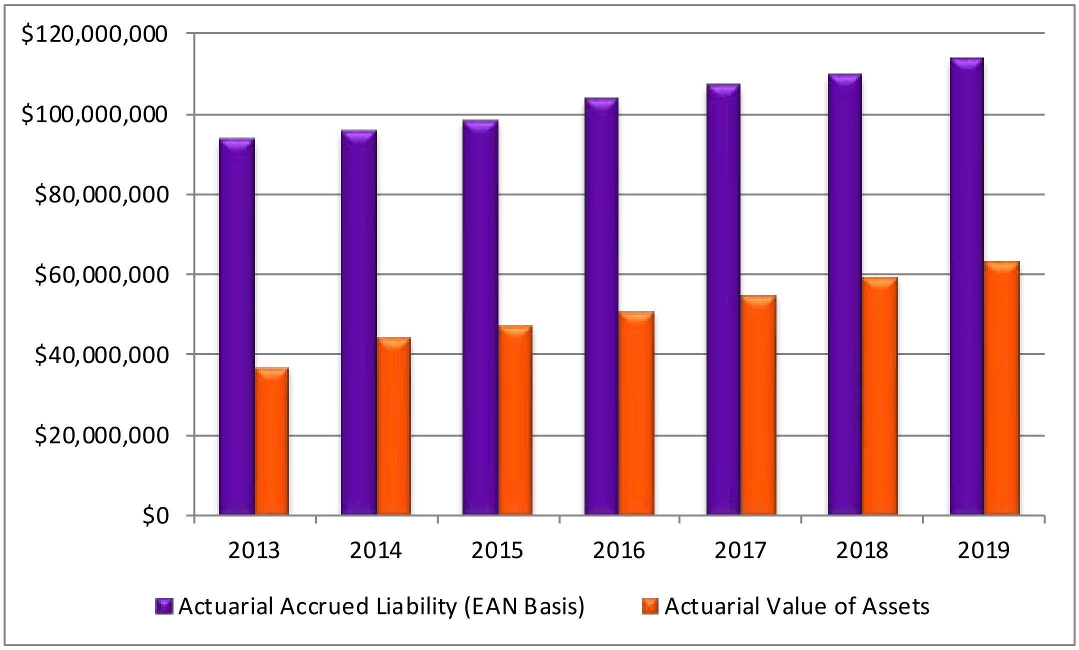
Steve A. Lemanski, FSA, FCA, MAAA
Enrolled Actuary 17-05506

September 30, 2019

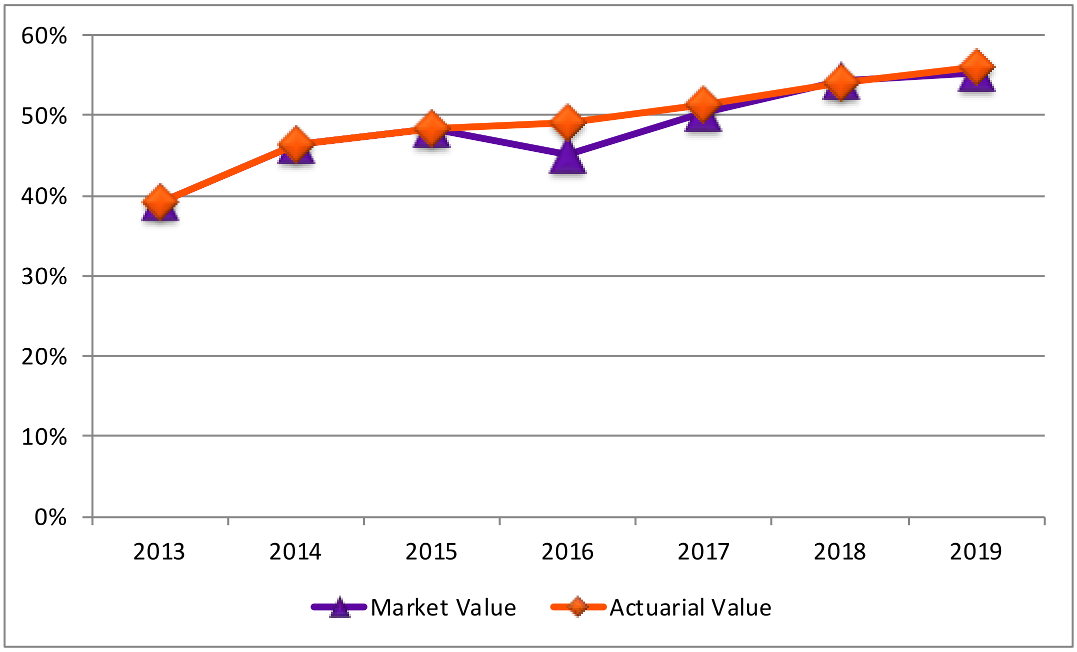
## Development of Unfunded Accrued Liability and Funded Ratio

| | July 1, 2019 | July 1, 2018 |
|---|---|---|
| Actuarial accrued liability for inactive members | | |
| Retired, disabled and beneficiaries | $81,277,575 | $79,922,530 |
| Terminated vested members | 0 | 0 |
| Total | 81,277,575 | 79,922,530 |
| Actuarial accrued liability for active employees | 31,948,262 | 29,393,535 |
| Total actuarial accrued liability | 113,225,837 | 109,316,065 |
| Actuarial value of assets | 63,474,304 | 59,088,528 |
| Unfunded accrued liability | 49,751,533 | 50,227,537 |
| Funded ratio | 56.1% | 54.1% |

## Actuarial Accrued Liability vs. Actuarial Value of Assets



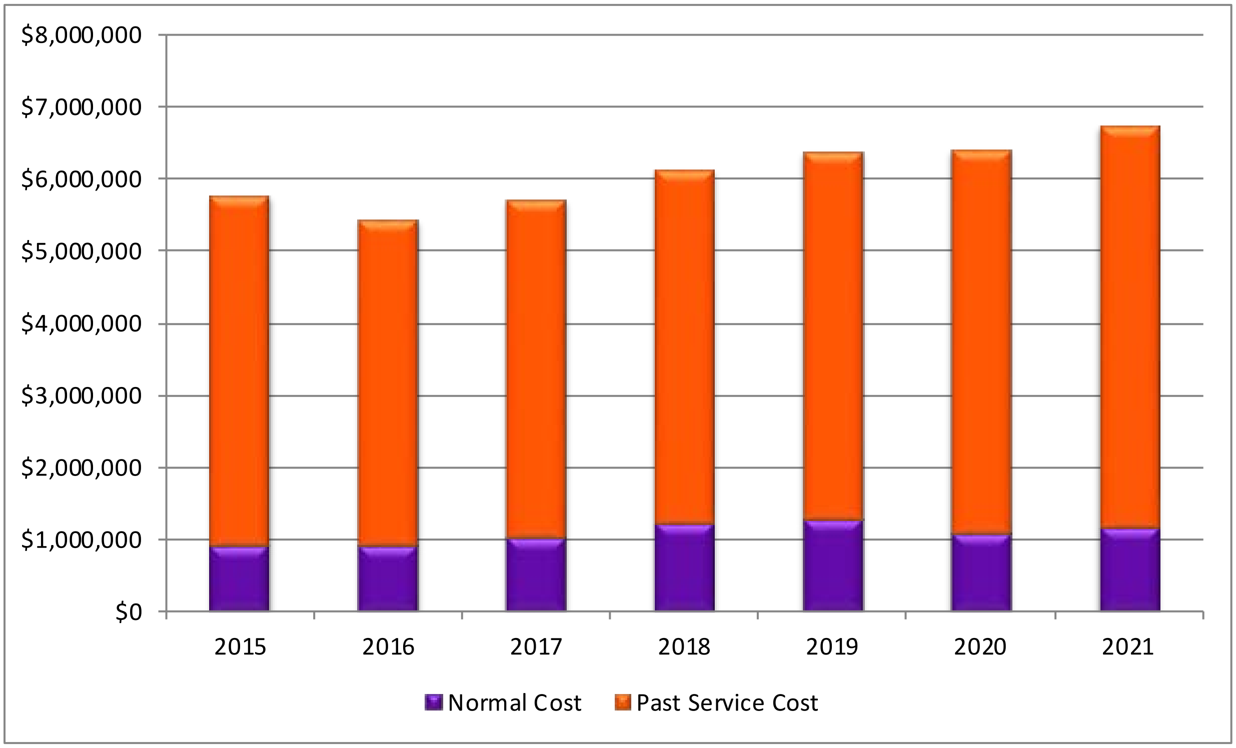

## Funded Ratio



## Determination of Normal Cost and Actuarially Determined Employer Contribution

| | July 1, 2019 | | July 1, 2018 | |
|---|---|---|---|---|
| | Cost | Percent of payroll | Cost | Percent of payroll |
| Gross normal cost | $1,657,006 | 25.0% | $1,562,372 | 22.9% |
| Estimated employee contributions | (595,877) | -9.0% | (567,754) | -8.3% |
| Estimated administrative expenses | 51,763 | 0.8% | 57,662 | 0.8% |
| City's normal cost | 1,112,892 | 16.8% | 1,052,280 | 15.4% |
| Amortization of unfunded accrued liability | 5,468,129 | 82.6% | 5,197,469 | 76.0% |
| Contribution before adjustment as of the valuation date | 6,581,021 | 99.4% | 6,249,749 | 91.4% |
| Estimated valuation year payroll for actives not yet at 100% assumed retirement age | 6,620,854 | | 6,835,155 | |
| Fiscal year ending | 2021 | | 2020 | |
| Adjustment for interest and inflation | 171,107 | | 162,493 | |
| Actuarially determined employer contribution | 6,752,128 | | 6,412,242 | |

**Actuarially Determined Employer Contribution**



## Determination of Actuarial Gain/Loss

The Actuarial Gain/Loss is the difference between the expected unfunded accrued liability and the actual unfunded accrued liability, without regard to any changes in actuarial methods, actuarial assumptions or plan provisions. This can also be referred to an Experience Gain/Loss, since it reflects the difference between what was expected and what was actually experienced.

| Actuarial Gain / Loss | | |
|---|---|---|
| **Expected unfunded accrued liability July 1, 2019** | | |
| Expected unfunded accrued liability July 1, 2019 | | |
| Unfunded accrued liability July 1, 2018 | 50,227,537 | |
| Gross normal cost July 1, 2018 | 1,620,034 | |
| City and employee contributions for 2018-2019 | (6,996,337) | |
| Interest at 7.25% to July 1, 2019 | 3,293,054 | |
| Expected unfunded accrued liability July 1, 2019 | 48,144,288 | |
| **Actuarial (gain) / loss July 1, 2019** | 439,678 | |
| **Actual unfunded accrued liability July 1, 2019, prior to plan provision, assumption and method changes** | | 48,583,966 |
| **Sources of (gain) / loss** | | |
| Assets | 690,000 | |
| Liabilities | (250,000) | |
| Total (gain) / loss (rounded to nearest $1,000) | 440,000 | |
| **Assumption and method changes since prior valuation** | | 1,167,567 |
| **Actual unfunded accrued liability July 1, 2019, after plan provision, assumption and method changes** | | 49,751,533 |

## Development of Asset Values

| Summary of Fund Activity | | |
|---|---|---|
| | **Market Value** | **Actuarial Value** |
| **1. Beginning value of assets July 1, 2018** | | |
| Trust assets | $59,376,422 | $59,129,978 |
| Accrued contribution | 0 | 0 |
| Benefits payable | 0 | 0 |
| Administrative expenses payable | (41,450) | (41,450) |
| Net total | 59,334,972 | 59,088,528 |
| **2. Contributions** | | |
| City contributions during year | 6,383,436 | 6,383,436 |
| Employee contributions during year | 612,901 | 612,901 |
| Change in accrued contribution | 0 | 0 |
| Total for plan year | 6,996,337 | 6,996,337 |
| **3. Disbursements** | | |
| Benefit payments during year | 6,364,551 | 6,364,551 |
| Administrative expenses during year | 51,763 | 51,763 |
| Change in benefits payable | 0 | 0 |
| Change in administrative expenses payable | (8,110) | (8,110) |
| Total for plan year | 6,408,204 | 6,408,204 |
| **4. Net investment return** | | |
| Net investment income | 2,600,291 | N/A |
| Change in accrued income | 0 | N/A |
| Expected return | N/A | 4,519,917 |
| Recognized gain / (loss) | N/A | (722,274) |
| Required adjustment due to corridor | N/A | 0 |
| Reversal of prior year required adjustment | N/A | 0 |
| Total for plan year | 2,600,291 | 3,797,643 |
| **5. Ending value of assets July 1, 2019** | | |
| Trust assets | 62,556,736 | 63,507,644 |
| Accrued contribution | 0 | 0 |
| Benefits payable | 0 | 0 |
| Administrative expenses payable | (33,340) | (33,340) |
| Net total: (1) + (2) - (3) + (4) | 62,523,396 | 63,474,304 |
| **6. Approximate rate of return** | 4.2% | 6.2% |

| Relationship of Actuarial Value to Market Value | |
|---|---|
| 1. Market value 7/1/2019 | $62,523,396 |
| 2. Gain / (loss) not recognized in actuarial value 7/1/2019 | (950,908) |
| 3. Preliminary actuarial value 7/1/2019: (1) - (2) | 63,474,304 |
| 4. Preliminary actuarial value as a percentage of market value: (3) ÷ (1) | 101.5% |
| 5. Gain / (loss) recognized for corridor minimum / maximum | N/A |
| 6. Actuarial value 7/1/2019 after corridor minimum / maximum: (3) + (5) | 63,474,304 |
| 7. Actuarial value as a percentage of market value: (6) ÷ (1) | 101.5% |

| Development of Market Value Gain / Loss for 2018-2019 Plan Year | |
|---|---|
| 1. Market value 7/1/2018 | $59,334,972 |
| 2. City contributions | 6,383,436 |
| 3. Employee contributions | 612,901 |
| 4. Benefit payments | 6,364,551 |
| 5. Administrative expenses | 43,653 |
| 6. Expected return at 7.25% | 4,519,917 |
| 7. Expected value 7/1/2019: (1) + (2) + (3) - (4) - (5) + (6) | 64,443,022 |
| 8. Market value 7/1/2019 | 62,523,396 |
| 9. Market value gain / (loss) for 2018-2019 plan year: (8) - (7) | (1,919,626) |

**Recognition of Gain / Loss in Actuarial Value**

| Year | (a) Gain / (loss) | (b) Total recognized as of 7/1/2018 | (c) Recognized in current year: 20% of (a) | (d) Total recognized as of 7/1/2019: (b) + (c) | (e) Not recognized as of 7/1/2019: (a) - (d) |
|---|---|---|---|---|---|
| 2014-2015 | $0 | $0 | $0 | $0 | $0 |
| 2015-2016 | (5,251,800) | (3,151,080) | (1,050,360) | (4,201,440) | (1,050,360) |
| 2016-2017 | 2,504,401 | 1,001,760 | 500,880 | 1,502,640 | 1,001,761 |
| 2017-2018 | 1,055,654 | 211,131 | 211,131 | 422,262 | 633,392 |
| 2018-2019 | (1,919,626) | 0 | (383,925) | (383,925) | (1,535,701) |
| Total | | | (722,274) | | (950,908) |

| Rate of Return on Market Value of Assets | | | | |
|---|---|---|---|---|
| Period Ending | Average Annual Effective Rate of Return | | | |
| June 30 | 1 Year | 3 Years | 5 Years | 10 Years |
| 2010 | N/A | N/A | N/A | N/A |
| 2011 | N/A | N/A | N/A | N/A |
| 2012 | N/A | N/A | N/A | N/A |
| 2013 | 12.2% | N/A | N/A | N/A |
| 2014 | 16.7% | N/A | N/A | N/A |
| 2015 | 4.7% | 11.1% | N/A | N/A |
| 2016 | -3.0% | 5.8% | N/A | N/A |
| 2017 | 12.6% | 4.6% | 8.4% | N/A |
| 2018 | 9.1% | 6.0% | 7.8% | N/A |
| 2019 | 4.2% | 8.6% | 5.4% | N/A |

## Target Allocation and Expected Rate of Return
## July 1, 2019

| Asset Class | Target Allocation | Long-Term Expected Real Rate of Return* | Weighting |
|---|---|---|---|
| Large Cap Equity | 20.00% | 4.50% | 0.90% |
| Mid Cap Equity | 15.00% | 5.00% | 0.75% |
| Small Cap Equity | 15.00% | 5.00% | 0.75% |
| International Equity | 15.00% | 5.25% | 0.79% |
| Fixed Income | 20.00% | 2.50% | 0.50% |
| Real Estate and Timber | 15.00% | 4.50% | 0.68% |
| | 100.00% | | 4.37% |
| Long-Term Inflation Expectation | | | 2.60% |
| Long-Term Expected Nominal Return | | | 6.97% |

**Long-Term Real Returns are provided by Hooker & Holcombe Investment Advisors. The returns are geometric means.*

The long-term expected rate of return on pension plan investments was determined using a building block method in which best-estimate ranges of expected future real rates of return are developed. Best estimates of the real rates of return for each major asset class are included in the pension plan's target asset allocation.

The information above is based on geometric means and does not reflect additional returns through investment selection, asset allocation and rebalancing. The results support a rate between 7.00% and 7.50%. An expected rate of return of 7.25% was used.

# Amortization of Unfunded Liability

| Schedule of Amortization Bases | | | | | |
|---|---|---|---|---|---|
| | **Date established** | **Original amount** | **Amortization installment** | **Years remaining** | **Present value of remaining installments as of July 1, 2019** |
| Initial base | July 1, 2018 | $50,227,537 | $5,332,603 | 12 | $48,536,430 |
| 2019 base | July 1, 2019 | 1,215,103 | 135,526 | 15 | 1,215,103 |
| **Total** | | | 5,468,129 | | 49,751,533 |

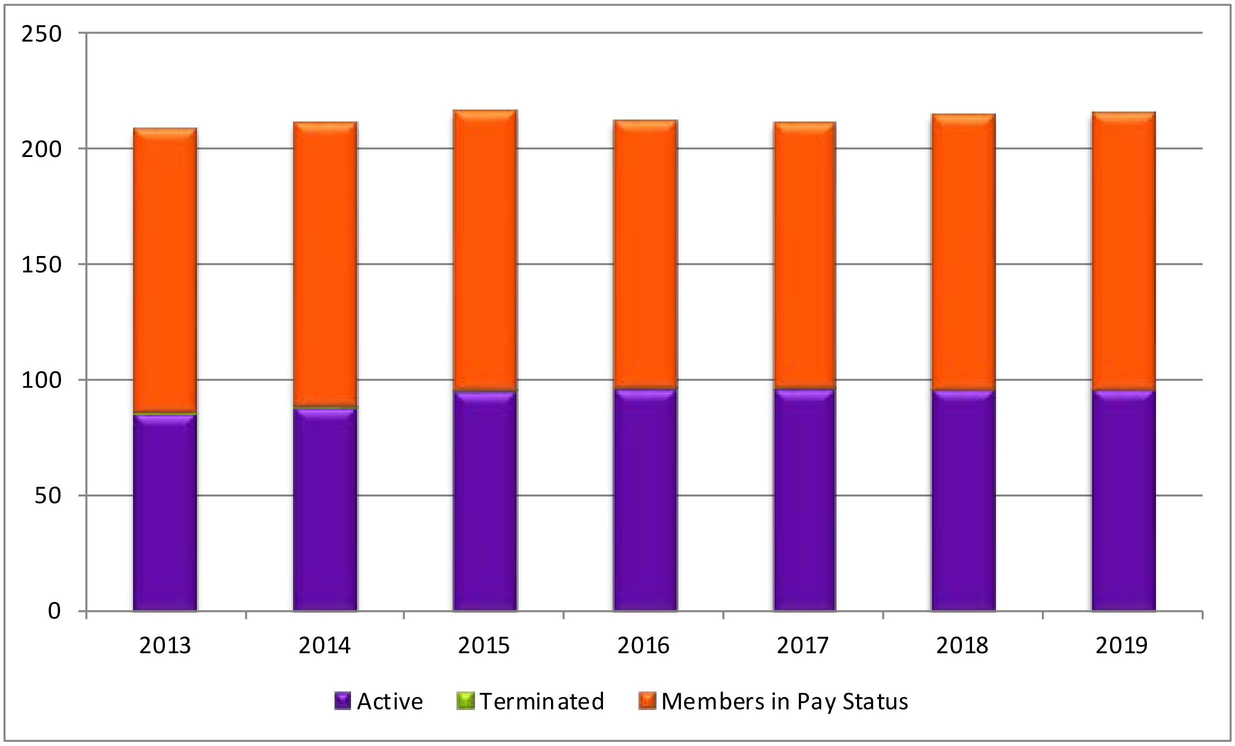
## Member Data

The data reported by the Plan Sponsor for this valuation includes 95 active employees who met the Plan's minimum age and service requirements as of July 1, 2019.

| Member Data | | | | |
|---|---|---|---|---|
| | Active | Terminated vested | Members in pay status | Total |
| **Total members July 1, 2018** | 95 | 0 | 119 | 214 |
| Adjustments | 0 | 0 | 0 | 0 |
| Retirements | -2 | 0 | +2 | 0 |
| Disabilities | 0 | N/A | 0 | 0 |
| Terminations | | | | |
| Vested | 0 | 0 | N/A | 0 |
| Lump sum payments | 0 | 0 | N/A | 0 |
| Deaths | | | | |
| With death benefit | 0 | 0 | -1 | -1 |
| Without death benefit | 0 | 0 | -1 | -1 |
| Transfers | 0 | 0 | N/A | 0 |
| Rehires | 0 | 0 | N/A | 0 |
| New beneficiaries | N/A | N/A | +1 | +1 |
| New entrants | +2 | N/A | N/A | +2 |
| **Total members July 1, 2019** | 95 | 0 | 120* | 215 |

** Includes 3 alternate payees receiving benefits*

**Member Counts by Status**



| Member Data | | | |
|---|---|---|---|
| | Active | Terminated vested | Members in pay status |
| **Average age** | | | |
| July 1, 2018 | 42.9 | N/A | 69.6 |
| July 1, 2019 | 43.3 | N/A | 70.5 |
| **Average service** | | | |
| July 1, 2018 | 13.1 | N/A | N/A |
| July 1, 2019 | 13.6 | N/A | N/A |
| **Covered employee payroll** | | | |
| July 1, 2018 | $6,533,050 | N/A | N/A |
| July 1, 2019 | 6,844,043 | N/A | N/A |
| **Total annual benefits** | | | |
| July 1, 2018 | N/A | N/A | $6,293,153 |
| July 1, 2019 | N/A | N/A | 6,456,422 |

## Active Member Count by Age and Years of Service

| | Completed Years of Credited Service | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Attained age** | **Under 1** | **1 to 4** | **5 to 9** | **10 to 14** | **15 to 19** | **20 to 24** | **25 to 29** | **30 to 34** | **35 to 39** | **40 and over** | **All years** |
| Under 25 | | 1 | | | | | | | | | 1 |
| 25 to 29 | | 7 | 1 | | | | | | | | 8 |
| 30 to 34 | 2 | 5 | 6 | | | | | | | | 13 |
| 35 to 39 | | 3 | 6 | 7 | | | | | | | 16 |
| 40 to 44 | | 2 | | 5 | 6 | 1 | | | | | 14 |
| 45 to 49 | | | 1 | 1 | 4 | 6 | | | | | 12 |
| 50 to 54 | | | | 4 | 2 | 7 | 2 | | | | 15 |
| 55 to 59 | | | | 1 | 1 | 6 | 3 | | | | 11 |
| 60 to 64 | | | 1 | | | 3 | 1 | | | | 5 |
| 65 to 69 | | | | | | | | | | | |
| 70 & over | | | | | | | | | | | |
| **All ages** | **2** | **18** | **15** | **18** | **13** | **23** | **6** | | | | **95** |

# Description of Actuarial Methods

**Asset Valuation Method**

The Actuarial Value of assets used in the development of plan contributions phases in the recognition of differences between the actual return on Market Value and expected return on Market Value over a 5-year period at 20% per year.

**Actuarial Cost Method**

Changes in Actuarial Cost Method: The amortization method was updated to create new 15-year (level dollar) amortization bases in future valuations to account for changes in the unfunded accrued liability.

Description of Current Actuarial Cost Method: Entry Age Normal (level percentage of salary)

Normal Cost: Under this method, the total normal cost is the sum of amounts necessary to fund each active member's normal retirement benefit if paid annually from entry age to assumed retirement age. Entry age is the age at which the employee would have been first eligible for the plan, if it had always been in effect. The normal cost for each participant is expected to remain a level percentage of the employee's salary. The normal cost for the plan is the difference between the total normal cost for the year and the anticipated member contributions for that year.

Past Service Liability: The present value of future benefits that relates to service before the valuation date is the total past service liability. The unfunded past service liability is the difference between the total past service liability and any assets (including accumulated member contributions). Unfunded accrued liabilities as of July 1, 2018 were amortized over a closed 13-year period, assuming a 2.60% amortization increase rate. Effective with the July 1, 2019 valuation, future changes in the unfunded accrued liability will be amortized separately, assuming a new 15-year amortization each valuation with level dollar payments.

Experience Gains and Losses: All experience gains and losses (the financial effect of the difference between the actual experience during the prior period and the result expected by the actuarial assumptions for that prior period) appear directly in the past service liability and are amortized at the same rate the plan is amortizing the remaining unfunded past service liability.

# Description of Actuarial Assumptions

**Changes in Actuarial Assumptions**

The valuation reflects changes in the actuarial assumptions listed below. (The assumptions used before and after these changes are more fully described in the next section.)

- Mortality

The assumptions indicated were changed to represent the Enrolled Actuary's current best estimate of anticipated experience of the plan.

**Investment rate of return** (net of investment-related and administrative expenses)

7.25%.

**Rate of compensation increase** (including inflation)

2.60% per year plus longevity increases of 3.00% after seventh year of employment and 0.50% for each year of employment thereafter through the thirty-first year of employment. No longevity increases are assumed after the thirty first year of employment.

The assumption is based on input from the plan sponsor regarding future expectations, as well as our review of long-term inflation expectations.

**Inflation**

2.60%.

This assumption is consistent with the Social Security Administration's current best estimate of the ultimate long-term (75-year horizon) annual percentage increase in CPI, as published in the 2019 OASDI Trustees Report.

**Mortality**

Pub-2010 Public Retirement Plans Mortality Tables for Public Safety employees, for non-annuitants and annuitants, projected to the valuation date with Scale MP-2018.

(Prior:  RP-2014 Adjusted to 2006 Total Dataset Mortality Table projected to valuation date with Scale MP-2017.)

**Mortality improvement**

Projected to date of decrement using Scale MP-2018 (generational).

(Prior: Projected to date of decrement using Scale MP-2017 (generational).)

We have selected this mortality assumption because it is based on the latest published public pension mortality study released by the Society of Actuaries.

The mortality assumption was updated to better reflect anticipated experience.

**Retirement rates**

| Years of Credited Service | Rate |
|---|---|
| 20 | 10% |
| 21-24 | 2% |
| 25 | 50% |
| 26-29 | 10% |
| 30 | 50% |
| 31-34 | 20% |
| 35+ | 100% |

**Termination prior to retirement**

| Years of Credited Service | Rate |
|---|---|
| 0 | 3.00% |
| 1 | 2.25% |
| 2 | 2.00% |
| 3 | 1.75% |
| 4 | 1.50% |
| 5 | 1.25% |
| 6 | 1.00% |
| 7 | 0.75% |
| 8 | 0.50% |
| 9 | 0.25% |
| 10+ | 0.00% |

**Disability**

| Sample Rates | |
|---|---|
| Age | Rate |
| 25 | 0.17% |
| 35 | 0.29 |
| 45 | 0.72 |
| 55 | 1.21 |

90% of disabilities are assumed to be service related.

The actuarial assumptions in regards to rates of decrement shown above are based on standard tables modified for certain plan features such as eligibility for full and early retirement where applicable and input from the plan sponsor.

**Administrative expenses**

The estimate is based on actual administrative expenses paid from the trust in the prior year.

**Cost of living increases**

2.60% per year.  For terminated vested members, 3.00% per year.

**Amortization increase rate**

2.60% per year.

**Payroll growth**

2.60% per year.

**Percent of active employees married**

90%.

**Spouse's age**

Husbands are assumed to be 3 years older than wives.

The assumption changes increased liabilities by approximately 1.0%.

## Summary of Plan Provisions

*This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.*

**Effective data**

Most recent amendment: August 31, 2011.

**Eligibility**

All firefighters who contribute to the pension fund.

**Retirement**

Eligibility:

Members retired prior to July 1, 2011: 20 years of service.
Members retired on or after July 1, 2011: earlier of attainment of age 58 or completion of 30 years of service.

Benefit formula: The annual benefit at retirement is equal to the percentage of final annual salary specified in the table below, plus $100 per year for each year of service over 25 (maximum $1,000). For pension purposes, annual salary includes regular and longevity pay.

| Years of Service | Benefit as a Percentage of Final Annual Salary |
|---|---|
| 20 | 50% |
| 21 | 52% |
| 22 | 54% |
| 23 | 56% |
| 24 | 58% |
| 25 | 65% |
| 26 | 66% |
| 27 | 67% |
| 28 | 68% |
| 29 | 69% |
| 30+ | 70% |

Commencement date: Retirement benefits commence as of the first payroll period after retirement.

Form of payment: The annual benefit calculated in accordance with the formula above is payable monthly for the remainder of the retired member's life, with 67.5% of the member's benefit payable for the lifetime of the member’s surviving spouse.

**Vested termination**

Eligibility: Upon termination of employment after 10 years of service, a member is eligible for a benefit deferred to retirement age.

Benefit formula: 2.5% of final annual salary multiplied by full years of service at termination.

Commencement date: $25^{th}$ anniversary of employment.

Form of payment: The annual benefit calculated in accordance with the formula above is payable monthly for the remainder of the retired member's life, with 67.5% of the member's benefit payable for the lifetime of the member's surviving spouse.

**Disability retirement**

Eligibility: A member who is retired because of mental or physical incapacity is eligible to receive disability retirement benefits.

Benefit formula:

Non-service related: If a member has fewer than 10 years of service, benefit is 25% of final annual salary. If a member has more than 10 years of service, benefit is 25% of final annual salary plus an additional 2.5% of final annual salary for each year over 10, up to a maximum of 62.5% of final annual salary.

Service related: 66-2/3% of final annual salary.

Regular retirement: If an employee has 25 or more years of service at disability, his pension will be the greater of the disability or retirement pension.

Commencement date: Benefits commence as of first payroll period after disability.

Form of payment: The annual benefit calculated in accordance with the formula above is payable monthly for the remainder of the retired member's life, with 67.5% of the member's benefit payable for the lifetime of the member's surviving spouse.

**Non-vested termination of employment**

A member who leaves employment prior to completing 10 years of service will receive a lump sum payment of accumulated contributions.

**Death before retirement – survivor annuity benefits**

Eligibility: Death while actively employed.

Benefit formula: Surviving spouse (or, if none, dependent children) receives benefit of 67.5% of final annual salary, reduced pro rata if the deceased member had less than 20 years of service.

Commencement date: Benefits commence as of the first payroll period after death.

Form of payment: Monthly life annuity.

**Retiree cost of living increase**

Members retired prior to August 26, 2011: Pensions for retirees and disabled retirees (but not beneficiaries) are indexed to the negotiated pay increases for active firefighters. Terminated vested members receive 3% annual increases after benefit commencement.

Members retired on or after August 26, 2011: For those entitled to annual increases, they will equal the Bureau of Labor Statistics CPI for Northeast Urban Wage Earners, but will not exceed 3% nor be lower than 0.5%.

Firefighters who retire due to a line of duty injury or sickness shall receive the annual cost of living adjustments provided to active members who retire after July 1, 2011 commencing at the time they would have had 20 years of service if they had remained on active duty.

**Employee contributions**

9% of salary.