

Town of Johnston, Rhode Island Firefighters Pension System

**Actuarial Valuation and Review as of
June 30, 2016**





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November 9, 2016

Joseph Chiodo, CPA, MBA

Finance Director

Town of Johnston, Rhode Island Firefighters Pension System

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Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2016. It summarizes the actuarial data used in the valuation, establishes the funding requirements for the fiscal year ending June 30, 2018 and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Pension System. The census information and financial information on which our calculations were based was prepared by the Town of Johnston, and the financial information was obtained from the Town of Johnston trial balance and journal entries for the fiscal year ended June 30, 2016. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. 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); and changes in plan provisions or applicable law.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions recommended by Segal in our experience study for the period July 1 2011 to June 30, 2014, dated April 1, 2015, as approved by the Board are reasonably related to the experience of and the expectations for the Plan.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: *William J. Connelly / RJC*
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SECTION 1: Valuation Summary for the Town of Johnston, Rhode Island Firefighters Pension System

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Town of Johnston, Rhode Island Firefighters Pension System as of June 30, 2016. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Town;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of June 30, 2016, provided by the Town;
- The assets of the Plan as of June 30, 2016, provided by the Town;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

1. As developed in this June 30, 2016 actuarial valuation, the actuarially determined employer contribution (ADEC) for the fiscal year ending June 30, 2018 is \$7,430,222.
2. The market value of assets earned a 0.13% rate of return for the plan year ending June 30, 2016. The actuarial value of assets is set equal to market value. This return was less than the 7.50% investment return assumption, causing an investment loss of \$1,631,785.
3. The ADEC increased from \$6,954,295 in last year's valuation to \$7,430,222 this year. The unfunded actuarial liability increased from \$60,676,233 to \$66,207,659. The contribution increased primarily because the actual contributions paid were less than the recommended amount.
4. The System was closed to new entrants effective July 1, 1999. This year there was a 30% decrease in the number of active participants with the number of actives dropping from 30 to 21. There was a corresponding increase in the number of participants receiving benefits, up from 83 annuitants last year to 92 annuitants this year.

SECTION 1: Valuation Summary for the Town of Johnston, Rhode Island Firefighters Pension System

5. The System's funded percentage has declined from 27.55% to 24.30%. In an effort to improve the funded percentage, the Town has evaluated the impact of contribution increases and benefit cutbacks under a possible funding improvement plan. However, these proposals have not yet been implemented.
6. Plan assets are currently equivalent to less than four years of projected benefit payments. The imbalance between the benefit levels in the System and the resources available to pay for them must be addressed. We are available to prepare solvency projections upon request.
7. Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 are effective for fiscal years beginning after June 15, 2013 and June 15, 2014, respectively. GASB 67 and 68 information is not included in this report. GASB 67 disclosure information as of June 30, 2016 and GASB 68 information for the fiscal year ending June 30, 2016 will be provided in a separate letter.

SECTION 1: Valuation Summary for the Town of Johnston, Rhode Island Firefighters Pension System

Summary of Key Valuation Results

	2016	2015
Contributions for following fiscal year beginning July 1:		
Recommended contribution	\$7,430,222	\$6,954,295
Funding elements for plan year beginning July 1:		
Normal cost, including administrative expenses	\$797,070	\$1,053,338
Market value of assets	21,252,891	23,075,101
Actuarial value of assets	21,252,891	23,075,101
Actuarial accrued liability	87,460,550	83,751,334
Unfunded actuarial accrued liability	66,207,659	60,676,233
Funded ratio	24.30%	27.55%
Demographic data as of June 30:		
Number of retired participants and beneficiaries	92	83
Number of active participants	21	30
Total payroll	\$2,205,173	\$2,977,948
Average payroll	105,008	99,265

SECTION 1: Valuation Summary for the Town of Johnston, Rhode Island Firefighters Pension System

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the Town. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** The valuation is based on the market value of assets as of the valuation date, as provided by the Town.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

SECTION 1: Valuation Summary for the Town of Johnston, Rhode Island Firefighters Pension System

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the Town. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If the Town is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Town should look to their other advisors for expertise in these areas.

As Segal Consulting has no discretionary authority with respect to the management or assets of the System, it is not a fiduciary in its capacity as actuaries and consultants with respect to the System.

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

A. PARTICIPANT DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, vested terminated participants, retired participants and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A, B, and C.

A historical perspective of how the participant population has changed over the past ten valuations can be seen in this chart.

CHART 1
Participant Population: 2003 – 2016

Year Ended June 30	Active Participants	Retired Participants and Beneficiaries	Ratio of Non-Actives to Actives
2003	69	47	0.68
2005	63	53	0.84
2007	58	59	1.02
2009	42	74	1.76
2011	39	75	1.92
2012	40	76	1.90
2013	35	80	2.29
2014	31	83	2.68
2015	30	83	2.77
2016	21	92	4.38

**Includes disabled retirees*

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

Active Participants

Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 21 active participants with an average age of 47.9, average years of service of 21.6 years and average payroll of \$105,008. The 30 active participants in the prior valuation had an average age of 47.2, average service of 20.2 years and average payroll of \$99,265.

The Plan has been closed to new hires since July 1, 1999.

Inactive Participants

In this year's valuation, there were no participants with a vested right to a deferred or immediate vested benefit.

CHART 2

Distribution of Active Participants by Age as of June 30, 2016

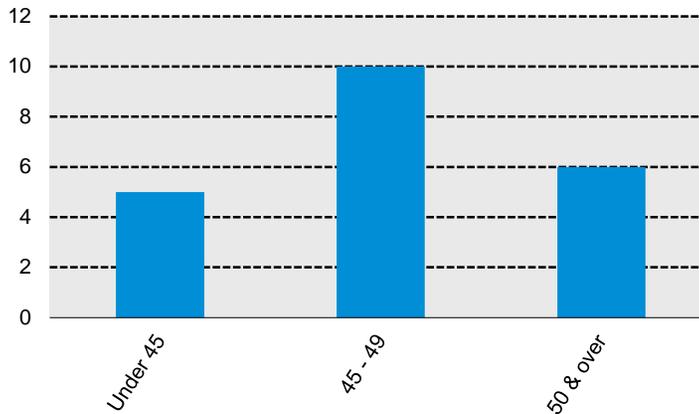
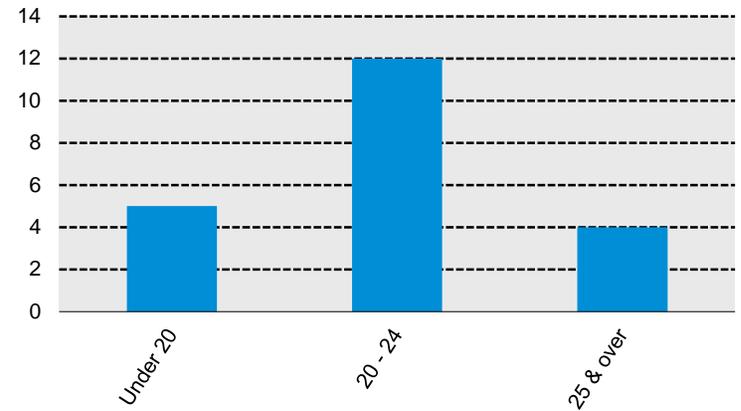


CHART 3

Distribution of Active Participants by Years of Service as of June 30, 2016



SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

Retired Participants and Beneficiaries

As of June 30, 2016, 90 retired participants (including one QDRO) and two beneficiaries were receiving total monthly benefits of \$416,542. For comparison, in the previous valuation, there were 81 retired participants and two beneficiaries receiving monthly benefits of \$364,427.

These graphs show a distribution of the current retired participants (including QDROs) based on their monthly amount and age, by type of pension.

- QDRO
- Disability
- Regular

CHART 4

Distribution of Retired Participants by Type and by Monthly Amount as of June 30, 2016

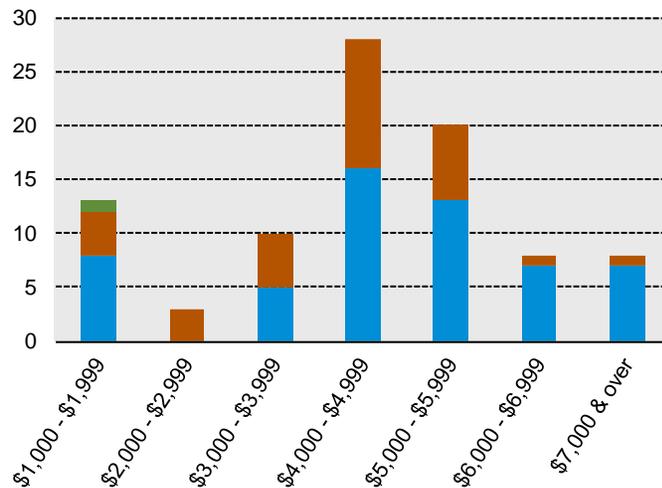
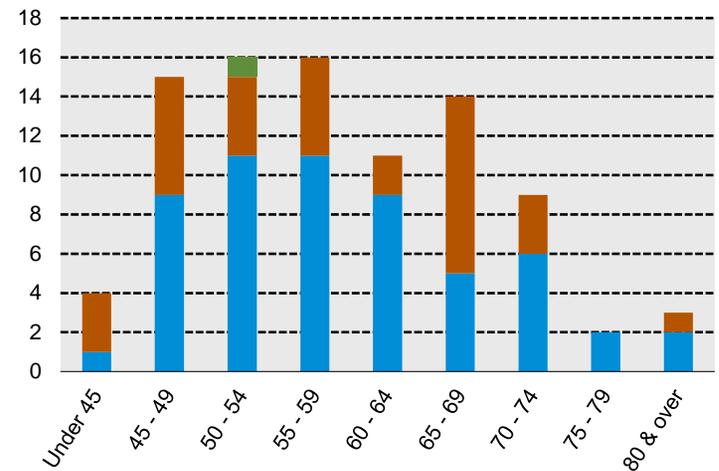


CHART 5

Distribution of Retired Participants by Type and by Age as of June 30, 2016



SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

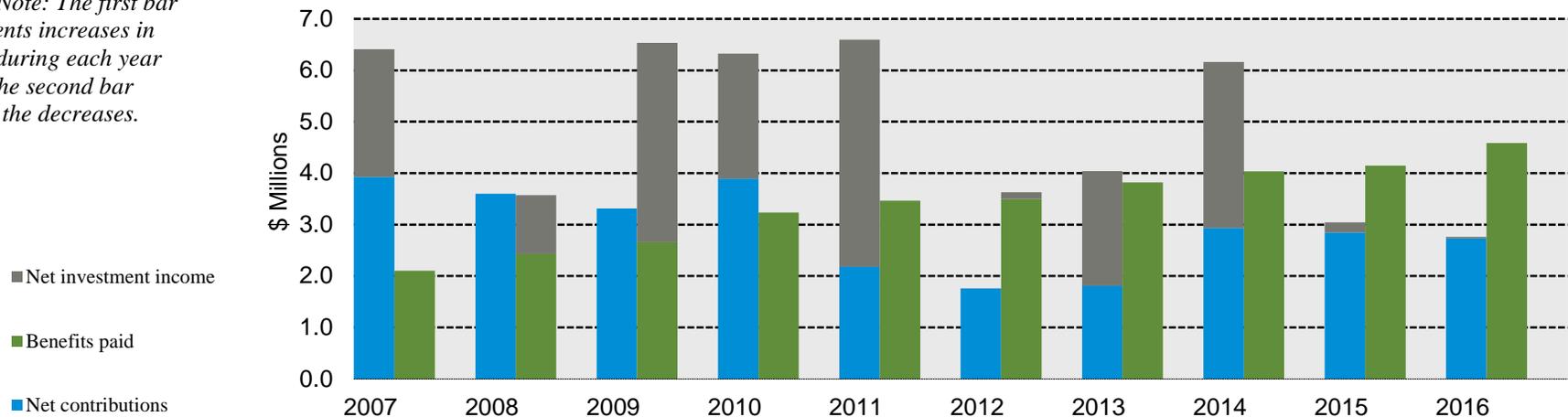
B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

Retirement plan assets change as a result of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits D and E.

The chart depicts the components of changes in the actuarial value of assets over the last ten years. Note: The first bar represents increases in assets during each year while the second bar details the decreases.

CHART 6
Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended June 30, 2007 – 2016



SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

It is desirable to have level and predictable plan costs from one year to the next. However, the Town has approved an asset valuation method that uses market value. Under this valuation method, the full value of market fluctuation is recognized in a single year and, as a result, the asset value and the plan costs are relatively volatile.

CHART 7

Determination of Actuarial Value of Assets for Year Ended June 30, 2016

1. Actuarial value of assets at beginning of year (equal to market value)	\$23,075,101
2. Employer contributions	2,576,831
3. Employee contributions	209,439
4. Purchase of service	24,146
5. Net investment income	29,412
6. Benefit payments	-4,584,209
7. Administrative expenses	<u>-77,829</u>
8. Actuarial value of assets at end of year (equal to market value)	<u>\$21,252,891</u>

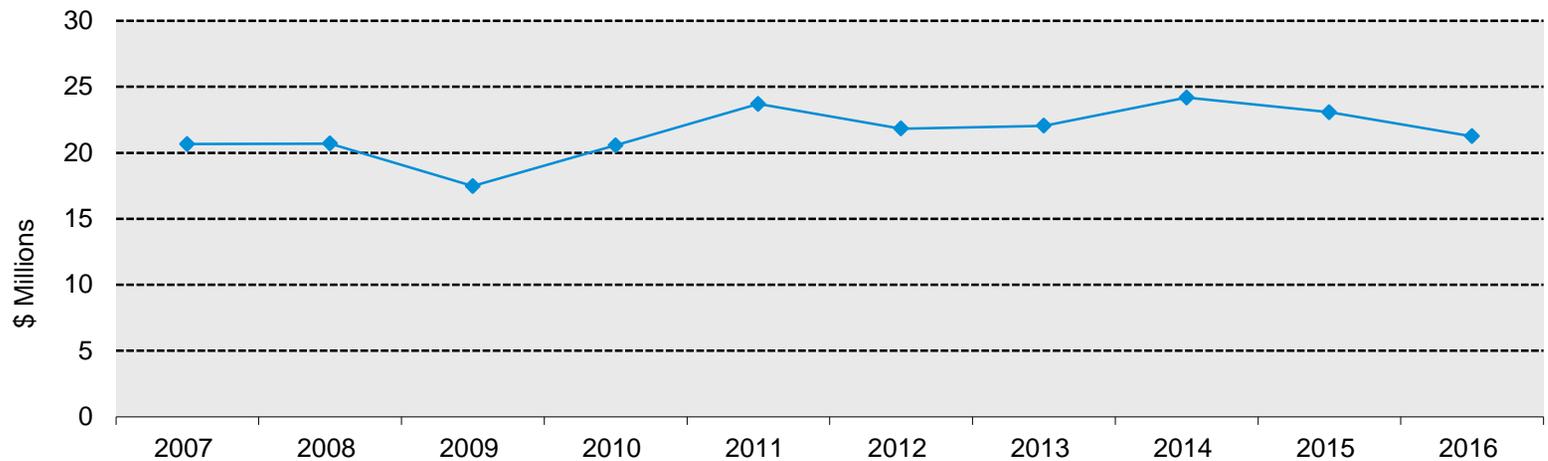
The chart shows the determination of the actuarial value of assets as of the valuation date.

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

The actuarial value (equal to the market value of assets) is a representation of the Firefighters Pension System’s financial status. The actuarial asset value is significant because the Firefighters Pension System’s liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

This chart shows how the actuarial value of assets (equal to the market value of assets) has changed over the past ten years.

CHART 8
Actuarial Value of Assets (equal to Market Value of Assets) as of June 30, 2007 – 2016



SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

C. ACTUARIAL EXPERIENCE

To calculate the required contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If the expected contribution is paid, there are no changes in plan provisions, methods, or assumptions, and if overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term

development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total loss is \$2,764,176, including \$1,631,785 from investment losses and \$1,132,391 in losses from all other sources. The net experience variation from individual sources other than investments was 1.3% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

CHART 9
Actuarial Experience for Year Ended June 30, 2016

1. Net gain/(loss) from investments*	-\$1,631,785
2. Net gain/(loss) from administrative expenses	5,609
3. Net gain/(loss) from other experience**	<u>-1,138,000</u>
4. Net experience gain/(loss): (1) + (2) + (3)	-\$2,764,176

* Details in Chart 10

** Details in Chart 13

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Town of Johnston’s investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.50%. The actual rate of return on an actuarial basis for the 2016 plan year was 0.13%.

Since the actual return for the year was less than the assumed return, the Firefighters Pension System experienced an actuarial loss during the year ended June 30, 2016 with regard to its investments.

This chart shows the gain/(loss) due to investment experience.

CHART 10
Actuarial Value Investment Experience for Year Ended June 30, 2016

1. Actual return	\$29,412
2. Average value of assets	22,149,290
3. Actual rate of return: (1) ÷ (2)	0.13%
4. Assumed rate of return	7.50%
5. Expected return: (2) x (4)	\$1,661,197
6. Actuarial gain/(loss): (1) – (5)	<u>-\$1,631,785</u>

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis for the last ten years, including three-year, five-year and ten-year averages.

CHART 11

Investment Return – Actuarial Value of Assets (equal to Market Value of Assets): 2007 - 2016

Year Ended June 30	Actuarial Value Investment Return	
	Amount	Percent
2007	\$2,478,794	14.35%
2008	-1,144,522	-5.39
2009	-3,871,296	-18.42
2010	2,434,222	13.68
2011	4,414,857	22.16
2012	-125,235	-0.55
2013	2,230,398	10.71
2014	3,228,280	15.01
2015	199,661	0.85
2016	<u>29,412</u>	0.13
Total	\$9,874,571	
	Three-year average return	5.15%
	Five-year average return	5.02%
	Ten-year average return	4.75%

Note: Each year's yield is weighted by the average asset value in that year.

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

The actuarial value of assets has been equal to market value for the last ten years. This has resulted in relatively volatile actuarial rates of return and pension plan cost.

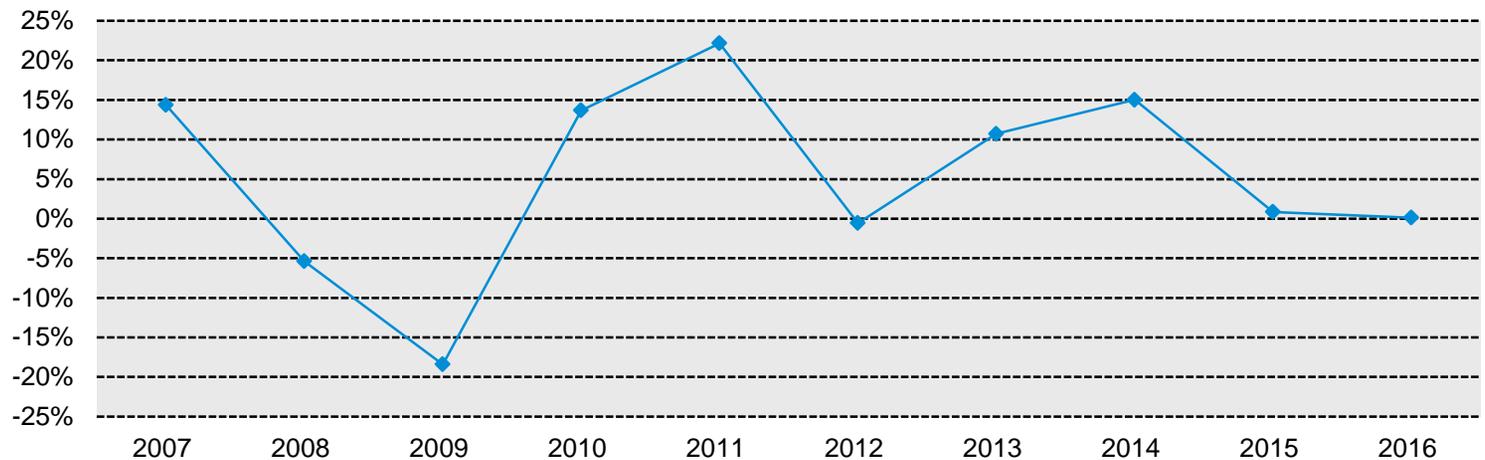
Administrative Expenses

Administrative expenses for the year ended June 30, 2016 totaled \$77,829 compared to the assumption of \$75,000, payable as of the beginning of the year. This resulted in a gain of \$5,609 for the year. Because it is expected that these expenses will remain fairly stable, we have maintained the assumption of \$75,000 for the current year.

This chart illustrates the rates of return.

CHART 12

Actuarial Rates of Return (equal to Market Value Rates of Return) for Years Ended June 30, 2007 - 2016



SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net loss from this other experience for the year ended June 30, 2016 amounted to \$1,138,000, which is 1.3% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the Firefighters Pension System for the year ended June 30, 2016 is shown in the chart below.

The chart shows elements of the experience gain/(loss) for the most recent year.

CHART 13

Experience Due to Changes in Demographics for Year Ended June 30, 2016

1. Retirement experience different than expected	-\$1,182,178
2. Mortality experience	304,585
3. Cost-of-living adjustments greater than expected and other changes in benefit amounts	-151,562
4. Disability retirement experience different than expected	101,678
5. Salary increases less than expected	91,039
6. Miscellaneous	<u>-301,562</u>
7. Total	-\$1,138,000

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

D. RECOMMENDED CONTRIBUTION

The amount of annual contribution required to fund the Plan is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability.

Prior to July 1, 2012, the recommended contribution was based on a 30-year level percent of pay amortization method with 18 years remaining as of July 1, 2011.

Effective July 1, 2012, the recommended contribution is based on a 24-year level dollar amortization of the unfunded actuarial accrued liability as adopted by the Pension System’s Board of Trustees. As of June 30, 2016, there are 20 years remaining on this schedule.

The chart compares this valuation’s recommended contribution with the prior valuation.

CHART 14
Recommended Contribution

	Year Beginning July 1	
	2016	2015
	Amount	Amount
1. Total normal cost	\$722,070	\$978,338
2. Administrative expenses	75,000	75,000
3. Expected employee contributions	<u>-176,414</u>	<u>-238,236</u>
4. Employer normal cost: (1) + (2) + (3)	\$620,656	\$815,102
5. Actuarial accrued liability	87,460,550	83,751,334
6. Actuarial value of assets	<u>21,252,891</u>	<u>23,075,101</u>
7. Unfunded actuarial accrued liability: (5) - (6)	\$66,207,659	\$60,676,233
8. Payment on unfunded actuarial accrued liability	6,041,353	5,420,187
9. Total recommended contribution: (4) + (8), adjusted for timing*	<u>\$7,430,222</u>	<u>\$6,954,295</u>

**Recommended contributions are assumed to be paid at the middle of the next fiscal year.*

SECTION 2: Valuation Results for the Town of Johnston, Rhode Island Firefighters Pension System

The recommended contribution for the fiscal year ending June 30, 2018 is based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

Reconciliation of Recommended Contribution

The chart below details the changes in the recommended contribution from the prior valuation to the current year’s valuation.

The chart reconciles the contribution from the prior valuation to the amount determined in this valuation.

CHART 15

Reconciliation of Recommended Contribution

Recommended Mid-Year Contribution for Fiscal Year Ending June 30, 2017	\$6,954,295
Effect of contributions less than recommended contribution	414,032
Effect of change in net benefit normal cost	-216,868
Effect of investment loss	166,068
Effect of gains and losses on accrued liability	<u>112,695</u>
Total change	<u>\$475,927</u>
Recommended Mid-Year Contribution for Fiscal Year Ending June 30, 2018	\$7,430,222

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT A

Table of Plan Coverage

Category	Year Ended June 30		Change From Prior Year
	2016	2015	
Active participants in valuation:			
Number	21	30	-30.0%
Average age	47.9	47.2	N/A
Average years of service	21.6	20.2	N/A
Total payroll	\$2,205,173	\$2,977,948	-25.9%
Average payroll	105,008	99,265	5.8%
Total active vested participants	21	30	-30.0%
Retired participants:*			
Number in pay status	57	47	21.3%
Average age	58.9	60.0	N/A
Average monthly benefit	\$4,789	\$4,746	0.9%
Disabled participants:			
Number in pay status	33	34	-2.9%
Average age	58.4	57.0	N/A
Average monthly benefit	\$4,198	\$4,011	4.7%
Beneficiaries in pay status:			
Number in pay status	2	2	0.0%
Average age	64.4	63.4	N/A
Average monthly benefit	\$2,528	\$2,494	1.4%

**Includes alternate payees receiving benefits subject to a QDRO.*

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT B

**Participants in Active Service as of June 30, 2016
By Age, Years of Service, and Average Payroll**

Age	Years of Service			
	Total	15 - 19	20 - 24	25 - 29
40 - 44	5	2	3	--
	\$95,660	\$94,273	\$96,585	--
45 - 49	10	3	6	1
	103,188	95,470	104,475	\$118,625
50 - 54	6	--	3	3
	115,831	--	104,160	127,503
Total	21	5	12	4
	\$105,008	\$94,991	\$102,424	\$125,283

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT C

Reconciliation of Participant Data

	Active Participants	Disableds	Retired Participants	Beneficiaries	Total
Number as of June 30, 2015	30	34	47	2	113
Retirements	-9	N/A	9	N/A	0
New alternate payees	N/A	N/A	1	N/A	1
Data adjustments	<u>0</u>	<u>-1</u>	<u>0</u>	<u>0</u>	<u>-1</u>
Number as of June 30, 2016	21	33	57	2	113

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial and Market Actuarial Value Basis

	Year Ended June 30, 2016	Year Ended June 30, 2015
Net assets at actuarial value at the beginning of the year	\$23,075,101	\$24,179,398
Contribution income:		
Employer contributions	\$2,576,831	\$2,620,273
Employee contributions	209,439	260,422
Purchase of service contributions	24,146	35,117
Less administrative expenses	<u>-77,829</u>	<u>-71,000</u>
Net contribution income	2,732,587	2,844,812
Investment income	<u>29,412</u>	<u>199,661</u>
Total income available for benefits	\$2,761,999	\$3,044,473
Less benefit payments	-\$4,584,209	-\$4,148,770
Change in reserve for future benefits	-\$1,822,210	-\$1,104,297
Net assets at actuarial value at the end of the year	\$21,252,891	\$23,075,101

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT E

Development of the Fund Through June 30, 2016

Year Ended June 30	Employer Contributions	Employee Contributions*	Net Investment Return**	Administrative Expenses***	Benefit Payments	Actuarial Value of Assets at End of Year
2007	\$3,544,672	\$383,637	\$2,478,794	\$0	\$2,101,578	\$20,662,996
2008	3,209,813	390,201	-1,144,522	0	2,428,198	20,690,290
2009	2,833,053	479,991	-3,871,296	0	2,659,161	17,472,877
2010	3,596,440	295,826	2,434,222	0	3,237,396	20,561,969
2011	1,886,017	296,478	4,414,857	0	3,463,917	23,695,404
2012	1,316,296	444,235	-125,235	0	3,501,916	21,828,784
2013	1,504,172	306,620	2,230,398	0	3,818,702	22,051,272
2014	2,706,157	356,584	3,228,280	127,318	4,035,577	24,179,398
2015	2,620,273	295,539	199,661	71,000	4,148,770	23,075,101
2016	2,576,831	233,585	29,412	77,829	4,584,209	21,252,891

* Includes purchase of service

** Net of investment fees

*** Shown separately beginning in 2014; prior to that included in net investment return

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT F

Development of Unfunded Actuarial Accrued Liability for Year Ended June 30, 2016

1. Unfunded actuarial accrued liability at beginning of year		\$60,676,233
2. Total normal cost at beginning of year		1,053,338
3. Total contributions		-2,810,416
4. Interest		
(a) For whole year on (1) + (2)	\$4,629,718	
(b) For half year on (3)	<u>-105,390</u>	
(c) Total interest		<u>4,524,328</u>
5. Expected unfunded actuarial accrued liability		\$63,443,483
6. Changes due to:		
(a) (Gain)/loss	\$2,764,176	
(b) Assumptions	N/A	
(c) Funding method	N/A	
(d) Plan provisions	<u>N/A</u>	
(e) Total changes		<u>2,764,176</u>
7. Unfunded actuarial accrued liability at end of year		<u>\$66,207,659</u>

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT G

Definitions of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial Assumptions:

The estimates on which the cost of the Plan is calculated including:

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age;
- (d) Withdrawal rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost:

The amount of contributions required to fund the benefit allocated to the current year of service.

Actuarial Accrued Liability For Actives:

The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

Actuarial Accrued Liability For Pensioners:

The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded Actuarial Accrued Liability:

The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There is a wide range of approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

SECTION 3: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

Amortization of the Unfunded

Actuarial Accrued Liability: Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.

Investment Return:

The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:

1. Retired participants as of the valuation date (including two beneficiaries in pay status)		92
2. Participants inactive during year ended June 30, 2016 with vested rights		0
3. Participants active during the year ended June 30, 2016		21
Fully vested	21	
Not vested	0	
4. Inactive non-vested participants as of June 30, 2016		0

The actuarial factors as of the valuation date are as follows:

1. Total normal cost, including administrative expenses		\$797,070
2. Present value of future benefits		87,907,383
3. Present value of future normal costs		446,833
4. Actuarial accrued liability		87,460,550
Retired participants and beneficiaries	\$67,634,223	
Active participants	19,826,327	
5. Actuarial value of assets (equal to market value)		21,252,891
6. Unfunded actuarial accrued liability		\$66,207,659

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

The determination of the recommended contribution is as follows:

1. Total benefit normal cost	\$722,070
2. Administrative expenses	75,000
3. Expected employee contributions	<u>-176,414</u>
4. Employer normal cost: (1) + (2) + (3)	\$620,656
5. Payment on unfunded actuarial accrued liability	6,041,353
6. Total recommended contribution: (4) + (5), adjusted for timing	<u>\$7,430,222</u>
7. Actuarially determined employer contribution for fiscal year ending June 30, 2018: (6)	\$7,430,222

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT II

History of Employer Contributions

Plan Year Ended June 30	Actuarially Determined Employer Contributions (ADEC)*	Actual Contributions	Percentage Contributed
2008	\$3,208,904	\$3,209,813	100.0%
2009	3,704,162	2,833,053	76.5%
2010	3,833,808	3,596,440	93.8%
2011	4,701,525	1,886,017	40.1%
2012	4,866,078	1,316,296	27.1%
2013	4,941,035	1,504,172	30.4%
2014	6,325,477	2,706,157	42.8%
2015	6,331,388	2,620,273	41.4%
2016	6,607,532	2,576,831	39.0%
2017	6,954,295	--	--

**Prior to 2015, this amount was the Annual Required Contribution (ARC).*

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT III

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll* [(b) - (a)] / (c)
07/01/2009	\$17,472,877	\$65,098,078	\$47,625,201	26.84%	\$3,449,317	1,380.71%
07/01/2011	23,695,404	70,408,046	46,712,642	33.65%	3,533,442	1,322.02%
07/01/2012	21,828,784	77,341,524	55,512,740	28.22%	3,901,034	1,423.03%
07/01/2013	22,051,272	78,316,245	56,264,973	28.16%	3,354,290	1,677.40%
07/01/2014	24,179,398	82,359,411	58,180,013	29.36%	3,023,153	1,924.48%
07/01/2015	23,075,101	83,751,334	60,676,233	27.55%	2,977,948	2,037.52%
07/01/2016	21,252,891	87,460,550	66,207,659	24.30%	2,205,173	3,002.38%

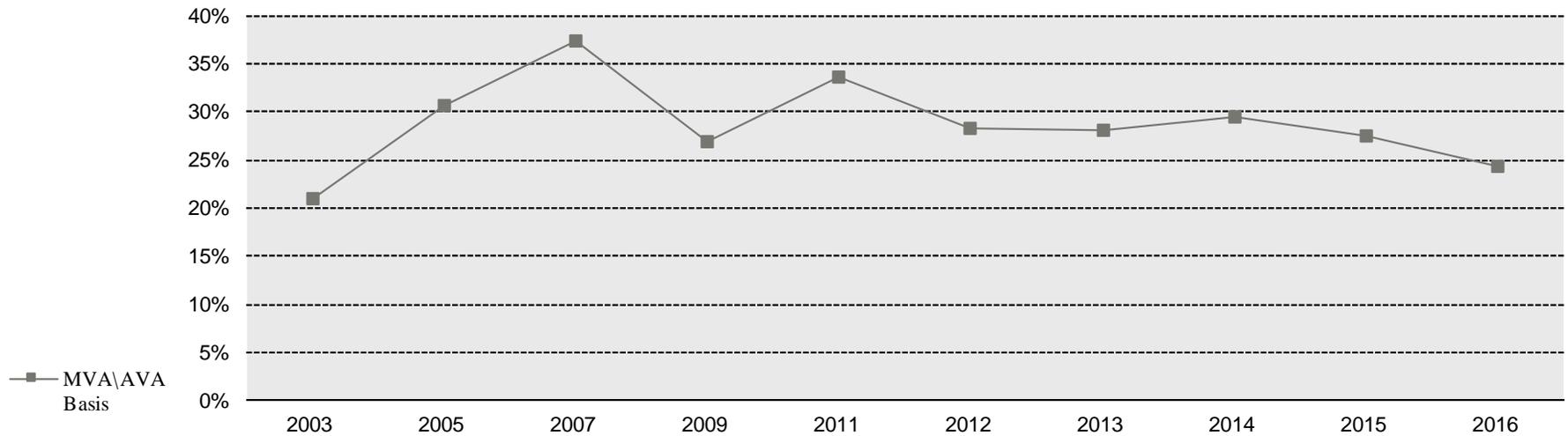
* Not less than zero

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

**EXHIBIT IV
Funded Ratio**

A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for this plan. As shown below, the funded ratio has been below 30% for the last five years.



SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT V

Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions:

The information and analysis used in selecting each demographic assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Review July 1, 2011 to June 30, 2014 dated April 1, 2015. Please see this study for the rationale for each assumption used. As noted in this study, due to the low number of participants in the Police and Firefighters System, the mortality experience is not credible. It is our understanding that the State of Rhode Island deems the mortality assumptions reasonable if they match the assumptions used for the State of Rhode Island Municipal Employees Retirement System (MERS). Therefore, the mortality assumptions shown below match the MERS assumptions used at the time of the experience study.

Mortality Rates:

Healthy:

Males – 115% of the RP-2000 Combined Healthy White Collar Mortality Table for Males

Females – 95% of the RP-2000 Combined Healthy White Collar Mortality Table for Females

The healthy mortality tables are adjusted to the valuation date using generational projection under Scale AA to reflect future mortality improvements.

Disabled:

Males – 60% of PBGC Table V(a) for disabled males eligible for Social Security disability benefits

Females – 60% of PBGC Table VI(a) for disabled females eligible for Social Security disability benefits

No provision was made to the disabled mortality tables for future mortality improvement after the measurement date.

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

Termination Rates before Retirement:

Age	Mortality*		Rate (%) Disability		Withdrawal	
	Male	Female	Male	Female	Male	Female
20	0.04%	0.02%	0.34	0.34	0.00	0.00
25	0.04	0.02	0.34	0.34	0.00	0.00
30	0.04	0.03	0.44	0.44	0.00	0.00
35	0.07	0.04	0.58	0.58	0.00	0.00
40	0.10	0.06	0.88	0.88	0.00	0.00
45	0.15	0.10	1.44	1.44	0.00	0.00
50	0.23	0.15	2.42	2.42	0.00	0.00
55	0.38	0.25	2.42	2.42	0.00	0.00
60	0.64	0.44	2.42	2.42	0.00	0.00

100% of deaths and disabilities are assumed to be service-related.

** Generational projection is not reflected in tabular rates.*

Retirement Rates:

Years of Service	Retirement Probability
20	75%
21-25	50%
26 or more	100%

All employees are assumed to retire no later than age 65.

Description of Weighted Average Retirement Age:

Age 49, determined as follows: The weighted average retirement age for each participant is calculated as the sum of the product of each potential current or future retirement age times the probability of surviving from current age to that age and then retiring at that age, assuming no other decrements. The overall weighted retirement age is the average of the individual retirement ages based on all the active participants included in the June 30, 2016 actuarial valuation.

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

Percent Married:	85% of active firefighters and retirees are assumed to be married.
Age of Spouse:	Females are assumed to be three years younger than males unless dates of birth are provided.
Net Investment Return:	7.50% - The net investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation.
Salary Increases:	4.00%; including 2.75% for inflationary increases, 0.50% for productivity increases and 0.75% for promotional and longevity increases
Inflation:	2.75%
Severance Pay:	Severance pay is estimated as 50% of base pay at retirement. With this assumption, this increases the expected final average salary which includes overtime and other portions of total pay at retirement by 12.5%.
Administrative Expenses:	Administrative expenses are assumed to be \$75,000, payable as of the beginning of the year.
Cost of Living Increases:	½ of the expected payroll growth (1.625%)
Actuarial Value of Assets:	Market value
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age at the time the participant would have commenced participation if the plan had always been in existence. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by service, with Normal Cost determined as if the current benefit accrual rate had always been in effect.

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

Amortization Method: The unfunded actuarial accrued liability is amortized on a level dollar basis with the period set to 24 years as of July 1, 2012.

Changes in Assumptions: There have been no changes in actuarial assumptions or methods since the last valuation.

SECTION 4: Supplemental Information for the Town of Johnston, Rhode Island Firefighters Pension System

EXHIBIT VI

Summary of Plan Provisions

This exhibit summarizes the major provisions of the Town of Johnston Firefighters Pension System included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year: July 1 through June 30
Plan Status: Closed to new entrants as of July 1, 1999

Normal Retirement:

Eligibility 20 years of service

Amount The annual benefit at retirement is equal to the percentage of final average salary specified in the table below. For pension purposes, final average salary is a three-year average of pay comprising base (including on-the-job injury pay), holiday and longevity pay, “severance pay” (unused sick and vacation pay distributed at retirement), and 75% of overtime pay.

<u>Years of Service</u>	<u>Benefit as a Percentage of Final Average Salary</u>
20	50.0%
21	52.5
22	55.0
23	57.5
24	60.0
25	62.5
26	65.0
27	67.5
28	70.0
29	72.5
30 or more	75.0

Years of service include call service.

SECTION 4: Reporting Information for the Town of Johnston, Rhode Island Firefighters Pension System

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 his or her surviving spouse. The benefit ceases if the spouse remarries. If there is no spouse, a dependent's benefit may be paid to any children until their 18th birthday.

Disability:

Service Related

Eligibility Job-related mental or physical incapacity. Disability to be determined by the Town.

Amount 66 2/3% of final average salary

Non-Service Related

Eligibility Retirement because of a non-job-related mental or physical incapacity. Disability to be determined by the Town.

Amount Benefit applicable under retirement or vested termination (25% of final average salary for non-vested member is minimum benefit)

Commencement Date Benefits commence as of the first payroll period after disability

Form of Payment Same as Normal Retirement

Vested Termination:

Eligibility 10 years of service

Benefit Formula 25% of final average salary at termination with 10 years of service, increasing by 2.5% for each additional year of service up to a maximum of 47.5% of final average salary.

Commencement Date Age 55

Form of Payment Same as Normal Retirement

SECTION 4: Reporting Information for the Town of Johnston, Rhode Island Firefighters Pension System

Spouse's Pre-Retirement Death Benefit:

<i>Eligibility</i>	Death while actively employed
<i>Benefit Formula</i>	Surviving spouse (or if none, dependent children) receives 50% of final average salary (30% of final average salary for non-service related death). If surviving spouse has dependent children under age 18, additional percentages of final average salary up to a 66 2/3% benefit if service related or 50% benefit if not service related.

Retiree Cost-of-Living Increases: One-half of the negotiated base pay increases for active firefighters

Military Service Purchase: A member may purchase up to four years of pension service credit for prior military service by contributing 10% of the member's base pay at hire at any time prior to retirement, for each year purchased.

Employee Contributions: 8% of salary including base, holiday, longevity, clothing allowance, clothing maintenance allowance, severance and overtime.

Eligibility: All members of the fire department hired before July 1, 1999 (members hired after this date are participants in the Rhode Island Municipal Employees Retirement System).

Forms of Payment: All single participants receive a life annuity. All married participants receive a fully subsidized 67.5% joint and survivor annuity. There are no optional forms of payment.

Changes in Plan Provisions: There have been no changes in plan provisions since the last valuation.

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