



**City of East Providence, Rhode Island
Police and Fire Fighters Retirement System
October 31, 2017 Actuarial Valuation
Determination of Contribution for Plan Year Ending
October 31, 2019**

Actuarial Certification	3
Executive Summary	5
Summary Results	5
Changes Since Prior Valuation and Key Notes	6
Assets and Liabilities	7
Present Value of Future Benefits	7
Funding Liabilities – Entry Age Normal	8
Asset Information	9
Reconciliation of Gain/Loss	11
Contribution Requirements	12
Development of Actuarial Recommended Contribution for Plan Year Ending October 31, 2018	12
Demographic Information	13
Participant Reconciliation	15
Plan Provisions	17
Actuarial Assumptions	21
Other Measurements	24
Development of Actuarial Recommended Contribution for Plan Year Ending October 31, 2019	25
Schedule of Amortizations	26
Schedule of Amortizations by Division for Plan Year Ending October 31, 2018 Actuarial Recommended Contribution	27
Schedule of Amortizations by Division for Plan Year Ending October 31, 2019 Actuarial Recommended Contribution	28
Allocation of Assets by Division	29
Actuarial Recommended Contribution for Plan Year Ending October 31, 2018 by division	30
Actuarial Recommended Contribution for Plan Year Ending October 31, 2019 by division	31

At the request of the plan sponsor, this report summarizes the City of East Providence, Rhode Island Police and Fire Fighters Retirement System as of October 31, 2017. The purpose of this report is to communicate the following results of the valuation:

- Funded Status; and
- Determine Actuarial Recommended Contribution for plan year ending October 31, 2018 and for plan year ending October 31, 2019;

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census information has been provided to us by the employer. Asset information has been provided to us by the trustee. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods were chosen by the Board. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. 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.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart


Elizabeth A. Wiley, ASA, EA

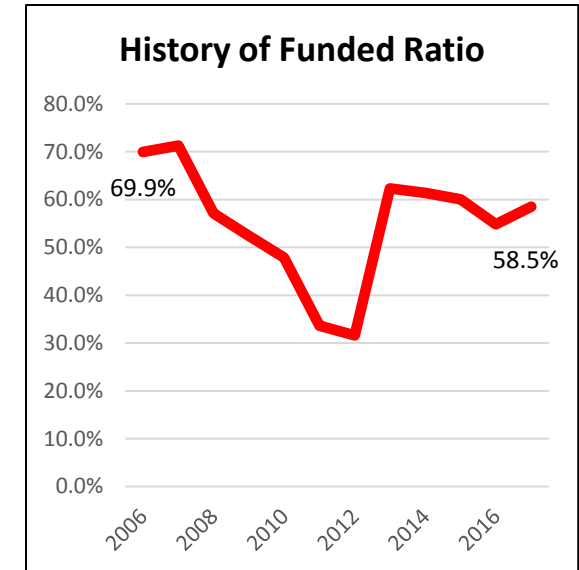
July 7, 2018
Date


Carter M. Angell, FSA, EA, MAAA

Summary Results

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The accrued liability is based on an entry age level percentage of pay.

Valuation Date	October 31, 2016	October 31, 2017
Funded Status Measures		
Entry Age Accrued Liability	\$211,150,930	\$219,314,469
Actuarial Value of Assets	<u>115,793,717</u>	<u>128,310,000</u>
Unfunded Accrued Liability	\$95,357,213	\$91,004,469
Funded Percentage (AVA)	54.8%	58.5%
Funded percentage (MVA)	55.2%	59.3%
Asset Performance		
Market Value of Assets (MVA)	\$116,473,001	\$130,039,860
Actuarial Value of Assets (AVA)	\$115,793,717	\$128,310,000
Actuarial Value/Market Value	99.4%	98.6%
Participant Information		
Active Participants	204	195
Terminated Vested Participants	0	8
Retirees, Beneficiaries, and Disabled Participants	<u>254</u>	<u>270</u>
Total	458	473
Valuation Payroll	\$15,021,061	\$14,517,769



Cost Measures	For Plan Year Ending October 31, 2017	For Plan Year Ending October 31, 2018	For Plan Year Ending October 31, 2019
Actuarial Recommended Contribution	\$7,289,839	\$7,019,872	\$7,470,844
Actuarial Recommended Contribution (as a percentage of payroll)	48.5%	48.4%	49.6%
Projected Payroll	\$15,021,061	\$14,517,769	15,062,185

Changes Since Prior Valuation and Key Notes

Fire Fighter employee contribution rates will increase annually by 0.25% from November 1, 2018 to November 1, 2021, ultimately leading to annual contributions of 10.0%.

Police employee contribution rates will increase annually by 0.25% from November 1, 2020 to November 1, 2021, ultimately leading to annual contributions of 9.50%.

The mandatory retirement age was increased from age 60 to age 62. The rate of retirement assumption was updated from 100% assumed to retire at age 60 to 100% assumed to retire at age 62. Graded retirement rates by service prior to attainment of mandatory retirement age remain unchanged. The change results in a decrease to the Funding Liability and Normal Cost.

To better reflect anticipated experience, the mortality table for healthy lives has been updated from the RP-2014 Blue Collar mortality table with improvements from 2006 to 2016 based on assumptions from the 2016 Social Security Administration Trustee's Report to the RP-2014 Blue Collar mortality table with improvements from 2006 to 2017 based on assumptions from the 2017 Social Security Administration Trustee's Report. This change results in an increase to the Funding Liability and a decrease in Normal Cost.

In addition, the mortality table for disabled lives has been updated from the RP-2014 Disabled mortality table with improvements from 2006 to 2016 based on assumptions from the 2016 Social Security Administration Trustee's Report, to the RP-2014 Disabled mortality table with improvements from 2006 to 2017 based on assumptions from the 2017 Social Security Administration Trustee's Report. This change results in an increase to the Funding Liability and a decrease in Normal Cost.

The actuarial value of assets valuation method has been updated from a method which replaces actual gains/(losses) and unrealized gains/(losses) by a 5-year average of such gains/(losses) to a method which adjusts the actual fair market value of assets with a 5-year phase-in of gains/(losses) on a fair market value of assets subject to a 20% corridor. This results in an increase in the actuarial value of assets and a decrease in the recommended contribution.

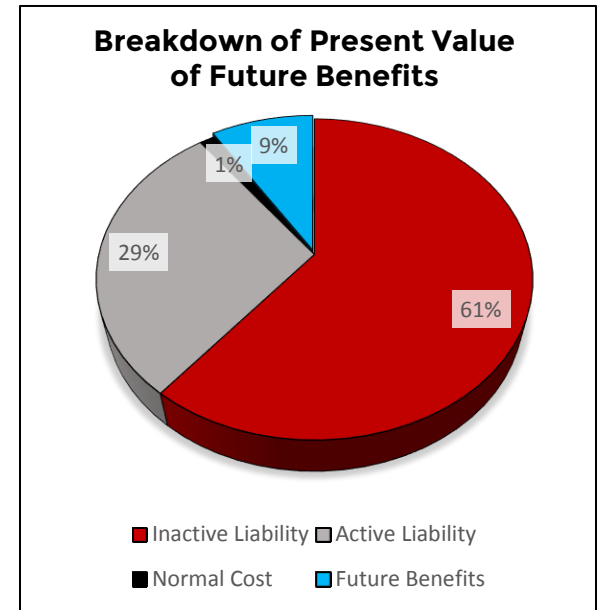
Present Value of Future Benefits

The Present Value of Future Benefits represents the future benefits payable to the existing participants.

October 31, 2017

Present Value of Future Benefits

Active participants	
Retirement	\$82,093,304
Disability	11,434,535
Death	1,141,023
Termination	1,021,733
Refund of contributions	0
Total active	\$95,690,595
Inactive participants	
Retired participants	\$112,877,216
Beneficiaries	7,844,795
Disabled participants	27,073,276
Terminated vested participants	604,002
Total inactive	\$148,399,289
Total	\$244,089,884
Present value of future payrolls	\$116,474,652



Funding Liabilities - Entry Age Normal

The Funding Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions. It is used to determine the recommended contribution.

	October 31, 2017
Funding Liabilities	
Active participants	
Retirement	\$65,134,255
Disability	5,312,459
Death	648,478
Termination	(180,012)
Refund of contributions	0
Total Active	\$70,915,180
Inactive participants	
Retired participants	\$112,877,216
Beneficiaries	7,844,795
Disabled participants	27,073,276
Terminated vested participants	604,002
Total Inactive	\$148,399,289
Total	\$219,314,469
Normal Cost	\$3,213,366

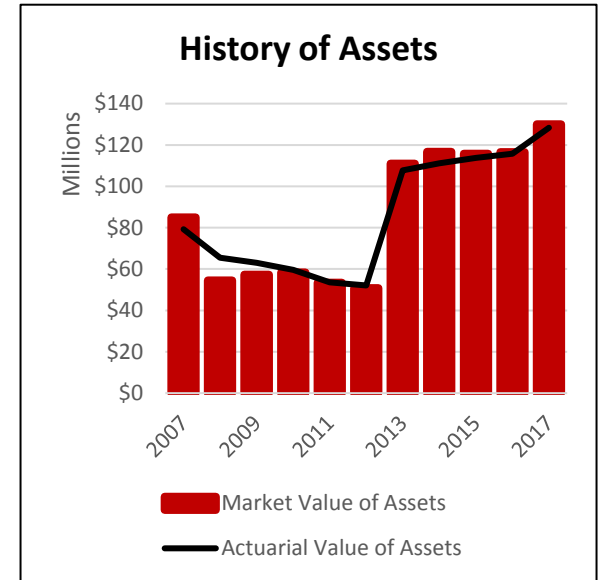
Asset Information

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

October 31, 2017

Market Value Reconciliation

Market value of assets, beginning of prior year	\$116,473,001
Contributions	
Employer contributions	\$6,327,364
Member contributions	1,302,238
Non-employer contributing entity	0
Total	\$7,629,602
Investment income	\$17,606,037
Benefit payments	(\$11,311,227)
Investment expenses	(\$295,178)
Administrative expenses	(\$62,375)
Market value of asset, beginning of current year	\$130,039,860
Return on Market Value	15.06%
Actuarial value of assets	
Value at beginning of current year	\$128,310,000



Asset Information (continued) - 20% Phase in

Plan Assets are used to develop funded percentages and contribution requirements.

	October 31, 2017
1. Expected market value of assets	
(a) Market value of assets, beginning of prior year	\$116,473,001
(b) Contributions	7,629,602
(c) Benefit payments	(11,311,227)
(d) Expected return	8,599,910
(e) Expected market value of assets, beginning of current year	\$121,391,286
2. Market value of assets, beginning of current year	\$130,039,860
3. Actual return on market value	\$17,248,484
4. Amount subject to phase in [(3)-(1d)]	\$8,648,574
5. Phase in of asset gain/(loss)	
(a) Current year (80% x \$8,648,574)	\$6,918,859
(b) First prior year (60% x \$(4,220,777))	(2,532,466)
(c) Second prior year (40% x \$(6,942,755))	(2,777,102)
(d) Third prior year (20% x \$602,846)	120,569
(e) Total phase-in	\$1,729,860
6. Preliminary actuarial value of assets, beginning of current year [2-5(e)]	\$128,310,000
7. 80% Market value of assets	\$104,031,888
8. 120% Market value of assets	\$156,047,832
9. Adjusted to actuarial value of assets due to 20% corridor	\$0
10. Final actuarial value of assets (6-9)	\$128,310,000
12. Return on actuarial value of assets	14.2%

Reconciliation of Gain/Loss

October 31, 2017

Liability (gain)/loss

Actuarial liability, beginning of prior year	\$211,150,930
Normal cost	\$3,455,749
Benefit payments	(\$11,311,227)
Expected interest	\$15,678,998
Change in assumptions	\$(1,427,122)
Expected actuarial liability, beginning of current year	\$217,547,328
Actual actuarial liability	\$219,314,469
Liability (gain)/loss	\$1,767,141

Asset (gain)/loss

Actuarial value of assets, beginning of prior year	\$115,793,717
Contributions	\$7,629,602
Benefit payments	(\$11,311,227)
Expected investment return	\$8,599,910
Change in method	\$7,580,951
Expected actuarial value of assets, beginning of current year	\$128,292,953
Actual actuarial value of assets, beginning of current year	\$128,310,000
Asset (gain)/loss	\$(17,047)

Total (gain)/loss

\$1,750,094

Development of Actuarial Recommended Contribution for Plan Year Ending October 31, 2018

The actuarial recommended contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws.

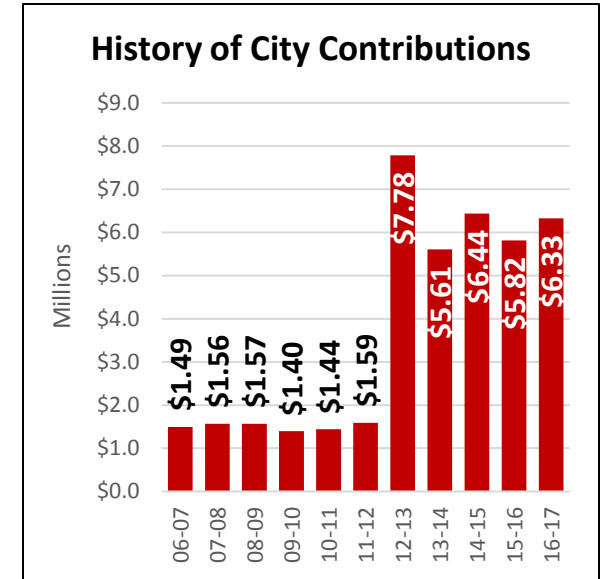
October 31, 2017

Funded Position

1. Entry age accrued liability	\$219,314,469
2. Actuarial value of assets	\$128,310,000
3. Unfunded actuarial accrued liability (UAAL)	\$91,004,469

Employer Contributions

1. Normal Cost	
(a) Total normal cost	\$3,213,366
(b) Expected participant contributions	(\$1,224,869)
(c) Net normal cost	\$1,988,497
2. Amortization of UAAL	\$5,031,375
3. Calculated contribution at valuation date	\$7,019,872
4. Valuation payroll	\$14,517,769
5. Calculated contribution as a percentage of payroll	48.4%



Demographic Information

The foundation of a reliable actuarial report is the participant information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

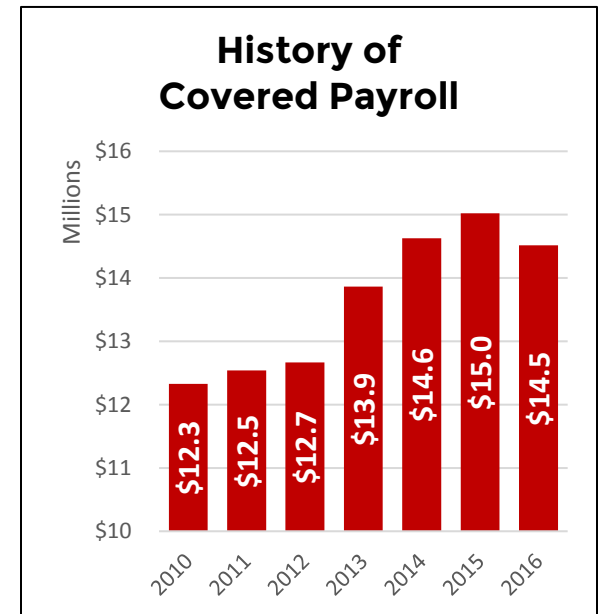
October 31, 2017

Participant Counts

Active Participants	195
Retired Participants	175
Beneficiaries	50
Disabled Participants	45
Terminated Vested Participants	<u>8</u>
Total Participants	473

Active Participant Demographics

Average Age	41.0
Average Service	14.0
Average Compensation	\$74,450
Covered Payroll	\$14,517,769



Demographic Information (continued)

October 31, 2017

Retiree Statistics

Average Age	67.4
Average Monthly Benefit	\$4,144

Beneficiary Statistics

Average Age	78.1
Average Monthly Benefit	\$1,708

Disabled Participants Statistics

Average Age	66.0
Average Monthly Benefit	\$4,189

Terminated Vested Participants with Deferred Retirement Benefit Statistics

Average Age	39.6
Average Monthly Benefit	\$1,155

Terminated Vested Participants Due a Return of Contributions Statistics

Average Age	30.9
Total Employee Contributions	\$94,332
Average Employee Contributions	\$15,722

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	204	0	43	161	50	458
Active						
To Terminated Vested	(8)	8	0	0	0	0
To Retired	(12)	0	0	12	0	0
To Cash-Out	(1)	0	0	0	0	(1)
To Non-Participating	(2)	0	0	0	0	(2)
Terminated Vested						
To Active	0	0	0	0	0	0
To Retired	0	0	0	0	0	0
To Death	0	0	0	0	0	0
Disabled						
To Survivor	0	0	0	0	0	0
To Death	0	0	0	0	0	0
Retired						
To Survivor	0	0	0	(3)	3	0
To Disabled	0	0	1	(1)	0	0
To Death	0	0	0	(1)	0	(1)
Survivor						
To Death	0	0	0	0	(2)	(2)
Alternate Payees of QDRO's	0	0	1	6	0	7
Status Corrections	0	0	0	1	(1)	0
Additions	14	0	0	0	0	14
Departures	0	0	0	0	0	0
Current Year	195	8	45	175	50	473

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service										Total
	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 & Up	
Under 25	4	3									7
25 to 29	7	24	2								33
30 to 34		10	7	7							24
35 to 39	2	5	2	12	1						22
40 to 44	1		1	5	16	4					27
45 to 49				7	15	17	3				42
50 to 54			1		4	11	7	3			26
55 to 59				1		2	4	7			14
60 to 64											0
65 to 69											0
70 & up											0
Total	14	42	13	32	36	34	14	10	0	0	195

Name of plan

City of East Providence, Rhode Island Police and Fire Fighters Retirement System

Effective Date

November 1, 1961

Eligibility for Participation

Immediately upon becoming an employee of the police or fire department, and being sworn in as a police officer or fire fighter

Benefits

Normal Retirement

Eligibility

Police hired on or after 11/1/2014	Earlier of (i) age 50 and 25 years of service or (ii) age 60 and 10 years of service
Fire Fighters hired on or after 1/1/2014	Earlier of (i) age 55 and 25 years of service or (ii) age 60 and 10 years of service
Others	Earlier of (i) 20 years of service or (ii) age 60 and 10 years of service

Benefit

Police and Fire Fighters retired after 11/1/1991	2.50% of Average Annual Compensation for each of the first 24 years of credited service, plus 2.0% of Average Annual Compensation for each of the next 4 years, plus 1.0% of Average Annual Compensation for each additional year of credited service to a maximum of 70% at 30 years of credited service
Fire Fighters hired on or after 1/1/2014	2.50% of Average Annual Compensation for each of the first 20 years of credited service, plus 4.0% of Average Annual Compensation for each of the next 5 years to a maximum of 70% at 25 years of credited service
Police and Fire Fighters retiring after 11/1/2008	Members will receive an additional 1.0% of Average Annual Compensation

Death – Service Related

Eligibility

Death resulting from an act of duty

Benefit

With surviving spouse, 50% of compensation at time of death, plus 10% of compensation for each child under age 18 to a maximum of 70% of compensation

Without surviving spouse, 15% of compensation at time of death for each child under the age of 18 with a maximum of 60% of compensation

Death – Non Service Related

Eligibility

3 years of service

Benefit

30% of compensation increased by 1% for each year of service in excess of 3 years, to a maximum of 50% of compensation, and beginning at the surviving spouse's age 55, plus 10% of compensation for each child under age 18 to a maximum of 60% of compensation, with benefits to spouse and children under age 18 beginning immediately.

Death – R. I. State Mandated Death Benefit

Plan benefit above, or 67.50% of final pension payment, if provides a higher benefit

Disability – Service Related

Eligibility

Active participant

Benefit

$66\frac{2}{3}$ % of compensation at time of disability plus 10% of salary for each child under age 18 to a maximum of 80% of compensation

Disability – Non Service Related

Eligibility

10 years of service

Benefit

1.75% of compensation at time of disability for each year of service to date of disability, with minimum benefit of 25% of compensation, and maximum benefit of 50% of compensation. If credited service at date of disability is twenty years or more, at age 55, participant is entitled to a service retirement annuity

Annual Compensation

Base salary, 14 days of holiday pay, plus longevity payment based on schedules below:

<u>Police Hired after 10/31/2014</u>	<u>Fire Hired on or after January 1, 2015</u>	<u>Others</u>
7% of base salary after 10 years of service	6% of base salary after 10 years of service	6% of base salary after 5 years of service
8% of base salary after 15 years of service	7% of base salary after 15 years of service	7% of base salary after 10 years of service
9% of base salary after 20 years of service	8% of base salary after 20 years of service	8% of base salary after 15 years of service
	9% of base salary after 25 years of service	9% of base salary after 20 years of service

Average Annual Compensation

Members retired on or after 11/1/1985	Final year of Annual Compensation
Police hired on or after 11/1/2014 and Fire Fighters hired on or after 1/1/2014	Average of their final 3 years' Annual Compensation

Credited Service

Completed years and months from date of hire. For any month, 15 days or more is considered a full month of service.

Employee Contributions

9% of Compensation

Fire Fighters contributions increase annually as follows	11/1/2018	9.25%
	11/1/2019	9.50%
	11/1/2020	9.75%
	11/1/2021	10.00%
Police contributions increase annually as follows	11/1/2020	9.25%
	11/1/2021	9.50%

Cost of living adjustments

Police retired between 11/1/1982 and 10/31/1983*	3.0% non-compounded increase starting on 11/1/1984
Police retired between 11/1/1983 and 10/31/1984*	3.0% non-compounded increase
Police retired between 11/1/1984 and 10/31/1991*	3.0% compounded increase at or after age 51
Police retired after 11/1/1991*	3.0% compounded increase
Police hired on or after 11/1/2014*	2.25% non-compounded increase
Fire Fighters retired between 11/1/1985 and 10/31/1989	3.0% compounded increase at or after age 51
Fire Fighters retired after 11/1/1989	3.0% compounded increase
Fire Fighters hired on or after 1/1/2014	2.25% non-compounded increase

*After 10/1/1995, annual 3% COLA extended to disabled policemen prior to age 51.

Vesting

10 years of service. Employees who terminate prior to 10 years of service receive a return of employee contributions without interest.

Normal form of payment

The normal form of benefit is a monthly benefit payable for the participant's lifetime; optional non-spouse joint and survivor annuity available on actuarial equivalent basis

Plan Provisions Not Included

We are not aware of any plan provisions not included in the valuation

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results of this report.

Except where otherwise indicated, the following assumptions were selected by the plan sponsor with the concurrence of the actuary. Prescribed assumptions are based on the requirements of the relevant law, the Internal Revenue Code, and applicable regulation. The actuary was not able to evaluate the prescribed assumptions for reasonableness for the purpose of the measurement.

Valuation Date	October 31, 2017
Participant and Asset Information Collected as of	October 31, 2017
Cost Method (CO)	Entry Age Normal Cost Method. The Actuarial Recommended Contribution is determined as a percentage of payroll.
Amortization Method (CO)	30-year closed level % of pay amortization of the excess of the entry age actuarial accrued liability over the actuarial value of plan assets. For this purpose, pay is assumed to grow at 3.75% annually.
Asset Valuation Method	The actuarial value of assets is equal to the fair market value of assets on the valuation date adjusted for a 5-year phase in of gains and losses on fair market value of assets.
Interest Rates (CO)	7.50%
	This assumption has been set by the plan sponsor in conjunction with their asset advisors. Detailed evaluation of this assumption was outside the scope of our engagement.
Annual Pay Increases (FE)	4.0% compounded annually
	The annual pay increase is based on a study of actual experience for the plan during 1991-2014. See the experience study report dated 06/01/2015 prepared by Fallon Pension Actuaries, Inc.
Expense and/or Contingency Loading (FE)	None

Mortality Rates (FE)

Healthy Lives	RP-2014 Blue Collar Mortality Table with improvements from 2006 to 2017 based on assumptions from the 2017 Social Security Administration Trustee's Report
Disabled Lives	RP-2014 Disabled Mortality Table with improvements from 2006 to 2017 based on assumptions from the 2017 Social Security Administration Trustee's Report

As the plan is not large enough to have credible experience, mortality rates are set to reflect general population trends.

Retirement Rates (FE)

The following annual rates of retirement are reflected for participants after age 40; at age 62 and over, the annual rate of retirement is 100%.

<u>Years of Service</u>	<u>Rate</u>
20	12%
21-23	14%
24-26	16%
27-29	18%
30+	20%

The assumed retirement rates are based on a study of actual experience for the plan during 1991-2014. See the experience study report dated 06/01/2015 prepared by Fallon Pension Actuaries, Inc.

Disability Rates (FE)

<u>Age</u>	<u>Rate</u>
25	0.50%
35	0.75%
45	1.80%
55	3.00%

50% of disability is assumed to be service-related.

The assumed disability rates are based on a study of actual experience for the plan during 1991-2014. See the experience study report dated 06/01/2015 prepared by Fallon Pension Actuaries, Inc.

Withdrawal Rates (FE)

<u>Years of Service</u>	<u>Rate</u>
1	4.00%
5	3.14%
10	2.07%
15	1.00%
20+	0.00%

The assumed withdrawal rates are based on a study of actual experience for the plan during 1991-2014. See the experience study report dated 06/01/2015 prepared by Fallon Pension Actuaries, Inc.

Marital Status and Ages (FE)

85% of participants assumed to be married with female spouses 3 years younger than husbands.

Cost of Living Adjustments

In accordance with benefit provisions of the plan, annual COLAs are assumed for the appropriate categories of members

Service-Related Death

50% of pre-retirement deaths are assumed to be service-related

Benefit Payment Timing

Payments occur at the end of the month

FE indicates an assumption representing an estimate of future experience

MD indicates an assumption representing observations of estimates inherent in market data

CO indicates an assumption representing a combination of an estimate of future experience and observations of market data

The actuarial report also shows the necessary items required for plan reporting and any state requirements.

- ✓ Development of Actuarial Recommended Contribution for Plan Year Ending October 31, 2019
- ✓ Schedule of amortizations
- ✓ Schedule of amortizations by division for Plan Year Ending October 31, 2018 Actuarial Recommended Contribution
- ✓ Schedule of amortizations by division for Plan Year Ending October 31, 2019 Actuarial Recommended Contribution
- ✓ Allocation of Assets by division
- ✓ Actuarial Recommended Contribution for Plan Year Ending October 31, 2018 by division
- ✓ Actuarial Recommended Contribution for Plan Year Ending October 31, 2019 by division

Development of Actuarial Recommended Contribution for Plan Year Ending October 31, 2019

The actuarial recommended contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws.

October 31, 2017

Funded Position

1.	Entry age accrued liability	\$219,314,469
2.	Actuarial value of assets	\$128,310,000
3.	Unfunded actuarial accrued liability (UAAL)	\$91,004,469

Employer Contributions

6.	Normal Cost	
	(d) Total normal cost	\$3,213,366
	(e) Expected participant contributions	(\$1,224,869)
	(f) Net normal cost	\$1,988,497
7.	Amortization of UAAL	\$5,205,611
8.	Calculated contribution at valuation date	\$7,194,108
9.	Valuation payroll	\$14,517,769
10.	Calculated contribution as a percentage of payroll	49.6%
11.	Projected payroll	\$15,062,185
12.	Actuarial recommended contribution	\$7,470,844

Schedule of Amortizations

Total Plan for Plan Year Ending October 31, 2018 Actuarial Recommended Contribution

		October 31, 2017	
		Total	\$5,031,375
	Total	\$91,004,469	
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>	Annual <u>Payment</u>
10/31/2015	28	\$78,434,405	\$4,343,156
10/31/2016	29	\$18,532,515	\$1,005,599
10/31/2017	30	\$(5,962,451)	\$(317,380)

Total Plan for Plan Year Ending October 31, 2019 Actuarial Recommended Contribution

		October 31, 2017	
		Total	\$5,205,611
	Total	\$91,004,469	
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>	Annual <u>Payment</u>
10/31/2015	28	\$78,434,405	\$4,343,156
10/31/2017	20	\$12,570,064	\$862,455

Schedule of Amortizations by Division for Plan Year Ending October 31, 2018 Actuarial Recommended Contribution

Police

				October 31, 2017
	Total		\$12,520,795	\$693,942
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>		Annual <u>Payment</u>
10/31/2015	28	\$8,785,739		\$486,494
10/31/2016	29	\$8,367,762		\$454,046
10/31/2017	30	\$(4,632,706)		\$(246,598)

Fire

				October 31, 2017
	Total		\$78,483,674	\$4,337,433
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>		Annual <u>Payment</u>
10/31/2015	28	\$69,648,666		\$3,856,662
10/31/2016	29	\$10,164,753		\$551,553
10/31/2017	30	\$(1,329,745)		\$(70,782)

Schedule of Amortizations by Division for Plan Year Ending October 31, 2019 Actuarial Recommended Contribution

Police

		October 31, 2017	
		Total	\$12,520,795
			\$742,763
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>	Annual <u>Payment</u>
10/31/2015	28	\$8,785,739	\$486,494
10/31/2017	20	\$3,735,056	\$256,269

Fire

		October 31, 2017	
		Total	\$78,483,674
			\$4,462,848
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>	Annual <u>Payment</u>
10/31/2015	28	\$69,648,666	\$3,856,662
10/31/2017	20	\$8,835,008	\$606,186

Allocation of Assets by Division

Assets are allocated between Police and Fire divisions by allocating actual employer contributions by the proportionate share of the year's anticipated employer contributions, allocating actual employee contributions by division, accounting for actual benefit payments by division, and allocating Police 60% of the year's expenses.

	<u>Police</u>	<u>Fire</u>	<u>Total</u>
Market value of assets, prior year	\$82,118,463	\$34,354,538	\$116,473,001
City contributions	\$1,705,430	\$4,621,934	\$6,327,364
Employee contributions	602,480	699,758	1,302,238
Total contributions	<u>\$2,307,910</u>	<u>\$5,321,692</u>	<u>\$7,629,602</u>
Benefit payments	(\$5,077,796)	(\$6,233,431)	(\$11,311,227)
Expenses	(\$214,532)	(\$143,021)	(\$357,553)
Investment income	\$12,402,503	\$5,203,534	\$17,606,037
Market value of assets, end of year	\$91,536,548	\$38,503,312	\$130,039,860

Development of Actuarial Recommended Contribution for Plan Year Ending October 31, 2018 by Division

	Police	Fire	Total
Funded Position			
1. Entry age accrued liability	\$102,838,204	\$116,476,265	\$219,314,469
2. Actuarial value of assets	\$90,317,409	\$37,992,591	\$128,310,000
3. Unfunded actuarial accrued liability (UAAL)	\$12,520,795	\$78,483,674	\$91,004,469
Employer Contributions			
1. Normal Cost			
(a) Total normal cost	\$1,566,759	\$1,646,607	\$3,213,366
(b) Expected participant contributions	(\$556,344)	(\$668,525)	(\$1,224,869)
(c) Net normal cost	\$1,010,415	\$978,082	\$1,988,497
2. Amortization of UAAL	\$693,942	\$4,337,433	\$5,031,375
3. Calculated contribution at valuation date	\$1,704,357	\$5,315,515	\$7,019,872
4. Valuation payroll	\$6,743,060	\$7,774,709	\$14,517,769
5. Calculated contribution as a percentage of payroll	25.3%	68.4%	48.4%

Development of Actuarial Recommended Contribution for Plan Year Ending October 31, 2019 by Division

	Police	Fire	Total
Funded Position			
1. Entry age accrued liability	\$102,838,204	\$116,476,265	\$219,314,469
2. Actuarial value of assets	\$90,317,409	\$37,992,591	\$128,310,000
3. Unfunded actuarial accrued liability (UAAL)	\$12,520,795	\$78,483,674	\$91,004,469
Employer Contributions			
1. Normal Cost			
(a) Total normal cost	\$1,566,759	\$1,646,607	\$3,213,366
(b) Expected participant contributions	(\$556,344)	(\$668,525)	(\$1,224,869)
(c) Net normal cost	\$1,010,415	\$978,082	\$1,988,497
2. Amortization of UAAL	\$742,763	\$4,462,848	\$5,205,611
3. Calculated contribution at valuation date (1(c) + (2))	\$1,753,178	\$5,440,930	\$7,194,108
4. Valuation payroll	\$6,743,060	\$7,774,709	\$14,517,769
5. Calculated contribution as a percentage of valuation payroll (3) / (4)	26.0%	70.0%	49.6%
13. Projected payroll	\$6,995,925	\$8,066,260	\$15,062,185
14. Preliminary actuarial recommended contribution (5) x (6)	\$1,818,941	\$5,646,382	\$7,470,844
15. Adjustment due to rounding	\$2,564	\$2,957	
16. Actuarial recommended contribution (7) + (8)	\$1,821,505	\$5,649,339	\$7,470,844