

The logo for nyhart, featuring the word "nyhart" in a white, lowercase, sans-serif font centered within a black rectangular box. To the left of this box is a thick black vertical bar, and to its right is a thin red vertical line.

nyhart

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

*October 31, 2016
Actuarial Valuation Report*

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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, 2016. 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, 2017;

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:

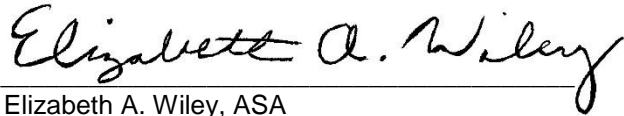
- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period);
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



David D. Harris, ASA, EA, MAAA

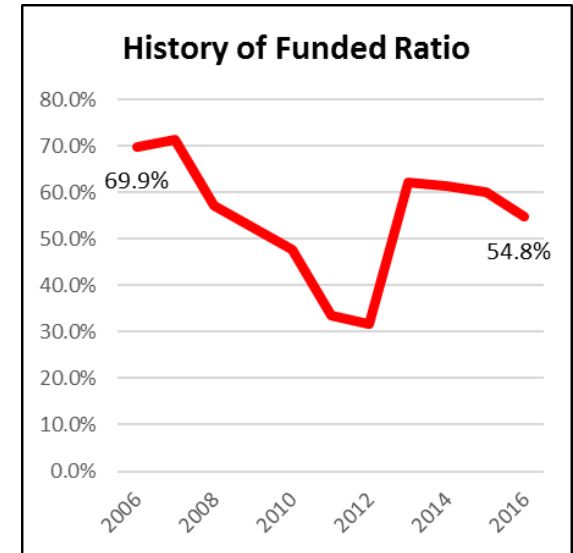
August 3, 2017

Date

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, 2015	October 31, 2016
Funded Status Measures		
Entry Age Accrued Liability	\$189,603,866	\$211,150,930
Actuarial Value of Assets	113,803,022	115,793,717
Unfunded Accrued Liability	\$75,800,844	\$95,357,213
Funded Percentage (AVA)	60.0%	54.8%
Funded percentage (MVA)	61.1%	55.2%
Cost Measures		
Actuarial Recommended Contribution	\$5,921,652	\$7,289,839
Actuarial Recommended Contribution (as a percentage of payroll)	40.5%	48.5%
Asset Performance		
Market Value of Assets (MVA)	\$115,826,192	\$116,473,001
Actuarial Value of Assets (AVA)	\$113,803,022	\$115,793,717
Actuarial Value/Market Value	98.3%	99.4%
Participant Information		
Active Participants	205	204
Terminated Vested Participants	0	0
Retirees, Beneficiaries, and Disabled Participants	246	254
Total	451	458
Valuation Payroll	\$14,628,273	\$15,021,061
Projected Payroll	\$14,628,273	\$15,021,061



Changes Since Prior Valuation and Key Notes

There have been no changes to the plan provisions since the last valuation.

Effective October 31, 2016 there was a funding method change due to the change in firm and enrolled actuary for the plan. Results from 2015 and prior plan years shown in this report were obtained from valuation results prepared by Fallon Pension Actuaries, Inc.

As a result of the change in firm and enrolled actuary for the plan, some differences in software and coding resulted in an increase in the Funding Liability and Normal Cost. Specifically, the most impactful difference relates to how pay increases from longevity and holiday pay are reflected in retirement benefits. Prior software had gradually reflected increases due to longevity and holiday pay to the benefit through accruals, where current coding now reflects specific longevity and pay increases as scheduled in the agreement between:

- the City of East Providence, Rhode Island and the International Brotherhood of Police Officers Local Number 569 for the period November 1, 2014 to October 31, 2017; and
- the City of East Providence, Rhode Island and the East Providence Fire Fighters Local 850, International Association of Fire Fighters, AFL-CIO for the period November 1, 2014 to October 31, 2017.

To better reflect anticipated experience, the mortality table for healthy lives has been updated from the RP-2000 Combined Healthy mortality table for Males and Females with Blue Collar adjustments, projected with Scale AA, to 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. This change results in an increase to the Funding Liability and Normal Cost.

In addition, the mortality table for disabled lives has been updated from the RP-2000 Combined Healthy mortality table for Males and Females with Blue Collar adjustments, projected with Scale AA, to the RP-2014 Disabled mortality table with improvements from 2006 to 2016 based on assumptions from the 2016 Social Security Administration Trustee's Report. This change results in an increase to the Funding Liability and Normal Cost.

Present Value of Future Benefits

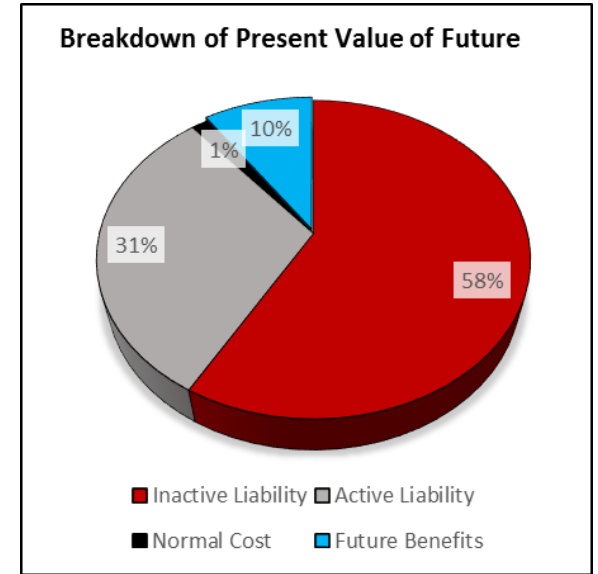
The Present Value of Future Benefits represents the future benefits payable to the existing participants.

October 31, 2016

Present Value of Future Benefits

Active participants	
Retirement	\$86,056,120
Disability	10,744,113
Death	1,000,619
Termination	1,072,755
Refund of contributions	0
Total active	\$98,873,607
Inactive participants	
Retired participants	\$104,040,251
Beneficiaries	8,000,426
Disabled participants	26,322,275
Terminated vested participants	0
Total inactive	\$138,362,952
Total	\$237,236,559

Present value of future payrolls



Entry Age Accrued Liability

The Funding Liability measures the present value of benefits earned as of the valuation date, using a specified set of actuarial assumptions.

	October 31, 2016
Funding Liabilities	
Active participants	
Retirement	\$67,710,245
Disability	4,761,259
Death	542,945
Termination	(226,471)
Refund of contributions	0
Total Active	\$72,787,978
Inactive participants	
Retired participants	\$104,040,251
Beneficiaries	8,000,426
Disabled participants	26,322,275
Terminated vested participants	0
Total Inactive	\$138,362,952
Total	\$211,150,930
Normal Cost	\$3,455,749

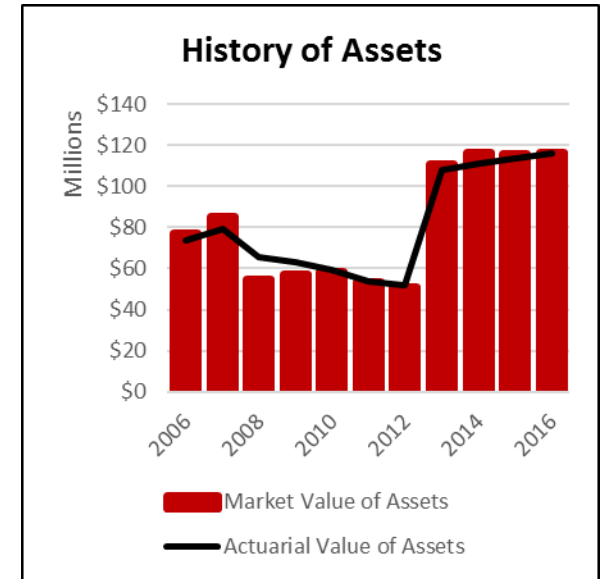
Asset Information

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, 2016

Market Value Reconciliation

Market value of assets, beginning of prior year	\$115,826,192
Contributions	
Employer contributions	\$5,816,231
Member contributions	1,284,211
Non-employer contributing entity	0
Total	\$7,100,442
Investment income	\$4,739,493
Benefit payments	(\$10,784,177)
Investment expenses	(\$349,525)
Administrative expenses	(\$59,424)
Market value of asset, beginning of current year	\$116,473,001
Return on Market Value	4.17%
Actuarial value of assets	
Value at beginning of current year	\$115,793,717



Asset Information (continued) – 20% Phase in

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

	October 31, 2016
1. Actuarial value of assets, beginning of prior year	\$113,803,022
2. Contributions	7,100,442
3. Benefit payments	(10,784,177)
4. Expenses	(408,949)
5. Investment income	980,131
6. Phase in of realized/unrealized gain/(loss)	
(a) Current year (20% x \$3,759,362)	\$751,872
(b) First prior year (20% x \$971,762)	194,352
(c) Second prior year (20% x \$7,978,888)	1,595,778
(d) Third prior year (20% x \$9,793,725)	1,958,745
(e) Fourth prior year (20% x \$3,012,503)	602,501
(f) Total phase-in	\$5,103,248
7. Preliminary actuarial value of assets, beginning of current year [1+2+3+4+5+6(f)]	\$115,793,717
8. 80% Market value of assets	\$93,178,401
9. 120% Market value of assets	\$139,767,601
10. Adjusted actuarial value of assets	\$115,793,717
11. Final actuarial value of assets	\$115,793,717
12. Return on actuarial value of assets	5.4%

Reconciliation of Gain/Loss

October 31, 2016

Liability (gain)/loss

Actuarial liability, beginning of prior year	\$189,603,866
Normal cost	\$3,203,318
Benefit payments	(\$10,784,177)
Expected interest	\$14,063,443
Coding updates	\$7,038,714
Change in assumptions	<u>\$8,434,044</u>
Expected actuarial liability, beginning of current year	\$211,559,208
Actual actuarial liability	\$211,150,930
Liability (gain)/loss	\$(408,278)

Asset (gain)/loss

Actuarial value of assets, beginning of prior year	\$113,803,022
Contributions	\$7,100,442
Benefit payments	(\$10,784,177)
Expected investment return	<u>\$8,399,584</u>
Expected actuarial value of assets, beginning of current year	\$118,518,871
Actual actuarial value of assets, beginning of current year	\$115,793,717
Asset (gain)/loss	\$2,725,154

Total (gain)/loss

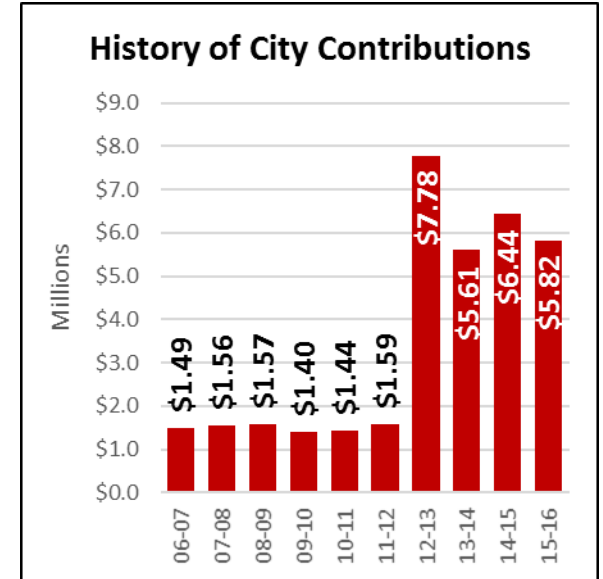
\$2,316,876

Development of Actuarial Recommended Contribution

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

October 31, 2016

Funded Position	
1. Entry age accrued liability	\$211,150,930
2. Actuarial value of assets	<u>\$115,793,717</u>
3. Unfunded actuarial accrued liability (UAAL)	\$95,357,213
Employer Contributions	
1. Normal Cost	
(a) Total normal cost	\$3,455,749
(b) Expected participant contributions	<u>(\$1,321,337)</u>
(c) Net normal cost	\$2,134,412
2. Amortization of UAAL	<u>\$5,155,427</u>
3. Calculated contribution at valuation date	\$7,289,839
4. Valuation payroll	\$15,021,061
5. Calculated contribution as a percentage of payroll	48.5%



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.

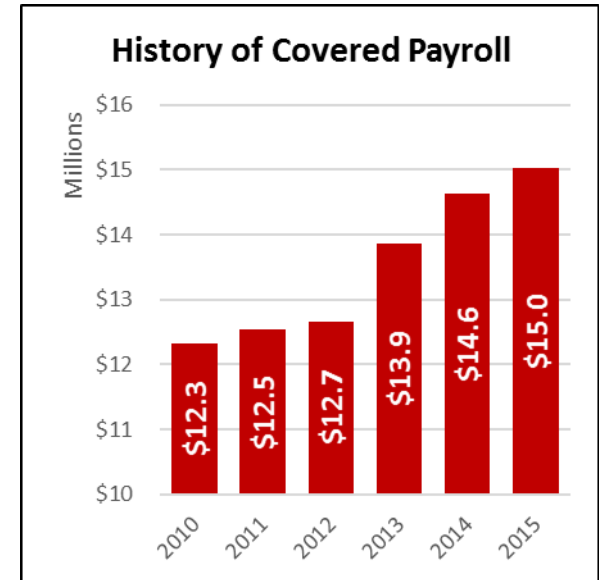
October 31, 2016

Participant Counts

Active Participants	204
Retired Participants	161
Beneficiaries	50
Disabled Participants	43
Terminated Vested Participants	0
Total Participants	458

Active Participant Demographics

Average Age	41.4
Average Service	14.3
Average Compensation	\$73,633
Covered Payroll	\$15,021,061



Demographic Information (continued)

October 31, 2016

Retiree Statistics

Average Age	67.9
Average Monthly Benefit	\$4,126

Beneficiary Statistics

Average Age	77.9
Average Monthly Benefit	\$1,740

Disabled Participants Statistics

Average Age	65.3
Average Monthly Benefit	\$4,156

Terminated Vested Participants Statistics

Average Age	N/A
Average Monthly Benefit	N/A

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	205	0	45	161	40	451
Active						
To Terminated Vested	0	0	0	0	0	0
To Retired	(6)	0	0	6	0	0
To Disabled	0	0	0	0	0	0
To Death	(1)	0	0	0	0	(1)
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	(1)	0	1	0
To Death	0	0	(1)	0	0	(1)
Retired						
To Survivor	0	0	0	(4)	4	0
To Death	0	0	0	(3)	0	(3)
Survivor						
To Death	0	0	0	0	(1)	(1)
Additions	6	0	0	1	6	13
Departures	0	0	0	0	0	0
Current Year	204	0	43	161	50	458

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		6									6
25 to 29	4	26									30
30 to 34		16	11	3							30
35 to 39		4	1	9	3						17
40 to 44			4	6	21	5					36
45 to 49	1			6	15	15	6				43
50 to 54			1		2	9	12	2			26
55 to 59	1			1	1	4	6	3			16
60 to 64											
65 to 69											
70 & up											
Total	6	52	17	25	42	33	24	5			204

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

Under (i) above, 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

Under (ii) above, 2.00% of Average Annual Compensation for each year of credited service

Fire Fighters hired on or after 1/1/2014

Under (i) above, 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

Under (ii) above, 2.00% of Average Annual Compensation for each year of credited service

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:

Police Hired after 10/31/2014

7% of base salary after 10 years of service
8% of base salary after 15 years of service
9% of base salary after 20 years of service

Fire Hired on or after January 1, 2015

6% of base salary after 10 years of service
7% of base salary after 15 years of service
8% of base salary after 20 years of service
9% of base salary after 25 years of service

Others

6% of base salary after 5 years of service
7% of base salary after 10 years of service
9% of base salary after 20 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

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

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, 2016
Participant and Asset Information Collected as of	October 31, 2016
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 by replacing actual gains (losses) and unrealized gains (losses) by a 5 year average of such gains (losses) Allocation of assets between police and fire determined based on equivalent funded status of accrued benefits on a termination basis as of the valuation date.
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 2016 based on assumptions from the 2016 Social Security Administration Trustee's Report
Disabled Lives	RP-2014 Disabled Mortality Table with improvements from 2006 to 2016 based on assumptions from the 2016 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 60 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

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.

- ✓ Schedule of amortizations
- ✓ Schedule of amortizations by division
- ✓ Allocation of Assets by division
- ✓ Actuarial Recommended Contribution by division

Schedule of Amortizations

Total Plan

			October 31, 2016
	Total	\$95,357,213	\$5,155,427
<u>Date Established</u>	<u>Remaining Period Years</u>	<u>Outstanding Balance</u>	<u>Annual Payment</u>
10/31/2015	29	\$77,148,412	\$4,186,175
10/31/2016	30	\$18,208,801	\$969,252

Schedule of Amortizations by division

Police

		October 31, 2016	
		Total	\$16,863,290
			\$906,545
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>	Annual <u>Payment</u>
10/31/2015	29	\$8,641,690	\$468,910
10/31/2016	30	\$8,221,600	\$437,635

Fire

		October 31, 2016	
		Total	\$78,493,923
			\$4,248,882
<u>Date Established</u>	Remaining Period <u>Years</u>	Outstanding <u>Balance</u>	Annual <u>Payment</u>
10/31/2015	29	\$68,506,722	\$3,717,265
10/31/2016	30	\$9,987,201	\$531,617

Allocation of Assets by division

Assets are allocated between Police and Fire divisions by allocating actual contributions by the proportionate share of the year's anticipated contributions, 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	\$81,705,490	\$34,120,702	\$115,826,192
City contributions	\$1,400,079	\$4,416,152	\$5,816,231
Employee contributions	600,125	684,086	1,284,211
Total contributions	<u>\$2,000,204</u>	<u>\$5,100,238</u>	<u>\$7,100,442</u>
Benefit payments	(\$4,684,286)	(\$6,099,891)	(\$10,784,177)
Expenses	(\$245,369)	(\$163,580)	(\$408,949)
Investment income	\$3,342,424	\$1,397,069	\$4,739,493
Market value of assets, end of year	\$82,118,463	\$34,354,538	\$116,473,001

Development of Actuarial Recommended Contribution by division

	Police	Fire	Total
Funded Position			
1. Entry age accrued liability	\$98,497,860	\$112,653,070	\$211,150,930
2. Actuarial value of assets	\$81,634,570	\$34,159,147	\$115,793,717
3. Unfunded actuarial accrued liability (UAAL)	\$16,863,290	\$78,493,923	\$95,357,213
Employer Contributions			
1. Normal Cost			
(a) Total normal cost	\$1,676,506	\$1,779,243	\$3,455,749
(b) Expected participant contributions	(\$618,203)	(\$703,134)	(\$1,321,337)
(c) Net normal cost	\$1,058,303	\$1,076,109	\$2,134,412
2. Amortization of UAAL	\$906,545	\$4,248,882	\$5,155,427
3. Calculated contribution at valuation date	\$1,964,848	\$5,324,991	\$7,289,839
4. Valuation payroll	\$7,094,356	\$7,926,705	\$15,021,061
5. Calculated contribution as a percentage of payroll	27.7%	67.2%	48.5%