CITY OF MERIDEN FIRE EMPLOYEES' PENSION PLAN

ACTUARIAL VALUATION REPORT

JULY 1, 2016

hooker & holcombe

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Executive Summary

	July 1, 2016	July 1, 2014
Number of members		
Active employees	47	54
Terminated vested members	0	0
Retired, disabled and beneficiaries	122	117
Total	169	171
Covered employee payroll	3,735,996	4,048,391
Average plan salary	79,489	74,970
Actuarial present value of future benefits	90,211,311	88,560,619
Actuarial accrued liability	85,565,375	83,914,767
Plan assets		
Market value of assets	44,669,265	50,560,094
Actuarial value of assets	53,945,391	54,495,663
Unfunded accrued liability	31,619,984	29,419,104
Funded ratio	63.0%	64.9%
Actuarially determined employer contribution (ADEC)		
Fiscal year ending	2018	2016
ADEC	3,201,799	3,040,690
Fiscal year ending	2019	2017
ADEC	3,201,799	3,054,069

Valuation Results and Highlights

Purpose of the Valuation

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

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

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

The actuarial cost method distributes this ultimate cost over the working lifetime of current plan participants. By means of this budgeting process, costs are allocated to both past and future years, and a cost is assigned to the current year. The current year's allocated cost, or normal cost, is the building block upon which the actuarially determined employer contribution is developed. The July 1, 2016 valuation produces the contributions for the fiscal years ending 2018 and 2019.

Information Available in the Valuation Report

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

Changes Reflected in the Valuation

The proposed assumption changes in the Experience Study published on November 23, 2016 were adopted and reflected in this report. In addition, the investment rate of return assumption decreased from 8.00% to 7.75%.

Cash Contribution for Fiscal Years Ending 2018 and 2019

The City cost is:	2018 Fiscal Year	2019 Fiscal Year
	$3,201,799	$3,201,799

Liability Experience During Period Under Review

The plan experienced a net actuarial gain on liabilities of $661,543 since the prior valuation.

Asset Experience During Period Under Review

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

	2015 Fiscal Year	2016 Fiscal Year
Market Value Basis	0.9%	-2.4%
Actuarial Value Basis	5.1%	3.6%

The Actuarial Value of assets, rather than the Market Value, is used to determine plan contributions. The Actuarial Value spreads the asset volatility by recognizing 20% of the difference each year, thereby smoothing out fluctuations that are inherent in the Market Value.

Certification

This report presents the results of the July 1, 2016 Actuarial Valuation for City of Meriden Fire Employees' Pension Plan (the Plan) for the purpose of estimating the funded status of the Plan and determining the Actuarially Determined Employer Contribution (ADEC) for the fiscal years ending June 30, 2018 and June 30, 2019. This report is intended to satisfy the requirements of Connecticut General Statute 7-450a. This report may not be appropriate for any other purpose.

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

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

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

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

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of this report, an analysis of the potential range of such future measurements has not been performed.

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

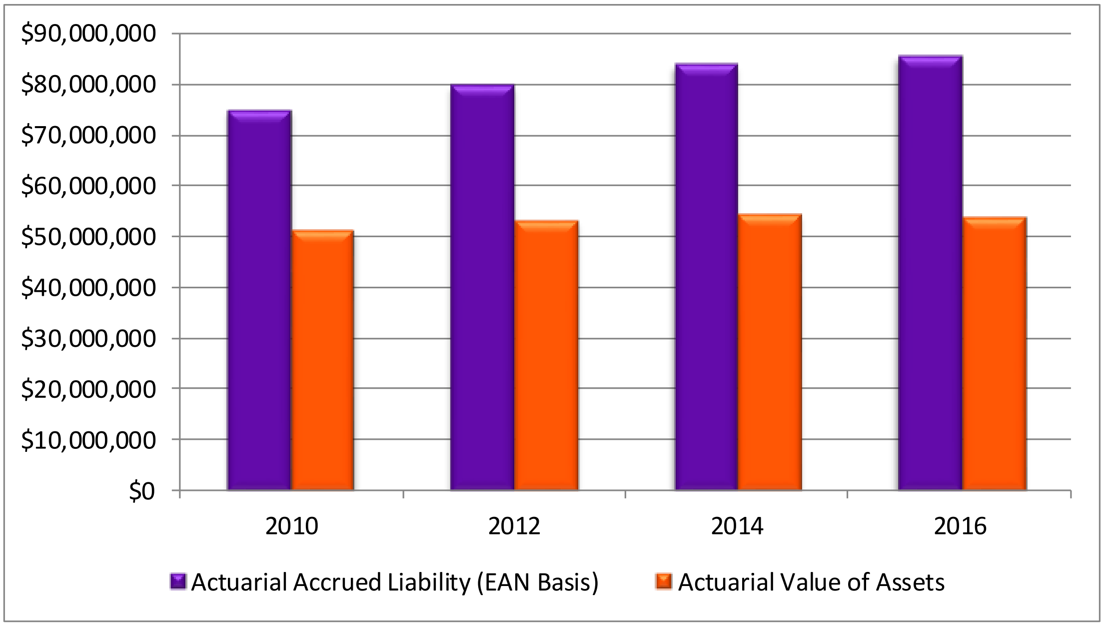
Timothy A. Ryor, FSPA, FCA, MAAA
Enrolled Actuary 17-05126

June 27, 2017

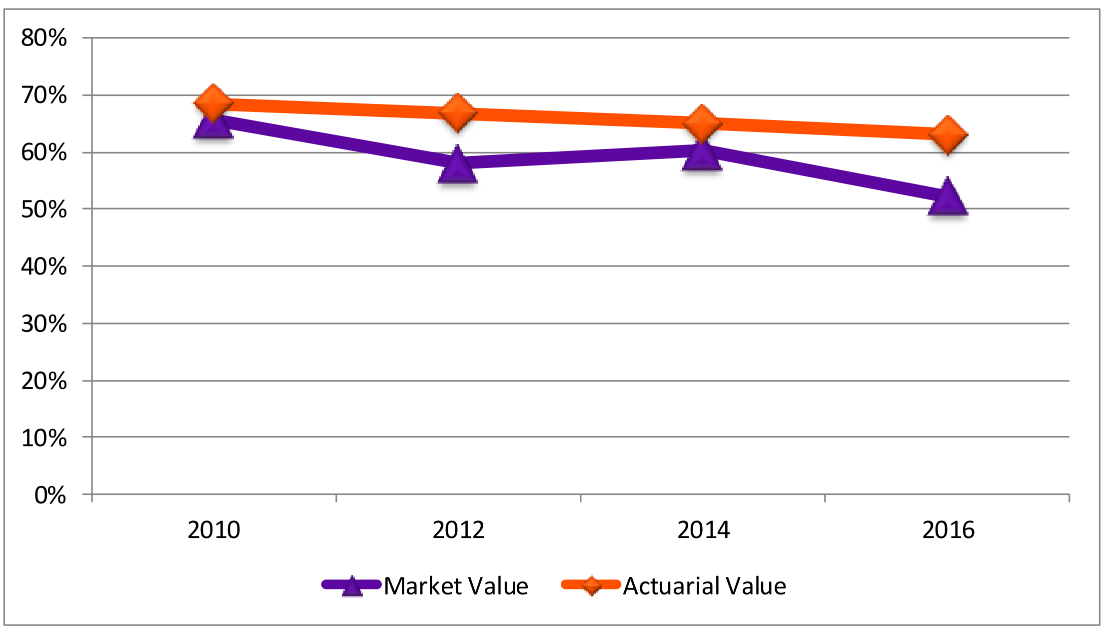
Development of Unfunded Accrued Liability and Funded Ratio

	July 1, 2016	July 1, 2014
Actuarial accrued liability for inactive members		
Retired, disabled and beneficiaries	$65,074,336	$59,995,126
Terminated vested members	0	0
Total	65,074,336	59,995,126
Actuarial accrued liability for active employees	20,491,039	23,919,641
Total actuarial accrued liability	85,565,375	83,914,767
Actuarial value of assets	53,945,391	54,495,663
Unfunded accrued liability	31,619,984	29,419,104
Funded ratio	63.0%	64.9%

Actuarial Accrued Liability vs. Actuarial Value of Assets



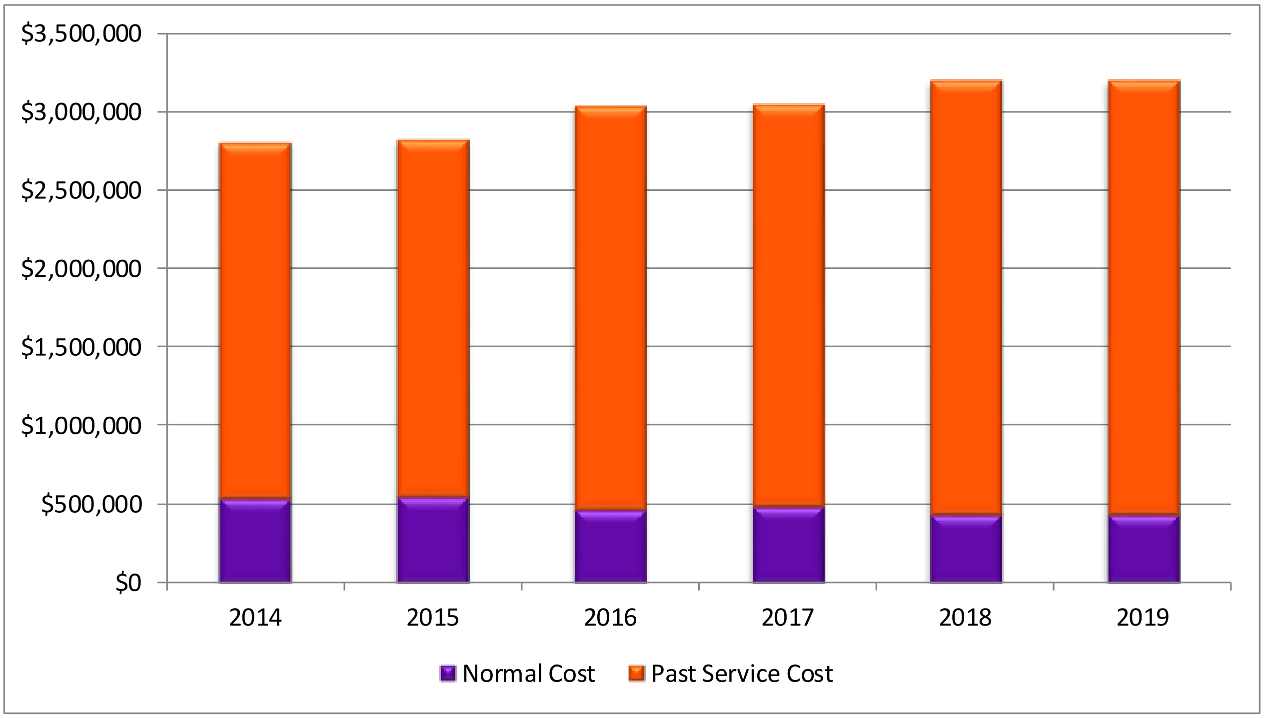
Funded Ratio



Determination of Normal Cost and Actuarially Determined Employer Contribution

	July 1, 2016		July 1, 2014	
	Cost	**Percent of payroll**	**Cost**	**Percent of payroll**
Gross normal cost	$626,248	16.3%	$628,936	17.8%
Estimated employee contributions	(229,880)	-6.0%	(212,596)	-6.0%
Estimated administrative expenses	32,500	0.9%	30,000	0.8%
City's normal cost	428,868	11.2%	446,340	12.6%
Amortization of unfunded accrued liability	2,655,637	69.3%	2,464,910	69.6%
Contribution before adjustment as of the valuation date	3,084,505	80.5%	2,911,250	82.2%
Estimated valuation year payroll	3,831,328		3,543,271	
Fiscal year ending	2018		2016	
Adjustment for interest and inflation	117,294		129,440	
Actuarially determined employer contribution	3,201,799		3,040,690	
Fiscal year ending	2019		2017	
Adjustment for interest and inflation	0		13,379	
Actuarially determined employer contribution	3,201,799		3,054,069	

Actuarially Determined Employer Contribution



Determination of Actuarial Gain/Loss

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

Actuarial Gain / Loss		
Expected unfunded accrued liability July 1, 2016		
Expected unfunded accrued liability July 1, 2015		
Unfunded accrued liability July 1, 2014	$29,419,104	
Gross normal cost July 1, 2014	658,936	
City and employee contributions for 2014-2015	(3,161,236)	
Interest at 8.00% to July 1, 2015	2,286,757	
Expected unfunded accrued liability July 1, 2015	29,203,561	
Expected unfunded accrued liability July 1, 2016		
Expected unfunded accrued liability July 1, 2015	29,203,561	
Expected gross normal cost July 1, 2015	677,804	
City and employee contributions for 2015-2016	(3,365,002)	
Interest at 8.00% to July 1, 2016	2,260,413	
Expected unfunded accrued liability July 1, 2016	28,776,776	
Actuarial (gain) / loss July 1, 2016	3,213,552	
Actual unfunded accrued liability July 1, 2016, prior to plan provision, assumption and method changes		31,990,328
Sources of (gain) / loss		
Assets	3,875,095	
Liabilities	(661,543)	
Total (gain) / loss	3,213,552	
Assumption and method changes since prior valuation		1,857,559
Actual unfunded accrued liability July 1, 2016, after plan provision, assumption and method changes		31,619,984

Development of Asset Values

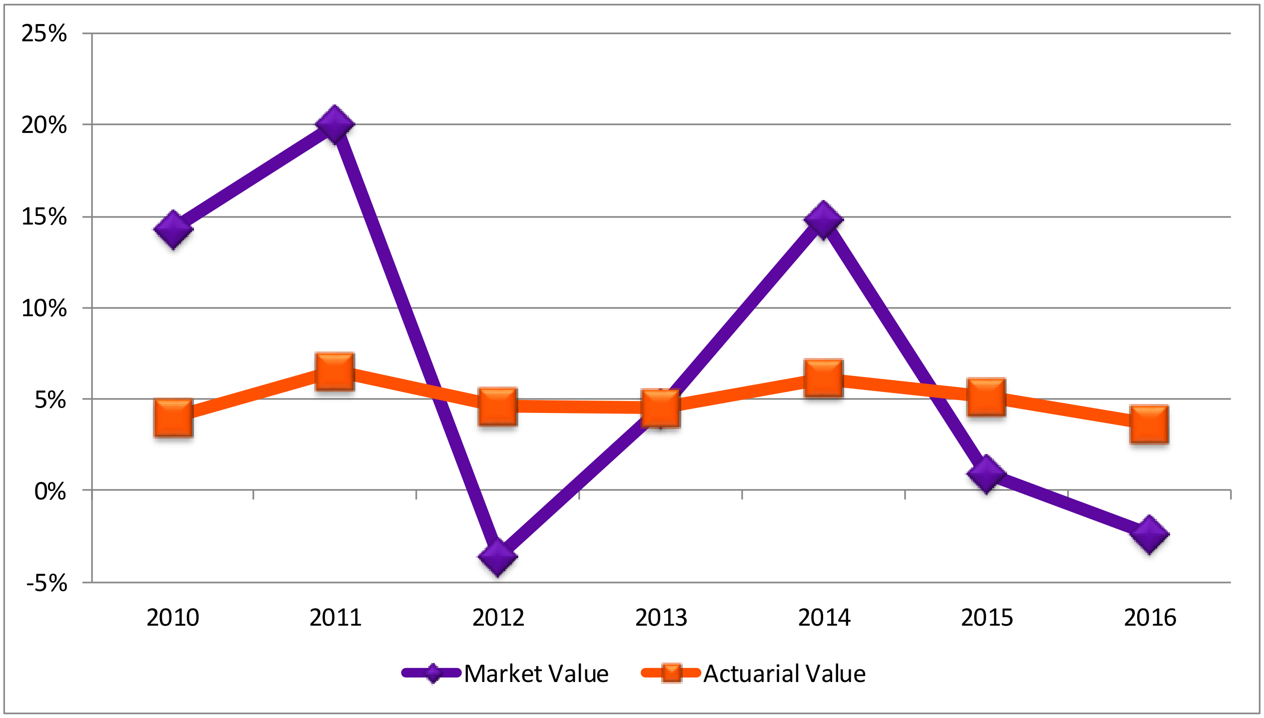
Summary of Fund Activity		
	July 1, 2014 - June 30, 2015	**July 1, 2015 - June 30, 2016**
1. Beginning market value of assets		
Trust assets	$50,560,094	$48,461,030
2. Contributions		
City contributions during year	2,823,649	3,040,690
Employee contributions during year	337,587	324,312
Total for plan year	3,161,236	3,365,002
3. Disbursements		
Benefit payments during year	5,690,074	6,001,021
Administrative expenses during year	29,710	30,815
Other disbursements	7,771	2,050
Total for plan year	5,727,555	6,033,886
4. Net investment return		
Interest and dividends	895,545	665,652
Net appreciation (depreciation)	(143,318)	(1,526,016)
Investment-related expenses	(284,972)	(262,517)
Total for plan year	467,255	(1,122,881)
5. Ending market value of assets		
Trust assets: (1) + (2) - (3) + (4)	48,461,030	44,669,265
6. Approximate rate of return	0.9%	-2.4%

Determination of the Actuarial Value of Assets	
1. Actuarial value of assets July 1, 2014	$ 54,495,663
2. City contributions during 2014-2015	2,823,649
3. Employee contributions during 2014-2015	337,587
4. Benefit payments, administrative expenses and other disbursements during 2014-2015	(5,727,555)
5. Expected return during 2014-2015	4,310,441
6. Expected actuarial value of assets July 1, 2015	56,239,785
7. Market value of assets July 1, 2015	48,461,030
8. Appreciation (depreciation) recognized: 20% x [(7) - (6)]	(1,555,751)
9. Actuarial value of assets July 1, 2015: (6) + (8)	54,684,034
10. City contributions during 2015-2016	3,040,690
11. Employee contributions during 2015-2016	324,312
12. Benefit payments, administrative expenses and other disbursements during 2015-2016	(6,033,886)
13. Expected return during 2015-2016	4,249,272
14. Expected actuarial value of assets July 1, 2016	56,264,422
15. Market value of assets July 1, 2016	44,669,265
16. Appreciation (depreciation) recognized: 20% x [(15) - (14)]	(2,319,031)
17. Preliminary actuarial value of assets July 1, 2016: (14) + (16)	53,945,391
18. Preliminary actuarial value of assets as a percentage of market value of assets	120.8%
19. Actuarial value of assets July 1, 2016	53,945,391
2014-2015 return on actuarial value of assets	5.1%
2015-2016 return on actuarial value of assets	3.6%

Rate of Return on Market Value of Assets				
Period Ending June 30	Average Annual Effective Rate of Return			
	1 Year	3 Years	5 Years	10 Years
2007	15.3%	N/A	N/A	N/A
2008	6.7%	N/A	N/A	N/A
2009	-19.6%	-0.4%	N/A	N/A
2010	14.3%	-0.7%	N/A	N/A
2011	20.0%	3.3%	6.3%	N/A
2012	-3.6%	9.8%	2.6%	N/A
2013	4.5%	6.5%	2.1%	N/A
2014	14.8%	5.0%	9.7%	N/A
2015	0.9%	6.6%	7.0%	N/A
2016	-2.4%	4.2%	2.6%	4.4%

Rate of Return on Actuarial Value of Assets				
Period Ending June 30	Average Annual Effective Rate of Return			
	1 Year	3 Years	5 Years	10 Years
2007	7.9%	N/A	N/A	N/A
2008	7.7%	N/A	N/A	N/A
2009	2.2%	5.9%	N/A	N/A
2010	4.0%	4.6%	N/A	N/A
2011	6.5%	4.2%	5.6%	N/A
2012	4.6%	5.0%	5.0%	N/A
2013	4.5%	5.2%	4.4%	N/A
2014	6.1%	5.1%	5.1%	N/A
2015	5.1%	5.2%	5.4%	N/A
2016	3.6%	4.9%	4.8%	5.2%

Actual Rate of Return on Assets



Target Allocation and Expected Rate of Return
July 1, 2016

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*	Weighting
Equity - Domestic	45.00%	5.75%	2.59%
Equity - International	12.00%	6.00%	0.72%
Fixed Income	18.00%	2.50%	0.45%
Real Estate	3.00%	4.25%	0.13%
Hedge Funds	4.00%	4.90%	0.20%
Managed Futures	10.00%	4.50%	0.45%
Private Equity	6.00%	10.70%	0.64%
Commodities	0.00%	2.30%	0.00%
Cash	2.00%	0.50%	0.01%
	100.00%		5.19%
Long-Term Inflation Expectation			2.75%
Long-Term Expected Nominal Return			7.94%

**Long-Term Returns are provided by Stifel Nicolaus. The returns are geometric means.*

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

The information above is based on geometric means and does not reflect additional returns through investment selection, asset allocation and rebalancing. An expected rate of return of 7.75% was used.

Amortization of Unfunded Liability

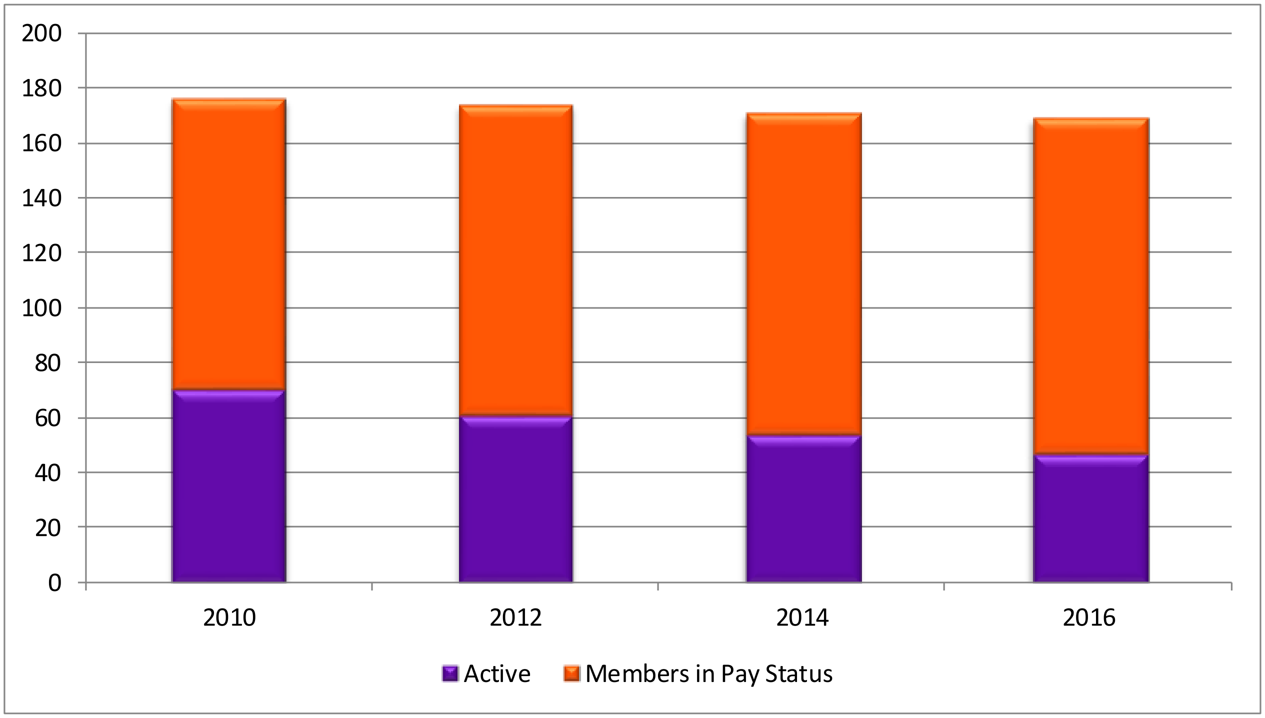
Schedule of Amortization Bases					
	Date established	Original amount	Amortization installment	Years remaining	Present value of remaining installments as of July 1, 2016
2016 base	July 1, 2016	31,619,984	2,655,637	26	31,619,984

Member Data

The data reported by the Plan Sponsor for this valuation includes 47 active employees who met the Plan's minimum age and service requirements as of July 1, 2016.

Member Data				
	Active	**Terminated vested**	**Members in pay status**	**Total**
Total members July 1, 2014	54	0	117	171
Adjustments	0	0	0	0
Retirements	-7	0	+7	0
Disabilities	0	N/A	0	0
Terminations				
Vested	0	0	N/A	0
Lump sum payments	0	0	N/A	0
Due contributions only	0	N/A	N/A	0
Deaths				
With death benefit	0	0	-2	-2
Without death benefit	0	0	-2	-2
Transfers	0	0	N/A	0
Rehires	0	0	N/A	0
New beneficiaries	N/A	N/A	+2	+2
New entrants	0	N/A	N/A	0
Total members July 1, 2016	47	0	122	169

Member Counts by Status



Member Data			
	Active	**Terminated vested**	**Members in pay status**
Average age			
July 1, 2014	49.7	N/A	70.6
July 1, 2016	50.4	N/A	71.7
Average service			
July 1, 2014	23.7	N/A	N/A
July 1, 2016	24.2	N/A	N/A
Covered employee payroll			
July 1, 2014	$4,048,391	N/A	N/A
July 1, 2016	3,735,996	N/A	N/A
Total annual benefits			
July 1, 2014	N/A	N/A	$5,450,268
July 1, 2016	N/A	N/A	5,742,127

Description of Actuarial Methods

Asset Valuation Method

The Actuarial Value of assets used in the development of plan contributions phases in differences between the Market Value and Expected Actuarial Value by recognizing 20% of the difference each year.

Actuarial Cost Method

A. Changes in Actuarial Cost Method: None.

B. Description of Current Actuarial Cost Method:

Basic cost method: Entry Age Normal (level percentage of salary)

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

Past Service Liability: The present value of future benefits that relates to service before the valuation date is the total past service liability. The unfunded past service liability is the difference between the total past service liability and any assets (including accumulated member contributions). This amount is amortized over 26 years on a closed basis.

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

Description of Actuarial Assumptions

Changes in Actuarial Assumptions as of July 1, 2016

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

- Mortality
- Retirement
- Investment rate of return
- Disability
- Salary Scale
- Inflation

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

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

7.75%. (Prior: 8.00%)

Salary Scale

Merit table shown below, plus an annual inflation assumption of 2.75%.

Fire	
Completed Years of Service	Rate
0	8.00%
1	6.00
2	4.00
3	1.50
4	1.50
5	1.50
6	1.50
7	1.25
8	1.25
9	1.25
10	1.25
11	1.25
12	1.25
13	1.00
14	1.00
15+	0.50

Prior: It is assumed that salaries will increase by 3% per annum (compounded) plus a graded scale of 7% at age 20 down to 0% at age 60 and beyond.

The actuarial assumption in regard to salary scale shown above is based on the results of an actuarial experience study for the period July 1, 2008 through July 1, 2014.

Inflation

2.75%. (Prior: 3.00%)

This assumption is based on long term historical inflation numbers. While near term averages have been lower, we do not believe this trend will continue indefinitely and expect that there will be a reversion to the long-term average.

The assumption was changed to better reflect expected experience.

Cost of living increases

Retirement date prior to April 1, 2003: 3.75%.

Retirement date on or after April 1, 2003: 3.00%.

Mortality

Retirement: RP-2014 Adjusted to 2006 Blue Collar Mortality Table, projected to the valuation date with Scale MP-2016.

Disabilities: RP-2014 Adjusted to 2006 Disabled Mortality Table, projected to the valuation date with Scale MP-2016.

Survivors: RP-2014 Adjusted to 2006 Total Dataset Mortality Table, projected to the valuation date with Scale MP-2016.

Prior: Retirement: RP-2000 Mortality Table with separate male and female rates, with blue collar adjustment, separate tables for non-annuitants and annuitants, projected to the valuation date with Scale AA.

Disabilities: RP-2000 Mortality Table with separate male and female rates, with no collar adjustment, combined table for non-annuitants and annuitants.

Mortality Improvement

All: Projected to date of decrement using Scale MP-2016 (generational).

Prior: Retirement: Projected to date of decrement using Scale AA (generational mortality).

Disabilities: None.

We have selected this mortality assumption because it is based on the latest published pension mortality study released by the Society of Actuaries. The group composition of the Plan is consistent with the collar adjustment selected.

Retirement age

Sample Rates:

	Completed Years of Service			
Age	<25	25	30	35
50	0%	5%	5%	5%
55	0%	20%	20%	20%
60	0%	20%	20%	30%
65	0%	100%	100%	100%

Prior:

Sample Rates	
Completed Years of Service	Retirement
<25	0%
25	25%
26-29	15%
30	50%
31-34	20%
35+	100%

Termination prior to retirement

None.

Disability

1985 Pension Disability Study Class 4 Unisex Table.

Prior:

Sample Rates	
Age	Rate
20	0.06%
25	0.09%
30	0.11%
35	0.15%
40	0.22%
45	0.36%
50	0.61%
55	1.01%
60	1.63%

**100% of deaths prior to retirement and 100% of disabilities are considered service connected.*

The actuarial assumptions in regards to rates of decrement shown above are based on the results of an actuarial experience study for the period July 1, 2008 through July 1, 2014.

Administrative expenses

We have included estimated administrative expenses in the development of the normal cost.

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

Payroll growth

0%.

Percent of active employees married

75%.

Spouse's age

Husbands are assumed to be 3 years older than wives.

Portion of benefit due to Emoluments

Active liabilities are loaded 7.3% to reflect the portion of future benefits based on 50% of emoluments.

The assumption changes increased liabilities by about 2.2%.

Summary of Plan Provisions

This summary outlines the major features of the Plan. It does not give full details or cover all aspects of the Plan. The actual terms and conditions of the Plan are stated in documents with the City.

Plan identification

Single-employer pension plan

Effective date

Originally effective June 13, 1913.

Amended and restated as of July 1, 2006.

Eligibility for Participation

Regular full-time Firefighters hired prior to March 18, 2003, covered under the IAFF, Local 1148 collective bargaining agreement.

Years of Service

Completed whole years of employment during which employee has made required contributions.

Base Rate of Pay

Salary or wages including elective deferrals under 401(k) or Sec. 125, limited by IRC 401(a)(17).

Emoluments

Longevity payments, holiday pay, life insurance and health insurance minus cost share.

Accrued Benefit

2.2% of Base Pay times Years of Service up to 20 Years,
plus
50% of current Emoluments.

Normal Retirement

Age & Service Requirements:

Earlier of

- 25 Years of Service
- Age 65

Benefit: Accrued Benefit

Termination

Prior to completion of 25 Years of Service: Return of employee contributions plus regular interest.

After completion of 10 Years of Service: Accrued Benefit, payable when Member would have completed 20 Years.

Disability

Eligibility: None if service-related; otherwise completion of 10 Years of Service.

Benefit: 50% of Base Pay plus Emoluments.

Death Prior to Retirement

Non-service related: Return of employee contributions plus regular interest.

Service-related: Surviving spouse receives 100% of Accrued Benefit as if Officer had 25 Years of Service. Upon attainment of date Officer would have attained 25 Years, spouse's benefit decreases to 50% of the pension amount. Payable until death or remarriage.

Post-retirement Death Benefit

Surviving spouse receives one-half of amount Member was receiving at time of death. Payable until death or remarriage.

Normal Form of Retirement Benefit

Single life annuity.

Employee Contributions

8% of Base Pay, split between Pension and OPEB at the City's discretion, plus Emoluments.

COLA

Retirement prior to January 1, 2003: based on increases in Base Pay for the rank held at retirement.

Retirement after January 1, 2003: active members retiring with at least 25 Years of Service: 3% of Base Pay, excluding Emoluments.

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