CITY EMPLOYEES' RETIREMENT FUND

ACTUARIAL VALUATION REPORT

JULY 1, 2018

hooker & holcombe

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Executive Summary

	July 1, 2018	July 1, 2016
Number of members		
Active employees	940	943
Terminated vested members	22	20
Vested in employee contributions only	44	65
Retired, disabled and beneficiaries	1,102	1,103
Total	2,108	2,131
Covered employee payroll	51,106,803	53,237,062
Average plan salary	54,369	56,455
Actuarial present value of future benefits	498,224,758	500,786,918
Actuarial accrued liability	459,960,594	461,503,244
Plan assets		
Market value of assets	169,713,789	153,440,281
Actuarial value of assets	178,553,006	176,433,401
Unfunded accrued liability	281,407,588	285,069,843
Funded ratio	38.8%	38.2%
Actuarially determined employer contribution (ADEC)		
Fiscal year ending	2020	2018
ADEC	22,221,339	21,662,916
Fiscal year ending	2021	2019
ADEC	22,665,766	22,096,174

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, 2018 valuation produces the contributions for the fiscal years ending 2020 and 2021.

Information Available in the Valuation Report

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

Changes Reflected in the Valuation

The inflation assumption was lowered from 2.75% to 2.50%. The mortality assumption was updated from RP-2014 with Scale MP-2016 to RP-2014 with Scale MP-2018.

Cash Contribution for Fiscal Years Ending 2020 and 2021

The City cost is:	2020 Fiscal Year	2021 Fiscal Year
	$22,221,339	$22,665,766

Liability Experience During Period Under Review

The plan experienced a net actuarial gain on liabilities of $17,398,174 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:

	2017 Fiscal Year	2018 Fiscal Year
Market Value Basis	8.7%	7.9%
Actuarial Value Basis	3.3%	3.5%

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

Certification

This report presents the results of the July 1, 2018 Actuarial Valuation for City Employees' Retirement Fund (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, 2020 and June 30, 2021. 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.

Richard S. Sych

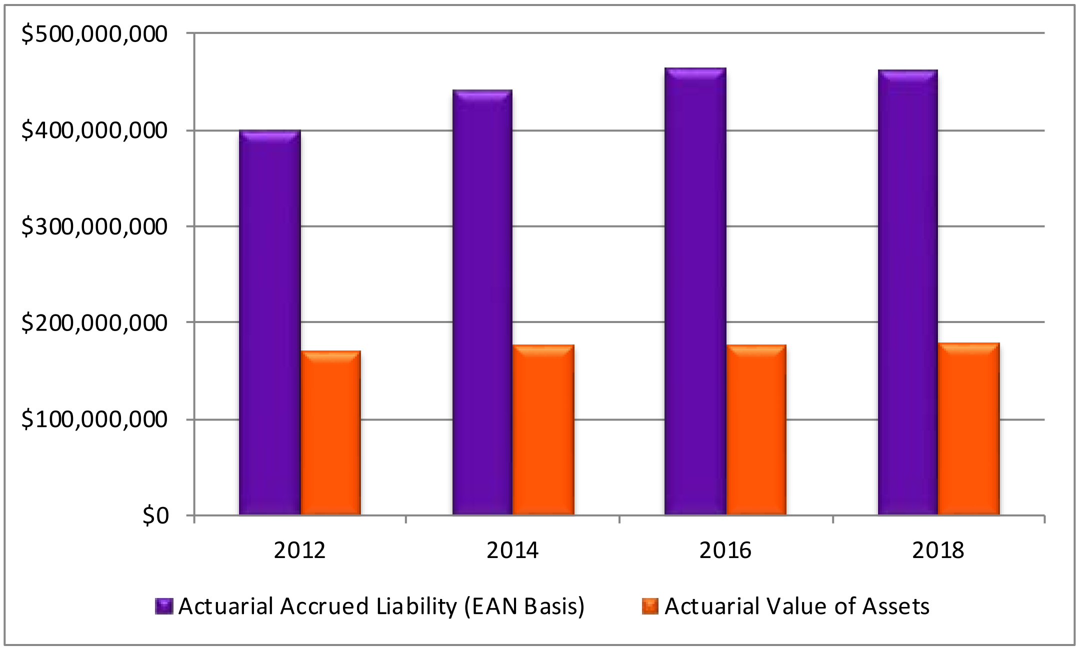
Richard S. Sych, FSA, FCA, MAAA,
Enrolled Actuary 17-05065

March 14, 2019

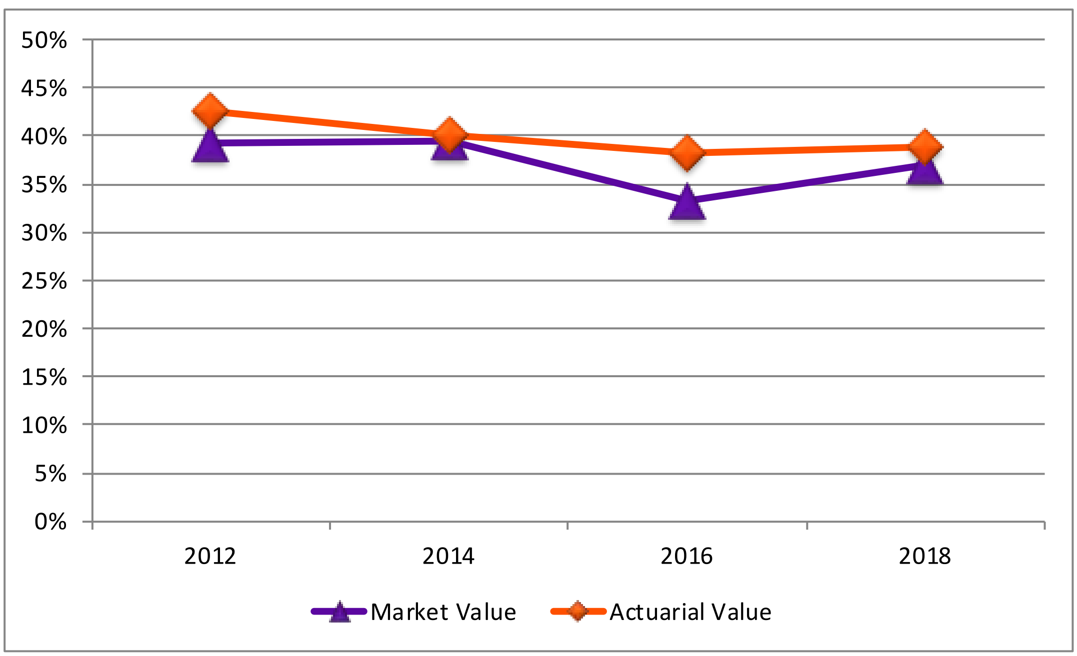
Development of Unfunded Accrued Liability and Funded Ratio

	July 1, 2018	July 1, 2016
Actuarial accrued liability for inactive members		
Retired, disabled and beneficiaries	$308,814,165	$313,009,119
Terminated vested members	1,832,648	3,158,148
Due refund of employee contributions only	425,775	759,218
Total	311,072,588	316,926,485
Actuarial accrued liability for active employees	148,888,006	144,576,759
Total actuarial accrued liability	459,960,594	461,503,244
Actuarial value of assets	178,553,006	176,433,401
Unfunded accrued liability	281,407,588	285,069,843
Funded ratio	38.8%	38.2%

Actuarial Accrued Liability vs. Actuarial Value of Assets



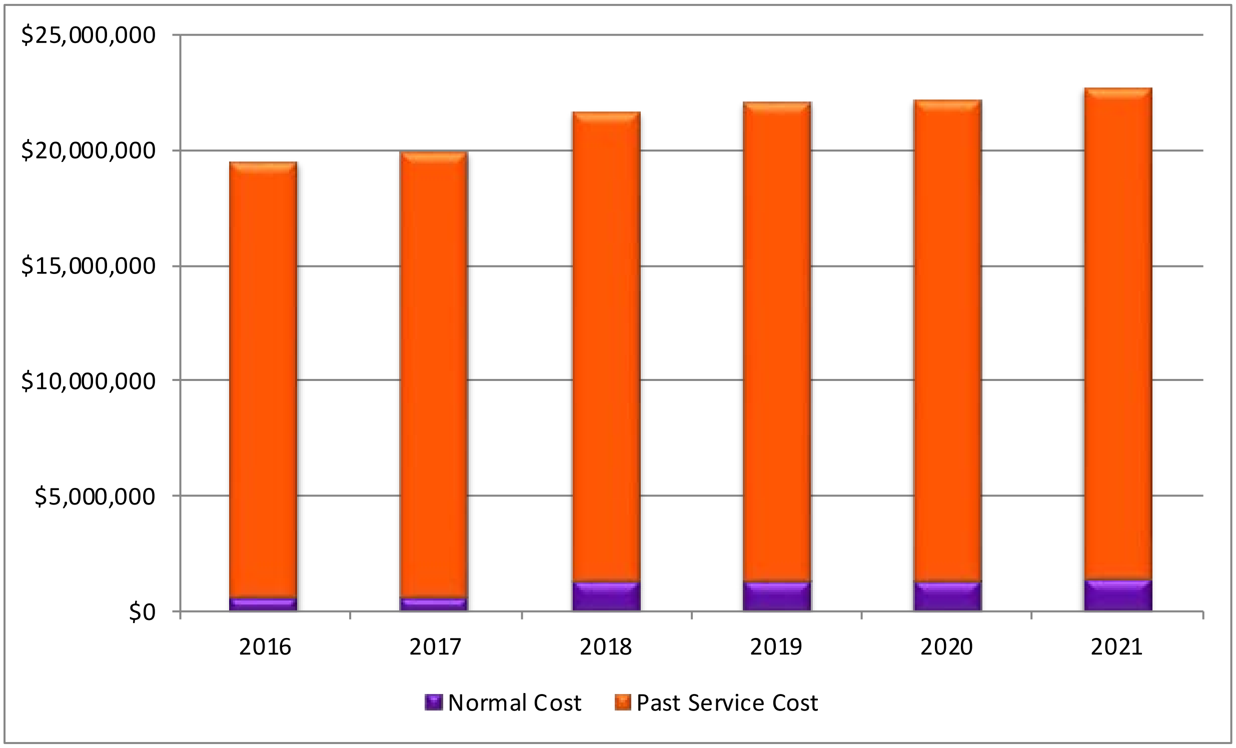
Funded Ratio



Determination of Normal Cost and Actuarially Determined Employer Contribution

	July 1, 2018		July 1, 2016	
	Cost	Percent of payroll	Cost	Percent of payroll
Gross normal cost	$5,887,225	10.9%	$5,847,690	11.0%
Estimated employee contributions	(4,876,183)	-9.0%	(4,798,967)	-9.0%
Estimated administrative expenses	255,000	0.4%	165,000	0.3%
City's normal cost	1,266,042	2.3%	1,213,723	2.3%
Amortization of unfunded accrued liability	20,519,584	38.0%	20,024,430	37.6%
Contribution before adjustment as of the valuation date	21,785,626	40.3%	21,238,153	39.9%
Estimated valuation year payroll for actives not yet at 100% assumed retirement age	54,018,127		53,237,062	
Fiscal year ending	2020		2018	
Adjustment for interest and inflation	435,713		424,763	
Actuarially determined employer contribution	22,221,339		21,662,916	
Fiscal year ending	2021		2019	
Adjustment for interest and inflation	444,427		433,258	
Actuarially determined employer contribution	22,665,766		22,096,174	

Actuarially Determined Employer Contribution



Valuation Contribution Change

Valuation Contribution Change		
Contribution before adjustment as of July 1, 2016		$21,238,153
Increase due to actuarial return on assets	$1,336,211	
Decrease due to liability gains	(1,501,747)	
Expected increase in normal cost	49,034	
Expected increase in amortization of unfunded accrued liability	808,987	
Decrease due to assumption or method changes	(561,840)	
Miscellaneous increase	416,828	
Total increase in contribution		547,473
Contribution before adjustment as of July 1, 2018		21,785,626

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, 2018		
Expected unfunded accrued liability July 1, 2017		
Unfunded accrued liability July 1, 2016	$285,069,843	
Gross normal cost July 1, 2016	6,012,690	
City and employee contributions for 2016-2017	(25,232,838)	
Interest at 7.75% to July 1, 2017	21,365,627	
Expected unfunded accrued liability July 1, 2017	287,215,322	
Expected unfunded accrued liability July 1, 2018		
Expected unfunded accrued liability July 1, 2017	287,215,322	
Expected gross normal cost July 1, 2017	6,129,644	
City and employee contributions for 2017-2018	(26,687,732)	
Interest at 7.75% to July 1, 2018	21,999,640	
Expected unfunded accrued liability July 1, 2018	288,656,874	
Actuarial (gain) / loss July 1, 2018	(1,917,779)	
Actual unfunded accrued liability July 1, 2018, prior to plan provision, assumption and method changes		286,739,095
Sources of (gain) / loss		
Assets	15,480,395	
Liabilities	(17,398,174)	
Total (gain) / loss	(1,917,779)	
Assumption and method changes since prior valuation		(5,331,507)
Actual unfunded accrued liability July 1, 2018, after plan provision, assumption and method changes		281,407,588

Development of Asset Values

Summary of Fund Activity		
	Market Value	**Actuarial Value**
1. Beginning value of assets July 1, 2017		
Trust assets	$162,050,464	$177,307,460
2. Contributions		
City contributions during year	21,706,165	21,706,165
Employee contributions during year	4,981,567	4,981,567
Total for plan year	26,687,732	26,687,732
3. Disbursements		
Benefit payments during year	31,210,152	31,210,152
Administrative expenses during year	251,637	251,637
Total for plan year	31,461,789	31,461,789
4. Net investment return		
Interest and dividends	2,230,488	N/A
Realized and unrealized gain / (loss)	10,911,682	N/A
Expected return	N/A	12,190,830
Recognized gain / (loss)	N/A	(6,171,227)
Required adjustment due to corridor	N/A	0
Reversal of prior year required adjustment	N/A	0
Investment-related expenses	(704,788)	N/A
Total for plan year	12,437,382	6,019,603
5. Ending value of assets July 1, 2018		
Trust assets: (1) + (2) - (3) + (4)	169,713,789	178,553,006
6. Approximate rate of return	7.9%	3.5%

Relationship of Actuarial Value to Market Value	
1. Market value 7/1/2018	$169,713,789
2. Gain / (loss) not recognized in actuarial value 7/1/2018	(8,839,217)
3. Preliminary actuarial value 7/1/2018: (1) - (2)	178,553,006
4. Preliminary actuarial value as a percentage of market value: (3) ÷ (1)	105.2%
5. Gain / (loss) recognized for corridor minimum / maximum	N/A
6. Actuarial value 7/1/2018 after corridor minimum / maximum: (3) + (5)	178,553,006
7. Actuarial value as a percentage of market value: (6) ÷ (1)	105.2%

Development of Market Value Gain / Loss for 2017-2018 Plan Year	
1. Market value 7/1/2017	$162,050,464
2. City contributions	21,706,165
3. Employee contributions	4,981,567
4. Benefit payments	31,210,152
5. Administrative expenses	251,637
6. Expected return at 7.75%	12,190,830
7. Expected value 7/1/2018: (1) + (2) + (3) - (4) - (5) + (6)	169,467,237
8. Market value 7/1/2018	169,713,789
9. Market value gain / (loss) for 2017-2018 plan year: (8) - (7)	246,552

Recognition of Gain / Loss in Actuarial Value

Year	(a) Gain / (loss)	(b) Total recognized as of 7/1/2017	(c) Recognized in current year: 20% of (a)	(d) Total recognized as of 7/1/2018: (b) + (c)	(e) Not recognized as of 7/1/2018: (a) - (d)
2013-2014	$0	$0	$0	$0	$0
2014-2015	(15,507,487)	(9,304,491)	(3,101,497)	(12,405,988)	(3,101,499)
2015-2016	(17,110,784)	(6,844,314)	(3,422,157)	(10,266,471)	(6,844,313)
2016-2017	1,515,587	303,117	303,117	606,234	909,353
2017-2018	246,552	0	49,310	49,310	197,242
Total			(6,171,227)		(8,839,217)

Summary of Fund Activity		
	Market Value	**Actuarial Value**
1. Beginning value of assets July 1, 2016		
Trust assets	$153,440,281	$176,433,401
2. Contributions		
City contributions during year	20,400,121	20,400,121
Employee contributions during year	4,832,717	4,832,717
Total for plan year	25,232,838	25,232,838
3. Disbursements		
Benefit payments during year	29,973,518	29,973,518
Administrative expenses during year	202,382	202,382
Total for plan year	30,175,900	30,175,900
4. Net investment return		
Interest and dividends	2,936,926	N/A
Realized and unrealized gain / (loss)	11,379,442	N/A
Expected return	N/A	12,037,658
Recognized gain / (loss)	N/A	(6,220,537)
Required adjustment due to corridor	N/A	0
Reversal of prior year required adjustment	N/A	0
Investment-related expenses	(763,123)	N/A
Total for plan year	13,553,245	5,817,121
5. Ending value of assets July 1, 2017		
Trust assets: (1) + (2) - (3) + (4)	162,050,464	177,307,460
6. Approximate rate of return	8.7%	3.3%

Relationship of Actuarial Value to Market Value	
1. Market value 7/1/2017	$162,050,464
2. Gain / (loss) not recognized in actuarial value 7/1/2017	(15,256,996)
3. Preliminary actuarial value 7/1/2017: (1) - (2)	177,307,460
4. Preliminary actuarial value as a percentage of market value: (3) ÷ (1)	109.4%
5. Gain / (loss) recognized for corridor minimum / maximum	N/A
6. Actuarial value 7/1/2017 after corridor minimum / maximum: (3) + (5)	177,307,460
7. Actuarial value as a percentage of market value: (6) ÷ (1)	109.4%

Development of Market Value Gain / Loss for 2016-2017 Plan Year	
1. Market value 7/1/2016	$153,440,281
2. City contributions	20,400,121
3. Employee contributions	4,832,717
4. Benefit payments	29,973,518
5. Administrative expenses	202,382
6. Expected return at 7.75%	12,037,658
7. Expected value 7/1/2017: (1) + (2) + (3) - (4) - (5) + (6)	160,534,877
8. Market value 7/1/2017	162,050,464
9. Market value gain / (loss) for 2016-2017 plan year: (8) - (7)	1,515,587

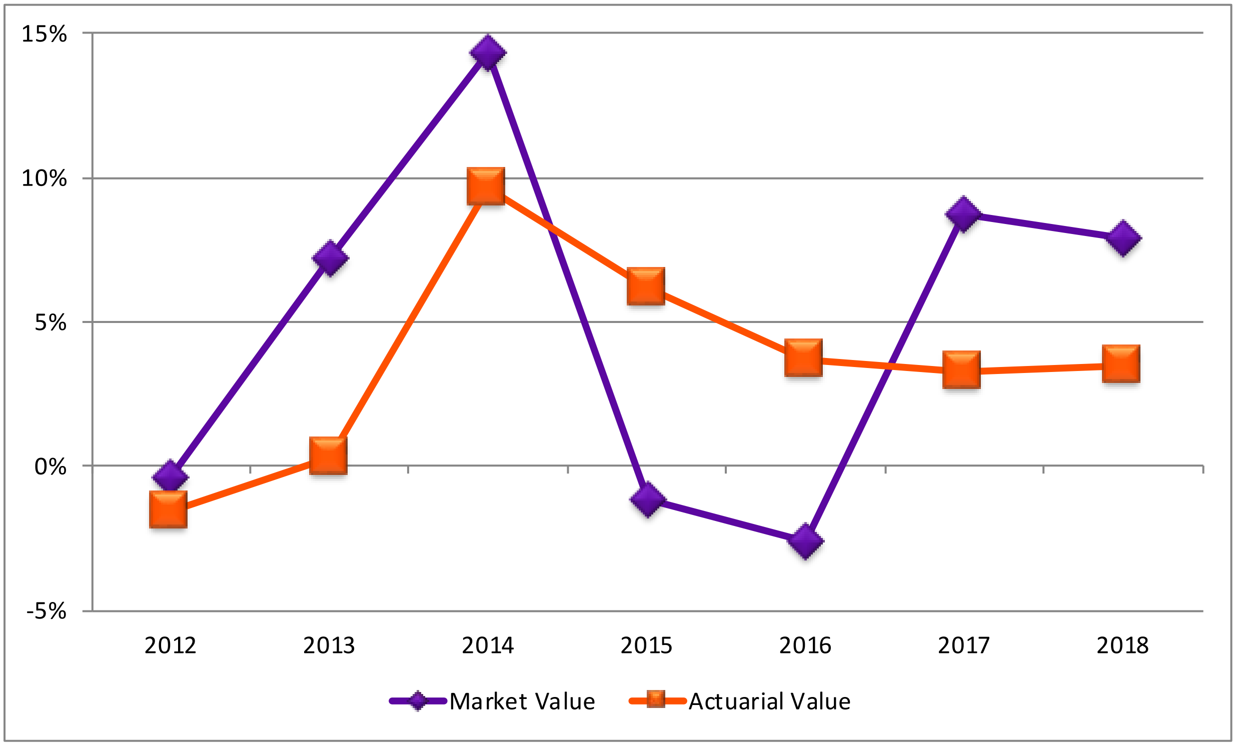
Recognition of Gain / Loss in Actuarial Value

Year	(a) Gain / (loss)	(b) Total recognized as of 7/1/2016	(c) Recognized in current year: 20% of (a)	(d) Total recognized as of 7/1/2017: (b) + (c)	(e) Not recognized as of 7/1/2017: (a) - (d)
2012-2013	$0	$0	$0	$0	$0
2013-2014	0	0	0	0	0
2014-2015	(15,507,487)	(6,202,994)	(3,101,497)	(9,304,491)	(6,202,996)
2015-2016	(17,110,784)	(3,422,157)	(3,422,157)	(6,844,314)	(10,266,470)
2016-2017	1,515,587	0	303,117	303,117	1,212,470
Total			(6,220,537)		(15,256,996)

Rate of Return on Market Value of Assets				
Period Ending	Average Annual Effective Rate of Return			
June 30	1 Year	3 Years	5 Years	10 Years
2009	-23.2%	-4.7%	0.1%	2.6%
2010	10.9%	-5.9%	0.5%	3.1%
2011	18.1%	0.2%	2.5%	4.3%
2012	-0.4%	9.3%	-0.4%	4.5%
2013	7.2%	8.0%	1.4%	4.9%
2014	14.3%	6.9%	9.8%	4.9%
2015	-1.1%	6.6%	7.3%	3.9%
2016	-2.6%	3.2%	3.3%	2.9%
2017	8.7%	1.5%	5.1%	2.3%
2018	7.9%	4.5%	5.2%	3.3%

Rate of Return on Actuarial Value of Assets				
Period Ending	Average Annual Effective Rate of Return			
June 30	1 Year	3 Years	5 Years	10 Years
2009	0.9%	N/A	N/A	N/A
2010	-6.9%	N/A	N/A	N/A
2011	7.4%	0.3%	N/A	N/A
2012	-1.6%	-0.5%	N/A	N/A
2013	0.3%	2.0%	-0.1%	N/A
2014	9.6%	2.7%	1.6%	N/A
2015	6.2%	5.3%	4.3%	N/A
2016	3.7%	6.4%	3.5%	N/A
2017	3.3%	4.4%	4.6%	N/A
2018	3.5%	3.5%	5.2%	2.5%

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
US Large Cap	19.00%	4.65%	0.88%
US Mid Cap / Small Cap	4.00%	5.50%	0.22%
Developed International Equity	9.00%	5.50%	0.50%
Emerging Market Equity	7.00%	6.50%	0.46%
Intermediate Corporate Fixed	2.00%	2.25%	0.05%
Intermediate Government Fixed	2.00%	1.65%	0.03%
High Yield Income	5.00%	3.25%	0.16%
International Bonds	0.00%	2.00%	0.00%
Emerging Market Debt	5.00%	3.75%	0.19%
Money Market / Short Term Bonds	2.00%	0.00%	0.00%
Real Estate (Core)	13.00%	5.00%	0.65%
Commodities	0.00%	5.25%	0.00%
Alternatives	32.00%	5.00%	1.60%
	100.00%		4.74%
Long-Term Inflation Expectation			2.50%
Long-Term Expected Nominal Return			7.24%

**Long-Term Real Returns are provided by HHIA. 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	**Amortization installment**	**Years remaining**	**Present value of remaining installments as of July 1, 2018**
2018 base	July 1, 2018	20,519,584	24	281,407,588

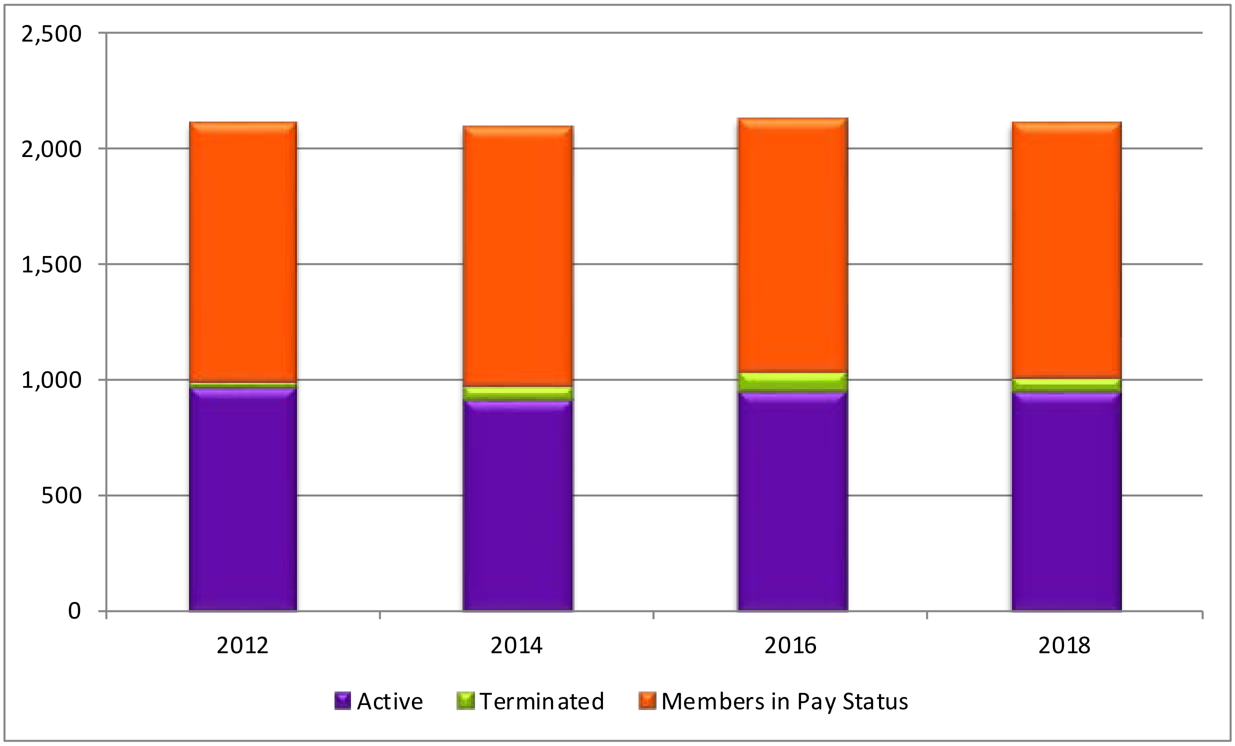
Member Data

The data reported by the Plan Sponsor for this valuation includes 940 active employees who met the Plan's minimum age and service requirements as of July 1, 2018.

Member Data					
	Active	Terminated vested	Due refund of contributions	Members in pay status	Total
Total members July 1, 2016	943	20	65	1,103	2,131
Adjustments	-6	-10	+4	0	-12
Retirements	-59	-1	N/A	+60	0
Disabilities	-5	-1	N/A	+6	0
Terminations					
Vested	-19	+19	N/A	N/A	0
Lump sum payments	-44	0	-39	N/A	-83
Due contributions only	-3	-1	+4	N/A	0
Deaths					
With death benefit	-2	0	0	-19	-21
Without death benefit	-5	-3	-1	-71	-80
Transfers	0	0	0	N/A	0
Rehires	+1	-1	0	N/A	0
New beneficiaries	N/A	N/A	N/A	+23	+23
New entrants	+139	N/A	+11	N/A	+150
Total members July 1, 2018	940	22	44	1,102*	2,108

** Includes 7 alternate payees receiving benefits*

Member Counts by Status



Member Data				
	Active	Terminated vested	Due refund of contributions	Members in pay status
Average age				
July 1, 2016	50.1	51.8	41.8	71.9
July 1, 2018	50.1	46.2	43.7	72.4
Average service				
July 1, 2016	14.2	N/A	N/A	N/A
July 1, 2018	14.2	N/A	N/A	N/A
Covered employee payroll				
July 1, 2016	$53,237,062	N/A	N/A	N/A
July 1, 2018	51,106,803	N/A	N/A	N/A
Total annual benefits				
July 1, 2016	N/A	$220,637	N/A	$29,171,631
July 1, 2018	N/A	262,433	N/A	30,552,127

Active Member Count by Age and Years of Service

	Completed Years of Credited Service										
Attained age	**Under 1**	**1 to 4**	**5 to 9**	**10 to 14**	**15 to 19**	**20 to 24**	**25 to 29**	**30 to 34**	**35 to 39**	**40 and over**	**All years**
Under 25	8	5									13
25 to 29	12	33	5								50
30 to 34	12	30	8	3							53
35 to 39	8	32	17	20	9						86
40 to 44	7	16	15	20	20	10					88
45 to 49	4	19	16	29	33	27	4				132
50 to 54	7	30	12	24	30	36	17	10			166
55 to 59	1	17	11	18	42	43	16	14	2	1	165
60 to 64	1	13	5	17	24	21	16	9	6	3	115
65 to 69	1	4	5	9	8	10	6	2		2	47
70 & over			1	1	5	3	3	4	3	5	25
All ages	**61**	**199**	**95**	**141**	**171**	**150**	**62**	**39**	**11**	**11**	**940**

Expected Benefit Payments from Trust Fund

An important consideration in formulating short-term or intermediate-term investment policy is the need for liquidity to meet the payment requirements of the Plan. The Plan's investment advisors may wish to compare expected benefit payments and expenses with anticipated cash income from investments and employer contributions.

The table below presents projected annual benefit payments for the next ten plan years. The following assumptions are reflected in this table:

- Retirements among active participants will occur at the valuation's assumed retirement date.
- Benefits will continue to accrue based on the current Plan.
- Plan salaries will increase in accordance with the valuation's assumption.
- Benefits will be paid monthly.
- Participants will receive the normal form of benefit.

Differences between actual experience and that assumed will affect the pattern of benefit payments.

Participant categories reflect status as of July 1, 2018.

Year	Active as of July 1, 2018	Retired and Terminated as of July 1, 2018	Total Benefit Payments
2018	$1,471,000	$30,721,000	$32,192,000
2019	3,441,000	30,106,000	33,547,000
2020	5,250,000	29,861,000	35,111,000
2021	6,993,000	29,567,000	36,560,000
2022	8,605,000	29,224,000	37,829,000
2023	10,161,000	28,835,000	38,996,000
2024	11,613,000	28,401,000	40,014,000
2025	12,947,000	27,918,000	40,865,000
2026	14,260,000	27,386,000	41,646,000
2027	15,565,000	26,806,000	42,371,000

Long Range Forecast

Projected Values as of the Valuation Date				Cash Flows Projected to the Following Fiscal Year			
Fiscal Year Ending	Market Value of Fund - Beginning of Fiscal Year	City Contribution (ADEC) *	Employee Contributions	Estimated Benefit Payments + Expense	Expected Net Cash Flow	Estimated Investment Earnings (@ 7.75%)	Market Value of Fund - End Fiscal Year
6/30/2019	169,713,789	***$22,096,000***	$4,876,000	$32,192,000	($5,220,000)	$13,664,000	$178,157,789
6/30/2020	178,157,789	**22,221,000**	4,974,000	33,548,000	(6,353,000)	14,279,000	186,083,789
6/30/2021	186,083,789	**22,666,000**	5,073,000	35,111,000	(7,372,000)	14,868,000	193,579,789
6/30/2022	193,579,789	23,119,000	5,174,000	36,560,000	(8,267,000)	15,429,000	200,741,789
6/30/2023	200,741,789	23,581,000	5,277,000	37,829,000	(8,971,000)	15,971,000	207,741,789
6/30/2024	207,741,789	24,053,000	5,383,000	38,995,000	(9,559,000)	16,506,000	214,688,789
6/30/2025	214,688,789	24,534,000	5,491,000	40,014,000	(9,989,000)	17,044,000	221,743,789
6/30/2026	221,743,789	25,025,000	5,601,000	40,865,000	(10,239,000)	17,596,000	229,100,789
6/30/2027	229,100,789	25,526,000	5,713,000	41,646,000	(10,407,000)	18,176,000	236,869,789
6/30/2028	236,869,789	26,037,000	5,827,000	42,371,000	(10,507,000)	18,791,000	245,153,789
6/30/2029	245,153,789	26,558,000	5,944,000	43,045,000	(10,543,000)	19,448,000	254,058,789
6/30/2030	254,058,789	27,089,000	6,063,000	43,637,000	(10,485,000)	20,158,000	263,731,789
6/30/2031	263,731,789	27,631,000	6,184,000	44,098,000	(10,283,000)	20,933,000	274,381,789
6/30/2032	274,381,789	28,184,000	6,308,000	44,410,000	(9,918,000)	21,790,000	286,253,789
6/30/2033	286,253,789	28,748,000	6,434,000	44,587,000	(9,405,000)	22,749,000	299,597,789
6/30/2034	299,597,789	29,323,000	6,563,000	44,593,000	(8,707,000)	23,828,000	314,718,789
6/30/2035	314,718,789	29,909,000	6,694,000	44,436,000	(7,833,000)	25,053,000	331,938,789
6/30/2036	331,938,789	30,507,000	6,828,000	44,161,000	(6,826,000)	26,446,000	351,558,789
6/30/2037	351,558,789	31,117,000	6,965,000	43,756,000	(5,674,000)	28,031,000	373,915,789
6/30/2038	373,915,789	31,739,000	7,104,000	43,237,000	(4,394,000)	29,833,000	399,354,789

**** ADECs are projected at the 2% payroll increase assumption after last published ADEC. ADECs asssume a 7.75% rate of return after 7/1/2018 to reflect the future impact of the current unrecognized losses being recognized.***

Description of Actuarial Methods

Asset Valuation Method

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

Actuarial Cost Method

Changes in Actuarial Cost Method: None.

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

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

Past Service Liability: The present value of future benefits that relates to service before the valuation date is the total past service liability. The unfunded past service liability is the difference between the total past service liability and any assets (including accumulated member contributions). The amount is amortized over 24 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.

In addition, an annual 2.00% amortization increase rate was assumed.

Description of Actuarial Assumptions

Changes in Actuarial Assumptions

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

- Inflation
- Salary increase
- Mortality

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

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

7.75% per year.

Rate of compensation increase (including inflation)

2.00%.

Inflation

2.50%. (Prior: 2.75%)

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.

Salary increases

	Years of Service			
Age	< 1	1	2	3+
<=30	10.50%	8.25%	6.00%	3.75%
30	9.50%	7.50%	5.50%	3.50%
40	8.50%	6.75%	5.00%	3.25%
50	7.50%	6.00%	4.50%	3.00%
55	6.50%	4.75%	4.00%	2.75%
>=60	5.50%	4.50%	3.50%	2.50%

* Implicit inflation assumption is 2.50%.

Prior:

	Years of Service			
Age	< 1	1	2	3+
<=30	10.75%	8.50%	6.25%	4.00%
30	9.75%	7.75%	5.75%	3.75%
40	8.75%	7.00%	5.25%	3.50%
50	7.75%	6.25%	4.75%	3.25%
55	6.75%	5.00%	4.25%	3.00%
>=60	5.75%	4.75%	3.75%	2.75%

* Implicit inflation assumption is 2.75%.

The actuarial assumption in regards to rates of salary increases shown above are based on the results of an actuarial experience study for the period July 1, 2008 through June 30, 2014.

Overtime and Longevity Pay

Project actual total compensation with salary scale to expected retirement and compare with projected final budgeted pay.

Mortality

PR-2014 Adjusted to 2006 Total Dataset Mortality Table projected to valuation date with Scale MP-2018, set forward one year.

Prior: RP-2014 Adjusted to 2006 Total Dataset Mortality Table projected to valuation date with Scale MP-2016, set forward one year.

Mortality Improvement

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

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

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

Retirement age

Age and service based table developed from 2008-2014 experience. The assumed rates of retirement are as follows:

	Years of Service				
Age	10	15	20	25	30+
45	0%	3%	5%	5%	5%
50	3%	3%	10%	10%	15%
55	5%	5%	10%	15%	20%
60	10%	10%	18%	18%	23%
65	25%	25%	25%	25%	30%
70	10%	10%	10%	10%	20%
75	35%	35%	35%	35%	50%
80	100%	100%	100%	100%	100%

The actuarial assumption in regards to rates of retirement shown above is based on the results of an actuarial experience study for the period 2008 through 2014.

Termination prior to retirement

	Years of Service			
Age	< 1	1	2	3+
<=20	12.00%	12.00%	12.00%	12.00%
25	12.00%	12.00%	11.75%	11.00%
30	12.00%	11.00%	10.00%	8.60%
35	12.00%	11.00%	10.00%	6.60%
40	12.00%	11.00%	10.00%	6.00%
45	12.00%	11.00%	10.00%	5.00%
50	10.00%	9.00%	8.00%	5.00%
55	7.00%	6.50%	6.00%	5.00%
>=60	6.00%	5.50%	5.00%	4.50%

The actuarial assumption in regards to rate of termination shown above is based on the results of an actuarial experience study for the period 2008 through 2014.

Disability

The assumed rates of disability are from the 1985 Pension Disability Table, Class 1 professional administrative, supervisory, sales and clerical occupations.

Administrative expenses

The estimate is based on actual expenses paid from the trust in the prior year. Estimated expenses are added to annual budget estimates at the time of their preparation.

Cost of living increases

Increases are assumed to average 2.3% per year for employees with more than 20 years (Tier 1), 1.7% for employees with less than 20 years (Tier 2 and Tier 3), and 1.4% for new employees, where Tier is determined by the bargaining unit's specific service counting dates.

Payroll growth

2.00% per year.

Percent of active employees married

80% of male employees and 70% of female employees assumed married.

Spouse's age

Husbands are assumed to be 3 years older than wives.

COLA Buy-out Assumption

0% of the eligible employees are assumed to buy out the Cost of Living provision upon retirement.

As of the valuation date, there was not enough data to support a change in this assumption.

Summary of Plan Provisions

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

Effective Date

January 1, 1938 and dates of subsequent amendments.

Plan Year

July 1 through June 30.

Employees Covered

General Fund or Water Pollution Control Authority full time employees or full time elected or appointed officers if,

1. hired before age 55 (60 for some employee groups);
2. not receiving benefits from or eligible for participation in any other pension plan of the City or the State of Connecticut; and
3. makes employee contributions.

Coverage is automatic for such full time employees.

Credited Service

Employment with the City prior to January 1, 1938; employment with the City after January 1, 1938 during which time employee contributions were made.

Form of Benefit Payment

Life annuity with a 50% survivor benefit for service pensioners and disabled pensioners.

Non-Occupational Disability

Payable (after 10 years of credited service) upon medical proof of “permanently disabled from performing duties of the nature required by his job”. Benefit is equal to the service retirement benefit with a minimum equal to 50% (or lower percentage for members hired after age 40) of the disabled member’s rate of pay at time of disability. Benefits are subject to reductions for portions of any earnings received while disabled. Continuance of benefits are subject to periodic medical examinations.

Occupational Disability

Same as non-occupational disability except there is no service requirement if disability arises “out of and in the course of employment”. Disability benefits are reduced by weekly Worker’s Compensation payments.

Survivor Benefits

The benefit, payable to a qualified spouse or the qualified children of members with at least 10 years of credited service, is equal to either 50% of the benefit to which the member would have been entitled if he was approved for a permanent disabled pension on the date of his death, or 50% of the benefit the deceased member actually was receiving on his date of death. The minimum benefit, subject to only a six month service requirement, is set forth in a table based on the number of qualified survivors and the member's "highest average pay". The maximum monthly benefit in this table for average annual pay of $16,800 or more, amounts to $265, $510 and $800 respectively when there are one, two or three or more qualified survivors. (Prior to July 1, 1990 the highest average annual pay was $12,000 which generated maximum survivors' benefits of $225, $430 and $600 respectively.)

Death Benefits

If the accumulated employee contributions exceed the benefit payments made to a member and/or his survivors, the difference will be paid to the appropriate beneficiary, legal representative or estate in a lump sum.

Termination Benefits

100% of the accrued normal retirement benefit will be payable at age 65 for members who have completed 10 years of credited service (previously disabled members who have recovered from their disability and have not returned to work need not satisfy this 10 years of credited service requirement) and have not elected to withdraw their accumulated employee contributions. (Prior to July 1, 1980 previously disabled members had to satisfy the 10 years of credited service requirement.)

All other terminating members receive their accumulated contributions without interest in a lump sum. After March 31, 1991, members who have completed 10 years of credited service and who elect to receive their accumulated contributions instead of their accrued normal retirement benefit will also receive interest on their accumulated contributions at the rate of 3% compounded annually.

Summary of Plan Provisions – by Union Groups 3144, 884, 71 and 424

PROVISIONS FOR:	3144- Supervisors	884 Clerical	71 Public Works (CILU/CIPU)	424 Public Works
Contract Ratification Date (Tiers only apply to those that retired after this date)	7/1/2013	9/9/2012	12/6/2013	12/3/2014
Tier 1	As of 7/1/2013, >=20 years of cred svc	As of 7/1/10, >=20 years of cred svc	As of 7/1/10, >=20 years of cred svc	As of 7/1/10, >=20 years of cred svc
Tier 2	As of 7/1/2013, >=10 but <20 years of cred svc	As of 7/1/10, >=10 but <20 years of cred svc	As of 7/1/10, >=10 but <20 years of cred svc	As of 7/1/10, >=10 but <20 years of cred svc
Tier 3	As of 7/1/2013, <10 years of cred svc	As of 7/1/10, <10 years of cred svc	As of 7/1/10, <10 years of cred svc	As of 7/1/10, <10 years of cred svc
Tier 4	Hired after 7/1/2013	Hired after 7/1/10	Hired after 7/1/2010	Hired after 12/3/14
Employee Contributions	9.0% - as of July 1, 2013 10.0% - as of July 1, 2014	9.0% - as of July 1, 2014	8.5% - as of July 1, 2013 9.0% -as of July 1, 2014	7.25%
Service Retirement Date	Age 65 with 10 or more years as of July 1, 2013 or Rule of 80 with no minimum age (Tiers 1 and 2). With less than 10 years as of July 1, 2013, Rule of 85 with minimum age 62 (Tiers 3 &	Age 65 with 10 or more years as of July 1, 2010 or Rule of 80 with no minimum age (Tiers 1 & 2). With less than 10 years as of July 1, 2010, Rule of 85 with minimum age 62 (Tiers 3 & 4).	Age 65 with 10 or more years as of July 1, 2010 or Rule of 80 with no minimum age (Tiers 1 & 2). With less than 10 years as of July 1, 2010 , Rule of 85 with minimum age 62 (Tiers 3 & 4).	Age 65 with 10 or more years as of July 1, 2010 or Rule of 80 with no minimum age (Tiers 1 & 2). With less than 10 years as of July 1, 2010 , Rule of 85 with minimum age 62 (Tiers 3 & 4).
Highest Average Pay	Average rate of pay or total earnings if greater, for the five years of service producing the highest average. After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of retirement.	Average rate of pay (Tiers 2,3 & 4) or total earnings if greater (Tier 1), for the five years of service producing the highest average. After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of retirement.	Average rate of pay (Tiers 3 & 4) or total earnings if greater (Tiers 1 & 2), for the five years of service producing the highest average. After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of retirement.	Average rate of pay (Tiers 3 & 4) or total earnings if greater (Tiers 1 & 2), for the five years of service producing the highest average. After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of retirement.

PROVISIONS FOR:	3144- Supervisors	884 Clerical	71 Public Works (CILU/CIPU)	424 Public Works
Service Retirement Benefit:	2% of "highest average pay" for each year of service and fraction thereof up to 20 years plus 3% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.	2% of "highest average pay" for each year of service and fraction thereof up to 20 years plus 3% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.	2% of "highest average pay" for each year of service and fraction thereof up to 20 years plus 3% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.	2% of "highest average pay" for each year of service and fraction thereof up to 20 years plus 3% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.
Early Retirement Benefit:	Determined in the same manner as the service retirement benefit and reduced by 3.5% (Tiers 3 & 4) and 2.0% for employees with more than 10 years of service as of July 1, 2013 (Tiers 1 & 2) for each year benefit payments start prior to service retirement date.	Determined in the same manner as the service retirement benefit and reduced by 3.5% (Tiers 3 & 4) and 2.0% for employees with more than 10 years of service as of July 1, 2010 (Tiers 1 & 2) for each year benefit payments start prior to service retirement date.	Determined in the same manner as the service retirement benefit and reduced by 3.5% (Tier 4) and 2.0% for hires prior to July 1, 2010 (Tiers 1, 2 & 3) for each year benefit payments start prior to service retirement date.	Determined in the same manner as the service retirement benefit and reduced by 3.5% (Tiers 3 & 4) and 2.0% for employees with more than 10 years of service as of July 1, 2010 (Tiers 1 & 2) for each year benefit payments start prior to service retirement date.

PROVISIONS FOR:	3144- Supervisors	884 Clerical	71 Public Works (CILU/CIPU)	424 Public Works
Cost of Living Adjustments:	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% (Tier 1) and 2% for participants with less than 20 years as of July 1, 2013 (Tiers 2,3 & 4) and (2) the cost of living adjustments will never reduce the benefit below its original level. It is capped at 20% for participants with less than 20 years as of July 1, 2013 (Tiers 2,3 & 4).	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% (Tier 1) and 2% for participants with less than 20 years as of July 1, 2010 (Tiers 2 ,3 & 4) and (2) the cost of living adjustments will never reduce the benefit below its original level. It is capped at 15% for participants with less than 10 years as of July 1, 2010 (Tier 3 & 4) and at 20% for participants with less than 20 years but more than 10 years as of July 1, 2010 (Tier 2).	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% (Tier 1) and 2% for participants with less than 20 years as of July 1, 2010 (Tiers 2, 3 & 4) and (2) the cost of living adjustments will never reduce the benefit below its original level. It is capped at 20% for participants with less than 20 years as of July 1, 2010 (Tiers 2,3 & 4).	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% (Tier 1) and 2% for participants with less than 20 years of service as of July 1, 2010 (Tiers 2,3 & 4) and (2) the cost of living adjustments will never reduce the benefit below its original level. It is capped at 15% for participants with less than 10 years as of July 1, 2010 (Tier 3 & 4) and at 20% for participants with less than 20 years but more than 10 years as of July 1, 2010 (Tier 2).
Future COLA Buyout	Upon retirement, a member may elect to forego the COLA benefits at a rate of 40% of the actuarial value of the benefit.	Upon retirement, a member may elect to forego the COLA benefits at a rate of 40% of the actuarial value of the benefit.	Upon retirement, a member may elect to forego the COLA benefits at a rate of 40% of the actuarial value of the benefit.	Upon retirement, a member may elect to forego the COLA benefits at a rate of 40% of the actuarial value of the benefit.

Summary of Plan Provisions – by Union Groups 1303-464, 287, 217, 21, 11, 90 and 777

PROVISIONS FOR:	Executive Mgmt & 1303-464 Attorneys	287 Custodians	217 Food Service	21, 11, 90, 777 Trades
Contract Ratification Date (Tiers only apply to those that retired after this date)		12/31/2012		10/15/2013
Tier 1		As of award date, >=20 years of cred svc		As of 7/1/10, >=20 years of cred svc
Tier 2		As of award date, >=10 but <20 years of cred svc		As of 7/1/10, >=10 but <20 years of cred svc
Tier 3		As of award date, <10 years of cred svc		As of 7/1/10, <10 years of cred svc
Tier 4		Hired after 12/31/2012		Hired after 7/1/2010
Employee Contributions	6.50%	9.0% - as of July 1, 2013	5.00%	8.5% - as of July 1, 2014 9.0% - as of July 1, 2015 9.5% - as of July 1, 2016
Service Retirement Date	Age 60 with 10 years of service	Age 65 with 10 or more years as of December 31, 2012 or Rule of 80 with no minimum age (Tiers 1 & 2). With less than 10 years as of December 31, 2012, Rule of 85 with minimum age 62 (Tiers 3 &	Age 65 with 10 years of service or Rule of 80	Age 65 with 10 or more years as of July 1, 2010 or Rule of 80 with no minimum age (Tiers 1 & 2). With less than 10 years as of July 1, 2010 , Rule of 85 with minimum age 62 (Tiers 3 & 4).
Highest Average Pay	Average rate of pay or total earnings if greater, for the five years of service producing the highest average. After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of retirement.	Average rate of pay (Tier 4) or total earnings if greater (Tiers 1 & 2), for the five years of service producing the highest average. Average rate of pay for three years of service producing the highest average (Tier 3). After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of	Average rate of pay or total earnings if greater, for the five years of service producing the highest average. After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of retirement.	Average rate of pay (Tiers 3 & 4) or total earnings if greater (Tiers 1 & 2), for the five years of service producing the highest average. After March 31, 1991, highest average pay will be subject to a minimum of budgeted salary as of date of retirement.

PROVISIONS FOR:	Executive Mgmt & 1303-464 Attorneys	287 Custodians	217 Food Service	21, 11, 90, 777 Trades
Service Retirement Benefit:	4% of "highest average pay" for each year of service and fraction thereof up to 10 years plus 2% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.	2% of "highest average pay" for each year of service and fraction thereof up to 20 years plus 3% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.	2% of "highest average pay" for each year of service and fraction thereof up to 20 years plus 3% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.	2% of "highest average pay" for each year of service and fraction thereof up to 20 years plus 3% of "highest average pay" for each year of service and fraction thereof in excess of 20 thereafter. Maximum benefit equals 70% of highest average pay. Minimum annual benefit is $2,000.
Early Retirement Benefit:	Determined in the same manner as the service retirement benefit and reduced by 2% for each year benefit payments start prior to service retirement date.	Determined in the same manner as the service retirement benefit and reduced by 6.0% (Tiers 3 & 4) and 2.0% for hires prior to 2002 (Tiers 1 & 2) for each year benefit payments start prior to service retirement date.	Determined in the same manner as the service retirement benefit and reduced by 2% for each year benefit payments start prior to service retirement date.	Determined in the same manner as the service retirement benefit and reduced by 3.5% (Tiers 3 & 4) and 2.0% for hires more than ten years prior to July 1, 2010 (Tiers 1 & 2) for each year benefit payments start prior to service retirement date.

PROVISIONS FOR:	Executive Mgmt & 1303-464 Attorneys	287 Custodians	217 Food Service	21, 11, 90, 777 Trades
Cost of Living Adjustments:	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% and (2) the cost of living adjustments will never reduce the benefit below its original level. It is not capped.	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% (Tier 1) and 2% for participants with less than 20 years as of December 31, 2012 (Tiers 2 & 3) and 1.50% for hires after December 31, 2012 (Tier 4) and (2) the cost of living adjustments will never reduce the benefit below its original level. It is capped at 10% for participants with less than 20 years as of December 31, 2012 (Tiers 2, 3 & 4).	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% and (2) the cost of living adjustments will never reduce the benefit below its original level. It is not capped.	Employees and their beneficiaries who are receiving monthly benefits will have these benefits increased or decreased each year according to U.S. CPI subject to the following restrictions: (1) the annual increase or decrease will be limited to 3% (Tier 1) and 2% for participants with less than 20 years as of October 3, 2014 (Tiers 2 & 3) and 1.50% for hires after October 3, 2014 (Tier 4) and (2) the cost of living adjustments will never reduce the benefit below its original level. It is capped at 15% for participants with less than 10 years as of October 3, 2014 (Tiers 3 & 4) and at 20% for participants with less than 20 years as of October 3, 2014
Future COLA Buyout	None.	Upon retirement, a member may elect to forego the COLA benefits at a rate of 40% of the actuarial value of the benefit.	None.	Upon retirement, a member may elect to forego the COLA benefits at a rate of 40% of the actuarial value of the benefit.