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Town of Needham

Contributory Retirement System

Actuarial Valuation Report

January 1, 2012

December 2012

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Report Summary:

Highlights	**January 1, 2011**	**January 1, 2012**
Contributions		
Funding Schedule FY 2013	$4,997,421	$4,997,421
Funding Schedule FY 2014	5,164,696	5,420,454
Funded Ratios		
GASB 25	77.9%	72.9%
Participants		
Actives	631	644
Retirees and Beneficiaries	446	435
Inactives	107	127
Disabled	41	38
Total	1,225	1,244
Payroll		
Payroll of Active Members	$28,057,204	$28,963,004
Average Payroll	44,465	44,974
Normal Cost		
Employer	$1,738,724	$1,736,898
Employee	2,365,020	2,458,692
Administrative Expenses	200,000	200,000
Total	$4,303,744	$4,395,590
Actuarial Accrued Liabilities		
Actives	$71,102,694	$72,403,383
Retirees, Beneficiaries, Disabilities and Inactives	78,475,279	84,511,483
Total	$149,577,973	$156,914,866
Actuarial Value of Assets	116,465,717	114,445,376
Unfunded Actuarial Accrued Liabilities	$33,112,256	$42,469,490

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2012, of Needham Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2012
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Town of Needham Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2012.

The valuation and forecast do not account for:

- Any subsequent changes in the law. In particular, benefit changes approved under Chapter 176 of the Acts of 2011 impact only members hired on or after April 2, 2012 and are therefore not reflected in this valuation. Subsequent valuations will be impacted to the extent the City has employees hired on or after the effective date.
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability and withdrawal rates as well as payroll, salary increases and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the year, the total unfunded actuarial accrued liability increased by 28.3% to $42,469,490. As shown in the reconciliation below, the major drivers were investment performance, salary increases, and a change in mortality assumption. The 0.38% return on actuarial assets was less than the 8% expected, and this had an unfavorable effect on the funded status. And the actuarial salary increases were lower than expected, which had a favorable effect on the funded status. In addition, to comply with a recent update within Actuarial Standard of Practice No. 35 (ASOP 35), the pre-retirement and post-retirement mortality were updated to the RP-2000 Mortality Table projected 22 years with Scale AA for males and females. This change increased the unfunded liability by $5,974,500. The sources of the (Gain)/Loss are as follows:

1/1/2011 unfunded accrued liability		$33,112,256
Expected change		(161,025)
Expected 1/1/2012 unfunded accrued liability		$32,951,231
Plan Experience		
Investment	$8,783,478	
Salary Increases	(3,031,995)	
New Participants	481,375	
Active - Retirements	(481,163)	
Active - Terminations	137,415	
Active - Mortality	12,176	
Active - Disabilities	(283,966)	
Retiree Mortality	629,942	
Other (Data corrections, Section 3(8)(c), etc.)	(999,832)	
Total (Gain)/Loss		5,247,430
Change in mortality assumption		5,974,500
Change in salary scale assumption		(1,703,671)
1/1/2012 unfunded accrued liability		$42,469,490

Actuarial Costs and Liabilities:

Normal Costs

An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. The normal cost is the sum of the individual normal costs determined for each member. Benefits payable under all circumstances (i.e., retirement, death, disability and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Table I

	January 1, 2011	January 1, 2012
Superannuation	$2,851,719	$2,969,687
Termination	425,519	463,396
Death	188,586	140,738
Disability	637,920	621,769
Administrative Expenses	200,000	200,000
Total Normal Cost	$4,303,744	$4,395,590
% of Pay	15.3%	15.2%
Employee Contributions	2,365,020	2,458,692
% of Pay	8.4%	8.5%
Employer Normal Cost	$1,938,724	$1,936,898
% of Pay	6.9%	6.7%

Present Value of Actuarial Accrued Liabilities

The actuarial accrued liabilities (AAL) represent the value of all benefits as of January 1, 2012, based on the past service of the actives and inactives. The AAL can be compared to the assets to determine the funded status of the Plan. The present value of these earned benefits is shown in Table II below.

Table II

	January 1, 2011	January 1, 2012
Actives		
Superannuation	$65,396,456	$67,309,764
Termination	521,976	532,541
Death	1,779,332	1,303,617
Disability	3,404,930	3,257,461
Retirees and Inactives		
Retirees and Beneficiaries	$65,288,175	$70,687,108
Terminated (Refund)	1,466,769	1,716,721
Disabled	11,720,335	12,107,654
Total	$149,577,973	$156,914,866

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Present Value of Future Benefits

The present value of future benefits represents the value of all benefits as of January 1, 2012, earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The present value of the total expected benefits is shown in Table III.

Table III

	January 1, 2011	January 1, 2012
Actives		
Superannuation	$90,063,379	$92,214,733
Termination	2,913,014	3,057,901
Death	3,277,116	2,424,793
Disability	9,471,240	9,146,387
Retirees and Inactives		
Retirees and Beneficiaries	$65,288,175	$70,687,108
Terminated (Refund)	1,466,769	1,716,721
Disabled	11,720,335	12,107,654
Total	$184,200,028	$191,355,297

Funded Status and Appropriations:

Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

Table IV

	January 1, 2011	January 1, 2012
Cash equivalents	$2,764,907	$2,231,435
Short term investments	0	0
Fixed income securities	0	0
Equities	0	0
International	0	0
Real Estate	0	0
Venture Capital	0	0
PRIT	103,694,430	101,362,151
Accounts receivable	67,468	73,610
Accounts payable	(56,185)	(34,425)
Accrued income	1,254	0
Total Market Value	$106,471,875	$103,632,771
Total Actuarial Value	$116,465,717	$114,445,376

Sum of values may not equal due to rounding.

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Actuarial Value of Assets

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.00%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 20%. The calculation of the actuarial value of assets as of January 1, 2012 is presented in Table V.

Table V

		January 1, 2012
(1)	Market value at January 1, 2011	$106,471,875
(2)	2011 Contributions	$8,066,311
(3)	2011 Payments	($10,522,196)
(4)	Net interest adjustment at 8.00% on (1), (2) and (3) to December 31, 2011	$8,419,515
(5)	Expected market value on January 1, 2012 (1) + (2) + (3) + (4)	$112,435,505
(6)	Actual market value on January 1, 2012	$103,632,771
(7)	2011 (Gain) / Loss	$8,802,734
(8)	80% of 2011 (Gain) / Loss	$7,042,187
(9)	2010 (Gain) / Loss	($4,522,713)
(10)	60% of 2010 (Gain) / Loss	($2,713,628)
(11)	2009 (Gain) / Loss	($6,806,891)
(12)	40% of 2009 (Gain) / Loss	($2,722,756)
(13)	2008 (Gain) / Loss	$46,034,008
(14)	20% of 2008 (Gain) / Loss	$9,206,802
(15)	Actuarial value on January 1, 2012, (6) + (8) + (10) + (12) + (14) but not less than 80% nor greater than 120% of (6)	$114,445,376
(16)	Ratio of actuarial value to market value	110.43%
(17)	Actuarial Value Return for 2010	2.58%
(18)	Actuarial Value Return for 2011	0.38%
(19)	Market Value Return for 2010	12.74%
(20)	Market Value Return for 2011	-0.36%

Unfunded Actuarial Accrued Liabilities

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

Table VI

	January 1, 2011	January 1, 2012
Actuarial Accrued Liability	$149,577,973	$156,914,866
Actuarial Assets	116,465,717	114,445,376
Unfunded Actuarial Accrued Liability	$33,112,256	$42,469,490
Funded Status	77.9%	72.9%

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Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Sections 22D and 22F of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2040, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2030
  $ 32,951,231 over 18 years with 4.5% increasing payments
- Increasing amortization of the current (gains)/losses by June 30, 2030
  $ 9,518,259 over 18 years with 4.5% increasing payments
- Interest adjustment for payments deposited at the beginning of the fiscal year

The pension appropriation is shown in Table VII.

Table VII

	January 1, 2011	January 1, 2012
Normal cost	$1,938,724	$1,936,898
Amortization payment of the prior accrued liability	2,622,566	2,387,193
Amortization payment of current (gains)/losses	82,915	689,562
Total cost	$4,644,205	$5,013,653
% of Pay	16.6%	17.3%
Fiscal 2013 cost	$4,997,421	$4,997,421
Fiscal 2014 cost	$5,164,696	$5,420,454

Appropriation Forecast

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 3.5% per year. The employee contribution rate is expected to increase to 10.5% by 2042 as members contributing base percentages 5%, 7% and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost, as a percentage of payroll, is expected to increase gradually until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. For FYE 2014, the total cost represents on average about 18.1% of payroll, decreasing to 5.7% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 5.7% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

Benefit changes approved under Chapter 176 of the Acts of 2011 impact only members hired on or after April 2, 2012 and are therefore not reflected in this valuation. Subsequent valuations will be impacted to the extent the City has employees hired on or after the effective date.

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Appropriation Forecast

Fiscal Year Ending	Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2013	$28,963,004	$2,458,692	$2,012,883	$2,984,538	$4,997,421	17.3%	72.9%
2014	29,976,709	2,565,533	2,061,732	3,358,722	5,420,454	18.1	73.9
2015	31,025,894	2,676,840	2,111,535	3,509,865	5,621,400	18.1	74.9
2016	32,111,800	2,792,797	2,162,298	3,667,809	5,830,107	18.2	75.9
2017	33,235,713	2,913,591	2,214,028	3,832,860	6,046,888	18.2	77.0
2018	34,398,963	3,039,420	2,266,730	4,005,339	6,272,069	18.2	78.2
2019	35,602,927	3,170,487	2,320,410	4,185,579	6,505,989	18.3	79.4
2020	36,849,029	3,307,006	2,375,070	4,373,930	6,749,000	18.3	80.7
2021	38,138,745	3,449,198	2,430,713	4,570,757	7,001,470	18.4	82.1
2022	39,473,601	3,597,291	2,487,343	4,776,441	7,263,784	18.4	83.5
2023	40,855,178	3,751,526	2,544,958	4,991,381	7,536,339	18.4	85.0
2024	42,285,109	3,912,151	2,603,560	5,215,993	7,819,553	18.5	86.5
2025	43,765,088	4,079,424	2,663,147	5,450,713	8,113,860	18.5	88.2
2026	45,296,866	4,253,614	2,723,715	5,695,995	8,419,710	18.6	89.9
2027	46,882,256	4,434,999	2,785,260	5,952,314	8,737,574	18.6	91.8
2028	48,523,135	4,623,871	2,847,777	6,220,168	9,067,945	18.7	93.7
2029	50,221,445	4,820,532	2,911,259	6,500,076	9,411,335	18.7	95.7
2030	51,979,195	5,025,294	2,975,695	6,792,579	9,768,274	18.8	97.8
2031	53,798,467	5,238,484	3,041,076	0	3,041,076	5.7	100.0
2032	55,681,413	5,460,442	3,107,389	0	3,107,389	5.6	100.0
2033	57,630,263	5,691,519	3,174,617	0	3,174,617	5.5	100.0
2034	59,647,322	5,932,083	3,242,746	0	3,242,746	5.4	100.0
2035	61,734,978	6,182,514	3,311,754	0	3,311,754	5.4	100.0
2036	63,895,703	6,443,209	3,381,621	0	3,381,621	5.3	100.0
2037	66,132,052	6,714,579	3,452,321	0	3,452,321	5.2	100.0
2038	68,446,674	6,997,051	3,523,828	0	3,523,828	5.1	100.0
2039	70,842,308	7,291,072	3,596,111	0	3,596,111	5.1	100.0
2040	73,321,788	7,597,102	3,669,137	0	3,669,137	5.0	100.0
2041	75,888,051	7,915,623	3,742,870	0	3,742,870	4.9	100.0
2042	78,544,133	8,247,134	3,817,270	0	3,817,270	4.9	100.0
2043	81,293,177	8,535,784	3,950,874	0	3,950,874	4.9	100.0
2044	84,138,439	8,834,536	4,089,155	0	4,089,155	4.9	100.0

* Calendar basis

** Beginning of Fiscal Year

GASB 25 and GASB 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with GASB 25 and GASB 27. These statements, which replace GASB 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB 25 and GASB 27 include a description of the plan, a summary of significant accounting policies and information about contributions, legally required reserves and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by GASB 27 will effectively always be equal to $0. The required disclosure information is shown in Table VIII.

Table VIII

		January 1, 2011	January 1, 2012
(1)	Actuarial Accrued Liability	$149,577,973	$156,914,866
(2)	Actuarial Value of Assets	116,465,717	114,445,376
(3)	Unfunded Actuarial Accrued Liability	$33,112,256	$42,469,490
(4)	Funded Ratio: (2) / (1)	77.9%	72.9%
(5)	Covered Payroll	$28,057,204	$28,963,004
(6)	UAAL as a Percentage of Payroll: (3) / (5)	118.0%	146.6%
(7)	Annual Required Contribution (ARC)	$4,722,775	$4,997,421
(8)	Net Pension Obligation	$0	$0

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PERAC Annual Statement
APPENDIX PAGE 3
ACTUARIAL VALUATION AND ASSUMPTIONS

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2012.

The normal cost for employees on that date was:	$2,458,692	8.5% of pay
The normal cost for the employer was:	1,936,898	6.7% of pay

The actuarial liability for active members was:	$72,403,383
The actuarial liability for retired and inactive members was:	84,511,483
Total actuarial accrued liability:	$156,914,866
System assets as of that date:	114,445,376
Unfunded actuarial accrued liability:	$42,469,490

The ratio of system's assets to total actuarial liability was: 72.9%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:		8.00%
Rate of Salary Increase:	Group 1	4.75%
	Group 4	5.25%

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a percent of Covered Payroll (b - a) / c
01/01/12	$114,445,376	$156,914,866	$42,469,490	72.9%	$28,963,004	146.6%
01/01/11	116,465,717	149,577,973	33,112,256	77.9%	28,057,204	118.0%
01/01/10	115,771,921	148,011,244	32,239,323	78.2%	30,285,518	106.5%
01/01/09	102,420,630	139,054,020	36,633,390	73.7%	28,012,825	130.8%
01/01/07	102,235,876	128,668,586	26,432,710	79.5%	26,120,560	101.2%
01/01/05	89,965,920	119,994,011	30,028,091	75.0%	23,585,296	127.3%
01/01/04	82,910,726	113,426,667	30,515,941	73.1%	21,633,442	141.1%
01/01/03	76,356,568	108,537,756	32,181,188	70.4%	21,380,463	150.5%

EXHIBITS

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Age/Service Distribution with Salary as of January 1, 2012

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20										
20-24	19									19
	25,986									25,986
25-29	49	7								56
	29,697	41,387								31,158
30-34	19	14	4	1						38
	39,239	63,381	57,063	58,347						50,512
35-39	18	14	17	1						50
	31,303	49,149	57,336	65,221						45,830
40-44	24	14	16	15	3					72
	35,137	52,318	58,345	66,487	70,247					51,629
45-49	30	25	15	12	15	6				103
	31,967	37,046	47,174	60,643	65,061	82,108				46,496
50-54	31	24	26	14	11	13	3			122
	29,722	31,776	39,307	54,581	57,611	63,951	63,683			42,019
55-59	14	17	18	9	3	9	10	2		82
	39,389	38,840	36,563	47,453	62,896	65,328	76,542	58,440		48,242
60-64	13	10	11	14	7	4	8	6	2	75
	40,488	47,190	29,938	43,346	44,880	57,209	71,214	95,411	66,699	50,040
65-69		6	2	4	4	1	3	1		21
		53,335	41,125	27,846	55,360	43,663	54,978	35,692		46,637
70+		1	1		2		1		1	6
		11,569	41,644		17,814		720		103,022	32,097
Total Employees	217	132	110	70	45	33	25	9	3	644
Average Salary	32,532	43,562	45,249	53,686	57,340	66,196	67,674	80,560	78,807	44,974

Retiree Distribution as of January 1, 2012

	Number of Employees			Total Payments		
Attained Age	Male	Female	Total	Male	Female	Total
< 20						
20-24						
25-29						
30-34						
35-39						
40-44						
45-49	1		1	18,982		18,982
50-54	1		1	5,868		5,868
55-59	3	2	5	107,332	14,529	121,861
60-64	25	14	39	1,052,141	205,737	1,257,878
65-69	31	34	65	1,198,539	560,456	1,758,995
70-74	35	39	74	1,084,477	577,165	1,661,642
75-79	24	43	67	543,733	615,749	1,159,481
80-84	35	39	74	733,965	475,937	1,209,902
85-89	26	45	71	387,096	412,003	799,099
90-94	6	19	25	79,432	169,782	249,214
95-99	4	3	7	53,312	15,962	69,274
100+	4	2	6	13,899	4,837	18,735
Total	195	240	435	5,278,775	3,052,157	8,330,932
Average (Age/Payment)	76.0	78.5	77.4	27,071	12,717	19,152
Frequency Percent	44.8	55.2	100.0	63.4	36.6	100.0

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Disabled Retiree Distribution as of January 1, 2012

	Number of Employees			Total Payments		
Attained Age	Male	Female	Total	Male	Female	Total
< 20						
20-24						
25-29						
30-34						
35-39						
40-44						
45-49	2	1	3	64,551	30,135	94,686
50-54	1		1	28,600		28,600
55-59	3	1	4	142,672	34,456	177,127
60-64	4	1	5	163,035	14,677	177,712
65-69	11		11	362,191		362,191
70-74	6		6	186,263		186,263
75-79	4		4	113,918		113,918
80-84	3		3	65,719		65,719
85-89		1	1		14,786	14,786
90-94						
95-99						
Total	34	4	38	1,126,949	94,054	1,221,003
Average (Age/Payment)	67.8	64.5	67.4	33,146	23,513	32,132
Frequency Percent	89.5	10.5	100.0	92.3	7.7	100.0

EXHIBIT 4 - CASHFLOW FORECAST:

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments*	Employee Contributions	Employer Contributions	Investment Returns	Net Change in Plan Assets
2012	$10,539,948	$2,458,692	$4,997,421	$9,140,163	$6,056,328
2013	11,088,735	2,565,533	5,420,454	9,381,390	6,278,642
2014	11,548,055	2,676,840	5,621,400	9,873,811	6,623,996
2015	11,991,843	2,792,797	5,830,107	10,394,838	7,025,899
2016	12,457,574	2,913,591	6,046,888	10,947,538	7,450,443
2017	12,952,037	3,039,420	6,272,069	11,533,473	7,892,925
2018	13,375,351	3,170,487	6,505,989	12,158,013	8,459,138
2019	13,855,915	3,307,006	6,749,000	12,826,041	9,026,132
2020	14,353,746	3,449,198	7,001,470	13,539,205	9,636,127
2021	14,869,463	3,597,291	7,263,784	14,300,939	10,292,551
2022	15,403,709	3,751,526	7,536,339	15,114,958	10,999,114
2023	15,957,150	3,912,151	7,819,553	15,985,264	11,759,818
2024	16,530,476	4,079,424	8,113,860	16,916,184	12,578,992
2025	17,124,401	4,253,614	8,419,710	17,912,395	13,461,318
2026	17,739,665	4,434,999	8,737,574	18,978,944	14,411,852
2027	18,377,035	4,623,871	9,067,945	20,121,281	15,436,062
2028	19,037,305	4,820,532	9,411,335	21,345,295	16,539,857
2029	19,721,298	5,025,294	9,768,274	22,657,354	17,729,624
2030	20,429,866	5,238,484	3,041,076	23,824,026	11,673,720
2031	21,163,892	5,460,442	3,107,389	24,735,442	12,139,381
2032	21,924,292	5,691,519	3,174,617	25,683,352	12,625,196
2033	22,712,011	5,932,083	3,242,746	26,669,340	13,132,158
2034	23,528,033	6,182,514	3,311,754	27,695,072	13,661,307
2035	24,373,374	6,443,209	3,381,621	28,762,295	14,213,751
2036	25,249,087	6,714,579	3,452,321	29,872,846	14,790,659
2037	26,156,264	6,997,051	3,523,828	31,028,651	15,393,266
2038	27,096,034	7,291,072	3,596,111	32,231,736	16,022,885
2039	28,069,570	7,597,102	3,669,137	33,484,231	16,680,900
2040	29,078,084	7,915,623	3,742,870	34,788,374	17,368,783
2041	29,838,092	8,247,134	3,817,270	36,157,692	18,384,004

* Excludes account balances of $1,716,721 for nonvested terminated members.

EXHIBIT 5 - SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2012, and does not take into account any subsequent changes. In particular, benefit changes approved under Chapter 176 of the Acts of 2011 impact only members hired on or after April 2, 2012 and are therefore not reflected in this valuation. Subsequent valuations will be impacted to the extent the City has employees hired on or after the effective date.

1. Administration

Each of the contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor and certain hospital interns.

There are four classes of membership as follows:

(i) Group 1: Most general employees in State and local government

(ii) Group 2: Certain specified hazardous duty positions

(iii) Group 3: State police officers and inspectors

(iv) Group 4: Local police officers, firefighters and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

3. Salary

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit or other similar compensation.

4. Member Contributions

Member contributions vary depending upon date hired as follows:

	Member Contribution Rate	
Date of Hire	**On Salary up to $30,000**	**On Salary in excess of $30,000**
Prior to 1975	5.0%	5.0%
1975 to 1978	7.0%	7.0%
1979 to 1983	7.0%	9.0%
1984 to 1996	8.0%	10.0%
1996 and Later	9.0%	11.0%

5. Average Salary

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.) For those hired on or after January 1, 2011, salary taken into account for benefit purposes is capped at 64% of the IRC Section 401(a)(17) limit (indexed).

6. Creditable Service

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. **Service Retirement**

a. Eligibility:

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

(i) completion of 20 years of service

(ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member

(iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

Age at	Percentage of Average Salary		
Retirement	Group 1	Group 2	Group 4
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For veterans (all groups) there is an additional benefit of $15 per year for each year of service, up to a maximum of 20 years of service.

8. Deferred Vested Retirement

a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

b. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated Member Contributions with credited interest.

9. Accidental Disability

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus $729.84 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. Ordinary Disability

a. Eligibility:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

b. Benefit Amount:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

11. Survivor Benefits

a. Occupational Death:

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

b. Non-Occupational Death:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of $250 per month to the surviving spouse, plus $120 for the first child, plus $90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of $250 per month plus $120 for the first child and $90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. Cost-of-Living Increases

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is $12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

(i) Option A - Life annuity

(ii) Option B - Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member

(iii) Option C - Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

EXHIBIT 6 - ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors and assumptions used in determining cost estimates are presented below.

1. Member Data

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired and disabled members of the employer as supplied by the employer to the actuary.

2. Valuation Date

January 1, 2012.

3. Actuarial Cost Method

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. Rate of Investment Return

It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.0% per annum.

5. Salary Scale

It is assumed that salaries including longevity will increase at a rate of 4.75% and 5.25% per year for Group 1 and 4, respectively. The prior valuation assumed 5.25% and 5.5% for Group 1 and 4, respectively.

6. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and $12,000 per year.

7. Value of Investments

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). The actuarial value of assets is determined using a five-year smoothing of unrealized gains and losses. The result must be within 20% of market value.

8. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

Service	General Employees	Police and Fire Employees
0	0.150	0.015
1	0.120	0.015
2	0.100	0.015
3	0.090	0.015
4	0.080	0.015
5	0.076	0.015
10	0.054	0.015
15	0.033	0.000
20	0.020	0.000
25	0.010	0.000
30+	0.000	0.000

9. Annual Rate of Mortality

It is assumed that both pre-retirement and post retirement mortality are represented by the RP-2000 Mortality Table projected 22 years with Scale AA for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members. The prior report used the same base tables with no projection.

10. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

11. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

Attained Age	General Employees	Police and Fire Employees
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

12. Family Composition

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

13. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for plan year 2012 is $200,000 and is anticipated to increase at 3.5% per year.

EXHIBIT 7 - GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. Actuarial Accrued Liability

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

2. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

3. Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

4. Actuarial Present Value

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

5. Forecast

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions and additional assumptions as to the replacement of terminating employees with new employees.

6. Normal Cost

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

7. Unfunded Actuarial Accrued Liability

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

8. Valuation Method

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

9. Vested Liability

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

CERTIFICATION:

This report fairly represents the actuarial position of the Town of Needham Contributory Retirement System contributing as of January 1, 2012, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

Buck Consultants, LLC

Marcus Cleary

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Marcus C. Cleary, FSA, MAAA
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December 2012