TOWN OF NEEDHAM
CONTRIBUTORY RETIREMENT SYSTEM

Actuarial Valuation Report

January 1, 2011

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TABLE OF CONTENTS

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Report Summary:

Highlights	January 1, 2010	January 1, 2011
Contributions		
Funding Schedule FY 2012	$4,722,775	$4,722,775
Funding Schedule FY 2013	4,896,240	4,997,421
Funded Ratios		
GAS No. 25	78.2%	77.9%
Participants		
Actives	674	631
Retirees and Beneficiaries	449	446
Inactives	71	107
Disabled	39	41
Total	1,233	1,225
Payroll		
Payroll of Active Members	$30,285,518	$28,057,204
Average Payroll	44,934	44,465
Normal Cost		
Employer	$1,686,581	$1,738,724
Employee	2,530,082	2,365,020
Administrative Expenses	175,000	200,000
Total	$4,391,663	$4,303,744
Actuarial Accrued Liabilities		
Actives	$73,020,633	$71,102,694
Retirees, Beneficiaries, Disabilities and Inactives	74,990,611	78,475,279
Total	$148,011,244	$149,577,973
Actuarial Value of Assets	115,771,921	116,465,717
Unfunded Actuarial Accrued Liabilities	$32,239,323	$33,112,256

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2011, 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, 2011
- 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, 2011.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- 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 2.7% to $33,112,256. As shown in the reconciliation below, the major drivers were investment performance and salary increases. The 2.6% 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.

The sources of the (gain)/loss are as follows:

1/1/2010 unfunded accrued liability		$32,239,323
Expected change		(141,856)
Expected 1/1/2011 unfunded accrued liability		$32,097,467
Plan Experience		
Investment	$6,218,548	
Salary Increases	(4,619,665)	
New Participants	419,971	
Active - Retirements	(435,196)	
Active - Terminations	40,109	
Active - Mortality	(32,828)	
Active - Disabilities	125,950	
Retiree Mortality	442,178	
Other (Data corrections, Section 3(8)(c), etc.)	(1,144,278)	
Total (Gain)/Loss		1,014,789
1/1/2011 unfunded accrued liability		$33,112,256

Actuarial Costs and Liabilities:

Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. 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. 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, 2010	January 1, 2011
Superannuation	$3,022,873	$2,851,719
Termination	445,941	425,519
Death	195,730	188,586
Disability	552,119	637,920
Administrative Expenses	175,000	200,000
Total Normal Cost	$4,391,663	$4,303,744
% of Pay	14.5%	15.3%
Employee Contributions	2,530,082	2,365,020
% of Pay	8.4%	8.4%
Employer Normal Cost	$1,861,581	$1,938,724
% of Pay	6.1%	6.9%

Present Value of Actuarial Accrued Liabilities

The actuarial accrued liabilities (AAL) represents today's value of all benefits 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 value of these earned benefits is shown in Table II below.

Table II

	January 1, 2010	January 1, 2011
Actives		
Superannuations	$66,035,599	$65,396,456
Termination	1,339,024	521,976
Death	1,740,256	1,779,332
Disability	3,905,754	3,404,930
Retirees and Inactives		
Retirees and Beneficiaries	$63,541,191	$65,288,175
Terminated (Refund)	1,096,991	1,466,769
Disabled	10,352,429	11,720,335
Total	$148,011,244	$149,577,973

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Present Value of Future Benefits

The present value of future benefits represents today's value of all benefits 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 value of the total expected benefits is shown in Table III.

Table III

	January 1, 2010	January 1, 2011
Actives		
Superannuation	$92,715,773	$90,063,379
Termination	3,271,663	2,913,014
Death	3,327,097	3,277,116
Disability	9,260,413	9,471,240
Retirees and Inactives		
Retirees and Beneficiaries	$63,541,191	$65,288,175
Terminated (Refund)	1,096,991	1,466,769
Disabled	10,352,429	11,720,335
Total	$183,565,557	$184,200,028

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, 2010	January 1, 2011
Cash equivalents	$2,720,448	$2,764,907
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	93,844,069	103,694,430
Accounts receivable	68,736	67,468
Accounts payable	(69,627)	(56,185)
Accrued income	9,126	1,254
Total Market Value	$96,572,752	$106,471,875
Total Actuarial Value	$115,771,921	$116,465,717

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 (8.0%) 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, 2011 is presented in Table V.

Table V

		January 1, 2011
(1)	Market value at January 1, 2010	$96,572,752
(2)	2010 Contributions	$7,839,012
(3)	2010 Payments	($10,098,060)
(4)	Net interest adjustment at 8.0% on (1), (2) and (3) to December 31, 2010	$7,635,458
(5)	Expected market value on January 1, 2011 (1) + (2) + (3) + (4)	$101,949,162
(6)	Actual market value on January 1, 2011	$106,471,875
(7)	2010 (Gain) / Loss	($4,522,713)
(8)	80% of 2010 (Gain) / Loss	($3,618,170)
(9)	2009 (Gain) / Loss	($6,806,891)
(10)	60% of 2009 (Gain) / Loss	($4,084,135)
(11)	2008 (Gain) / Loss	$46,034,008
(12)	40% of 2008 (Gain) / Loss	$18,413,603
(13)	2007 (Gain) / Loss	($3,587,279)
(14)	20% of 2007 (Gain) / Loss	($717,456)
(15)	Actuarial value on January 1, 2011, (6) + (8) + (10) + (12) + (14) but not less than 80% nor greater than 120% of (6)	$116,465,717
(16)	Ratio of actuarial value to market value	109.39%
(17)	Actuarial Value Return for 2009	15.69%
(18)	Actuarial Value Return for 2010	2.58%
(19)	Market Value Return for 2009	16.34%
(20)	Market Value Return for 2010	12.74%

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, 2010	January 1, 2011
Actuarial Accrued Liability	$148,011,244	$149,577,973
Actuarial Assets	115,771,921	116,465,717
Unfunded Actuarial Accrued Liability	$32,239,323	$33,112,256
Funded Status	78.2%	77.9%

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, 2027
  $ 32,097,467 over 16 years with 4.0% increasing payments
- Increasing amortization of the current (gains)/losses by June 30, 2027
  $ 1,014,789 over 16 years with 4.0% 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, 2010	January 1, 2011
Normal cost	$1,861,581	$1,938,724
Amortization payment of the prior accrued liability	2,891,133	2,622,566
Amortization payment of current (gains)/losses	(369,612)	82,915
Total cost	$4,383,102	$4,644,205
% of Pay	14.5%	16.6%
Fiscal 2012 cost	$4,722,775	$4,722,775
Fiscal 2013 cost	$4,896,240	$4,997,421

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 2041 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 decrease gradually until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. For FYE 2013, the total cost represents on average about 17.2% of payroll, decreasing to 16.9% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 6.0% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

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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 %**
2012	$28,057,204	$2,365,020	$2,014,781	$2,707,994	$4,722,775	16.8	77.9
2013	29,039,206	2,468,531	2,063,750	2,933,671	4,997,421	17.2	78.9
2014	30,055,578	2,576,390	2,113,678	3,051,018	5,164,696	17.2	79.9
2015	31,107,524	2,688,776	2,164,573	3,173,059	5,337,632	17.2	80.9
2016	32,196,287	2,805,873	2,216,442	3,299,982	5,516,424	17.1	82.0
2017	33,323,157	2,927,872	2,269,290	3,431,981	5,701,271	17.1	83.2
2018	34,489,467	3,054,975	2,323,122	3,569,260	5,892,382	17.1	84.4
2019	35,696,599	3,187,388	2,377,943	3,712,030	6,089,973	17.1	85.7
2020	36,945,980	3,325,327	2,433,755	3,860,512	6,294,267	17.0	87.0
2021	38,239,089	3,469,018	2,490,561	4,014,932	6,505,493	17.0	88.4
2022	39,577,457	3,618,694	2,548,362	4,175,529	6,723,891	17.0	89.9
2023	40,962,668	3,774,597	2,607,158	4,342,551	6,949,709	17.0	91.4
2024	42,396,362	3,936,981	2,666,948	4,516,253	7,183,201	16.9	93.0
2025	43,880,234	4,106,108	2,727,730	4,696,903	7,424,633	16.9	94.7
2026	45,416,042	4,282,250	2,789,499	4,884,779	7,674,278	16.9	96.4
2027	47,005,604	4,465,693	2,852,251	5,080,170	7,932,421	16.9	98.2
2028	48,650,800	4,656,731	2,915,978	0	2,915,978	6.0	100.0
2029	50,353,578	4,855,671	2,980,672	0	2,980,672	5.9	100.0
2030	52,115,953	5,062,832	3,046,323	0	3,046,323	5.8	100.0
2031	53,940,012	5,278,547	3,112,918	0	3,112,918	5.8	100.0
2032	55,827,912	5,503,160	3,180,443	0	3,180,443	5.7	100.0
2033	57,781,889	5,737,029	3,248,881	0	3,248,881	5.6	100.0
2034	59,804,255	5,980,528	3,318,214	0	3,318,214	5.5	100.0
2035	61,897,404	6,234,043	3,388,420	0	3,388,420	5.5	100.0
2036	64,063,813	6,497,979	3,459,476	0	3,459,476	5.4	100.0
2037	66,306,047	6,772,754	3,531,355	0	3,531,355	5.3	100.0
2038	68,626,758	7,058,803	3,604,027	0	3,604,027	5.3	100.0
2039	71,028,695	7,356,578	3,677,461	0	3,677,461	5.2	100.0
2040	73,514,699	7,666,551	3,751,620	0	3,751,620	5.1	100.0
2041	76,087,714	7,989,210	3,826,466	0	3,826,466	5.0	100.0
2042	78,750,784	8,268,832	3,960,392	0	3,960,392	5.0	100.0
2043	81,507,061	8,558,241	4,099,006	0	4,099,006	5.0	100.0

* Calendar basis

** Beginning of Fiscal Year

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GASB Statements No. 25 and No. 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 Statements 25 and 27. These statements, which replace GASB Statement No. 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 Statement No. 25 and 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 Statement No. 27 will effectively always be equal to $0. The required disclosure information is shown in Table VIII.

Table VIII

		January 1, 2010	January 1, 2011
(1)	Actuarial Accrued Liability	$148,011,244	$149,577,973
(2)	Actuarial Value of Assets	115,771,921	116,465,717
(3)	Unfunded Actuarial Accrued Liability	$32,239,323	$33,112,256
(4)	Funded Ratio: (2) / (1)	78.2%	77.9%
(5)	Covered Payroll	$30,285,518	$28,057,204
(6)	UAAL as a percentage of payroll: (3) / (5)	106.5%	118.0%
(7)	Annual Required Contribution (ARC)	$4,552,978	$4,722,775
(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, 2011.

The normal cost for employees on that date was:	$2,365,020	8.4% of pay
The normal cost for the employer was:	1,938,724	6.9% of pay

The actuarial liability for active members was:	$71,102,694
The actuarial liability for retired and inactive members was:	78,475,279
Total actuarial accrued liability:	$149,577,973
System assets as of that date:	116,465,717
Unfunded actuarial accrued liability:	$33,112,256

The ratio of system's assets to total actuarial liability was 77.9%

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

Investment Return:		8.00%
Rate of Salary Increase:	Group 1	5.25%
	Group 4	5.50%

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
01/01/11	$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, 2011

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20										
20-24	18 14,836									18 14,836
25-29	49 27,648	4 40,929								53 28,651
30-34	12 39,032	12 62,417	5 56,739							29 51,761
35-39	23 33,862	12 49,741	19 55,847							54 45,126
40-44	19 34,604	16 50,862	16 59,276	13 67,824	3 60,741					67 51,994
45-49	36 29,211	26 39,009	12 49,712	11 58,514	19 69,265	6 79,141				110 46,336
50-54	31 32,101	26 36,273	21 36,685	13 54,022	12 65,973	12 57,845				115 42,580
55-59	11 23,111	20 39,935	13 31,094	6 51,844	8 59,009	10 70,919	8 71,783	5 83,601		81 48,663
60-64	12 41,486	14 38,659	13 35,325	12 44,488	7 50,819	4 50,114	8 84,649	4 102,240	2 84,988	76 50,585
65-69	1 21,243	4 43,211	5 39,530	4 29,607	2 50,581	1 44,428	2 43,160	1 36,538	2 56,362	22 40,515
70+	2 15,327				2 22,405		1 632		1 102,945	6 29,840
Total Employees Average Salary	214 29,800	134 43,235	104 45,396	59 54,085	53 61,579	33 64,335	19 70,442	10 86,351	5 77,129	631 44,465

Retiree Distribution as of January 1, 2011

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20						
20-24						
25-29						
30-34						
35-39						
40-44						
45-49	2		2	12,253		12,253
50-54		1	1		26,709	26,709
55-59	5	2	7	177,583	14,112	191,695
60-64	26	11	37	1,009,158	160,336	1,169,494
65-69	29	39	68	1,142,522	593,105	1,735,627
70-74	34	38	72	888,413	499,898	1,388,311
75-79	30	41	71	632,437	593,173	1,225,610
80-84	28	49	77	570,323	620,349	1,190,672
85-89	14	56	70	245,834	505,454	751,288
90-94	9	20	29	123,543	121,570	245,113
95-99	4	5	9	34,188	17,756	51,944
100+		3	3		13,479	13,479
Total	181	265	446	4,836,254	3,165,941	8,002,195
Average (Age/Payment)	74.3	78.8	77.0	26,720	11,947	17,942
Frequency Percent	40.6	59.4	100.0	60.4	39.6	100.0

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Disabled Retiree Distribution as of January 1, 2011

Attained Age	Number of Employees Male	Female	Total	Total Payments Male	Female	Total
< 20						
20-24						
25-29						
30-34						
35-39						
40-44						
45-49	3	1	4	91,764	29,775	121,539
50-54	2		2	74,525		74,525
55-59	1	2	3	50,361	48,413	98,774
60-64	6		6	157,616		157,616
65-69	9	1	10	293,736	10,527	304,263
70-74	8		8	248,536		248,536
75-79	3		3	77,839		77,839
80-84	3		3	78,606		78,606
85-89	1	1	2	46,674	14,426	61,100
90-94						
95-99						
Total	36	5	41	1,119,657	103,141	1,222,798
Average (Age/Payment)	67.3	63.4	66.8	31,102	20,628	29,824
Frequency Percent	87.8	12.2	100.0	91.6	8.4	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
2011	$10,173,128	$2,365,020	$4,722,775	$9,184,328	$6,098,995
2012	10,772,380	2,468,531	4,997,421	9,542,581	6,236,152
2013	11,258,386	2,576,390	5,164,696	10,029,374	6,512,074
2014	11,642,622	2,688,776	5,337,632	10,542,529	6,926,315
2015	12,049,632	2,805,873	5,516,424	11,088,235	7,360,900
2016	12,452,344	2,927,872	5,701,271	11,669,196	7,845,995
2017	12,876,278	3,054,975	5,892,382	12,288,465	8,359,544
2018	13,237,023	3,187,388	6,089,973	12,951,643	8,991,981
2019	13,607,875	3,325,327	6,294,267	13,665,379	9,677,098
2020	13,989,116	3,469,018	6,505,493	14,433,893	10,419,288
2021	14,381,039	3,618,694	6,723,891	15,261,754	11,223,300
2022	14,783,942	3,774,597	6,949,709	16,153,912	12,094,275
2023	15,198,132	3,936,981	7,183,201	17,115,728	13,037,777
2024	15,623,927	4,106,108	7,424,633	18,153,010	14,059,824
2025	16,061,651	4,282,250	7,674,278	19,272,048	15,166,925
2026	16,511,638	4,465,693	7,932,421	20,479,650	16,366,126
2027	16,974,232	4,656,731	2,915,978	21,593,868	12,192,345
2028	17,449,786	4,855,671	2,980,672	22,555,944	12,942,501
2029	17,938,664	5,062,832	3,046,323	23,577,746	13,748,237
2030	18,441,238	5,278,547	3,112,918	24,663,716	14,613,943
2031	18,957,892	5,503,160	3,180,443	25,818,646	15,544,357
2032	19,489,021	5,737,029	3,248,881	27,047,710	16,544,599
2033	20,035,030	5,980,528	3,318,214	28,356,488	17,620,200
2034	20,596,337	6,234,043	3,388,420	29,751,005	18,777,131
2035	21,173,369	6,497,979	3,459,476	31,237,763	20,021,849
2036	21,766,567	6,772,754	3,531,355	32,823,779	21,361,321
2037	22,376,385	7,058,803	3,604,027	34,516,631	22,803,076
2038	23,003,287	7,356,578	3,677,461	36,324,494	24,355,246
2039	23,647,753	7,666,551	3,751,620	38,256,200	26,026,618
2040	24,265,830	7,989,210	3,826,466	40,323,022	27,872,868

EXHIBIT 5 - SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2011, and does not take into account any subsequent changes.

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:

Date of Hire	Member Contribution Rate
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later	9.0% of Salary
plus	
1979 and Later	2.0% of Salary in excess of $30,000

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.)

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 Retirement	Percentage of Average Salary 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, 2011.

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 5.25% and 5.50% per year 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 preretirement and postretirement mortality are represented by the RP-2000 Mortality Table for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

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 2011 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, 2011, 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

Marcus C. Cleary, FSA, MAAA
Enrolled Actuary No. 11-07662

January 2012