

**TOWN OF NEEDHAM
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2010

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Report Summary:

<u>Highlights</u>	<u>January 1, 2009</u>	<u>January 1, 2010</u>
<u>Contributions</u>		
Funding Schedule FY 2011	\$4,552,978	\$4,552,978
Funding Schedule FY 2012	4,717,833	4,722,775
<u>Funded Ratios</u>		
GAS No. 25	73.7%	78.2%
<u>Participants</u>		
Actives	636	674
Retirees and Beneficiaries	457	449
Vested	0	0
Inactives	114	71
Disabled	<u>41</u>	<u>39</u>
Total	1,248	1,233
<u>Payroll</u>		
Payroll of Active Members	\$28,012,825	\$30,285,518
Average Payroll	44,045	44,934
<u>Normal Cost</u>		
Employer	1,445,154	1,686,581
Employee	2,307,184	2,530,082
Administrative Expenses	<u>170,000</u>	<u>175,000</u>
Total	3,922,338	4,391,663
<u>Actuarial Accrued Liabilities</u>		
Actives	65,506,467	73,020,633
Retirees, Beneficiaries, Disabilities and Inactives	<u>72,250,250</u>	<u>74,990,611</u>
Total	139,054,020	148,011,244
<u>Actuarial Value of Assets</u>	<u>102,420,630</u>	<u>115,771,921</u>
<u>Unfunded Actuarial Accrued Liabilities</u>	\$36,633,390	\$32,239,323

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2010, 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, 2010.
- 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, 2010.

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 both 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 decreased by 12.0% to \$32,239,323. The decrease is the result of net favorable actuarial experience. The actuarial value of assets for 2009 had a return of 15.69%. To better reflect the anticipated plan experience, the System changed the assumed interest rate of the fund from a compound annual rate of 8.25% to 8.00% for 2010. The sources of the (gain)/loss are as follows:

Investment	(7,527,672)
Salary Gain	(726,972)
Retiree Mortality	417,040
Active Decrements (Termination)	413,390
Active Decrements (Disability)	(218,672)
Active Decrements (Retirement)	(362,810)
Active Decrements (Death)	(32,858)
New Entrants	93,063
Other (Data corrections, Section 3(8)(c), etc.)	<u>(188,697)</u>
Total (gain)/loss before assumption change	(8,134,188)
Change in interest rate assumption	<u>3,408,461</u>
Total	(4,725,727)

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Superannuation	\$2,660,380	\$3,022,873
Termination	408,195	445,941
Death	179,242	195,730
Disability	504,521	552,119
Administrative Expenses	<u>170,000</u>	<u>175,000</u>
Total Normal Cost	3,922,338	4,391,663
% of Pay	14.0%	14.5%
Employee Contributions	2,307,184	2,530,082
% of Pay	8.2%	8.4%
Employer Normal Cost	\$1,615,154	\$1,861,581
% of Pay	5.8%	6.1%

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 inactive. 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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actives		
Superannuations	\$59,102,266	\$66,035,599
Termination	1,237,098	1,339,024
Death	1,571,730	1,740,256
Disability	3,595,373	3,905,754
Retirees and Inactives		
Retirees and Beneficiaries	62,319,065	63,541,191
Vested	0	0
Terminated (Refund)	1,297,303	1,096,991
Disabled	<u>9,931,185</u>	<u>10,352,429</u>
Total	\$139,054,020	\$148,011,244

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actives		
Superannuation	\$82,329,528	\$92,715,773
Termination	2,992,909	3,271,663
Death	3,006,200	3,327,097
Disability	8,463,739	9,260,413
Retirees and Inactives		
Retirees and Beneficiaries	62,319,065	63,541,191
Vested	0	0
Terminated (Refund)	1,297,303	1,096,991
Disabled	<u>9,931,185</u>	<u>10,352,429</u>
Total	\$170,339,929	\$183,565,557

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Cash equivalents	\$2,395,539	\$2,720,448
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	82,961,175	93,844,069
Accounts receivable	23,726	68,736
Accounts payable	(29,915)	(69,627)
Accrued income	<u>0</u>	<u>9,126</u>
Total Market Value	\$85,350,525	\$96,572,752
Total Actuarial Value	\$102,420,630	\$115,771,921

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 (8.25%) 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, 2010 is presented in Table V.

Table V

	<u>January 1, 2010</u>
(1) Market value at January 1, 2009	\$85,350,525
(2) 2009 Contributions	\$7,402,319
(3) 2009 Payments	(\$9,924,367)
(4) Net interest adjustment at 8.25% on (1), (2), and (3) to December 31, 2009	\$6,937,384
(5) Expected market value on January 1, 2010	\$89,765,861
(1) + (2) + (3) + (4)	
(6) Actual market value on January 1, 2010	\$96,572,752
(7) 2009 (Gain) / Loss	(\$6,806,891)
(8) 80% of 2009 (Gain) / Loss	(\$5,445,513)
(9) 2008 (Gain) / Loss	\$46,034,008
(10) 60% of 2008 (Gain) / Loss	\$27,620,405
(11) 2007 (Gain) / Loss	(\$3,587,279)
(12) 40% of 2007 (Gain) / Loss	(\$1,434,911)
(13) 2006 (Gain) / Loss	(\$7,704,056)
(14) 20% of 2006 (Gain) / Loss	(\$1,540,811)
(15) Actuarial value on January 1, 2010, (6) + (8) + (10) + (12) + (14)	\$115,771,921
(16) but not less than 80% nor greater than 120% of (6)	\$115,771,921
Ratio of actuarial value to market value	119.88%
2008 Market Value Return	-29.30%
2008 Actuarial Value Return	-8.09%
2009 Market Value Return	16.34%
2009 Actuarial Value Return	15.69%

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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actuarial Accrued Liability	\$139,054,020	\$148,011,244
Actuarial Assets	<u>102,420,630</u>	<u>115,771,921</u>
Unfunded Actuarial Accrued Liability	\$36,633,390	\$32,239,323
Funded Status	73.7%	78.2%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2030, 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
\$ 36,965,050 over 17 years with 4.0% increasing payments
- Increasing amortization of the current (gains)/losses by June 30, 2027
\$ -4,725,727 over 17 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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Normal cost	\$1,615,154	\$1,861,581
Amortization payment of the prior accrued liability	1,813,496	2,891,133
Amortization payment of current (gains)/losses	<u>785,830</u>	<u>(369,612)</u>
Total cost	\$4,214,480	\$4,383,102
% of Pay	15.0%	14.5%
Fiscal 2011 cost	\$4,552,978	\$4,552,978
Fiscal 2012 cost	\$4,717,833	\$4,722,775

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 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 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 is expected to increase during the next 17 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents 15.0% of payroll, decreasing to 13.2% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 5.1% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

Appropriation Forecast

Fiscal Year	Employee Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2011	\$30,285,518	\$2,530,082	\$1,934,612	\$2,618,366	\$4,552,978	15.0	78.2
2012	\$31,648,366	\$2,667,354	\$1,997,332	\$2,725,443	\$4,722,775	14.9	79.2
2013	\$33,072,543	\$2,811,858	\$2,061,779	\$2,834,461	\$4,896,240	14.8	80.2
2014	\$34,560,807	\$2,963,965	\$2,127,982	\$2,947,840	\$5,075,822	14.7	81.2
2015	\$36,116,044	\$3,124,068	\$2,195,968	\$3,065,753	\$5,261,721	14.6	82.3
2016	\$37,741,266	\$3,292,579	\$2,265,764	\$3,188,383	\$5,454,147	14.5	83.4
2017	\$39,439,622	\$3,469,929	\$2,337,394	\$3,315,919	\$5,653,313	14.3	84.5
2018	\$41,214,405	\$3,656,573	\$2,410,883	\$3,448,555	\$5,859,438	14.2	85.7
2019	\$43,069,054	\$3,852,988	\$2,486,253	\$3,586,498	\$6,072,751	14.1	86.9
2020	\$45,007,161	\$4,059,677	\$2,563,524	\$3,729,957	\$6,293,481	14.0	88.2
2021	\$47,032,483	\$4,277,164	\$2,642,715	\$3,879,156	\$6,521,871	13.9	89.5
2022	\$49,148,945	\$4,506,005	\$2,723,842	\$4,034,322	\$6,758,164	13.8	90.9
2023	\$51,360,648	\$4,746,781	\$2,806,919	\$4,195,695	\$7,002,614	13.6	92.3
2024	\$53,671,877	\$5,000,101	\$2,891,957	\$4,363,523	\$7,255,480	13.5	93.8
2025	\$56,087,111	\$5,266,608	\$2,978,964	\$4,538,064	\$7,517,028	13.4	95.3
2026	\$58,611,031	\$5,546,976	\$3,067,946	\$4,719,586	\$7,787,532	13.3	96.8
2027	\$61,248,528	\$5,841,912	\$3,158,904	\$4,908,369	\$8,067,273	13.2	98.4
2028	\$64,004,711	\$6,152,159	\$3,251,835	\$0	\$3,251,835	5.1	100.0
2029	\$66,884,923	\$6,478,499	\$3,346,734	\$0	\$3,346,734	5.0	100.0
2030	\$69,894,745	\$6,821,751	\$3,443,588	\$0	\$3,443,588	4.9	100.0
2031	\$73,040,009	\$7,182,777	\$3,542,382	\$0	\$3,542,382	4.8	100.0
2032	\$76,326,809	\$7,562,481	\$3,643,094	\$0	\$3,643,094	4.8	100.0
2033	\$79,761,515	\$7,961,813	\$3,745,697	\$0	\$3,745,697	4.7	100.0
2034	\$83,350,783	\$8,381,772	\$3,850,157	\$0	\$3,850,157	4.6	100.0
2035	\$87,101,569	\$8,823,404	\$3,956,433	\$0	\$3,956,433	4.5	100.0
2036	\$91,021,139	\$9,287,809	\$4,064,478	\$0	\$4,064,478	4.5	100.0
2037	\$95,117,091	\$9,776,144	\$4,174,235	\$0	\$4,174,235	4.4	100.0
2038	\$99,397,360	\$10,289,621	\$4,285,640	\$0	\$4,285,640	4.3	100.0
2039	\$103,870,241	\$10,829,515	\$4,398,618	\$0	\$4,398,618	4.2	100.0
2040	\$108,544,402	\$11,397,162	\$4,513,085	\$0	\$4,513,085	4.2	100.0
2041	\$113,428,900	\$11,910,034	\$4,716,174	\$0	\$4,716,174	4.2	100.0
2042	\$118,533,200	\$12,445,986	\$4,928,402	\$0	\$4,928,402	4.2	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

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
(1) Actuarial Accrued Liability	\$139,054,020	\$148,011,244
(2) Actuarial Value of Assets	<u>102,420,630</u>	<u>115,771,921</u>
(3) Unfunded Actuarial Accrued Liability	36,633,390	32,239,323
(4) Funded Ratio (2)/(1)	73.7%	78.2%
(5) Covered Payroll	\$28,012,825	\$30,285,518
(6) UAAL as a percentage of payroll: (3)/(5)	130.8%	106.5%
(7) Annual Required Contribution (ARC)	\$4,271,094	\$4,552,978
(8) Net Pension Obligation	\$0	\$0

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, 2010.

The normal cost for employees on that date was:	\$2,530,082	8.4% of pay
The normal cost for the employer was:	1,861,581	6.1% of pay
The actuarial liability for active members was:		\$73,020,633
The actuarial liability for retired and inactive members was:		74,990,611
Total actuarial accrued liability:		148,011,244
System assets as of that date:		115,771,921
Unfunded actuarial accrued liability:		\$32,239,323
The ratio of system's assets to total actuarial liability was		78.2%

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
01/01/10	\$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%

Attach Copy of Current Approved Funding Schedule

EXHIBITS

Age/Service Distribution with Salary as of January 1, 2010

Attained Age	Average Salary	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0
20-24	33	0	0	0	0	0	0	0	0	0	33
	23,979	0	0	0	0	0	0	0	0	0	23,979
25-29	59	6	0	0	0	0	0	0	0	0	65
	28,450	38,263	0	0	0	0	0	0	0	0	29,356
30-34	23	12	6	0	0	0	0	0	0	0	41
	38,032	62,255	42,115	0	0	0	0	0	0	0	45,719
35-39	24	22	11	4	0	0	0	0	0	0	61
	36,621	52,822	63,689	59,049	0	0	0	0	0	0	48,816
40-44	19	15	14	8	10	0	0	0	0	0	66
	32,750	44,948	53,861	66,430	63,839	0	0	0	0	0	48,793
45-49	54	19	17	10	17	3	0	0	0	0	120
	34,860	35,497	40,975	53,786	77,265	33,849	0	0	0	0	43,386
50-54	31	27	13	11	16	10	1	0	0	0	109
	26,426	34,118	44,244	56,292	57,630	63,432	65,638	0	0	0	41,806
55-59	14	18	16	6	6	7	15	4	0	0	86
	34,553	33,656	33,943	39,352	59,392	55,468	70,772	81,204	0	0	46,509
60-64	9	15	13	9	9	2	2	6	5	0	70
	34,520	32,962	36,074	40,557	49,439	74,526	89,639	95,267	70,429	0	47,659
65-69	2	3	4	0	2	2	2	0	2	0	17
	21,847	53,509	37,282	0	23,103	61,973	18,421	0	82,135	0	42,624
70+	0	0	0	1	2	1	1	1	0	0	6
	0	0	0	45,969	24,964	16,702	766	47,632	0	0	26,833
Total Employees	268	137	94	49	62	25	21	11	7	0	674
Average Salary	31,289	41,382	44,045	52,486	60,829	56,554	64,005	85,823	73,774	0	42,666

Retiree Distribution as of January 1, 2010

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	1	1	0	10454	10,454
45-49	2	2	4	4,806	13,295	18,101
50-54	1	1	2	56,445	25,929	82,374
55-59	3	6	9	95,364	74,502	169,866
60-64	25	10	35	1,040,751	68,931	1,109,682
65-69	31	47	78	1,037,947	752,911	1,790,858
70-74	30	45	75	873,664	601,070	1,474,734
75-79	20	45	65	388,015	598,966	986,981
80-84	29	64	93	629,605	753,307	1,382,912
85-89	12	42	54	187,436	387,957	575,393
90-94	7	18	25	106,540	111,886	218,426
95-99	4	4	8	26,671	15,220	41,891
Total	164	285	449	4,447,244	3,414,428	7,861,672
Average (Age/Payment)	74.3	77.6	76.4	27,117	11,980	17,509
Frequency Percent	36.5	63.5	100	56.6	43.4	100

Disabled Retiree Distribution as of January 1, 2010

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	3	0	3	92,810	0	92,810
50-54	2	0	2	73,805	0	73,805
55-59	1	2	3	40,192	47,693	87,885
60-64	7	0	7	231,676	0	231,676
65-69	7	1	8	216,423	10,993	227,416
70-74	9	0	9	269,076	0	269,076
75-79	2	0	2	50,623	0	50,623
80-84	3	0	3	80,766	0	80,766
85-89	1	1	2	47,304	15,686	62,990
90-94	0	0	0	0	0	0
95-99	0	0	0	0	0	0
Total	35	4	39	1,102,675	74,372	1,177,047
Average (Age/Payment)	67.0	66.3	66.9	31,505	18,593	30,181
Frequency Percent	89.7	10.3	100	93.7	6.3	100

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
2010	\$9,729,633	\$2,530,082	\$4,552,978	\$9,074,235	\$6,427,662
2011	10,242,988	2,667,354	4,722,775	9,575,099	6,722,240
2012	10,814,800	2,811,858	4,896,240	10,099,916	6,993,214
2013	11,320,950	2,963,965	5,075,822	10,649,435	7,368,271
2014	11,719,207	3,124,068	5,261,721	11,233,660	7,900,242
2015	12,138,204	3,292,579	5,454,147	11,860,120	8,468,643
2016	12,560,513	3,469,929	5,653,313	12,532,439	9,095,167
2017	13,030,069	3,656,573	5,859,438	13,253,564	9,739,506
2018	13,517,179	3,852,988	6,072,751	14,026,113	10,434,673
2019	14,022,498	4,059,677	6,293,481	14,854,152	11,184,812
2020	14,546,708	4,277,164	6,521,871	15,742,081	11,994,408
2021	15,090,515	4,506,005	6,758,164	16,694,658	12,868,312
2022	15,654,652	4,746,781	7,002,614	17,717,030	13,811,773
2023	16,239,877	5,000,101	7,255,480	18,814,763	14,830,467
2024	16,846,981	5,266,608	7,517,028	19,993,881	15,930,535
2025	17,476,780	5,546,976	7,787,532	21,260,894	17,118,622
2026	18,130,123	5,841,912	8,067,273	22,622,849	18,401,911
2027	18,807,891	6,152,159	3,251,835	23,887,463	14,483,567
2028	19,510,996	6,478,499	3,346,734	25,030,421	15,344,658
2029	20,240,385	6,821,751	3,443,588	26,241,856	16,266,810
2030	20,997,042	7,182,777	3,542,382	27,526,646	17,254,764
2031	21,781,985	7,562,481	3,643,094	28,890,050	18,313,640
2032	22,596,272	7,961,813	3,745,697	30,337,733	19,448,971
2033	23,441,000	8,381,772	3,850,157	31,875,807	20,666,737
2034	24,317,306	8,823,404	3,956,433	33,510,861	21,973,392
2035	25,226,372	9,287,809	4,064,478	35,250,000	23,375,914
2036	26,169,423	9,776,144	4,174,235	37,100,888	24,881,844
2037	27,147,727	10,289,621	4,285,640	39,071,793	26,499,326
2038	28,162,605	10,829,515	4,398,618	41,171,635	28,237,164
2039	29,107,844	11,397,162	4,513,085	43,414,259	30,216,663

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2010, and does not take into account any subsequent changes.

1. Administration

Each of the 107 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:

<u>Date of Hire</u>	<u>Member Contribution Rate</u>
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary
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:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
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

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.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

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 \$648.48 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, 2010.

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 8.00% per annum. (8.25% for 2009)

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 asset returns greater than or less than the assumed rate of return.

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:

<u>Service</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

9. Annual Rate of Mortality

It is assumed that both pre-retirement and post retirement 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:

<u>Age</u>	<u>Male General Employees</u>	<u>Female General Employees</u>	<u>Male and Female Police and Fire Employees</u>
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:

<u>Attained Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.0001	0.0001
30	0.0003	0.0003
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 fiscal year 2010 is \$175,000 and is anticipated to increase at 4.5% 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.

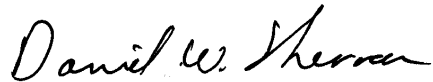
9. Vested Liability

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 Retirement System contributing as of January 1, 2010, 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



Daniel W. Sherman, ASA, MAAA
Enrolled Actuary No. 08-4086

August 2010