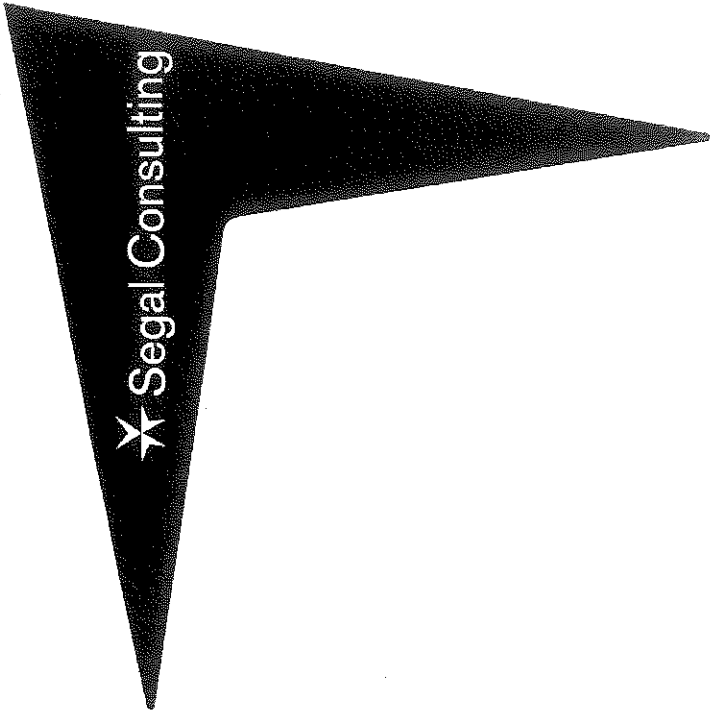


Town of Needham Contributory Retirement System

**Actuarial Valuation and Review as of
January 1, 2014**

The logo for Segal Consulting is a large, black, stylized letter 'S' that tapers to a point on the right. Inside the 'S', there is a white five-pointed star followed by the text 'Segal Consulting' in a white, sans-serif font.

★ Segal Consulting



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July 9, 2014

Retirement Board

*Town of Needham Contributory Retirement System
1471 Highland Avenue
Needham, MA 02492-2605*

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of January 1, 2014. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2015 and later years and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census information and financial information on which our calculations were based was prepared by the staff of the Town of Needham Contributory Retirement System. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.

The actuarial calculations were directed under the supervision of Kathleen A. Riley, FSA, MAAA, EA. She is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of her knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in her opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:



*Kathleen A. Riley, FSA, MAAA, EA
Senior Vice President and Actuary*



*William J. Connolly, FCA, MAAA, EA,
Consulting Actuary*

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SECTION 1: Valuation Summary for the Town of Needham Contributory Retirement System

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Town of Needham Contributory Retirement System as of January 1, 2014. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of M.G.L. Chapter 32;
- The characteristics of covered active participants, inactive participants, and retired participants and beneficiaries as of January 1, 2014;
- The assets of the Plan as of December 31, 2013;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

1. The actuarial valuation report as of January 1, 2014 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected.
2. During the 2013 plan year, the market value rate of return was 14.60%, compared to the assumed rate of return of 8.00%. Because the actuarial value of assets gradually recognizes market value fluctuations over a five-year period, the actuarial rate of return for the 2013 plan year was 10.92%. The actuarial value of assets as of December 31, 2013 was \$122.1 million, or 94.9% of the market value of assets of \$128.6 million reported in the Annual Statement. As of December 31, 2012, the actuarial value of assets was 98.1% of the market value.
3. As indicated in Section 2, the total unrecognized investment gain as of December 31, 2013 is \$6,557,845. This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of investment losses derived from future experience. This implies that earning the assumed rate of investment return on a market value basis will result in investment gains on the actuarial value of assets in the next few years. The deferred investment gains are not reflected in the funding schedules in Section 2.

SECTION 1: Valuation Summary for the Town of Needham Contributory Retirement System

4. With this valuation the investment return assumption was lowered from 8.0% to 7.75%. The change in assumptions increased the unfunded liability by \$4.3 million and the normal cost by \$218,000.
5. The unfunded liability was expected to increase from \$56.8 million as of January 1, 2013 to \$57.4 million as of January 1, 2014. The actual unfunded liability as of January 1, 2014 was \$57.7 million. The greater than expected increase was due to the change in the investment return assumption noted above, partially offset by an experience gain.
6. The contribution for fiscal 2015 is equal to the previously budgeted amount of \$5,621,400. The results of this valuation will first be reflected in the fiscal 2016 appropriation. The amortization payments for fiscal 2016 and later are calculated to increase 4.5% per year, and to fully fund the System by 2030. Schedule 1 in Chart 16 shows the appropriation through fiscal 2030 based on this schedule. The fiscal 2016 appropriation is \$6,697,495 or 19.14% higher than the fiscal 2015 appropriation.
- Charts 17 and 18 show additional funding schedules with the increase to the appropriation phased in over two and three years, respectively. In Chart 17, the fiscal 2016 appropriation is \$6,281,915 or 11.75% higher than the fiscal 2015 appropriation. In Chart 18, the fiscal 2016 appropriation is \$6,149,812 or 9.40% higher than the fiscal 2015 appropriation.
- Chart 19 shows a funding schedule where the total appropriation increases 6.10% per year and the System is fully funded by 2030. The fiscal 2016 appropriation is \$5,964,305 or 6.10% higher than the fiscal 2015 appropriation.
7. The funded ratio has increased from 66.38% as of January 1, 2013 to 67.89% as of January 1, 2014 on an actuarial value basis. On a market value basis, the funded ratio has increased from 67.65% to 71.53%.
8. Section 4 includes the disclosure information required by the Governmental Accounting Standards Board (GASB) Statements No. 25 and 27. Section 5 shows the format of the disclosure information required by GASB Statements No. 67 and 68. The exhibits in Section 5 will be completed at the end of the year when December 31, 2014 financial information is available. At that time, liabilities will be projected to the end of the year and the allocation to each employer will be determined.

SECTION 1: Valuation Summary for the Town of Needham Contributory Retirement System

Summary of Key Valuation Results

	2014	2013
Contributions for fiscal year beginning July 1:		
Recommended for fiscal 2015 and 2014	\$5,621,400*	\$5,420,454*
Recommended for fiscal 2016 and 2015	6,697,495**	5,621,400*
Funding elements for plan year beginning January 1:		
Normal cost, including administrative expenses	\$4,732,712	\$4,348,413
Market value of assets	128,642,380	114,284,852
Actuarial value of assets	122,084,535	112,131,508
Actuarial accrued liability	179,834,295	168,935,280
Unfunded actuarial accrued liability	57,749,760	56,803,772
Funded ratio based on market value of assets	71.53%	67.65%
Funded ratio based on actuarial value of assets	67.89%	66.38%
Demographic data for plan year beginning January 1:		
Number of retired participants and beneficiaries	464	471
Number of inactive participants entitled to a return of their employee contributions	126	112
Number of inactive participants with a vested right to a deferred or immediate benefit	17	21
Number of active participants	631	646
Total payroll	\$31,406,062	\$31,597,470
Average payroll	49,772	48,912

* From January 1, 2012 valuation report prepared by Buck Consultants, LLC.

** Based on funding schedule shown in Chart 16 of Section 2.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

A. PARTICIPANT DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, inactive participants, retired participants and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A and B.

A historical perspective of how the participant population has changed over the past four valuations can be seen in this chart.

CHART 1
Participant Population: 2010 – 2013

Year Ended December 31	Active Participants	Inactive Participants	Retired Participants and Beneficiaries	Non-Actives to Actives Ratio of
2010	631	107	487	0.94
2011	644	121	473	0.93
2012	646	131	471	0.93
2013	631	143	464	0.96

*1410
vested*

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

Active Participants

Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 631 active participants with an average age of 48.7, average years of service of 11.6 years and average payroll of \$49,772. The 646 active participants in the prior valuation had an average age of 48.2, average service of 11.2 years and average payroll of \$48,912.

Among the active participants, there were none with unknown age and/or service information.

Inactive Participants

In this year's valuation, there were 17 participants with a vested right to a deferred or immediate vested benefit and 126 participants entitled to a return of their employee contributions.

These graphs show a distribution of active participants by age and by years of service.

CHART 2

Distribution of Active Participants by Age as of December 31, 2013

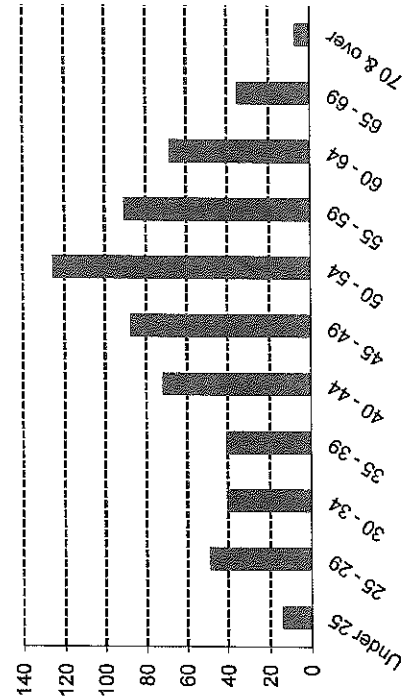
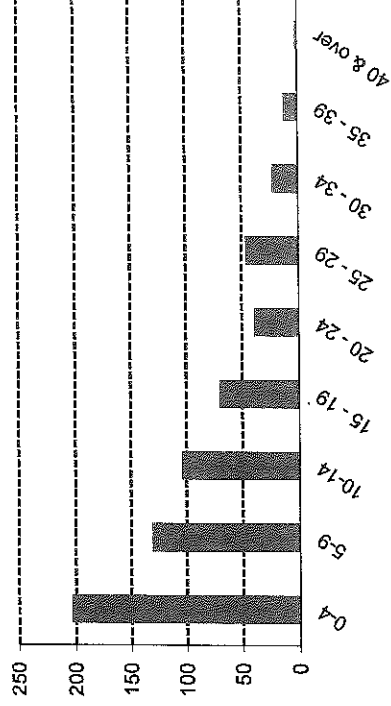


CHART 3

Distribution of Active Participants by Years of Service as of December 31, 2013



SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

Retired Participants and Beneficiaries

As of December 31, 2013, 410 retired participants and 54 beneficiaries were receiving total monthly benefits of \$837,251, excluding COLAs reimbursed by the Commonwealth. For comparison, in the previous valuation, there were 413 retired participants and 58 beneficiaries receiving monthly benefits of \$830,317, excluding COLAs reimbursed by the Commonwealth.

These graphs show a distribution of the current retired participants and beneficiaries based on their monthly amount and age, by type of pension.

CHART 4

Distribution of Retired Participants and Beneficiaries by Type and by Monthly Amount as of December 31, 2013

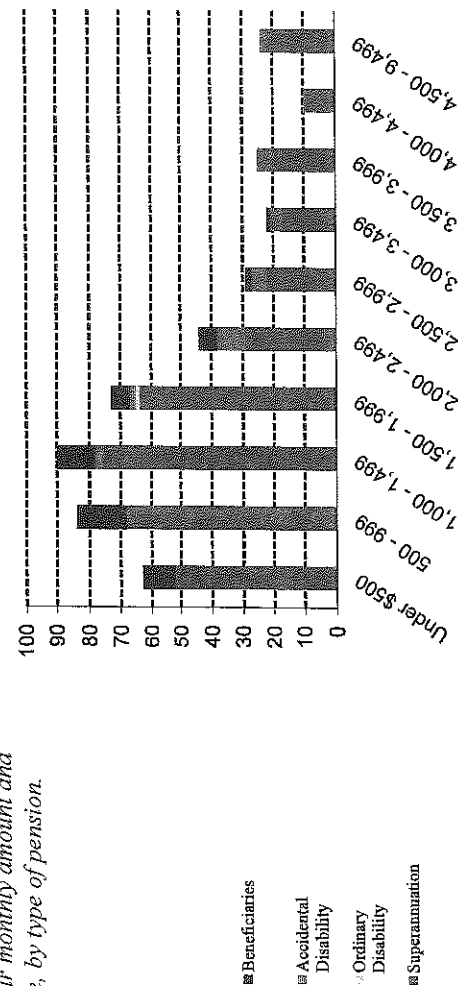
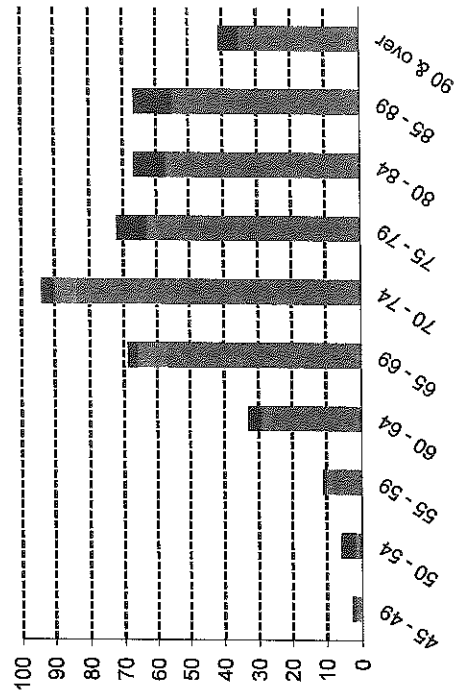


CHART 5

Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2013



SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

B. FINANCIAL INFORMATION

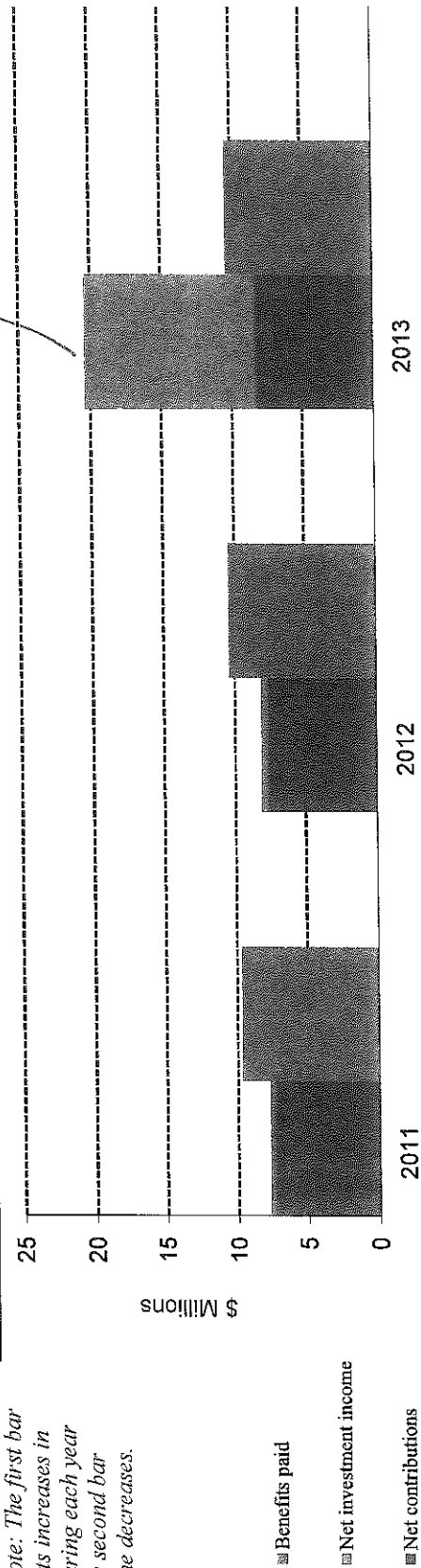
Retirement plan funding anticipates that, over the long term, both net contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

Retirement plan assets change as a result of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits C and D.

CHART 6

Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2011 – 2013

The chart depicts the components of changes in the actuarial value of assets over the last three years. Note: The first bar represents increases in assets during each year while the second bar details the decreases.



SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

*Method
Approved*

The chart shows the determination of the actuarial value of assets as of the valuation date.

CHART 7

Determination of Actuarial Value of Assets for Year Ended December 31, 2013

	Original Amount	Unrecognized Return	
1. Market value of assets, December 31, 2013			\$128,642,380
2. Calculation of unrecognized return*			
(a) Year ended December 31, 2013	\$7,470,006	\$5,976,005	
(b) Year ended December 31, 2012	5,330,652	3,198,391	
(c) Year ended December 31, 2011	-8,802,734	-3,521,094	
(d) Year ended December 31, 2010	4,522,713	904,543	
(e) Year ended December 31, 2009	6,806,891	0	
(f) Total unrecognized return			6,557,845
3. Preliminary actuarial value: (1) - (2f)			122,084,535
4. Adjustment to be within 20% corridor			0
5. Final actuarial value of assets as of December 31, 2013: (3) + (4)			\$122,084,535
6. Actuarial value as a percentage of market value: (5) ÷ (1)			94.9%
7. Amount deferred for future recognition: (1) - (5)			\$6,557,845

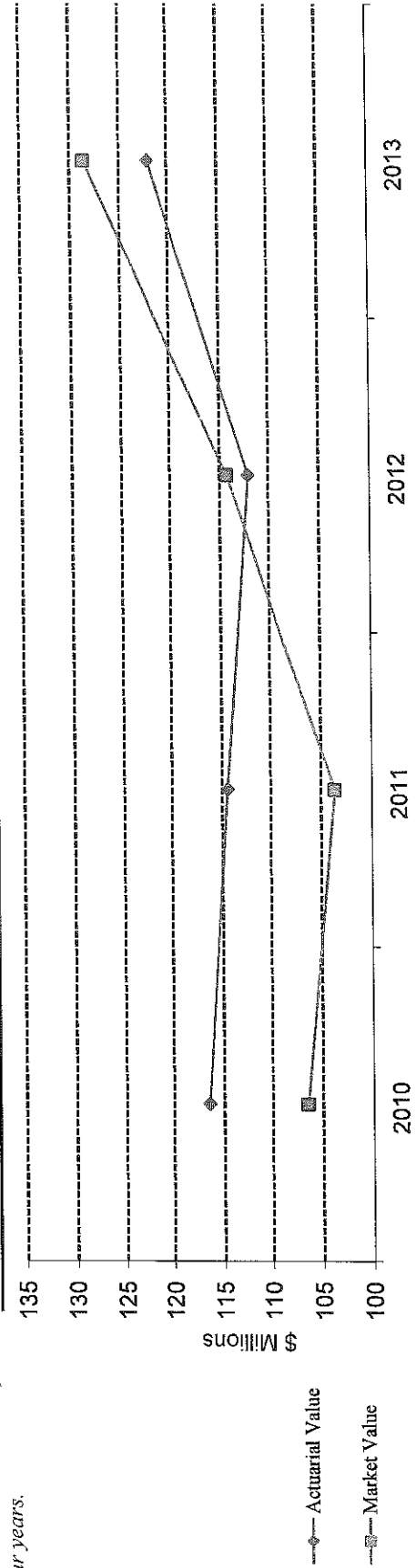
* Unrecognized return is the difference between the total return and expected return on a market value basis and is recognized over a five-year period.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

Both the actuarial value and market value of assets are representations of the Town of Needham Contributory Retirement System's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Town of Needham Contributory Retirement System's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

CHART 8

Actuarial Value of Assets vs. Market Value of Assets as of December 31, 2010 – 2013



This chart shows the change in the actuarial value of assets versus the market value over the past four years.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

C. ACTUARIAL EXPERIENCE

To calculate the required contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term

development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The net experience gain for the year ending December 31, 2013 is \$3,932,773. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

CHART 9

Actuarial Experience for Year Ended December 31, 2013

1. Net gain from investments*	\$3,237,773
2. Net gain from administrative expenses	73,654
3. Net gain from other experience**	621,346
4. Net experience gain: (1) + (2) + (3)	\$3,932,773

* Details in Chart 10

** Details in Chart 13

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Town of Needham Contributory Retirement System's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets was 8.0% for 2013. The actual rate of return on an actuarial basis for the 2013 plan year was 10.92%.

Since the actual return for the year was greater than the assumed return, the Town of Needham Contributory Retirement System experienced an actuarial gain during the year ended December 31, 2013 with regard to its investments.

This chart shows the gain/(loss) due to investment experience.

CHART 10

Actuarial Value Investment Experience for Year Ended December 31, 2013

1. Actual return	\$12,121,552
2. Average value of assets	111,047,245
3. Actual rate of return: (1) ÷ (2)	10.92%
4. Assumed rate of return	8.00%
5. Expected return: (2) x (4)	\$8,883,779
6. Actuarial gain/(loss): (1) - (5)	<u>\$3,237,773</u>

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the market value investment return for the last four years, including a three-year average.

As indicated below, the experience in the past few years has shown both higher and lower rates of return than the long-term assumption. Overall, interest rates have declined substantially in the current economic environment. Based upon this experience and future expectations, we have lowered the assumed rate of return from 8.00% to 7.75%. We will continue to monitor the plan's investment returns.

CHART 11

Investment Return – Actuarial Value vs. Market Value: 2010 - 2013

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2010	-	2.58%	-	12.74%
2011	\$419,144	0.36	-\$399,618	-0.38
2012	541,125	0.48	13,507,074	13.22
2013	12,121,552	10.92	16,526,053	14.60
Total	\$13,081,821		\$29,633,509	
	Three-year average return		3.85%	
			9.24%	

* Information not available.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

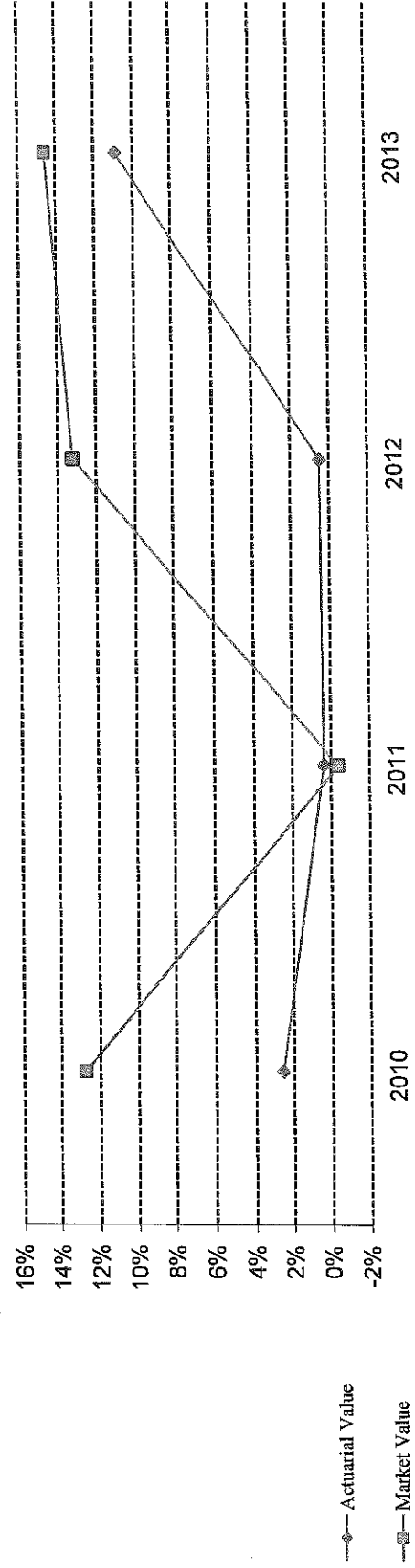
Administrative Expenses

Administrative expenses for the year ended December 31, 2013 totaled \$137,378 compared to the assumption of \$200,000. This resulted in a gain of \$73,654 for the year. We have maintained the assumption of \$200,000 for the current year.

This chart illustrates how this leveling effect has actually worked over the years 2010 - 2013.

CHART 12

Market and Actuarial Rates of Return for Years Ended December 31, 2010 - 2013



SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation.

These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net gain from this other experience for the year ended December 31, 2013 amounted to \$621,346, which is 0.3% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the Town of Needham Contributory Retirement System for the year ended December 31, 2013 is shown in the chart below.

With this valuation the assumed investment return assumption was lowered from 8.0% to 7.75%. The change in assumptions increased the unfunded liability by \$4.3 million and the normal cost by \$218,000.

The chart shows elements of the experience gain/(loss) for the most recent year.

CHART 13

Experience Due to Changes in Demographics for Year Ended December 31, 2013

<i>More</i>	
1. Lower deaths than expected amongst retired members and beneficiaries	\$521,367
2. Salary increases for continuing actives more than expected	(246,482)
3. Miscellaneous experience gain	<u>346,461</u>
4. Total	\$621,346

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

The unfunded liability was expected to increase from \$56.8 million as of January 1, 2013 to \$57.4 million as of January 1, 2014. The actual unfunded liability as of January 1, 2014 of \$57.7 million is \$391,726 higher than expected as detailed in Chart 14 below.

CHART 14

Development of Unfunded Actuarial Accrued Liability and (Gain)/Loss for the Year Ended December 31, 2013

1. Unfunded actuarial accrued liability at beginning of year	\$56,803,772
2. Normal cost at beginning of year	4,348,413
3. Total contributions	-8,383,213
4. Interest	
(a) For whole year on (1) + (2)	\$4,892,175
(b) For half year on (3)	<u>-303,113</u>
(c) Total interest	<u>4,589,062</u>
5. Expected unfunded actuarial accrued liability	\$57,358,034
6. Changes due to:	
(a) Net experience gain	-\$3,932,773
(b) Change in assumed interest rate	<u>4,324,499</u>
(c) Total changes	<u>391,726</u>
7. Unfunded actuarial accrued liability at end of year	<u>\$57,749,760</u>

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

D. RECOMMENDED CONTRIBUTION

The amount of annual contribution required to fund the Plan is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability.

The contribution for fiscal 2015 is equal to the previously budgeted amount of \$5,621,400. The results of this valuation will first be reflected in the fiscal 2016 appropriation. The amortization payments for fiscal 2016 and later are calculated to increase 4.5% per year, and to fully fund the System by 2030. Schedule 1 in Chart 16 shows the appropriation through fiscal 2030 based on this schedule. The fiscal 2016 appropriation is \$6,697,495 or 19.14% higher than the fiscal 2015 appropriation.

Charts 17 and 18 show additional funding schedules with the increase to the appropriation phased in over two and three years, respectively. In Chart 17, the fiscal 2016 appropriation is \$6,281,915 or 11.75% higher than the fiscal 2015 appropriation. In Chart 18, the fiscal 2016 appropriation is \$6,149,812 or 9.40% higher than the fiscal 2015 appropriation.

Chart 19 shows a funding schedule where the total appropriation increases 6.10% per year and the System is fully funded by 2030. The fiscal 2016 appropriation is \$5,964,305 or 6.10% higher than the fiscal 2015 appropriation.

The chart compares this valuation's recommended contribution with the prior valuation.

CHART 15

Recommended Contribution

	Year Beginning January 1			
	2014		2013	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	\$4,532,712	13.90%	\$4,148,413	13.13%
2. Administrative expenses	200,000	0.61%	200,000	0.63%
3. Expected employee contributions	<u>-3,066,324</u>	<u>-9.40%</u>	<u>-2,945,798</u>	<u>-9.32%</u>
4. Employer normal cost: (1) + (2) + (3)	\$1,666,388	5.11%	\$1,402,615	4.44%
5. Actuarial accrued liability	179,834,295		168,935,280	
6. Actuarial value of assets	<u>122,084,535</u>		<u>112,131,508</u>	
7. Unfunded actuarial accrued liability: (5) - (6)	\$57,749,760		\$56,803,772	
8. Employer normal cost projected to July 1, 2014 and 2013	1,695,299	5.11%	1,426,950	4.44%
9. Projected unfunded actuarial accrued liability	59,945,809		59,032,212	
10. Payment on projected unfunded actuarial accrued liability	3,926,101	11.84%	3,993,405	12.42%
11. Recommended contribution: (8) + (10)	<u>\$5,621,400</u>	<u>16.95%</u>	<u>\$5,420,454</u>	<u>16.86%</u>
12. Projected payroll	\$33,171,186		\$32,145,670	

Notes: Recommended contributions are assumed to be paid on July 1.
Recommended contributions are set equal to the budgeted amounts determined with the prior valuation.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

CHART 16

Funding Schedule 1 – Fully Funded by 2030

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Actuarial Accrued Liability	(4) Total Plan Cost: (2) + (3)	(5) Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in Total Cost
2015	\$1,695,299	\$3,926,101	\$5,621,400	\$59,945,809	--
2016	1,754,634	4,942,861	6,697,495	60,361,235	19.14%
2017	1,816,046	5,165,290	6,981,336	59,713,298	4.24%
2018	1,879,608	5,397,728	7,277,336	58,775,479	4.24%
2019	1,945,394	5,640,626	7,586,020	57,514,527	4.24%
2020	2,013,483	5,894,454	7,907,937	55,894,129	4.24%
2021	2,083,955	6,159,704	8,243,659	53,874,650	4.25%
2022	2,156,893	6,436,891	8,593,784	51,412,854	4.25%
2023	2,232,384	6,726,551	8,958,935	48,461,600	4.25%
2024	2,310,517	7,029,246	9,339,763	44,969,515	4.25%
2025	2,391,385	7,345,562	9,736,947	40,880,640	4.25%
2026	2,475,083	7,676,112	10,151,195	36,134,047	4.26%
2027	2,561,711	8,021,537	10,583,248	30,663,425	4.26%
2028	2,651,371	8,382,506	11,033,877	24,396,634	4.26%
2029	2,744,169	8,759,719	11,503,888	17,255,223	4.26%
2030	2,840,215	9,153,906	11,994,121	9,153,906	4.26%
2031	2,939,623	--	2,939,623	--	-75.49%

Notes: Recommended contributions are assumed to be paid on July 1.

Normal cost and expenses are assumed to increase at 3.5% per year.

Amortization payments increase at 4.5% per year.

Assumes contribution of budgeted amount for fiscal year 2015.

Does not reflect deferred investment gains.

Projected normal cost does not reflect the future impact of pension reform for new hires.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

CHART 17

Funding Schedule 2 – Fully Funded by 2030 with two-year phase-in of increase

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Actuarial Accrued Liability	(4) Total Plan Cost: (2) + (3)	(5) Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in Total Cost
2015	\$1,695,299	\$3,926,101	\$5,621,400	\$59,945,809	--
2016	1,754,634	4,527,281	6,281,915	60,361,235	11.75%
2017	1,816,046	5,203,993	7,020,039	60,161,086	11.75%
2018	1,879,608	5,438,208	7,317,816	59,216,267	4.24%
2019	1,945,394	5,682,928	7,628,322	57,945,858	4.24%
2020	2,013,483	5,938,659	7,952,142	56,313,308	4.24%
2021	2,083,955	6,205,899	8,289,854	54,278,684	4.25%
2022	2,156,893	6,485,164	8,642,057	51,798,426	4.25%
2023	2,232,384	6,776,997	9,009,381	48,825,039	4.25%
2024	2,310,517	7,081,967	9,392,479	45,306,765	4.25%
2025	2,391,385	7,400,650	9,792,035	41,187,226	4.25%
2026	2,475,083	7,733,679	10,208,762	36,405,036	4.26%
2027	2,561,711	8,081,695	10,643,406	30,893,387	4.26%
2028	2,651,371	8,445,371	11,096,742	24,579,598	4.26%
2029	2,744,169	8,825,413	11,569,582	17,384,630	4.26%
2030	2,840,215	9,222,556	12,062,771	9,222,556	4.26%
2031	2,939,623	--	2,939,623	--	-75.63%

Notes: Recommended contributions are assumed to be paid on July 1.

Normal cost and expenses are assumed to increase at 3.5% per year.

Amortization payments increase at 4.50% per year.

Assumes contribution of budgeted amount for fiscal year 2015.

Does not reflect deferred investment gains.

Projected normal cost does not reflect the future impact of pension reform for new hires.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

CHART 18

Funding Schedule 3 – Fully Funded by 2030 with three-year phase-in of increase

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Actuarial Accrued Liability	(4) Total Plan Cost: (2) + (3)	(5) Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in Total Cost
2015	\$1,695,299	\$3,926,101	\$5,621,400	\$5,945,809	--
2016	1,754,634	4,395,178	6,149,812	60,361,235	9.40%
2017	1,816,046	4,911,848	6,727,894	60,303,427	9.40%
2018	1,879,608	5,480,708	7,360,316	59,684,426	9.40%
2019	1,945,394	5,727,909	7,673,303	58,404,506	4.25%
2020	2,013,483	5,985,664	7,999,147	56,759,034	4.25%
2021	2,083,955	6,255,019	8,338,974	54,708,306	4.25%
2022	2,156,893	6,536,495	8,693,388	52,208,416	4.25%
2023	2,232,384	6,830,638	9,063,022	49,211,495	4.25%
2024	2,310,517	7,138,016	9,448,533	45,665,374	4.25%
2025	2,391,385	7,459,227	9,850,612	41,513,228	4.26%
2026	2,475,083	7,794,892	10,269,975	36,693,186	4.26%
2027	2,561,711	8,145,662	10,707,373	31,137,912	4.26%
2028	2,651,371	8,512,217	11,163,588	24,774,149	4.26%
2029	2,744,169	8,895,267	11,639,436	17,522,231	4.26%
2030	2,840,215	9,295,554	12,135,769	9,295,554	4.26%
2031	2,939,623	--	2,939,623	--	-75.78%

Notes: Recommended contributions are assumed to be paid on July 1.

Normal cost and expenses are assumed to increase at 3.5% per year.

Amortization payments increase at 4.50% per year.

Assumes contribution of budgeted amount for fiscal year 2015.

Does not reflect deferred investment gains.

Projected normal cost does not reflect the future impact of pension reform for new hires.

SECTION 2: Valuation Results for the Town of Needham Contributory Retirement System

CHART 19

Funding Schedule 4 – Fully Funded by 2030 with total plan cost increasing 6.10% per year

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Actuarial Accrued Liability	(4) Total Plan Cost: (2) + (3)	(5) Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in Total Cost
2015	\$1,695,299	\$3,926,101	\$5,621,400	\$59,945,809	--
2016	1,754,634	4,209,671	5,964,305	60,361,235	6.10%
2017	1,816,046	4,512,082	6,328,128	60,503,310	6.10%
2018	1,879,608	4,834,536	6,714,144	60,330,548	6.10%
2019	1,945,394	5,178,313	7,123,707	59,796,953	6.10%
2020	2,013,483	5,544,770	7,558,253	58,851,585	6.10%
2021	2,083,955	5,935,351	8,019,306	57,438,093	6.10%
2022	2,156,893	6,351,591	8,508,484	55,494,204	6.10%
2023	2,232,384	6,795,117	9,027,501	52,951,166	6.10%
2024	2,310,517	7,267,662	9,578,179	49,733,142	6.10%
2025	2,391,385	7,771,063	10,162,448	45,756,555	6.10%
2026	2,475,083	8,307,274	10,782,357	40,929,368	6.10%
2027	2,561,711	8,878,370	11,440,081	35,150,306	6.10%
2028	2,651,371	9,486,555	12,137,926	28,308,011	6.10%
2029	2,744,169	10,134,170	12,878,339	20,280,119	6.10%
2030	2,840,215	10,932,260	13,772,475	10,932,260	6.94%
2031	2,939,623	--	2,939,623	--	-78.66%

Notes: Recommended contributions are assumed to be paid on July 1.

Normal cost and expenses are assumed to increase at 3.5% per year.

Assumes contribution of budgeted amount for fiscal year 2015.

Does not reflect deferred investment gains.

Projected normal cost does not reflect the future impact of pension reform for new hires.

SECTION 3: Supplemental Information for the Town of Needham Contributory Retirement System

EXHIBIT A

Table of Plan Coverage

Category	Year Ended December 31		Change From Prior Year
	2013	2012	
Active participants in valuation:			
Number	631	646	-2.3%
Average age	48.7	48.2	N/A
Average years of service	11.6	11.2	N/A
Total payroll	\$31,406,062	\$31,597,470	-0.6%
Average payroll	49,772	48,912	1.8%
Member contributions	28,453,176	27,096,169	5.0%
Number of inactive participants entitled to a return of their employee contributions			
	126	112	12.5%
Number of inactive participants with a vested right to a deferred or immediate benefit			
	17	21	-19.0%
Retired participants:			
Number in pay status	379	382	-0.8%
Average age	76.6	76.9	N/A
Average monthly benefit	\$1,809	\$1,752	3.3%
Disabled participants:			
Number in pay status	31	31	0.0%
Average age	68.3	67.3	N/A
Average monthly benefit	\$2,907	\$2,926	-0.6%
Beneficiaries in pay status:			
Number in pay status	54	58	-6.9%
Average age	76.9	76.9	N/A
Average monthly benefit	\$1,142	1,214	-5.9%

SECTION 3: Supplemental Information for the Town of Needham Contributory Retirement System

EXHIBIT B

**Participants in Active Service as of December 31, 2013
By Age, Years of Service, and Average Payroll**

Age	Total	Years of Service										40 & over
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39			
Under 25	14	14	--	--	--	--	--	--	--	--	--	
25 - 29	\$25,636	\$25,636	--	--	--	--	--	--	--	--	--	
	49	44	5	--	--	--	--	--	--	--	--	
30 - 34	\$34,896	\$33,620	\$46,124	--	--	--	--	--	--	--	--	
	40	21	14	5	--	--	--	--	--	--	--	
35 - 39	\$54,488	\$44,089	\$65,634	\$66,951	--	--	--	--	--	--	--	
	41	7	18	12	4	--	--	--	--	--	--	
40 - 44	\$52,331	\$44,286	\$50,436	\$59,564	\$53,239	--	--	--	--	--	--	
	72	25	11	14	19	2	1	--	--	--	--	
45 - 49	\$58,827	\$35,470	\$47,118	\$73,999	\$71,895	\$180,535	\$67,452	--	--	--	--	
	88	30	17	14	8	10	9	--	--	--	--	
50 - 54	\$48,956	\$31,694	\$46,217	\$46,934	\$62,762	\$76,140	\$72,343	--	--	--	--	
	126	36	31	17	12	10	20	--	--	--	--	
55 - 59	\$47,344	\$33,053	\$40,030	\$44,173	\$47,624	\$59,659	\$80,521	--	--	--	--	
	91	18	17	19	9	7	9	10	2	--	--	
60 - 64	\$54,482	\$48,869	\$37,358	\$46,273	\$60,988	\$62,426	\$72,201	\$75,869	\$84,801	--	--	
	68	6	13	11	12	4	4	9	8	1	1	
65 - 69	\$52,815	\$45,096	\$38,499	\$40,191	\$40,852	\$43,378	\$65,552	\$68,596	\$87,093	\$138,192	--	
	35	3	5	9	6	6	2	3	1	--	--	
70 & over	\$42,558	\$34,734	\$33,940	\$37,798	\$36,385	\$52,726	\$48,019	\$54,209	\$82,115	--	--	
	7	--	--	3	--	--	1	1	1	1	1	
Total	\$66,323	--	--	\$67,889	--	--	\$23,302	\$91,450	\$37,920	\$107,924	--	
	631	204	131	104	70	39	46	23	12	2	2	
	\$49,772	\$36,058	\$45,096	\$51,575	\$55,857	\$67,844	\$73,050	\$70,875	\$82,198	\$123,058	--	

SECTION 3: Supplemental Information for the Town of Needham Contributory Retirement System

EXHIBIT C

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2013	Year Ended December 31, 2012
Net assets at actuarial value at the beginning of the year	\$112,131,508	\$114,445,376
Contribution income:		
Employer contributions	\$5,420,454	\$4,997,421
Employee contributions	2,962,759	2,764,061
Other contributions	0	1,253
Less administrative expenses	<u>-137,378</u>	<u>-198,470</u>
Net contribution income	8,245,835	7,564,265
Net investment income	<u>12,121,552</u>	<u>541,125</u>
Total income available for benefits	\$20,367,387	\$8,105,390
Less benefit payments:		
Pensions	<u>-9,878,148</u>	<u>-9,720,834</u>
Net 3(8)(c) reimbursements	-207,513	-220,553
Refunds, annuities, & Option B refunds	<u>-328,699</u>	<u>-477,870</u>
Net benefit payments	-\$10,414,360	-\$10,419,258
Change in reserve for future benefits	\$9,953,027	-\$2,313,868
Net assets at actuarial value at the end of the year	\$122,084,535	\$112,131,508

SECTION 3: Supplemental Information for the Town of Needham Contributory Retirement System

EXHIBIT D

Development of the Fund Through December 31, 2013

Year Ended December 31	Employer Contributions	Employee Contributions	Other Contributions	Net Investment Return*	Administrative Expenses	Benefit Payments	Actuarial Value of Assets at End of Year
2011	\$4,722,775	\$2,683,104	\$11,468	\$419,144	\$196,963	\$9,659,869	\$114,445,376
2012	4,997,421	2,764,061	1,253	541,125	198,470	10,419,258	112,131,508
2013	5,420,454	2,962,759	0	12,121,552	137,378	10,414,360	122,084,535

* Net of investment fees

SECTION 3: Supplemental Information for the Town of Needham Contributory Retirement System

EXHIBIT E

Definitions of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or actuarial assumptions:

The estimates on which the cost of the Plan is calculated including:

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age;
- (d) Withdrawal rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal cost:

The amount of contributions required to fund the benefit allocated to the current year of service.

Actuarial accrued liability for actives:

The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

Actuarial accrued liability for pensioners:

The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded actuarial accrued liability:

The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There are many approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

SECTION 3: Supplemental Information for the Town of Needham Contributory Retirement System

Amortization of the unfunded actuarial accrued liability:

Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.

Investment return:

The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:

1. Retired participants as of the valuation date (including 54 beneficiaries in pay status)	464
2. Participants active during the year ended December 31, 2013 with total contributions of \$28,453,176 and total payroll of \$32,605,497	631
3. Inactive participants with a vested right to a deferred or immediate benefit as of December 31, 2013	17
4. Inactive participants with a right to a return of their employee contributions as of December 31, 2013	126

The actuarial factors as of the January 1, 2014 valuation date are as follows:

1. Normal cost	\$4,732,712
2. Expected employee contributions	<u>-3,066,324</u>
3. Employer normal cost: (1) + (2)	\$1,666,388
4. Actuarial accrued liability	179,834,295
Retired participants and beneficiaries	
Active participants	\$88,784,757
Inactive participants	88,705,050
	2,344,488
5. Actuarial value of assets \$128,642,380 at market value as reported in the Annual Statement	122,084,535
6. Unfunded actuarial accrued liability: (4) - (5)	<u>57,749,760</u>

The actuarial factors projected to July 1, 2014 are as follows:

1. Employer normal cost, projected to July 1, 2014	\$1,695,299
2. Projected unfunded actuarial accrued liability	59,945,809
3. Payment on projected unfunded actuarial accrued liability	3,926,101
4. Recommended contribution: (1) + (3)	<u>\$5,621,400</u>
5. Projected payroll	33,171,186
6. Total budgeted contribution as a percentage of payroll: (4) ÷ (5)	16.95%

Notes: Recommended contributions are assumed to be paid July 1.
Recommended contributions are set equal to the budgeted amounts determined with the prior valuation.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

EXHIBIT II

Supplementary Information Required by the GASB - Schedule of Employer Contributions

Plan Year Ended December 31	Annual Required Contributions	Actual Contributions	Percentage Contributed
2011	\$4,722,775	\$4,722,775	100.0%
2012	4,997,421	4,997,421	100.0%
2013	5,420,454	5,420,454	100.0%

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

EXHIBIT III

Supplementary Information Required by the GASB - Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll* [(b) - (a)] / (c)
01/01/2003	\$76,356,568	\$108,537,756	\$32,181,188	70.35%	\$21,380,463	150.52%
01/01/2004	82,910,726	113,426,667	30,515,941	73.10%	21,633,442	141.06%
01/01/2005	89,965,920	119,994,011	30,028,091	74.98%	23,585,296	127.32%
01/01/2007	102,235,876	128,668,586	26,432,710	79.46%	26,120,560	101.20%
01/01/2009	102,420,630	139,054,020	36,633,390	73.66%	28,012,825	130.77%
01/01/2010	115,771,921	148,011,244	32,239,323	78.22%	30,285,518	106.45%
01/01/2011	116,465,717	149,577,973	33,112,256	77.86%	28,057,204	118.02%
01/01/2012	114,445,376	156,914,866	42,469,490	72.93%	28,963,004	146.63%
01/01/2013	112,131,508	168,935,280	56,803,772	66.38%	31,597,470	179.77%
01/01/2014	122,084,535	179,834,295	57,749,760	67.89%	32,605,497	177.12%

* Not less than zero

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

EXHIBIT IV

Supplementary Information Required by the GASB

Valuation date	January 1, 2014
Actuarial cost method	Entry Age Normal Cost Method
Amortization method	Amortization payments increase 4.5% per year
Remaining amortization period	16 years remaining as of January 1, 2014
Asset valuation method	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five - year period, further adjusted, if necessary, to be within 20% of the market value.
Actuarial assumptions:	
Investment rate of return	7.75% (previously, 8.00%)
Projected salary increases	4.75% for Group 1 employees and 5.25% for Group 4 employees
Cost of living adjustments	3.00% of first \$12,000 of retirement income
Plan membership:	
Retired participants and beneficiaries receiving benefits	464
Inactive participants entitled to a return of their employee contributions	126
Inactive participants with a vested right to a deferred or immediate benefit	17
Active participants	<u>631</u>
Total	1,238

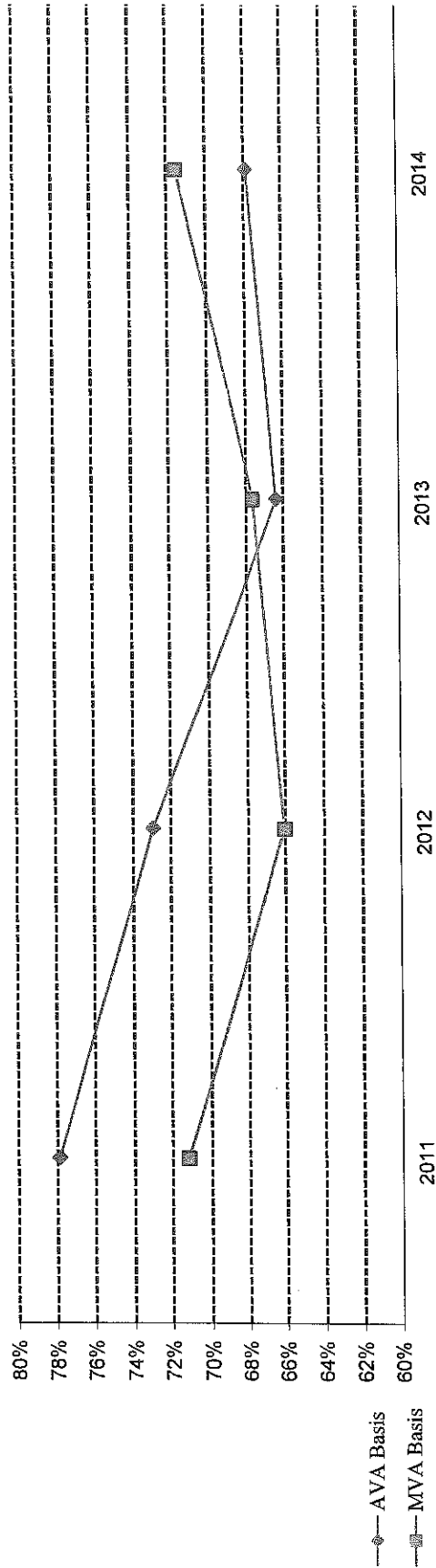
SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

EXHIBIT V

Funded Ratio

A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for this plan. On a market value basis, the funded ratio has increased from 67.65% as of January 1, 2013 to 71.53% as of January 1, 2014. On an actuarial basis, the funded ratio has increased from 66.38% as of January 1, 2013 to 67.89% as of January 1, 2014.



SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

EXHIBIT VI

Actuarial Assumptions and Actuarial Cost Method

Mortality Rates:

Healthy:

RP-2000 Combined Healthy Mortality Table projected 22 years using Scale AA

Disabled:

RP-2000 Combined Healthy Mortality Table, set forward 2 years

The above mortality assumptions were determined to contain provision appropriate to reasonably reflect future mortality improvement, based on a review of mortality experience of the plan.

Termination Rates before Retirement:

Age	Groups 1 and 2 - Rate (%)	
	Mortality	
	Male	Female
20	0.02	0.01
25	0.03	0.02
30	0.04	0.02
35	0.07	0.04
40	0.09	0.05
45	0.11	0.08
50	0.14	0.11
55	0.24	0.23
60	0.47	0.45
		Disability
		0.01
		0.02
		0.03
		0.06
		0.10
		0.15
		0.19
		0.24
		0.28

Notes: 55% of the disability rates shown represent accidental disability.
 20% of the accidental disabilities will die from the same cause as the disability.
 55% of the death rates shown represent accidental death.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

Group 4 - Rate (%)				
Age	Mortality		Female	Disability
	Male			
20	0.02		0.01	0.10
25	0.03		0.02	0.20
30	0.04		0.02	0.30
35	0.07		0.04	0.30
40	0.09		0.05	0.30
45	0.11		0.08	1.00
50	0.14		0.11	1.25
55	0.25		0.23	1.20
60	0.47		0.45	0.85

Notes: 90% of the disability rates shown represent accidental disability.
60% of the accidental disabilities will die from the same cause as the disability.
90% of the death rates shown represent accidental death.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

Withdrawal Rates:	Years of Service	Rate per year (%)	
		Groups 1 and 2	Group 4
	0	15.0	1.5
	1	12.0	1.5
	2	10.0	1.5
	3	9.0	1.5
	4	8.0	1.5
	5	7.6	1.5
	6	7.5	1.5
	7	6.7	1.5
	8	6.3	1.5
	9	5.9	1.5
	10	5.4	1.5
	11	5.0	0.0
	12	4.6	0.0
	13	4.1	0.0
	14	3.7	0.0
	15	3.3	0.0
	16 - 20	2.0	0.0
	21 - 29	1.0	0.0
	30+	0.0	0.0

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

Retirement Rates:		Rate per year (%)		Group 4	
		Groups 1 and 2		Male and Female	
Age	Age	Male	Female	Age	Male and Female
50	45	1.0	1.5	45	1.0
51	46	1.0	1.5	46	1.0
52	47	1.0	2.0	47	1.0
53	48	1.0	2.5	48	1.0
54	49	2.0	2.5	49	1.0
55	50	2.0	5.5	50	2.0
56	51	2.5	6.5	51	2.0
57	52	2.5	6.5	52	2.0
58	53	5.0	6.5	53	5.0
59	54	6.5	6.5	54	7.5
60	55	12.0	5.0	55	15.0
61	56	20.0	13.0	56	10.0
62	57	30.0	15.0	57	10.0
63	58	25.0	12.5	58	10.0
64	59	22.0	18.0	59	15.0
65	60	40.0	15.0	60	20.0
66	61	25.0	20.0	61	20.0
67	62	25.0	20.0	62	25.0
68	63	30.0	25.0	63	25.0
69	64	30.0	20.0	64	30.0
70	65	100.0	100.0	65	100.0

Retirement Age for Inactive

Vested Participants:

Age 65 for Group 1 and 2 employees and Age 55 for Group 4 employees

Unknown Data for Participants:

Same as those exhibited by participants with similar known characteristics.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

Family Composition: 80% of participants are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their spouses.

Benefit Election: All participants are assumed to elect Option A.

Net Investment Return: 7.75% (Previously, 8.00%)

Salary Increases: 4.75% for Group 1 and 2 employees and 5.25% for Group 4 employees

Interest on Employee Contributions: 3.50%

Administrative Expenses: \$200,000 for calendar 2014, increasing 3.50% per year

2013 Salary: 2013 salary equal to salaries provided in the data, except for new hires where salaries were annualized based on date of hire.

Total Service: Total creditable service reported in the data.

Net 3(8)(c) Liability: No liability is valued for benefits paid to or received from other municipal systems.

Actuarial Value of Assets: Market value of assets as reported in the System's Annual Statement less unrecognized return in each of the last five years. Unrecognized return is equal to the difference between the actual market value return and the expected market value return and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.

Actuarial Cost Method: Entry Age Normal Actuarial Cost Method. Entry Age is the age of the participant less Total Service as defined above. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary. Normal Cost is determined using the plan of benefits applicable to each participant.

Changes in Assumptions: The investment return assumption was lowered from 8.00% to 7.75%.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

EXHIBIT VII

Summary of Plan Provisions

This exhibit summarizes the major provisions of Chapter 32 of the Laws of Massachusetts.

Plan Year:

January 1 – December 31

Retirement Benefits

Employees covered by the Contributory Retirement Law are classified into one of four groups depending on job classification. Group 1 comprises most positions in state and local government. It is the general category of public employees. Group 4 comprises mainly police and firefighters. Group 2 is for other specified hazardous occupations. (Officers and inspectors of the State Police are classified as Group 3.)

For employees hired prior to April 2, 2012, the annual amount of the retirement allowance is based on the member's final three-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following table based on the age of the member at retirement:

Percent	Age Last Birthday at Date of Retirement			
	Group 1 65 or over	Group 2 60 or over	Group 3 55 or over	Group 4 55 or over
2.5	64	59	54	54
2.4	63	58	53	53
2.3	62	57	52	52
2.2	61	56	51	51
2.1	60	55	50	50
2.0	59	54	49	49
1.9	58	53	48	48
1.8	57	52	47	47
1.7	56	51	46	46
1.6	55	50	45	45
1.5	54	49	44	44

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

A member's final three-year average salary is defined as the greater of the highest consecutive three-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last three years of creditable service prior to retirement.

For employees hired on April 2, 2012 or later, the annual amount of the retirement allowance is based on the member's final five-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following tables based on the age and years of creditable service of the member at retirement:

For members with less than 30 years of creditable service:

Age Last Birthday at Date of Retirement			
Percent	Group 1 67 or over	Group 2 62 or over	Group 4 57 or over
2.50	66	61	56
2.35	65	60	55
2.20	64	59	54
2.05	63	58	53
1.90	62	57	52
1.75	61	56	51
1.60	60	55	50

For members with 30 years of creditable service or greater:

Age Last Birthday at Date of Retirement			
Percent	Group 1 67 or over	Group 2 62 or over	Group 4 57 or over
2.500	66	61	56
2.375	65	60	55
2.250	64	59	54
2.125	63	58	53
2.000	62	57	52
1.875	61	56	51
1.750	60	55	50

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

A member's final five-year average salary is defined as the greater of the highest consecutive five-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last five years of creditable service prior to retirement.

For employees who became members after January 1, 2011, regular compensation is limited to 64% of the federal limit found in 26 U.S.C. 401(a)(17). In addition, regular compensation for members who retire after April 2, 2012 will be limited to prohibit "spiking" of a member's salary to increase the retirement benefit.

For all employees, the maximum annual amount of the retirement allowance is 80 percent of the member's final average salary. Any member who is a veteran also receives an additional yearly retirement allowance of \$15 per year of creditable service, not exceeding \$300. The veteran allowance is paid in addition to the 80 percent maximum.

Employee Contributions

Date of Hire	Contribution Rate
Prior to January 1, 1975	5%
January 1, 1975 – December 31, 1983	7%
January 1, 1984 – June 30, 1996	8%
July 1, 1996 onward	9%

In addition, employees hired after December 31, 1978 contribute an additional 2 percent of salary in excess of \$30,000.

Employees hired after 1983 who voluntarily withdraw their contributions with less than 10 ten years of credited service receive 3% interest on their contributions.

Employees in Group 1 hired on or after April 2, 2012 with 30 years of creditable service or greater will pay a base contribution rate of 6%.

Retirement Benefits (Superannuation)

Members of Group 1, 2 or 4 hired prior to April 2, 2012 may retire upon the attainment of age 55. For retirement at ages below 55, twenty years of creditable service is required.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

Members hired prior to April 2, 2012 who terminate before age 55 with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System).

Members of Group 1 hired April 2, 2012 or later may retire upon the attainment of age 60. Members of Group 2 or 4 hired April 2, 2012 or later may retire upon the attainment of age 55. Members of Group 4 may retire upon attainment of age 50 with ten years of creditable service.

Members hired April 2, 2012 or later who terminate before age 55 (60 for members of Group 1) with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (60 for members of Group 1) provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System.

Ordinary Disability Benefits

A member who is unable to perform his or her job due to a non-occupational disability will receive a retirement allowance if he or she has ten or more years of creditable service and has not reached age 55. The annual amount of such allowance shall be determined as if the member retired for superannuation at age 55 (age 60 for Group 1 members hired on or after April 2, 2012), based on the amount of creditable service at the date of disability. For veterans, there is a minimum benefit of 50 percent of the member's most recent year's pay plus an annuity based on his or her own contributions.

Accidental Disability Benefit

For a job-connected disability, the benefit is 72 percent of the member's most recent annual pay plus an annuity based on his or her own contributions, plus additional amounts for surviving children. Benefits are capped at 75 percent of annual rate of regular compensation for employees who become members after January 1, 1988.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

Death Benefits

In general, the beneficiary of an employee who dies in active service will receive a refund of the employee's own contributions. Alternatively, if the employee were eligible to retire on the date of death, a spouse's benefit will be paid equal to the amount the employee would have received under Option C. The surviving spouse of a member who dies with two or more years of credited service has the option of a refund of the employee's contributions or a monthly benefit regardless of eligibility to retire, if they were married for at least one year. There is also a minimum widow's pension of \$500 per month, and there are additional amounts for surviving children.

If an employee's death is job-connected, the spouse will receive 72 percent of the member's most recent annual pay, in addition to a refund of the member's accumulated deductions, plus additional amounts for surviving children. However, in accordance with Section 100 of Chapter 32, the surviving spouse of a police officer, firefighter or corrections officer is killed in the line of duty will be eligible to receive an annual benefit equal to the maximum salary held by the member at the time of death.

Upon the death of a job-connected disability retiree who retired prior to November 7, 1996 and could not elect an Option C benefit, a surviving spouse will receive an allowance of \$9,000 per year if the member dies for a reason unrelated to the cause of the disability.

"Heart And Lung Law" And Cancer Presumption

Any case of hypertension or heart disease resulting in total or partial disability or death to a uniformed fireman, permanent member of a police department, or certain employees of a county correctional facility is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. Any case of disease of the lungs or respiratory tract resulting in total disability or death to a uniformed fireman is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. There is an additional presumption for uniformed firemen that certain types of cancer are job-related if onset occurs while actively employed or within five years of retirement.

SECTION 4: Reporting Information for the Town of Needham Contributory Retirement System

Options

Members may elect to receive a full retirement allowance payable for life under Option A. Under Option B a member may elect to receive a lower monthly allowance in exchange for a guarantee that at the time of death any contributions not expended for annuity payments will be refunded to the beneficiary. Option C allows the member to take a lesser retirement allowance in exchange for providing a survivor with two-thirds of the lesser amount. Option C pensioners will have benefits converted from a reduced to a full retirement if the beneficiary predeceases the retiree.

Post-Retirement Benefits

The Board has adopted the provisions of Section 51 of Chapter 127 of the Acts of 1999, which provide that the Retirement Board may approve an annual COLA in excess of the Consumer Price Index but not to exceed a 3% COLA on the first \$12,000 of a retirement allowance. Cost-of-living increases granted prior to July 1, 1998 are reimbursed by the Commonwealth and not reflected in this report.

Changes in Plan Provisions

There have been no changes in the plan of benefits since our prior valuation.

SECTION 5: GASB Information for Town of Needham Contributory Retirement System

EXHIBIT 1

Net Pension Liability

The components of the net pension liability of the Town of Needham Contributory Retirement System at December 31, 2013 were as follows:

Total pension liability	\$179,834,295
Plan fiduciary net position	128,642,380
System's net pension liability	51,191,915
Plan fiduciary net position as a percentage of the total pension liability	71.53%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of December 31, 2013, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.5%
Salary increases	4.75% for Group 1 and 2 employees, 5.25% for Group 4 employees
Investment rate of return	7.75%, net of pension plan investment expense, including inflation
Cost of Living Adjustments	3% of first \$12,000
Healthy:	RP-2000 Combined Healthy Mortality Table projected 22 years with Scale AA
Disabled Retiree:	RP-2000 Combined Healthy Mortality Table set forward two years

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2013 are summarized in the following table:

SECTION 5: GASB Information for Town of Needham Contributory Retirement System

Asset Class	Long-Term Expected Real Rate of Return
Domestic equity	6.60%
International developed markets equity	7.10%
International emerging markets equity	9.40%
Core fixed income	2.20%
High-yield fixed income	4.70%
Real estate	4.40%
Commodities	4.40%
Hedge fund, GTAA, Risk parity	3.90%
Private equity	11.70%

Discount rate: The discount rate used to measure the total pension liability was 7.75%. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that Town of Needham Contributory Retirement System contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the Town of Needham Contributory Retirement System, calculated using the discount rate of 7.75%, as well as what the Town of Needham's Contributory Retirement System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75%) or 1-percentage-point higher (8.75%) than the current rate:

	1% Decrease (6.75%)	Current Discount (7.75%)	1% Increase (8.75%)
Town of Needham Contributory Retirement System's net pension liability as of December 31, 2013	\$70,294,345	\$51,191,915	\$34,851,928

SECTION 5: GASB Information for Town of Needham Contributory Retirement System

EXHIBIT 2

Pension Expense and Deferred Outflows/Inflows of Resources Related to Pensions

A. Pension expense for the year ended June 30, 2015

Service cost	\$4,532,712
Interest	--
Recognized portion of current-period difference between expected and actual experience	--
Contributions — employee	--
Projected earnings on pension plan investments	--
Recognized portion of current-period difference between projected and actual earnings on pension plan investments	--
Recognition of deferred outflows of resources	--
Recognition of deferred inflows of resources	--
Pension expense for fiscal year ended June 30, 2015	-- To be determined

B. Deferred outflows/inflows of resources related to pensions

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	--	--
Changes of assumptions	--	--
Changes of benefit terms	--	--
Net difference between projected and actual earnings on pension plan investments	--	--
Total	-- To be determined	-- To be determined

C. Projected recognition of deferred outflows/(inflows)

Year Ended June 30,	Recognition
2016	--
2017	--
2018	--
2019	--
2020	--
Thereafter	--

Note: Entry Age Normal liabilities calculated using ages and service amounts as of January 1, 2014 are used to measure the pension expense for fiscal year ended June 30, 2015.

SECTION 5: GASB Information for Town of Needham Contributory Retirement System

EXHIBIT 3

Schedule of Changes in the Net Pension Liability – Last Ten Years

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Total pension liability										
Service cost	\$4,532,712									
Interest	--									
Differences between expected and actual experience	--									
Changes of assumptions	--									
Changes of benefit terms	--									
Benefit payments, including refunds of employee contributions	--									
Net change in total pension liability	TBD									
Total pension liability – beginning	179,834,295									
Total pension liability - ending (a)	TBD									
(Historical information prior to implementation of GASB 67/68 is not required)										
Plan fiduciary net position										
Contributions – employer	--									
Contributions – employee	--									
Net investment income	--									
Benefit payments, including refunds of employee contributions	--									
Other	--									
Net change in fiduciary net position	TBD									
Plan fiduciary net position - beginning	128,642,380									
Plan fiduciary net position - ending (b)	TBD									
(Historical information prior to implementation of GASB 67/68 is not required)										
Net pension liability – ending: (a)-(b)	TBD									
Plan's fiduciary net position as a percentage of the total pension liability	TBD									
Covered-employee payroll	\$32,605,497									
Net pension liability as a percentage of covered-employee payroll	TBD									
(Historical information prior to implementation of GASB 67/68 is not required)										

*Covered-employee payroll as reported in the January 1, 2014 funding valuation report

SECTION 5: GASB Information for Town of Needham Contributory Retirement System

EXHIBIT 4

Schedule of Contributions – Last Ten Years

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Actuarially determined contribution*	\$5,621,400									
Contributions in relation to the actuarially determined contribution	TBD									
Contribution deficiency (excess)	TBD									
Covered-employee payroll	\$32,605,497									
Contributions as a percentage of covered-employee payroll	17.24%									

(Historical information prior to implementation of GASB 67/68 is not required)

* Based on the results of the January 1, 2013 actuarial valuation (including assumptions and methods) which determined budgeted appropriation for fiscal 2015.

SECTION 5: GASB Information for Town of Needham Contributory Retirement System

EXHIBIT 5

Notes to Required Supplementary Information

Valuation date	Actuarial determined contribution rates are calculated as of January 1 two years prior to the end of the employer's fiscal year in which contributions are reported.	
Actuarial cost method	Entry Age Normal Cost Method	
Amortization method	Amortization payments increase 4.5% per year	
Remaining amortization period	16 years remaining as of January 1, 2014	
Asset valuation method	Market value of assets less unrecognized returns in each of the last four years. Unrecognized return is equal to the difference between the actual and expected return on a market value basis and is recognized over a four-year period, further adjusted, if necessary, to be within 20% of the market value.	
Actuarial assumptions:		
Investment rate of return	7.75% (previously, 8.0%)	
Discount rate	7.75% (previously, 8.0%)	
Inflation rate	3.5%	
Projected salary increases	4.75% for Group 1 and Group 2 employees, 5.25% for Group 4 employees	
Cost of living adjustments	3.00% of the first \$12,000 of retirement income	
Plan membership:		
Retired participants and beneficiaries receiving benefits	464	
Inactive participants entitled to a return of their employee contributions	126	
Inactive participants with a vested right to a deferred or immediate benefit	17	
Active participants	<u>631</u>	
Total	1,238	
Changes in Assumptions:		
The investment return assumption was lowered from 8.00% to 7.75%.		
Changes in Plan Provisions:		
There have been no changes in plan provisions since our prior valuation.		