

Town of Needham
Actuarial Valuation and Review of Other
Postemployment Benefits (OPEB)
as of June 30, 2017



This report has been prepared at the request of the Town of Needham to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Town of Needham and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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March 22, 2018

Mr. David Davison
Assistant Town Manager/Director of Finance
Town of Needham
1471 Highland Avenue
Town Hall
Needham, MA 02492-2669

Dear Mr. Davison:

We are pleased to submit this report on our actuarial valuation of postemployment welfare benefits as of June 30, 2017. The purpose of this report is to calculate an Actuarially Determined Contribution for the Town of Needham Other Postemployment Benefit (OPEB) plan for the fiscal year ending June 30, 2020. It summarizes the actuarial data used in the valuation and analyzes the experience and changes in assumptions since the prior valuation. The GASB Statement Number 75 disclosure information for the fiscal year ending June 30, 2018 will be provided in a separate report when the June 30, 2018 financial information is available.

This report is based on information received from the Town of Needham and vendors employed by the Town of Needham. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security at termination of the plan, or determining short-term cash flow requirements.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience or rates of return on assets differing from that anticipated by the assumptions; changes in 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 retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

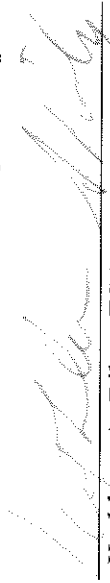
The actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Town of Needham are reasonably related to the experience of and the expectations for the Plan.

We look forward to discussing this with you at your convenience.

Sincerely,

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

By:



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

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Daniel J. Rhodes, FSA, MAAA
Vice President and Consulting Actuary

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Section 1: Executive Summary

Important Information about Actuarial Valuations

An actuarial valuation is an estimate of future uncertain obligations of a postretirement health plan. As such, it will never forecast the precise future stream of benefit payments. It is an estimated forecast – the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. For example, a plan may provide health benefits to post-65 retirees that coordinate with Medicare. If so, changes in the Medicare law or administration may change the plan’s costs without any change in the terms of the plan itself. It is important for the Town of Needham to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.

An actuarial valuation for a plan is based on data provided to the actuary by the plan. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is not necessary to have perfect data for an actuarial valuation: the valuation is an estimated forecast, not a prediction. The uncertainties in other factors are such that even perfect data does not produce a “perfect” result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.

Part of the cost of a plan will be paid from existing assets – the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, provided by the Town of Needham. Some plans include assets, such as private equity holdings, real estate, or hedge funds, that are not subject to valuation by reference to transactions in the marketplace. A snapshot as of a single date may not be an appropriate value for determining a single year’s contribution requirement, especially in volatile markets. Plan sponsors often use an “actuarial value of assets” that differs from market value to reflect gradually year-to-year changes in the market value of assets in determining the contribution requirements.

In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. To determine the future costs of benefits, Segal collects claims, premiums, and enrollment data in order to establish a baseline cost for the valuation measurement, and then develops short- and long-term health care cost trend rates to project increases in costs in future years. This forecast also requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year, as well as forecasts of the plan’s benefits for each of those events. In a funding valuation, the forecasted benefits are then discounted to a present value using the expected rate of return that will be achieved on the plan’s assets. All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model necessarily uses approximations and estimates that may lead to significant changes in our results but will have no impact on the actual cost of the plan. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

Given the above, the user of Segal's actuarial valuation (or other actuarial calculations) needs to keep the following in mind:

- The actuarial valuation is prepared for use by the Town of Needham. It includes information for compliance with accounting standards. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- If the Town of Needham is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- An actuarial valuation is a measurement at a specific date — it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Sections of this report may include actuarial results that are not rounded, but that does not imply precision.
- Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience and health care cost trend, and investment losses, not just the current valuation results.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Town of Needham should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the Town of Needham upon delivery and review. The Town of Needham should notify Segal immediately of any questions or concerns about the final content.

As Segal Consulting has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Purpose

This report presents the results of our actuarial valuation of the Town of Needham postemployment welfare benefit plan as of June 30, 2017. The purpose of this report is to calculate a recommended Actuarially Determined Contribution for the OPEB plan for the fiscal year ending June 30, 2020.

Highlights of the Valuation

- The unfunded actuarial accrued liability (UAAL) as of June 30, 2017 is \$56,717,000 based on an actuarial accrued liability (AAL) of \$83,277,000, an actuarial value of assets of \$26,560,000 and a discount rate of 7.5%. Going forward, net unfunded plan obligations will be expected to change due to normal plan operations, which consist of continuing accruals for active members, plus interest on the unfunded actuarial accrued liability, less employer contributions. Future valuations will analyze the difference between actual and expected unfunded actuarial accrued liabilities.
- As of June 30, 2017 the ratio of assets to the AAL (the funded ratio) is 31.89%. This funded percentage is not necessarily appropriate for assessing the sufficiency of OPEB assets to cover the estimated cost of settling the benefit obligations or the need for or the amount of future contributions.
- The UAAL of \$56,717,000 as of June 30, 2017 represents a decrease of \$8,822,000 from \$65,539,000 as shown in the June 30, 2016 valuation. The unfunded liability had been expected to decrease \$56,000 due to normal plan operations. The difference between the actual and expected increase was the net effect of the following:
 - An actuarial experience loss increased obligations by \$1,218,000. This was the net result of losses due to demographic changes.
 - Valuation assumption changes decreased obligations by \$5,893,000. This was the net result of a decrease in obligations due to 1) updating the valuation-year per capita costs and contributions, 2) changing the future trend on per capita health care costs and contributions, 3) revising the excise tax calculation on high cost health plans beginning in 2022 and 4) updating the salary increase assumption, partially offset by 5) updating the mortality assumptions. The complete set of assumptions is shown in Exhibit II.
 - Plan changes decreased obligations by \$4,091,000. As of July 1, 2018, the “Rate Saver” plans will no longer be offered. The complete plan summary is shown in Exhibit III.
- The Actuarially Determined Contribution (ADC) for fiscal year 2020 is \$6,148,780. The ADC is calculated using a 22-year amortization with payments increasing at 4.25% per year.
- For illustration purposes, the UAAL and ADC have also been calculated using a discount rate of 7.25%.
- A summary of the valuation results using the 7.50% and, alternatively, 7.25% discount rate appears on page 10.

OPEB Trust Information

As of June 30, 2017, the Town of Needham has \$26,560,055 in assets, which are invested primarily in the State Retiree Benefits Trust Fund/PRIT. The table below shows the increase in assets from June 30, 2013 to June 30, 2017, which matches the figures shown in the Town's financial statements.

Summary of OPEB Trust Fund Assets		Total
• Balance as of June 30, 2013		\$10,095,258
• Balance as of June 30, 2014		15,496,964
• Balance as of June 30, 2015		18,424,006
• Balance as of June 30, 2016		21,180,534
• Balance as of June 30, 2017		26,560,055

Summary of Funding Schedules

This report includes two funding schedules for the Town of Needham. The funding schedules for the Town of Needham reflect the Town's policy to contribute the actuarially determined contribution each year to the OPEB Trust. One schedule is based on the 7.5% discount rate (Funding Schedule 1) and one schedule is based on the 7.25% discount rate (Funding Schedule 2). For both schedules, the fiscal year 2018 and fiscal year 2019 ADC are set to previously budgeted amounts. This valuation will be used to determine the ADC for fiscal year 2020.

Other Considerations

This valuation does not include the potential impact of any future changes due to the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 other than the excise tax on high cost health plans beginning in 2022 (reflected in this valuation) and those previously adopted as of the valuation date.

Employer decisions regarding plan design, cost sharing between the Employer and its retirees, actuarial cost method, amortization techniques, and integration with Medicare are just some of the decisions that affect the magnitude of OPEB obligations. We are available to assist you with any investigation of such options you may wish to undertake.

Calculations are based on the benefits provided under the terms of the substantive plan in effect at the time of the valuation and on the pattern of sharing costs between the employer and plan members. The projection of benefits does not incorporate the potential effect of legal or contractual funding limitations on the pattern of cost sharing between the employer and plan members in the future.

Actuarial calculations reflect a long-term perspective, and the methods and assumptions use techniques designed to reduce short-term volatility in accrued liabilities and the actuarial value of assets, if any.

The calculation of an accounting obligation does not, in and of itself, imply that there is any legal liability to provide the benefits valued, nor is there any implication that the Employer is required to implement a funding policy to satisfy the projected expense.

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future, and the actuarially determined amounts are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future.

Section 2: Valuation Results

Summary of Valuation Results

	July 1, 2017		July 1, 2016	
	7.5% discount rate	7.25% discount rate	7.5% discount rate	7.5% discount rate
Actuarial Accrued Liability by Participant Category				
1. Retirees, beneficiaries and dependents	\$45,490,403	\$46,478,365	\$44,042,041	
2. Active employees	37,238,381	38,516,474	42,052,270	
3. Vested terminated employees	<u>548,357</u>	<u>560,996</u>	<u>625,527</u>	
4. Total as of June 30, 2017: (1) + (2) + (3)	\$83,277,141	\$85,555,835	\$86,719,838	
5. Actuarial value of assets as of June 30, 2017	<u>26,560,055</u>	<u>26,560,055</u>	<u>21,180,534</u>	
6. Unfunded actuarial accrued liability (UAAL) as of June 30, 2017:				
(4) - (5)	\$56,717,086	\$58,995,780	\$65,539,304	
7. Funded ratio: (5) / (4)	31.89%	31.04%	24.42%	
Actuarially Determined Contribution for fiscal year beginning:				
8. Normal Cost as of beginning of year:	\$2,656,909	\$2,804,357	\$2,913,331	
9. 22-year and 23-year amortization (increasing at 4.25% per year) of the UAAL	<u>3,491,871</u>	<u>3,577,007</u>	<u>3,993,374</u>	
10. Total Actuarially Determined Contribution: (8) + (9)	\$6,148,780	\$6,381,364	\$6,906,705	

Note: Assumes payment at beginning of fiscal year.

Funding Schedules

Funding Schedule 1 – 7.5% Discount Rate – Fully Funded in Fiscal 2041

Fiscal Year Ending June 30	(1) Projected Benefit Payments	(2) Normal Cost	(3) Amortization of UAAL	(4) Actually Determined Contribution (2) + (3)	(5) Assets at End of Year	(6) AAL at End of Year	(7) UAAL at End of Year (6) – (5)
2018	\$4,463,145	\$2,472,829	\$3,599,454	\$6,072,283	30,452,276	\$87,553,731	\$57,101,455
2019	4,694,158	2,563,217	4,343,488	6,906,705	35,293,898	92,008,712	56,714,814
2020	5,206,926	2,656,909	3,491,871	6,148,780	39,152,223	96,366,887	57,214,664
2021	5,574,543	2,754,026	3,640,276	6,394,302	43,182,705	100,775,172	57,592,467
2022	5,967,641	2,854,693	3,794,987	6,649,680	47,382,432	105,214,723	57,832,291
2023	6,285,643	2,959,039	3,956,274	6,915,313	51,852,983	109,769,701	57,916,718
2024	6,647,060	3,067,199	4,124,416	7,191,615	56,581,124	114,407,849	57,826,725
2025	6,943,473	3,179,313	4,299,704	7,479,017	61,665,505	119,207,053	57,541,548
2026	7,289,605	3,295,525	4,482,441	7,777,966	67,093,708	124,132,248	57,038,540
2027	7,646,662	3,415,985	4,672,945	8,088,930	72,893,108	129,186,123	56,293,015
2028	7,904,776	3,540,848	4,871,545	8,412,393	79,207,567	134,485,648	55,278,081
2029	8,260,491	3,670,275	5,078,585	8,748,860	85,988,500	139,952,958	53,964,458
2030	8,632,213	3,804,433	5,294,425	9,098,858	93,268,841	145,589,126	52,320,285
2031	9,020,662	3,943,495	5,519,438	9,462,933	101,083,836	151,394,746	50,310,910
2032	9,426,592	4,087,640	5,754,015	9,841,655	109,471,204	157,369,866	47,898,662
2033	9,850,789	4,237,053	5,998,560	10,235,613	118,471,313	163,513,923	45,042,610
2034	10,294,074	4,391,928	6,253,499	10,645,427	128,127,372	169,825,667	41,698,295
2035	10,757,308	4,552,464	6,519,273	11,071,737	138,485,627	176,303,077	37,817,450
2036	11,241,387	4,718,868	6,796,342	11,515,210	149,595,581	182,943,273	33,347,692
2037	11,747,249	4,891,354	7,085,186	11,976,540	161,510,223	189,742,417	28,232,194
2038	12,275,875	5,070,145	7,386,307	12,456,452	174,286,277	196,695,606	22,409,329
2039	12,828,290	5,255,471	7,700,225	12,955,696	187,984,467	203,796,754	15,812,287
2040	13,405,563	5,447,572	8,027,484	13,475,056	202,669,804	211,038,467	8,368,663
2041	14,008,813	5,646,694	8,368,663	14,015,357	218,411,902	218,411,902	0

Notes: Benefit payments are assumed to be payable in the middle of the fiscal year.

Contributions are assumed to be made at the beginning of the fiscal year.

Normal cost is projected to increase 3.5% per year for inflation and 0.15% per year for mortality improvement and does not reflect the future impact of pension reform for new hires.

Amortization payments calculated to increase 4.25% per year

Actuarially Determined Contributions for fiscal 2018 and 2019 are set to previously budgeted amounts.

Section 2: Valuation Results for the Town of Needham OPEB as of June 30, 2017

Funding Schedule 2 - 7.25% Discount Rate – Fully Funded in Fiscal 2041

Fiscal Year Ending June 30	(1) Projected Benefit Payments	(2) Normal Cost	(3) Amortization of UAAL	(4) Actuarially Determined Contribution (2) + (3)	(5) Assets at End of Year	(6) AAL at End of Year	(7) UAAL at End of Year (6) – (5)
2018	\$4,463,145	\$2,610,061	\$3,462,222	\$6,072,283	30,376,080	\$89,935,820	\$59,559,740
2019	4,694,158	2,705,465	4,201,240	6,906,705	35,124,443	94,496,434	59,371,991
2020	5,206,926	2,804,357	3,577,007	6,381,364	39,122,603	98,962,724	59,840,121
2021	5,574,543	2,906,863	3,729,030	6,635,893	43,302,902	103,482,047	60,179,145
2022	5,967,641	3,013,116	3,887,514	6,900,630	47,663,105	108,035,879	60,372,774
2023	6,285,643	3,123,253	4,052,733	7,175,986	52,305,414	112,708,658	60,403,244
2024	6,647,060	3,237,416	4,224,974	7,462,390	57,217,170	117,468,364	60,251,194
2025	6,943,473	3,355,752	4,404,535	7,760,287	62,497,553	122,393,094	59,895,541
2026	7,289,605	3,478,413	4,591,728	8,070,141	68,134,622	127,447,961	59,313,339
2027	7,646,662	3,605,558	4,786,877	8,392,435	74,156,265	132,635,895	58,479,630
2028	7,904,776	3,737,350	4,990,319	8,727,669	80,706,709	138,073,995	57,367,286
2029	8,260,491	3,873,959	5,202,407	9,076,366	87,737,654	143,684,486	55,946,832
2030	8,632,213	4,015,562	5,423,510	9,439,072	95,282,383	149,468,646	54,186,263
2031	9,020,662	4,162,341	5,654,009	9,816,350	103,376,451	155,427,294	52,050,843
2032	9,426,592	4,314,485	5,894,304	10,208,789	112,057,843	161,560,731	49,502,888
2033	9,850,789	4,472,190	6,144,812	10,617,002	121,367,139	167,868,675	46,501,536
2034	10,294,074	4,635,660	6,405,967	11,041,627	131,347,696	174,350,194	43,002,498
2035	10,757,308	4,805,105	6,678,220	11,483,325	142,045,833	181,003,620	38,957,787
2036	11,241,387	4,980,744	6,962,045	11,942,789	153,511,039	187,826,473	34,315,434
2037	11,747,249	5,162,803	7,257,932	12,420,735	165,796,191	194,815,362	29,019,171
2038	12,275,875	5,351,516	7,566,394	12,917,910	178,957,783	201,965,887	23,008,104
2039	12,828,290	5,547,127	7,887,965	13,435,092	193,056,180	209,272,528	16,216,348
2040	13,405,563	5,749,888	8,223,204	13,973,092	208,155,882	216,728,529	8,572,647
2041	14,008,813	5,960,061	8,572,647	14,532,708	224,325,765	224,325,765	0

Notes: Benefit payments are assumed to be payable in the middle of the fiscal year.

Contributions are assumed to be made at the beginning of the fiscal year.

Normal cost is projected to increase 3.5% per year for inflation and 0.15% per year for mortality improvement and does not reflect the future impact of pension reform for new hires.

Amortization payments calculated to increase 4.25% per year

Actuarially Determined Contributions for fiscal 2018 and 2019 are set to previously budgeted amounts.

Department Results – 7.5% Discount Rate

Actuarial Accrued Liability by Participant Category	Fire	Other	Police	RTS	School	Sewer	Water	Total
1. Retirees, beneficiaries and dependents	\$4,953,261	\$9,251,468	\$3,003,482	\$73,955	\$27,303,891	\$469,435	\$434,911	\$45,490,403
2. Active employees	4,133,856	7,542,886	3,262,836	177,106	20,670,338	749,011	702,348	37,238,381
3. Vested terminated employees	0	401,821	0	0	146,536	0	0	548,357
4. Total as of June 30, 2017: (1) + (2) + (3)	\$9,087,117	\$17,196,175	\$6,266,318	\$251,061	\$48,120,765	\$1,218,446	\$1,137,259	\$83,277,141
5. Actuarial value of assets as of June 30, 2017	<u>2,898,206</u>	<u>5,484,475</u>	<u>1,998,553</u>	<u>80,072</u>	<u>15,347,430</u>	<u>388,606</u>	<u>362,713</u>	<u>26,560,055</u>
6. Unfunded actuarial accrued liability (UAAL) as of June 30, 2017: (4) - (5)	\$6,188,911	\$11,711,700	\$4,267,765	\$170,989	\$32,773,335	\$829,840	\$774,546	\$56,717,086
7. Funded ratio: (5) / (4)	31.89%	31.89%	31.89%	31.89%	31.89%	31.89%	31.89%	31.89%
Actuarially Determined Contribution for fiscal year beginning July 1, 2019:								
8. Normal Cost as of beginning of year	\$291,988	\$477,776	\$233,403	\$23,587	\$1,564,886	\$26,985	\$38,284	\$2,656,909
9. 22-year amortization (increasing at 4.25% per year) of the UAAL	<u>381,029</u>	<u>721,048</u>	<u>262,751</u>	<u>10,527</u>	<u>2,017,740</u>	<u>51,090</u>	<u>47,686</u>	<u>3,491,871</u>
10. Total Actuarially Determined Contribution: (8) + (9)	\$673,017	\$1,198,824	\$496,154	\$34,114	\$3,582,625	\$78,075	\$85,970	\$6,148,780

Notes: Assumes payment at beginning of fiscal year.
Assets are allocated in proportion to liabilities.

Department Results – 7.25% Discount Rate

Actuarial Accrued Liability by Participant Category	Fire	Other	Police	RTS	School	Sewer	Water	Total
1. Retirees, beneficiaries and dependents	\$5,060,999	\$9,445,609	\$3,068,894	\$75,515	\$27,905,349	\$477,168	\$444,831	\$46,478,365
2. Active employees	4,253,733	7,777,679	3,368,476	183,007	21,436,828	771,605	725,146	38,516,474
3. Vested terminated employees	0	411,064	0	0	149,932	0	0	560,996
4. Total as of June 30, 2017: (1) + (2) + (3)	\$9,314,732	\$17,634,352	\$6,437,370	\$258,522	\$49,492,108	\$1,248,773	\$1,169,977	\$85,555,835
5. Actuarial value of assets as of June 30, 2017	2,891,676	5,474,429	1,998,425	80,256	15,364,389	387,671	363,209	26,560,055
6. Unfunded actuarial accrued liability (UAAL) as of June 30, 2017: (4) - (5)	\$6,423,056	\$12,159,923	\$4,438,945	\$178,266	\$34,127,719	\$861,102	\$806,768	\$58,995,780
7. Funded ratio: (5) / (4)	31.04%	31.04%	31.04%	31.04%	31.04%	31.04%	31.04%	31.04%
Actuarially Determined Contribution for fiscal year beginning July 1, 2019:								
8. Normal Cost as of beginning of year	\$307,934	\$502,568	\$246,131	\$24,696	\$1,654,253	\$28,473	\$40,302	\$2,804,357
9. 22-year amortization (increasing at 4.25% per year) of the UAAL	389,440	737,275	269,140	10,809	2,069,217	52,210	48,916	3,577,007
10. Total Actuarially Determined Contribution: (8) + (9)	\$697,374	\$1,239,843	\$515,271	\$35,505	\$3,723,470	\$80,683	\$89,218	\$6,381,364

Notes: Assumes payment at beginning of fiscal year.
Assets are allocated in proportion to liabilities.

Section 3: Supporting Information

EXHIBIT I – SUMMARY OF PARTICIPANT DATA AS OF JUNE 30, 2017 AND JUNE 30, 2016

	June 30, 2017	June 30, 2016
Active employees covered for medical benefits		
• Number of employees		
– Male	335	324
– Female	<u>493</u>	<u>493</u>
– Total	828	817
• Average age	46.2	46.0
• Average service	11.2	11.4
Current vested terminated individuals		
• Number of individuals	17	17
• Average age	59.2	58.0
Retired employees, spouses and beneficiaries covered for medical benefits		
• Number of individuals	933	907
• Average age	74.5	74.5

Notes: June 30, 2017 counts include 53 surviving spouses that pay 100% of the required premium for coverage.
June 30, 2016 counts include 58 surviving spouses that pay 100% of the required premium for coverage.

EXHIBIT II – ACTUARIAL ASSUMPTIONS AND METHODS

Data:	Detailed census data, premium rates and summary plan descriptions for postemployment welfare benefits were provided by the Town of Needham.
Actuarial Cost Method:	Entry Age Normal – Level percentage of payroll
Per Capita Cost Development:	Per capita costs were based on the fully insured premium rates effective January 1, 2018 for Medicare plans and July 1, 2017 for non-Medicare plans. Premiums were combined by taking a weighted average based on the number of participants in each plan, and were then trended to the midpoint of the valuation year at assumed trend rates. Actuarial factors were applied to the premium to estimate individual retiree and spouse costs by age and by gender.
Valuation Date:	June 30, 2017
Roll-Forward Technique:	The results of the June 30, 2017 actuarial valuation were used to determine the Actuarially Determined Contribution for the fiscal year ending June 30, 2020. Assets and liabilities were rolled forward from June 30, 2017 to June 30, 2019 using standard actuarial techniques.
Expected Return on Assets:	7.5% Illustrations show hypothetical assets under funding scenarios are based on the long term expected rate of return of a diversified investment portfolio, such as the PRIT Fund. The expected return of the PRIT Fund 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 a 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.
Discount Rate:	7.5% The discount rate is equal to expected return on assets.

Salary Increases:

Years of Service	Rate per year (%)		
	Group 1	Teachers	Group 4
0	6.00	7.50	7.00
1	5.50	7.10	6.50
2	5.50	7.00	6.00
3	5.25	6.90	5.75
4	5.25	6.80	5.25
5	4.75	6.70	5.25
6	4.75	6.60	4.75
7	4.50	6.50	4.75
8	4.50	6.30	4.75
9	4.25	6.10	4.75
10	4.25	5.90	4.75
11	4.25	5.70	4.75
12	4.25	5.20	4.75
13	4.25	4.70	4.75
14	4.25	4.35	4.75
15-16	4.25	4.20	4.75
17-19	4.25	4.10	4.75
20 and later	4.25	4.00	4.75

Previously, 4.75% for Group 1, Group 2 and Teacher employees, 5.25% for Group 4 employees.

Asset Valuation Method:

Market Value

Mortality Rates:

Pre-Retirement (Non-Teachers): RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-20162D set forward 1 year for females (previously, RP-2000 Mortality Table projected generationally with Scale BB2D from 2009)

Healthy (Non-Teachers): RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-20162D set forward 1 year for females (previously, RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2009)

Disabled (Non-Teachers): RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2015

Pre-Retirement (Teachers): RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016 (previously, RP-2014 Employee Mortality Table projected generationally with Scale BB2D from 2014)

Healthy (Teachers): RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016 (previously, RP-2014 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2014)

Disabled (Teachers): RP-2014 Healthy Annuitant Mortality Table set forward 4 years projected generationally with Scale BB2D from 2014

The underlying tables with generational projection to the ages of participants as of the measurement date reasonably reflect the mortality experience of the plan as of the measurement date. The mortality tables were then adjusted to future years using generational projection to reflect future mortality improvement between the measurement date and those years.

Non-Teacher Annuitant Mortality Rates:

Age	Rate per year (%)			
	Current		Previously	
	Male	Female	Male	Female
60	0.85	0.62	0.82	0.62
70	1.97	1.54	2.22	1.67
80	5.19	4.24	6.44	4.59
90	14.64	12.43	18.34	13.17

Note: Rates shown are before generational projection.

Teacher Annuitant Mortality Rates:

Age	Rate per year (%)			
	Current		Previously	
	Male	Female	Male	Female
60	0.52	0.39	0.78	0.52
70	1.24	1.06	1.68	1.29
80	3.73	3.04	4.47	3.48
90	12.62	10.02	13.59	10.17

Note: Rates shown are before generational projection.

Termination Rates Before Retirement:

- * Groups 1 and 2 (excluding Teachers)

Age	Rate per year (%)					
	Mortality					
	Current		Previously		Disability	
	Male	Female	Male	Female	Male	Female
20	0.05	0.02	0.02	0.03	0.02	0.01
25	0.06	0.02	0.02	0.04	0.02	0.02
30	0.06	0.02	0.02	0.04	0.03	0.03
35	0.07	0.03	0.03	0.08	0.05	0.06
40	0.08	0.04	0.04	0.11	0.07	0.10
45	0.13	0.07	0.07	0.15	0.11	0.15
50	0.22	0.12	0.12	0.21	0.17	0.19
55	0.36	0.19	0.19	0.30	0.25	0.24
60	0.61	0.27	0.27	0.49	0.39	0.28

Notes: 55% of the disability rates shown represent accidental disability and death.
Rates shown are before generational projection.

• Group 4

Age	Rate per year (%)					
	Current			Previously		
	Male	Female	Male	Female	Male	Female
20	0.05	0.02	0.02	0.03	0.02	0.10
25	0.06	0.02	0.02	0.04	0.02	0.20
30	0.06	0.02	0.02	0.04	0.03	0.30
35	0.07	0.03	0.03	0.08	0.05	0.30
40	0.08	0.04	0.04	0.11	0.07	0.30
45	0.13	0.07	0.07	0.15	0.11	1.00
50	0.22	0.12	0.12	0.21	0.17	1.25
55	0.36	0.19	0.19	0.30	0.25	1.20
60	0.61	0.27	0.27	0.49	0.39	0.85

Notes: 90% of the disability rates shown represent accidental disability and death.
Rates shown are before generational projection.

• Teachers

Age	Teachers - Rate per year (%)					
	Mortality					
	Current		Previous		Disability	
	Male	Female	Male	Female	Male	Female
20	0.03	0.01	0.04	0.02	0.02	0.00
25	0.04	0.01	0.05	0.02	0.02	0.01
30	0.03	0.02	0.05	0.02	0.02	0.01
35	0.04	0.02	0.05	0.03	0.03	0.01
40	0.04	0.03	0.06	0.04	0.04	0.01
45	0.07	0.06	0.10	0.07	0.07	0.03
50	0.12	0.09	0.17	0.11	0.11	0.05
55	0.20	0.14	0.28	0.17	0.17	0.07
60	0.33	0.21	0.47	0.24	0.24	0.07

Notes: 35% of the disability rates shown represent accidental disability.
75% of the death rates shown represent accidental death.
Rates shown are before generational projection.

Withdrawal Rates:

- All Groups (excluding Teachers)

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

- Teachers

Age	Rate per year (%)			
	0 – 4 Years of Service		5 – 9 Years of Service	
	Male	Female	Male	Female
20	13.0	10.0	5.5	7.0
30	15.0	15.0	5.4	8.8
40	13.3	10.5	5.2	5.0
50	16.2	9.8	7.0	5.0
			2.3	2.0

Retirement Rates:

- All Groups (excluding Teachers)

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

• Teachers

Age	Rate per year (%)					
	Years of Service					
	Less than 20		20 – 29		30 or more	
	Male	Female	Male	Female	Male	Female
50 - 52	--	--	1.0	1.0	2.0	1.5
53	--	--	1.5	1.0	2.0	1.5
54	--	--	2.5	1.0	2.0	2.0
55	5.0	3.0	3.0	3.0	6.0	5.0
56	5.0	3.0	6.0	5.0	20.0	15.0
57	5.0	4.0	10.0	8.0	40.0	35.0
58	5.0	8.0	15.0	10.0	50.0	35.0
59	10.0	8.0	20.0	15.0	50.0	35.0
60	10.0	10.0	25.0	20.0	40.0	35.0
61	20.0	12.0	30.0	25.0	40.0	35.0
62	20.0	12.0	35.0	30.0	35.0	35.0
63	25.0	15.0	40.0	30.0	35.0	35.0
64	25.0	20.0	40.0	30.0	35.0	35.0
65	25.0	25.0	40.0	40.0	35.0	35.0
66	30.0	25.0	30.0	30.0	40.0	35.0
67	30.0	30.0	30.0	30.0	40.0	30.0
68	30.0	30.0	30.0	30.0	40.0	30.0
69	30.0	30.0	30.0	30.0	40.0	30.0
70	100.0	100.0	100.0	100.0	100.0	100.0

Dependents:

Demographic data was available for spouses of current retirees. For future retirees, husbands were assumed to be three years older than their wives. For future retirees who elect to continue their health coverage at retirement, 60% were assumed to have an eligible spouse who also opts for health coverage at that time.

Per Capita Health Costs:

Fiscal year 2017-2018 medical and prescription drug claims costs are shown in the table below for retirees and for spouses at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.

Age	Non-Medicare Plans				Medicare Plans			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
45	\$10,260	\$12,871	\$6,364	\$9,607	N/A	N/A	N/A	N/A
50	12,178	13,871	8,506	11,137	N/A	N/A	N/A	N/A
55	14,462	14,931	11,382	12,892	N/A	N/A	N/A	N/A
60	17,175	16,094	15,237	14,952	N/A	N/A	N/A	N/A
65	20,398	17,338	20,398	17,338	\$3,989	\$3,391	\$3,989	\$3,391
70	23,641	18,685	23,641	18,685	4,623	3,654	4,623	3,654
75	25,477	20,112	25,477	20,112	4,982	3,933	4,982	3,933
80	27,435	21,683	27,435	21,683	5,365	4,240	5,365	4,240

Age	Medicare Advantage Plans			
	Retiree		Spouse	
	Male	Female	Male	Female
45	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A
65	\$3,229	\$2,745	\$3,229	\$2,745
70	3,742	2,958	3,742	2,958
75	4,033	3,184	4,033	3,184
80	4,343	3,432	4,343	3,432

Weighted Average Annual Retiree Contribution Amounts:

Non-Medicare Plans		Retiree	Surviving Spouse
		\$4,073	\$13,633
Medicare Supplement Plans		1,623	4,359
Medicare Advantage Plan		1,813	3,626

Health Care Cost Trend Rates:

Health care trend measures the anticipated overall rate at which health plan costs are expected to increase in future years. The rates shown below are "net" and are applied to the net per capita costs shown above. The trend shown for a particular plan year is the rate that is applied to that year's cost to yield the next year's projected cost.

Year Ending June 30	Non-Medicare	Medicare
2018	-3.2%	7.0%
2019	6.5%	6.5%
2020	6.0%	6.0%
2021	5.5%	5.5%
2022	5.0%	5.0%
2023 & later	4.5%	4.5%

The first year valuation trend for Non-Medicare plans reflects the impact of the plan changes effective July 1, 2018 (the elimination of the "Rate Saver" plan options). Otherwise, the trend rate assumptions were developed using Segal's internal guidelines, which are established each year using data sources such as the 2018 Segal Health Trend Survey, internal client results, trends from other published surveys prepared by the S&P Dow Jones Indices, consulting firms and brokers, and CPI statistics published by the Bureau of Labor Statistics.

Retiree Contribution Increase Rate:

Non-Medicare and Medicare retiree contributions for medical and prescription drug coverage are expected to increase with the respective medical trends shown above.

Administrative Expenses:

Administrative expenses are assumed to be included in the fully insured premium rates.

Participation and Coverage Election:

- 105% of active employees with coverage are assumed to elect retiree coverage.
- 100% of retirees over age 65 are assumed to remain with their current medical plan for life.
- For future retirees hired before 1986 and current retirees under age 65, 90% are assumed to be eligible for Medicare and are assumed to enroll in a Medicare Supplement plan upon reaching age 65, 5% are assumed to be eligible for Medicare and are assumed to enroll in a Medicare Advantage Plan and 5% are assumed to be ineligible for Medicare and to remain enrolled in a non-Medicare plan.
- For future retirees hired after 1986, 95% are assumed to be eligible for Medicare and are assumed to enroll in a Medicare Supplement Plan upon reaching age 65 and 5% were assumed to be eligible for Medicare and were assumed to enroll in a Medicare Advantage Plan upon reaching age 65.
- 20% of current and future terminated vested participants are assumed to enroll in medical and dental coverage at age 55.

Plan Design:

Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit III.

Missing Participant Data:

A missing census item for a given participant was assumed to equal the average value of that item over all other participants of the same status for whom the item is known.

Health Care Reform Assumption:

This valuation does not include the potential impact of any future changes due to the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 other than the excise tax on high cost health plans beginning in 2022 (reflected with this valuation) and those previously adopted as of the valuation date. The excise tax calculation assumes that the current cost sharing provisions of the postretirement benefits will also apply to the additional cost of the plan due to the excise tax.

Demographic and Salary Increase Assumptions:

The demographic assumptions such as mortality, disability, turnover, and relative ages of spouses, and the salary increase assumption used in this valuation were based on the Town of Needham Contributory Retirement System Actuarial Valuation and Review as of January 1, 2017, dated November 21, 2017 completed by Segal Consulting and the Teachers' Retirement System Actuarial Valuation Report as of January 1, 2017, dated September 25, 2017 completed by PERAC. The percent married and enrollment elections were based on the experience of the Town and the experience of similar plans. A review of the demographic and salary increase assumptions is beyond the scope of this assignment; however, we have no reason to doubt the reasonableness of the assumptions.

Justification for Assumption Changes Since Prior Valuation:

Based on past experience and future expectations, the following actuarial assumptions were changed:

- The per capita health care costs were updated to reflect recent experience.
- The trend assumptions were revised to reflect future expectations.
- The mortality assumptions were updated as described earlier.
- The salary increase assumptions were revised to reflect future expectations.
- The impact of the excise tax on high cost health plans beginning in 2022 was recalculated with this valuation.

EXHIBIT III – SUMMARY OF PLAN

This exhibit summarizes the major benefit provisions as included in the valuation. To the best of our knowledge, the summary represents the substantive plans as of the measurement date. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Eligibility:

Retired and receiving a pension from the Town of Needham Retirement System or the Massachusetts Teachers' Retirement System.

- Members hired before April 2, 2012
 - Group 1 and Group 2 (including Teachers):
 - » Retirees with at least 10 years of creditable service are eligible at age 55;
 - » Retirees with at least 20 years of creditable service are eligible at any age.
 - Group 4
 - » Retirees are eligible at age 55;
 - » Retirees with at least 20 years of creditable service are eligible at any age.
- Members hired on or after April 2, 2012
 - Group 1 (including Teachers):
 - » Retirees with at least 10 years of creditable service are eligible at age 60.
 - Group 2
 - » Retirees with at least 10 years of creditable service are eligible at age 55.
 - Group 4
 - » Retirees are eligible at age 55;
 - » Retirees with at least 10 years of creditable service are eligible at age 50.

Disability:

Accidental (job-related) Disability has no age or service requirement.

Ordinary (non-job related) Disability has no age requirement but requires 10 years of creditable service.

Pre-Retirement Death:

Surviving spouses of members who die in active service on Accidental (job-related) Death are eligible at any age.

Surviving spouses of members who die in active service on Ordinary (non-job related) Death are eligible after two years of service.

Post-Retirement Death:

Surviving spouse is eligible.

Benefit Types:

The Town of Needham participates in the West Suburban Health Group. Medical and prescription drug benefits are provided to all eligible retirees through plans offered by Harvard Pilgrim, Blue Cross Blue Shield of Massachusetts, Tufts and Fallon Health. The Town of Needham pays 50% of the retiree life insurance premium of \$2,000 face value life insurance.

Duration of Coverage:

Lifetime.

Dependent Benefits:

Medical and Prescription Drugs. Surviving spouses pay 100% of the required premium for coverage.

Dependent Coverage:

Benefits are payable to a spouse for their lifetime, regardless of when the retirees dies.

Retiree Contributions:

Premium rates and retiree contributions as of July 1, 2017, and January 1, 2018, are summarized below:

Non-Medicare Actives and Retirees	Monthly Premium (Effective July 1, 2017)	Town Cost	Retiree Cost	Retiree Cost %
Harvard Pilgrim Rate Saver				
• Individual	\$919.00	\$731.24	\$187.76	23.50%
• Family	\$2,393.00	\$1,651.17	\$741.83	31.00%
Tufts Navigator Rate Saver				
• Individual	\$967.00	\$721.38	\$245.62	25.40%
• Family	\$2,533.00	\$1,616.05	\$916.95	36.20%
Blue Choice Rate Saver				
• Individual	\$1,018.00	\$757.39	\$260.61	25.60%
• Family	\$2,730.00	\$1,801.80	\$928.20	34.00%
Fallon SelectCare Rate Saver				
• Individual	\$697.00	\$546.84	\$150.16	23.50%
• Family	\$1,876.00	\$1,294.44	\$581.56	31.00%
Fallon DirectCare Rate Saver				
• Individual	\$650.00	\$497.25	\$152.75	23.50%
• Family	\$1,744.00	\$1,203.36	\$540.64	31.00%
Harvard Pilgrim PPO				
• Individual	\$2,464.00	\$1,232.00	\$1,232.00	50.00%
• Family	\$5,472.00	\$2,736.00	\$2,736.00	50.00%

Non-Medicare Actives and Retirees		Monthly Premium (Effective July 1, 2017)	Town Cost	Retiree Cost	Retiree Cost %
Fallon DirectCare Benchmark					
• Individual		\$594.00	\$454.41	\$139.59	23.50%
• Family		\$1,598.00	\$1,102.62	\$495.38	31.00%
Harvard Pilgrim Benchmark					
• Individual		\$831.00	\$658.28	\$172.72	23.50%
• Family		\$2,164.00	\$1,493.16	\$670.84	31.00%
Blue Choice Benchmark					
• Individual		\$920.00	\$684.48	\$235.52	25.60%
• Family		\$2,468.00	\$1,628.88	\$839.12	34.00%
Tufts Navigator Benchmark					
• Individual		\$875.00	\$652.75	\$222.25	25.40%
• Family		\$2,291.00	\$1,461.66	\$829.34	36.20%
Medicare Retirees		Monthly Premium (Effective January 1, 2018)	Town Cost	Retiree Cost	Retiree Cost %
Medex		\$379.00	\$189.50	\$189.50	50.00%
Managed Blue for Seniors		\$351.00	\$238.68	\$112.32	32.00%
Tufts Medicare Plus		\$385.00	\$261.80	\$123.20	32.00%
Harvard Pilgrim Medicare Enhance		\$370.00	\$185.00	\$185.00	50.00%
Tufts Medicare Preferred (Medicare Advantage)		\$314.00	\$157.00	\$157.00	50.00%

Plan Changes Since the Prior Valuation:

As of July 1, 2018, the "Rate Saver" plans will no longer be offered. The impact of this change was valued by an adjustment to the trend assumption, as described on page 26.

EXHIBIT IV – DEFINITION OF 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) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Actuarial Accrued Liability (AAL):

Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.

Unfunded Actuarial Accrued Liability (UAAL):

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.

Normal Cost:

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

Actuarially Determined Contribution:

A target or recommended contribution to an OPEB plan for the reporting period based on the most recent measurement available.

Valuation Date:

The date at which the actuarial valuation is performed

Covered Employee Payroll:

The payroll of the employees that are provided OPEB benefits

Entry Age Actuarial Cost Method:

An actuarial cost method where the present value of the projected benefits for an individual is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age

Healthcare Cost Trend Rates:

The rate of change in per capita health costs over time

Discount Rate:

The interest rate used to determine the actuarial present value of projected benefit payments.

Expected Return on Assets:

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.

Real Rate of Return:

The rate of return on an investment after removing inflation