

City of Newton

**Actuarial Valuation and Review of Other
Postemployment Benefits (OPEB)
as of June 30, 2019**

This report has been prepared at the request of the City of Newton to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the City of Newton 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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January 31, 2020

Ms. Susan Dzikowski
Comptroller
City of Newton
1000 Commonwealth Avenue, Room 110
Newton, MA 02459

Dear Ms. Dzikowski:

We are pleased to submit this report on our actuarial valuation of postemployment welfare benefits as of June 30, 2019. The purpose of this report is to calculate an Actuarially Determined Contribution for the City of Newton 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 Statements Number 74 and 75 disclosure information for the fiscal year ending June 30, 2020 will be provided in a separate report.

This report is based on information received from the City of Newton and vendors employed by the City of Newton. 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 City of Newton 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

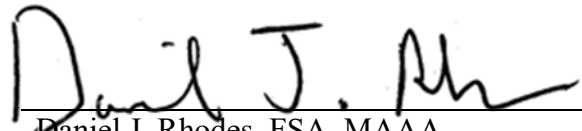

Daniel J. Rhodes, FSA, MAAA
Vice President and Consulting Actuary

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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 of Benefits	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 City of Newton 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.
Participant Data	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.
Assets	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 City of Newton. 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.
Actuarial Assumptions	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 City of Newton. 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 City of Newton 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 City of Newton should look to its 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 City of Newton upon delivery and review. The City of Newton 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 City of Newton postemployment welfare benefit plan as of June 30, 2019. 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 and to calculate liabilities to be used for accounting requirements.

Highlights of the Valuation

- The discount rate used to determine the liabilities that are the basis of the Actuarially Determined Contribution is the expected return on assets. Based on the investment allocation of the OPEB Trust, we recommend an expected return on assets of 7.25% for this valuation, the same assumption used in the prior valuation.
- The unfunded actuarial accrued liability (UAAL) based on the 7.25% discount rate as of June 30, 2019 is \$421,059,000 based on an actuarial accrued liability (AAL) of \$432,876,000 and an actuarial value of assets of \$11,817,000. 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, 2018 the ratio of assets to the AAL (the funded ratio) is 2.73%, compared to 2.10% in the prior valuation. 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 \$421,059,000 as of June 30, 2019 represents an increase of \$14,976,000 from \$406,083,000 as shown in the June 30, 2018 valuation (based on a discount rate of 7.25%). The unfunded liability had been expected to increase by \$14,781,000 due to normal plan operations. The \$195,000 difference between the actual and expected increase was the net effect of the following:
 - There was an actuarial experience loss of \$34,481,000 for the year period ending June 30, 2019, primarily due to the increased number of retirees and beneficiaries reported, partially offset by an investment gain.
 - The valuation assumption changes decreased obligations by \$34,286,000. This was the net result of 1) a net *decrease* in obligations due to updating the per capita costs and contributions (\$47,770,000) and 2) a *decrease* in obligations due to removing excise tax on high cost health plans (part of the Patient Protection and Affordable Care Act) as a result of the repeal effective December 20, 2019 (\$10,864,000), partially offset by 3) an *increase* due to updating the trend on the per capita costs and contributions (\$24,348,000). The complete set of assumptions is shown in Exhibit II.

- The Actuarially Determined Contribution (ADC) for fiscal year 2020 is \$35,931,000. The ADC is calculated using a 28-year amortization of the UAAL, with payments increasing at 2.75% per year.
- A projection of the ADC with the current funding policy appears on page 12. The ADC in this projection is based on a 28-year closed amortization.

The current funding policy assumes an employer contribution to the OPEB Trust of \$2,500,000 in fiscal 2020, increasing \$250,000 per year until fiscal 2031. The City of Newton Contributory Retirement System is projected to be fully funded in fiscal 2030 if all assumptions are met. The funding policy anticipates that beginning in fiscal 2031, \$50,000,000 will be contributed to the OPEB Trust.

As shown in the projection, the current funding policy will fund the obligations in 20 years or in fiscal 2039. Note, this is two years earlier than projected in the prior valuation. Also note that in fiscal 2039, the City will pay projected retiree benefits of \$55.1 million and is projected to make a partial payment to the OPEB Trust of \$43.2 million. Beginning in fiscal 2040, retiree benefits will be paid from the Trust and the City contribution to the OPEB Trust will equal the normal cost (projected to be \$17.3 million).

All projections assume that there will be no assumption or plan changes and that experience will develop as assumed.

- In addition to the liabilities to be used for the ADC, we have shown the liabilities using the 3.50% discount rate to be used for the June 30, 2020 GASB 75 accounting report.

OPEB Trust Information

As of June 30, 2019, the City of Newton has \$11,816,872 in assets. The table below shows the increase in assets from June 30, 2017 to June 30, 2019.

Reconciliation of OPEB Balance from June 30, 2017 through June 30, 2019	Total
Balance as of June 30, 2017	\$5,978,698
• Fiscal year 2018 OPEB contributions	2,117,732
• Net investment income	<u>604,735</u>
Balance as of June 30, 2018	\$8,701,165
• Fiscal year 2019 OPEB contributions	2,517,293
• Net investment income	<u>598,414</u>
Balance as of June 30, 2019	\$11,816,872

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 those previously adopted as of the valuation date. The excise tax on high cost health plans (part of the Patient Protection and Affordable Care Act) was repealed effective December 20, 2019.

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

	Funding		Accounting
	7.25% discount rate June 30, 2018	7.25% discount rate June 30, 2019	3.50% discount rate June 30, 2019
Actuarial Accrued Liability			
1. Current retirees, beneficiaries and dependents	\$236,709,563	\$271,913,457	\$408,105,030
2. Current active employees	<u>178,074,291</u>	<u>160,962,129</u>	<u>291,318,873</u>
3. Total as of June 30, 2018 and 2019: (1) + (2)	\$414,783,854	\$432,875,586	\$699,423,903
4. Actuarial value of assets as of June 30, 2018 and 2019	<u>8,701,165</u>	<u>11,816,872</u>	<u>11,816,872</u>
5. Unfunded actuarial accrued liability (UAAL) as of June 30, 2018 and 2019	\$406,082,689	\$421,058,714	\$687,607,031
6. Funded ratio: (4) / (3)	2.10%	2.73%	1.69%
Actuarially Determined Contribution for Fiscal Year Ending:	June 30, 2019	June 30, 2020	N/A
7. Normal cost, including adjustment for timing	\$10,814,219	\$9,750,979	N/A
8. 28-year (29-year for fiscal 2019) increasing amortization (2.75% per year) of the unfunded actuarial accrued liability (UAAL), including adjustment for timing	<u>24,800,228</u>	<u>26,179,759</u>	N/A
9. Total Actuarially Determined Contribution (ADC): (7) + (8)	\$35,614,447	\$35,930,738	N/A
10. Projected benefit payments	\$22,719,892	\$24,103,708	\$24,103,708

Note: Assumes payment in the middle of the fiscal year.

Projection of the Actuarial Determined Contribution

28-Years Closed (7.25% discount rate) –

Fully funded in 2039 due to redirection of pension contribution beginning in Fiscal Year 2031

Fiscal Year Ending June 30	(1) Normal Cost	(2) Amortization of UAAL	(3) Actuarially Determined Contribution (1) + (2)	(4) Projected Benefits Paid by the City	(5) Contribution to OPEB Trust	(6) Assets at End of Year	(7) AAL at End of Year	(8) UAAL at End of Year (7) - (6)
2020	\$9,750,979	\$26,179,759	\$35,930,738	\$24,103,708	\$2,500,000	\$15,262,635	\$449,395,154	\$434,132,519
2021	10,034,160	27,511,826	37,545,986	25,664,823	2,750,000	19,217,119	465,788,942	446,571,823
2022	10,325,565	28,879,948	39,205,513	26,868,166	3,000,000	23,717,207	482,426,862	458,709,655
2023	10,625,432	30,313,168	40,938,600	28,178,452	3,250,000	28,802,456	499,224,625	470,422,169
2024	10,934,008	31,812,821	42,746,829	29,535,678	3,500,000	34,515,289	516,154,228	481,638,939
2025	11,251,545	33,384,775	44,636,320	31,096,567	3,750,000	40,901,207	533,023,592	492,122,385
2026	11,578,304	35,024,409	46,602,713	32,479,125	4,000,000	48,009,008	550,022,583	502,013,575
2027	11,914,552	36,755,182	48,669,734	33,768,918	4,250,000	55,891,028	567,266,494	511,375,466
2028	12,260,565	38,598,503	50,859,068	35,179,914	4,500,000	64,603,398	584,657,676	520,054,278
2029	12,616,627	40,562,964	53,179,591	36,400,020	4,750,000	74,206,319	602,414,901	528,208,582
2030	12,983,030	42,685,193	55,668,223	37,900,875	5,000,000	84,764,356	620,284,668	535,520,312
2031	13,360,073	44,969,335	58,329,408	39,061,199	50,000,000	142,690,560	638,638,815	495,948,255
2032	13,748,066	43,419,637	57,167,703	40,482,018	50,000,000	204,816,414	657,254,027	452,437,613
2033	14,147,327	41,452,684	55,600,011	42,303,709	50,000,000	271,446,392	675,745,751	404,299,359
2034	14,558,183	38,932,340	53,490,523	44,207,376	50,000,000	342,907,043	694,032,146	351,125,103
2035	14,980,971	35,714,039	50,695,010	46,196,708	50,000,000	419,548,592	712,021,967	292,473,375
2036	15,416,037	31,604,216	47,020,253	48,275,559	50,000,000	501,746,653	729,613,721	227,867,068
2037	15,863,738	26,337,992	42,201,730	50,447,960	50,000,000	589,904,073	746,694,750	156,790,677
2038	16,324,441	19,543,490	35,867,931	52,718,118	50,000,000	684,452,906	763,140,254	78,687,348
2039	16,798,523	10,682,343	27,480,866	55,090,433	43,197,948	778,812,217	778,812,217	0
2040	17,286,373	0	17,286,373	0	17,286,373	793,558,258	793,558,258	0
2041	17,788,391	0	17,788,391	0	17,788,391	807,210,391	807,210,391	0

Notes: Assumes payment in the middle of the fiscal year.

Normal cost is projected to increase at the wage inflation assumption of 2.75% per year and 0.15% for future mortality improvement and does not reflect the future impact of pension reform for new hires.

Section 3: Supporting Information

EXHIBIT I – SUMMARY OF PARTICIPANT DATA AS OF JUNE 30, 2019 AND JUNE 30, 2018

Summary of Participant Data	June 30, 2019	June 30, 2018
Active Employees Covered for Medical Benefits		
• Number of employees		
• Male	918	973
• Female	<u>1,378</u>	<u>1,450</u>
• Total	2,296	2,423
• Average age	45.3	44.7
• Average service	12.2	11.8
Retirees, Beneficiaries and Dependents Covered for Medical Benefits		
• Number	3,110	2,841
• Average age	72.9	73.8
Retired employees with life insurance		
• Number	998	700
• Average age	74.2	74.4

EXHIBIT II – ACTUARIAL ASSUMPTIONS AND METHODS

Data:	Detailed census data, claims experience, premium rates and summary plan descriptions for postemployment welfare benefits were provided by the City of Newton.
Actuarial Cost Method:	Entry Age Normal – Level percentage of payroll
Per Capita Cost Development: Fully Insured Plans (Medicare Advantage Plans)	Per capita costs were based on the fully insured premium rates effective January 1, 2019 and January 1, 2020. 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 weighted average cost to estimate individual retiree and spouse costs by age and by gender.
Per Capita Cost Development: Self-Funded Plans (Non-Medicare Plans and MCP)	<p>Per capita claims costs were based on the monthly paid claims experience by participant group and by covered (medical and prescription drug) for the period July 1, 2016 through May 31, 2019. Claims were separated by plan year and by coverage and then adjusted as follows:</p> <ul style="list-style-type: none"> • enrollment was lagged two months for medical and one month for prescription drugs to account for time difference between incurral and payment of claims, • total claims were divided by the number of adult members to yield a per capita claim cost, • the per capita claim cost was trended to the midpoint of the valuation year at assumed trend rates, and • the per capita claim was adjusted for the effect of any plan changes. <p>Actuarial factors were then applied to the weighted average cost to estimate individual retiree and spouse costs by age and by gender.</p>
Valuation Date:	June 30, 2019
Roll-Forward Technique:	To project the Actuarially Determined Contribution for fiscal year 2021 and later, liabilities were rolled forward from June 30, 2019 using standard actuarial techniques.
Expected Return on Assets:	<p>7.25%</p> <p>Long-term rate of return on investments expected to be used to finance the benefits. The expected return 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.</p>

Discount Rate:

7.25% for funding, 3.50% for accounting, as of June 30, 2019

The discount rate for funding purposes is equal to the expected return on assets.

The discount rate for accounting purposes is equal to the yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher reported on the Bond Buyer's 20 bond index.

Asset Valuation Method:

Market Value

Salary Increases:

Years of Service	Groups 1 and 2	Group 4	Teachers
0	7.00%	8.00%	7.50%
1	6.50%	7.50%	7.10%
2	6.00%	7.00%	7.00%
3	5.50%	6.50%	6.90%
4	5.25%	6.00%	6.80%
5	5.00%	5.50%	6.70%
6	4.75%	5.25%	6.60%
7	4.50%	5.00%	6.50%
8	4.25%	4.75%	6.30%
9	4.00%	4.50%	6.10%
10	3.75%	4.25%	5.90%
11	3.50%	4.00%	5.70%
12	3.50%	4.00%	5.20%
13	3.50%	4.00%	4.70%
14	3.50%	4.00%	4.35%
15-16	3.50%	4.00%	4.20%
17-19	3.50%	4.00%	4.10%
20 and later	3.50%	4.00%	4.00%

Note: Total payroll is assumed to increase 2.75% per year.

Mortality Rates:

Pre-Retirement (non-Teachers): RP-2014 Blue Collar Employee Mortality Table projected generationally using Scale MP-2017

Healthy Retiree: RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally using Scale MP-2017

Disabled Retiree (non-Teachers): RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally using Scale MP-2017

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

Healthy Retiree (Teachers): RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally using Scale MP-2016

Disabled Retiree (Teachers): RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016

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 (%)			
	Healthy		Disabled	
	Male	Female	Male	Female
60	0.85	0.57	0.91	0.62
70	1.97	1.40	2.16	1.54
80	5.19	3.82	5.74	4.24
90	14.64	11.19	16.18	12.43

Note: Rates shown are before generational projection.

Teacher Annuitant Mortality Rates:	Rate per year (%)				
	Age	Healthy		Disabled	
		Male	Female	Male	Female
60	0.52	0.39	0.52	0.39	
70	1.24	1.06	1.24	1.06	
80	3.73	3.04	3.73	3.04	
90	12.62	10.02	12.62	10.02	

Note: Rates shown are before generational projection.

Termination Rates Before Retirement:	Groups 1 and 2 (excluding Teachers) - Rate per year (%)			
	Age	Mortality		Disability
		Male	Female	
20	0.05	0.02	0.01	
25	0.06	0.02	0.02	
30	0.06	0.02	0.03	
35	0.07	0.03	0.06	
40	0.08	0.04	0.10	
45	0.13	0.07	0.15	
50	0.22	0.12	0.19	
55	0.36	0.19	0.24	
60	0.61	0.27	0.28	

Notes: 70% of the disability rates shown represent accidental disability.
70% of the death rates shown represent accidental death.
Rates shown are before generational projection.

Termination Rates Before Retirement (continued):	Group 4 - Rate per year (%)		
	Mortality		
	Age	Male	Female
20	0.05	0.02	0.10
25	0.06	0.02	0.20
30	0.06	0.02	0.30
35	0.07	0.03	0.30
40	0.08	0.04	0.30
45	0.13	0.07	1.00
50	0.22	0.12	1.25
55	0.36	0.19	1.20
60	0.61	0.27	0.85

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

Termination Rates Before Retirement (continued):

Age	Teachers – Rate per year (%)		
	Mortality		
	Male	Female	Disability
20	0.03	0.01	0.00
25	0.03	0.01	0.01
30	0.03	0.02	0.01
35	0.04	0.02	0.01
40	0.04	0.03	0.01
45	0.07	0.06	0.03
50	0.12	0.09	0.05
55	0.20	0.14	0.07
60	0.33	0.21	0.07

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

Withdrawal Rates:	Rate per year (%)			
	Years of Service	Groups 1 and 2 (excluding Teachers)	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		

Withdrawal Rates (continued):	Teachers - Rate per year (%)						
	Age	0 – 4 Years of Service		5 – 9 Years of Service		10+ Years of Service	
		Male	Female	Male	Female	Male	Female
20	13.0	10.0	5.5	7.0	1.5	5.0	
30	15.0	15.0	5.4	8.8	1.5	4.5	
40	13.3	10.5	5.2	5.0	1.7	2.2	
50	16.2	9.8	7.0	5.0	2.3	2.0	

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

Retirement Rates (continued):

Age	Teachers - 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:

Dates of birth for spouses of current retirees electing family coverage were not provided. For current and future retirees, husbands were assumed to be three years older than their wives and 65% were assumed to have an eligible spouse who also opts for health coverage at that time.

Per Capita Health Costs:

Fiscal year 2020 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			
	Retiree		Spouse	
	Male	Female	Male	Female
45	\$10,366	\$13,004	\$6,430	\$9,707
50	12,304	14,014	8,594	11,253
55	14,612	15,086	11,500	13,025
60	17,353	16,261	15,395	15,106
65	20,609	17,518	20,609	17,518
70	23,886	18,878	23,886	18,878
75	25,741	20,320	25,741	20,320
80	27,719	21,907	27,719	21,907

Age	Medicare Plans							
	Medicare Supplemental Plans				Medicare Advantage Plans			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
65	\$4,346	\$3,694	\$4,346	\$3,694	\$3,743	\$3,182	\$3,743	\$3,182
70	5,037	3,981	5,037	3,981	4,338	3,429	4,338	3,429
75	5,428	4,285	5,428	4,285	4,675	3,691	4,675	3,691
80	5,845	4,620	5,845	4,620	5,034	3,979	5,034	3,979

Weighted Average Annual Retiree Contribution Amount:	Hired before July 1, 2011		Hired after July 3, 2011	
	<i>Non-Medicare Plans:</i>		\$2,437	
<i>Medicare Supplement Plans:</i>		1,292		1,656
<i>Medicare Advantage Plans:</i>		779		998

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 Advantage Plans	Medicare Supplement Plans	Administration
2020	7.50%	4.50%	6.50%	3.00%
2021	7.25%	4.50%	6.25%	3.00%
2022	7.00%	4.50%	6.00%	3.00%
2023	6.75%	4.50%	5.75%	3.00%
2024	6.50%	4.50%	5.50%	3.00%
2025	6.25%	4.50%	5.25%	3.00%
2026	6.00%	4.50%	5.00%	3.00%
2027	5.75%	4.50%	4.75%	3.00%
2028	5.50%	4.50%	4.50%	3.00%
2029	5.25%	4.50%	4.50%	3.00%
2030	5.00%	4.50%	4.50%	3.00%
2031	4.75%	4.50%	4.50%	3.00%
2032 and later	4.50%	4.50%	4.50%	3.00%

The trend rate assumptions were developed using Segal’s internal guidelines, which are established each year using data sources such as the 2020 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: 7.50% decreasing by 0.25% for 12 years to an ultimate level of 4.50% per year.

Medicare Supplement: 6.50% decreasing by 0.25% for 8 years to an ultimate level of 4.50% per year.

Medicare Advantage: 4.50%

Administrative Expenses:	<p>Administrative expenses for self-insured plans were based on current vendor contractual rates and fees. An administrative expense load of \$494 per participant for self-funded plans, increasing at 3.0% per year, was added for projected incurred self-funded claim costs in developing the benefit obligations.</p> <p>Administrative expenses for fully-insured plans were assumed to be included in the fully-insured premium rates and are included in the per capita health costs.</p>
Participation and Coverage Election:	<p>100% of active employees with coverage are assumed to elect retiree coverage.</p> <p>100% of retirees over age 65 are assumed to remain with their current medical plan for life.</p> <p>For future retirees hired before 1986 and current retirees under age 65, 75% are assumed to be eligible for Medicare and are assumed to enroll in a Medicare Supplement plan upon reaching age 65, 15% are assumed to be eligible for Medicare and are assumed to enroll in a Medicare Advantage Plan upon reaching age 65 and 10% are assumed to be ineligible for Medicare and to remain enrolled in a non-Medicare plan.</p> <p>For future retirees hired after 1986, 100% are assumed to be eligible for Medicare and upon reaching age 65 80% are assumed to enroll in a Medicare Supplement Plan and 20% are assumed to enroll in a Medicare Advantage Plan.</p> <p>100% of future retirees with medical coverage are assumed to have life insurance coverage. Current retirees with life insurance coverage are identified in the data received.</p>
Plan Design:	<p>Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit III.</p>
Missing Participant Data:	<p>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.</p>
Health Care Reform Assumption:	<p>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 those previously adopted as of the valuation date.</p> <p>The excise tax on high cost health plans (part of the Patient Protection and Affordable Care Act) was repealed effective December 20, 2019.</p>
Demographic and Salary Increase Assumptions:	<p>Many of the demographic assumptions used in this valuation for non-teachers (including mortality, disability, turnover, and retirement) and the salary increase assumptions are the same as used in the City of Newton Contributory Retirement System Actuarial Valuation and Review as of January 1, 2019, dated June 25, 2019, completed by Segal Consulting. The assumptions used in this valuation for teachers are the same as used in the Massachusetts Teachers' Retirement System Actuarial Valuation Report as of January 1, 2019, dated October 17, 2019, completed by PERAC. A review of these demographic assumptions is beyond the scope of this assignment, however, we have no reason to doubt the reasonableness of these assumptions.</p> <p>The remaining demographic assumptions, such as percent married, relative ages of spouses, and enrollment elections, were based on the experience of the Plan and the experience of similar plans.</p>

**Justification for Assumption
Changes Since Prior Valuation:**

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

- The per capita health costs and trends were updated.
-

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:	<p>Retired and receiving a pension from the City of Newton Contributory Retirement System or the Massachusetts Teachers' Retirement System.</p> <ul style="list-style-type: none"> • Members hired before April 2, 2012 <ul style="list-style-type: none"> – Groups 1 and Group 2 (including Teachers): <ul style="list-style-type: none"> » 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 <ul style="list-style-type: none"> » 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 <ul style="list-style-type: none"> – Group 1 (including Teachers): <ul style="list-style-type: none"> » Retirees with at least 10 years of creditable service are eligible at age 60. – Group 2 <ul style="list-style-type: none"> » Retirees with at least 10 years of creditable service are eligible at age 55. – Group 4 <ul style="list-style-type: none"> » Retirees are eligible at age 55; » Retirees with at least 10 years of creditable service are eligible at age 50.
Disability:	<p>Accidental (job-related) Disability has no age or service requirement.</p> <p>Ordinary (non-job related) Disability has no age requirement but requires 10 years of creditable service.</p>
Pre-Retirement Death:	<p>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.</p>
Post-Retirement Death:	<p>Surviving spouse is eligible.</p>
Benefit Types:	<p>Medical and prescription drug benefits are provided to all eligible retirees through plans offered by Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim Health Care and Tufts Health Plan. The City of Newton pays 50% of the retiree life insurance premium. (Dental coverage is offered but is 100% retiree paid and therefore has no impact on this valuation.)</p>
Duration of Coverage:	<p>Lifetime.</p>

Dependent Benefits:	Medical and Prescription Drugs.
Dependent Coverage:	Benefits are payable to a spouse for their lifetime, regardless of when the retirees dies.
MGL Chapter 32B, Section 18A:	Adopted.
Retiree Life:	\$5,000

Retiree Contributions: For all other groups, the premium rates and retiree contributions as of July 1, 2019 are summarized below:

Non-Medicare Plans ¹	Monthly Premium as of July 1, 2019	Retiree Cost (hired prior to 7/1/2011) 20%	Retiree Cost (Unions ² as listed below) 25%	Retiree Cost (Non Union & AFSCME 3092/3092B) 30%
Harvard Pilgrim HMO Advantage (Retired/Enrolled after 4/1/2012)				
• Individual	\$719.35	\$143.87	\$179.84	\$215.81
• Family	\$2,044.00	\$408.80	\$511.00	\$613.20
Tufts EPO Advantage (Retired/Enrolled after 4/1/2012)				
• Individual	\$792.85	\$158.57	\$198.21	\$237.86
• Family	\$2,176.35	\$435.27	\$544.09	\$652.91
Tufts PPO/OOA Advantage (Retired/Enrolled after 4/1/2012)				
• Individual	\$1,247.65	\$249.53	\$311.91	\$374.30
• Family	\$3,023.35	\$604.67	\$755.84	\$907.01
Harvard Pilgrim HMO Legacy (Retired/Enrolled prior to 4/1/2012)				
• Individual	\$816.95	\$163.39	N/A	N/A
• Family	\$2,218.85	\$443.77	N/A	N/A

¹ The Newton Public Schools retiree contributions are as follows:

- > Harvard Pilgrim HMO Advantage (hired prior to 7/1/2011) – 20%
- > Tufts EPO Advantage (hired prior to 7/1/2011) – 20%
- > Harvard Pilgrim HMO Advantage (hired after 7/1/2011) – 25%
- > Tufts EPO Advantage (hired after 7/1/2011) – 25%
- > Tufts PPO/OOA Advantage – 30%

² AFSCME 244, AFSCME 2913, Engineers, Local 863, Massachusetts Nurses Association, Newton Police Association, Newton Police Superior Officers, Teamsters 25.

Non-Medicare Plans ¹		Monthly Premium as of July 1, 2019	Retiree Cost (hired prior to 7/1/2011) 20%	Retiree Cost (Unions ² as listed below) 25%	Retiree Cost (Non Union & AFSCME 3092/3092B) 30%
Tufts EPO/OOA Legacy (Retired/Enrolled prior to 4/1/2012)					
• Individual		\$891.30	\$178.26	N/A	N/A
• Family		\$2,440.90	\$488.18	N/A	N/A
Tufts POS/OOA Legacy (Retired/Enrolled prior to 4/1/2012)					
• Individual		\$1,319.50	\$263.90	N/A	N/A
• Family		\$3,197.65	\$639.53	N/A	N/A
Medicare Supplement Plans		Monthly Premium as of July 1, 2019	Retiree Cost (enrolled prior to 7/1/2011) 20%	Retiree Cost (Unions ¹ as listed below) 25%	Retiree Cost (Non Union & AFSCME 3092/3092B) 30%
Tufts MCP		\$538.30	\$107.66	\$134.58	\$161.49
Medicare Advantage Plans		Monthly Premium as of January 1, 2020	Retiree Cost (enrolled prior to 7/1/2011) 20%	Retiree Cost (Unions ¹ as listed below) 25%	Retiree Cost (Non Union & AFSCME 3092/3092B) 30%
Tufts Medicare Preferred HMO		\$332.00	\$66.40	\$83.00	\$99.60
Blue Cross Blue Shield HMO Blue		\$383.15	\$76.63	\$95.79	\$114.95
Plan Changes Since the Prior Valuation:	None				

¹ The Newton Public Schools retiree contributions are as follows:

- > Harvard Pilgrim HMO Advantage (hired prior to 7/1/2011) – 20%
- > Tufts EPO Advantage (hired prior to 7/1/2011) – 20%
- > Harvard Pilgrim HMO Advantage (hired after 7/1/2011) – 25%
- > Tufts EPO Advantage (hired after 7/1/2011) – 25%
- > Tufts PPO/OOA Advantage – 30%

² AFSCME 244, AFSCME 2913, Engineers, Local 863, Massachusetts Nurses Association, Newton Police Association, Newton Police Superior Officers, Teamsters 25.

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: <ul style="list-style-type: none"> (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

