City of Newton

Actuarial Valuation and Review of Other Postemployment Benefits (OPEB)

Measured at June 30, 2021

Segal

Segal

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June 9, 2022

Mr. Stephen Curley
Comptroller
City of Newton
1000 Commonwealth Avenue, Room 110
Newton, MA 02459

Dear Mr. Curley:

We are pleased to submit this report on our actuarial valuation of postemployment welfare benefits as of June 30, 2021. 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 years ending June 30, 2022 and June 30, 2023. It summarizes the actuarial data used in the valuation and analyzes the experience and changes in assumptions since the prior valuation. The GASB Statements No. 74 and 75 disclosure information for the fiscal year ending June 30, 2022 will be provided in a separate report when the June 30, 2022 financial information is available.

This report is based on information received from the City of Newton and vendors employed by the City of Newton. Segal 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. Once you've reviewed this report, please send a copy (preferably the electronic version) to Jim Lamenzo at PERAC. His email address is jlamenzo@per.state.ma.us.

Sincerely,
Segal

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

Mark J. Noonan, ASA, MAAA
Vice President and Consulting Actuary

Segal

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Section 1: Actuarial Valuation Summary

Purpose and basis

This report presents the results of our actuarial valuation of the City of Newton other postemployment welfare benefit plan as of June 30, 2021. The purpose of this report is to calculate a recommended Actuarially Determined Contribution for the OPEB plan for the fiscal years ending June 30, 2022 and June 30, 2023. Determinations for purposes other than meeting funding requirements may be significantly different from the results reported here. This valuation is based on:

- The benefit provisions of the OPEB plan, as administered by the City of Newton;
- The characteristics of covered active members, retired members and beneficiaries as of June 30, 2021, provided by the City of Newton;
- The assets of the Plan as of June 30, 2021, provided by the City of Newton;
- Economic assumptions regarding future salary increases and investment earnings;
- Health care assumptions regarding per capita costs, trend rates and participation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

Highlights of the valuation

- The discount rate used to determine the liabilities that are the basis of the Actuarially Determined Contribution (ADC) is the expected return on assets. Based on the investment allocation of the OPEB Trust, we recommend lowering the expected return on assets from 7.25% to 6.90% for this valuation.
- The unfunded actuarial accrued liability (UAAL) as of June 30, 2021 is $417.6 million based on an actuarial accrued liability (AAL) of $440.5 million and an actuarial value of assets of $22.9 million. 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, 2021 the ratio of assets to the AAL (the funded ratio) is 5.20%, compared to 2.73% 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.

Section 1: Actuarial Valuation Summary

- The participant data received for the June 30, 2021 actuarial valuation included 2,503 active employees with health coverage and 3,016[1] retirees and beneficiaries receiving retiree health benefits compared to 2,296 active employees and 3,110 retirees and beneficiaries in the prior valuation.
- In addition to lowering the expected rate of return from 7.25% to 6.90% as noted on the prior page, the following assumptions were revised with this valuation:
  - The per capita health costs, contributions, and trends were updated to reflect current experience and future expectations;
  - The mortality projection scale was updated for non-teachers;
  - The mortality tables and projection scales were updated for teachers; and
  - The retirement rates were updated for Group 1 and Group 4 employees hired on or after April 2, 2012.
- There were plan changes enacted for School and Firefighter retirees. The effect of these plan changes on liabilities was determined to be immaterial.
- The UAAL was expected to increase by $25.5 million from $421.1 million as of June 30, 2019 to $446.6 million as of June 30, 2021. The actual unfunded liability of $417.6 million is $29.0 million less than expected. The difference between the actual and expected increase was the net effect of the following:

June 30, 2019 unfunded actuarial liability	$421,058,714
June 30, 2021 expected unfunded actuarial liability	$446,571,823
Change due to:	
• Net experience gain	-$21,471,002
• Investment gain and contributions greater than expected	-3,671,734
• Updating per capita costs and contributions and future trends	-14,964,588
• Updating retirement assumption	492,006
• Updating mortality assumptions	-5,760,299
• Lowering the discount rate	16,364,355
• Net decrease	-$29,011,262
June 30, 2021 unfunded actuarial accrued liability	$417,560,561

[1] Includes 57 retirees with only life insurance coverage.

Section 1: Actuarial Valuation Summary

- The ADC for fiscal year 2022 is $37,797,960. The ADC is calculated using a 26-year amortization of the UAAL, with payments increasing at 2.75% per year.
- A projection of the ADC appears on page 13. The projection reflects the City of Newton's policy to contribute $3,000,000 in the fiscal year ended June 30, 2022 increasing by $250,000 per year until fiscal 2030. 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 until fully funded. The liabilities are projected to be fully funded in 2039, if all assumptions are met and there are no future changes in assumptions or the plan of benefits. The projected date of full funding is the same as in the prior valuation report.
- Through fiscal 2038, the City of Newton will pay projected benefit payments in addition to the contribution to the OPEB Trust. In fiscal 2039, a larger payment to the OPEB trust will be made and benefit payments will be made from the OPEB Trust. The funding contribution to the OPEB Trust in fiscal 2040 will be the normal cost payment.
- The long term impact of the Coronavirus (COVID-19) pandemic is still unknown. Our results do not include the impact of the following:
  - The short-term impact on health plan costs;
  - Short-term or long-term impacts on mortality of the covered population; or
  - The potential for federal or state fiscal relief.

OPEB Trust information

As of June 30, 2021, the City of Newton has $22,888,853 in assets. The table below shows the increase in assets from June 30, 2019 to June 30, 2021.

Reconciliation of OPEB Balance from June 30, 2019 through June 30, 2021	Total
Balance as of June 30, 2019	$11,816,872
• Contributions	2,875,957
• Net investment income	235,100
Balance as of June 30, 2020	$14,927,929
• Contributions	3,219,795
• Net investment income	4,741,129
Balance as of June 30, 2021	$22,888,853

Other considerations

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.

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to defining 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 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 coordinates 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	The valuation is based on the market value of assets as of the valuation date, as provided by the City of Newton.
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. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). 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.

Section 1: Actuarial Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should 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 and for the plan's auditor. 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 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, 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 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 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 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.

Section 2: Valuation Results

Summary of valuation results

	June 30, 2021 6.90% Discount Rate	June 30, 2019 7.25% Discount Rate
Actuarial Accrued Liability		
1. Current retirees, beneficiaries and dependents	$255,329,500	$271,913,457
2. Current active employees	185,119,914	160,962,129
3. Total: **(1) + (2)**	$440,449,414	$432,875,586
4. Actuarial value of assets	22,888,853	11,816,872
5. Unfunded actuarial accrued liability (UAAL): **(3) - (4)**	$417,560,561	$421,058,714
6. Funded ratio: **(4) / (3)**	5.20%	2.73%
Actuarially Determined Contribution for Fiscal Year Ending June 30:	**2022**	**2020**
7. Normal cost, adjusted for timing	$11,724,389	$9,750,979
8. Amortization payment of the UAAL, adjusted for timing	26,073,571	26,179,759
9. Total Actuarially Determined Contribution (ADC): **(7) + (8)**	$37,797,960	$35,930,738
10. Projected benefit payments	23,417,962	24,103,708
Actuarially Determined Contribution for Fiscal Year Ending June 30:	**2023**	**2021**
11. Normal cost, adjusted for timing	$12,064,880	$10,034,160
12. Amortization payment of the UAAL, adjusted for timing	27,542,166	27,511,826
13. Total Actuarially Determined Contribution (ADC): **(11) + (12)**	$39,607,046	$37,545,986
14. Projected benefit payments	24,865,997	25,664,823

Notes:
Assumes payment in the middle of the fiscal year.
Amortization payment for 2020 and 2021 are 28-year and 27-year payments, respectively, increasing at 2.75% per year.
Amortization payment for 2022 and 2023 are 26-year and 25-year payments, respectively, increasing at 2.75% per year.

Projection of actuarially determined contribution

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) Projected Benefits paid by the Trust	(6) Contribution to OPEB Trust	(7) Total Town Contributions	(8) Assets at End of Year	(9) AAL at End of Year	(10) UAAL at End of Year: (9) - (8)
2022	$11,724,389	$26,073,571	$37,797,960	$23,417,962	-	$3,000,000	$26,417,962	$27,569,958	$458,750,151	$431,180,193
2023	12,064,880	27,542,166	39,607,046	24,865,997	-	3,250,000	28,115,997	32,832,540	477,168,522	444,335,982
2024	12,415,259	29,077,052	41,492,311	26,419,088	-	3,500,000	29,919,088	38,716,721	495,614,247	456,897,526
2025	12,775,814	30,680,164	43,455,978	28,063,045	-	3,750,000	31,813,045	45,265,392	514,005,786	468,740,394
2026	13,146,840	32,354,785	45,501,625	29,718,730	-	4,000,000	33,718,730	52,524,402	532,338,101	479,813,699
2027	13,528,641	34,110,621	47,639,262	31,148,680	-	4,250,000	35,398,680	60,542,765	550,851,639	490,308,874
2028	13,921,530	35,977,309	49,898,839	32,860,883	-	4,500,000	37,360,883	69,372,876	569,278,540	499,905,664
2029	14,325,829	37,950,806	52,276,635	34,394,868	-	4,750,000	39,144,868	79,070,746	587,808,887	508,738,141
2030	14,741,869	40,063,677	54,805,546	36,031,109	-	5,000,000	41,031,109	89,696,250	606,356,232	516,659,982
2031	15,169,991	42,332,318	57,502,309	37,550,179	-	50,000,000	87,550,179	147,581,519	625,055,386	477,473,867
2032	15,610,547	40,839,219	56,449,766	39,057,589	-	50,000,000	89,057,589	209,460,872	643,941,735	434,480,863
2033	16,063,897	38,940,654	55,004,551	40,486,665	-	50,000,000	90,486,665	275,609,900	663,122,415	387,512,515
2034	16,530,413	36,551,216	53,081,629	41,752,056	-	50,000,000	91,752,056	346,323,211	682,800,585	336,477,374
2035	17,010,477	33,567,660	50,578,137	43,630,899	-	50,000,000	93,630,899	421,915,741	702,390,318	280,474,577
2036	17,504,483	29,766,600	47,271,083	45,594,289	-	50,000,000	95,594,289	502,724,155	721,812,510	219,088,355
2037	18,012,835	24,905,536	42,918,371	47,646,032	-	50,000,000	97,646,032	589,108,350	740,979,083	151,870,733
2038	18,535,950	18,644,017	37,179,967	49,790,103		50,000,000	99,790,103	681,453,054	759,792,203	78,339,149
2039	19,074,257	10,489,180	29,563,437	-	$52,030,658	100,071,027	100,071,027	778,143,432	778,143,432	-
2040	19,628,197	-	19,628,197	-	54,372,038	19,628,197	19,628,197	795,912,819	795,912,819	-

Notes:
Assumes payment in the middle of the fiscal year.
Assets are assumed to return 6.9% per year.
Amortization payments are based on a 26-year period as of July 1, 2022 with payments increasing 2.75% per 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 1 – Summary of Participant Data as of June 30, 2021 and June 30, 2019

Summary of Participant Data	June 30, 2021	June 30, 2019
Active Employees Covered for Medical Benefits		
• Number of employees		
– Male	978	918
– Female	1,525	1,378
– Total	2,503	2,296
• Average age	45.0	45.3
• Average service	11.6	12.2
Retirees, Beneficiaries and Dependents Covered for Medical Benefits		
• Number	3,016[1]	3,110
• Average age	75.1	72.9
Retired employees with life insurance		
• Number	946	998
• Average age	76.8	74.2

[1] Includes 57 retirees with only life insurance coverage.

Exhibit 2 – Statement of Actuarial Assumption, Methods and Models

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, 2020 and January 1, 2021. 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)**	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 June 1, 2018 through June 30, 2021. Medical claims for the months of April, May, and June 2020 were adjusted to account for reduced utilization due to COVID-19. Claims were separated by plan year and by coverage and then adjusted as follows: • enrollment was lagged two months for medical and one month for prescription drugs to account for time difference between incurred 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. Actuarial factors were then applied to the weighted average cost to estimate individual retiree and spouse costs by age and by gender.
Valuation Date:	June 30, 2021
Roll-Forward Technique:	To project the Actuarially Determined Contribution for fiscal year 2023 and later, liabilities were rolled forward from June 30, 2021 using standard actuarial techniques.
Expected Return on Assets:	6.90% (previously 7.25%) 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.
Discount Rate:	6.90% (previously 7.25%). The discount rate is equal to the expected return on assets.
Asset Valuation Method:	Market Value

Section 3: Supporting Information

Salary Increases:

Years of Service	Rate per year (%)		
	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.

Section 3: Supporting Information

Mortality Rates:

Pre-Retirement (non-Teachers): RP-2014 Blue Collar Employee Mortality Table projected generationally using Scale MP-2021 (previously using Scale MP-2017).

Healthy Retiree: RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally using Scale MP-2021 (previously 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-2021 (previously using Scale MP-2017).

Pre-Retirement (Teachers): Pub 2010 Teacher Employee Mortality Table (headcount weighted) projected generationally with Scale MP-2020 (previously, RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016)

Healthy Retiree (Teachers): Pub 2010 Teacher Retiree Mortality Table (headcount weighted) projected generationally with Scale MP-2020 (previously, RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016)

Disabled Retiree (Teachers): Pub 2010 Teacher Retiree Mortality Table (headcount weighted) projected generationally with Scale MP-2020 (previously, 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.

Non-Teacher Annuitant Mortality Rates:

	Rate per year (%)			
	Healthy		Disabled	
Age	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.

Section 3: Supporting Information

Teacher Annuitant Mortality Rates:

	Rate per year (%)							
	Healthy				Disabled			
	Current		Previous		Current		Previous	
Age	Male	Female	Male	Female	Male	Female	Male	Female
60	0.42	0.32	0.52	0.39	0.42	0.32	0.52	0.39
70	1.16	0.80	1.24	1.06	1.16	0.80	1.24	1.06
80	4.09	2.88	3.73	3.04	4.09	2.88	3.73	3.04
90	13.75	10.40	12.62	10.02	13.75	10.40	12.62	10.02

Note:
Rates shown are before generational projection.

Termination Rates Before Retirement:

	Groups 1 and 2 (excluding Teachers) - Rate per year (%)		
	Mortality		
Age	Male	Female	Disability
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.

Section 3: Supporting Information

	Group 4 - Rate per year (%)		
	Mortality		
Age	Male	Female	Disability
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.

Section 3: Supporting Information

	Teachers - Rate per year (%)				
	Mortality				
	Current		Previous		
Age	Male	Female	Male	Female	Disability
20	0.04	0.01	0.03	0.01	0.00
25	0.02	0.01	0.03	0.01	0.01
30	0.03	0.02	0.03	0.02	0.01
35	0.04	0.02	0.04	0.02	0.01
40	0.05	0.03	0.04	0.03	0.01
45	0.08	0.05	0.07	0.06	0.03
50	0.13	0.08	0.12	0.09	0.05
55	0.19	0.12	0.20	0.14	0.07
60	0.29	0.18	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.

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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		

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	Teachers - Rate per year (%)					
	0 – 4 Years of Service		5 – 9 Years of Service		10+ Years of Service	
Age	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

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Retirement Rates:[1]

	Rate per year (%)		
	Groups 1 and 2 (excluding Teachers)		
Age	Male	Female	Group 4
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[2]
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[3]	5.0[4]	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	- -

[1] Rates are 0.0% for employees not eligible to retire.
[2] Rate is 15.0% for employees hired prior to April 2, 2012 and 30.0% for employees hired on or after April 2, 2012 (Previously, 15.0% for all employees).
[3] Rate is 12.0% for employees hired prior to April 2, 2012 and 20.0% for employees hired on or after April 2, 2012 (Previously, 12.0% for all employees).
[4] Rate is 5.0% for employees hired prior to April 2, 2012 and 9.0% for employees hired on or after April 2, 2012 (Previously, 5.0% for all employees).

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	Teachers - Rate per year (%)					
	Years of Service					
	Less than 20		20 - 29		30 or more	
Age	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.

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Per Capita Health Costs:

Fiscal year 2022 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.

	Non - Medicare Plans			
	Retiree		Spouse	
Age	Male	Female	Male	Female
45	$11,194	$14,042	$6,943	$10,482
50	13,286	15,133	9,280	12,151
55	15,778	16,290	12,418	14,065
60	18,738	17,558	16,624	16,312
65	22,254	18,916	22,254	18,916
70	25,792	20,385	25,792	20,385
75	27,795	21,942	27,795	21,942
80	29,932	23,656	29,932	23,656

	Medicare Plans							
	Medicare Supplemental Plans				Medicare Advantage Plans			
	Retiree		Spouse		Retiree		Spouse	
Age	Male	Female	Male	Female	Male	Female	Male	Female
65	$4,815	$4,093	$4,815	$4,093	$3,868	$3,288	$3,868	$3,288
70	5,581	4,411	5,581	4,411	4,483	3,543	4,483	3,543
75	6,014	4,748	6,014	4,748	4,831	3,814	4,831	3,814
80	6,476	5,118	6,476	5,118	5,202	4,112	5,202	4,112

Weighted Average Annual Retiree Contribution Amount:

	Hired before July 1, 2011	Hired after July 2, 2011
Non-Medicare Plans:	$2,563	$3,285
Medicare Supplement Plans:	1,397	1,791
Medicare Advantage Plans:	820	1,051

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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.

	Rate per year (%)			
Year Ending June 30	Non-Medicare	Medicare Advantage Plans	Medicare Supplement Plans	Administration
2022	7.50	4.50	6.50	3.00
2023	7.25	4.50	6.25	3.00
2024	7.00	4.50	6.00	3.00
2025	6.75	4.50	5.75	3.00
2026	6.50	4.50	5.50	3.00
2027	6.25	4.50	5.25	3.00
2028	6.00	4.50	5.00	3.00
2029	5.75	4.50	4.75	3.00
2030	5.50	4.50	4.50	3.00
2031	5.25	4.50	4.50	3.00
2032	5.00	4.50	4.50	3.00
2033	4.75	4.50	4.50	3.00
2034 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 2022 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:

Administrative expenses for self-insured plans were based on current vendor contractual rates and fees. An administrative expense load of $520 per participant for non-Medicare plans and $226 per participant for Medicare plans, increasing at 3.0% per year, was added for projected incurred self-funded claim costs in developing the benefit obligations.

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Participation and Coverage Election:	100% 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, 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. 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. 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.
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.
Demographic and Salary Increase Assumptions:	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, 2022, completed by Segal. 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, 2021, dated November 4, 2021 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. 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.
Actuarial Models:	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems Unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the model and reviews the test lives and results, under the supervision of the responsible actuary. Our claims costs assumptions are based on proprietary modeling software as well as models that were developed by others. These models generate per capita claims cost calculations that are used in our valuation software. Our Health Technical Services Unit, comprised of actuaries and programmers, is responsible for the initial development and maintenance of our health models. They are also responsible for testing models that we purchase from other vendors for reasonableness. The client team inputs the paid claims, enrollments, plan provisions and assumptions into these models and reviews the results for reasonableness, under the supervision of the responsible actuary.

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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, contributions, and trends were updated to reflect current experience and future expectations; • The mortality projection scale was updated for non-teachers; • The mortality tables and projection scales were updated for teachers; • The retirement rates were updated for Group 1 and Group 4 employees hired on or after April 2, 2012; and • The discount rate and the expected return on assets were lowered from 7.25% to 6.90%.

Exhibit 3 – 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 City of Newton Contributory Retirement System or the Massachusetts Teachers' Retirement System. • Members hired before April 2, 2012 – Groups 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:	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.)
Duration of Coverage:	Lifetime.

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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, 2021 are summarized below:

Non-Medicare Plans[1]	Monthly Premium as of July 1, 2021	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	$748.11	$149.62	$187.03	$224.43
• Family	$2,125.76	$425.15	$531.44	$637.73
Tufts EPO Advantage (Retired/Enrolled after 4/1/2012)				
• Individual	$824.55	$164.91	$206.14	$247.37
• Family	$2,263.39	$452.68	$565.85	$679.02
Tufts PPO/OOA Advantage (Retired/Enrolled after 4/1/2012)				
• Individual	$1,297.54	$259.51	$324.39	$389.26

[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.

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• Family	$3,144.29	$628.86	$786.07	$943.29
Harvard Pilgrim HMO Legacy (Retired/Enrolled prior to 4/1/2012)				
• Individual	$849.63	$169.93	N/A	N/A
• Family	$2,307.59	$461.52	N/A	N/A
Tufts EPO Legacy (Retired/Enrolled prior to 4/1/2012)				
• Individual	$926.97	$185.39	N/A	N/A
• Family	$2,538.55	$507.71	N/A	N/A
Tufts POS Legacy (Retired/Enrolled prior to 4/1/2012)				
• Individual	$1,372.28	$274.46	N/A	N/A
• Family	$3,325.55	$665.11	N/A	N/A

Medicare Supplement Plans	Monthly Premium as of July 1, 2021	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	$559.85	$111.97	$139.96	$167.96

Medicare Advantage Plans	Monthly Premium as of January 1, 2021	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	$346.00	$69.20	$86.50	$103.80
Blue Cross Blue Shield HMO Blue	$398.50	$79.70	$99.63	$119.55

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Plan Changes Since the Prior Valuation:	For both School and Firefighter plans: • Specialist visit from $35 to $40. • PCP visit from $20 to $25. • Retail urgent care from $20 to $5, • Urgent care center from $20 to $10. For School • Outpatient Surgery $150 deductible applies. • Prescription Drug Retail from 15/30/50 to 20/35/55. • Prescription Drug Mail Order from 30/60/100 to 40/70/110. For Firefighters • Outpatient Surgery $100. • Prescription Drug Retail from 15/30/50 to 20/30/50. • Prescription Drug Mail Order from 30/60/100 to 40/60/100. These plan changes have been determined to be immaterial.

Exhibit 4 – 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: 1. Investment return — the rate of investment yield that the Plan will earn over the long-term future; 2. Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates; 3. Retirement rates — the rate or probability of retirement at a given age; 4. 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 (ADC):	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
Health Care 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.