

City of Boston

Governmental Accounting Standards Board (GASB) Statement No. 75 Accounting Valuation Report

Measured at June 30, 2020



This report has been prepared at the request of the City of Boston 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 Boston 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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November 20, 2020

Ms. Maureen Joyce
City Auditor
City of Boston
City Hall, Room M-4
Boston, MA 02201

Dear Ms. Joyce:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statement 75 Accounting Valuation as of June 30, 2020 for the City of Boston. It contains the actuarial information that will need to be disclosed in order to comply with GASB 75. Except as otherwise noted, please refer to the City of Boston Actuarial Valuation and Review of Other Postretirement Benefits (OPEB) as of June 30, 2019, dated July 1, 2020, for the data, assumptions and plan of benefits underlying these calculations.

This report is based on information received from the City of Boston and vendors employed by the City of Boston. 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 my supervision. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in my opinion, the assumptions as approved by the City of Boston 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

A handwritten signature in blue ink, appearing to read "Kathleen A. Riley", is written over a horizontal line.

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

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Section 1: Actuarial Valuation Summary

Purpose and basis

This report has been prepared by Segal to present certain disclosure information for the City of Boston and the Public Health Commission (PHC) (the “Employer”) Other Postemployment Benefits (OPEB) plan as of June 30, 2020, required by Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here. This report is based on financial information as of June 30, 2020 provided by the City of Boston and the City of Boston Actuarial Valuation and Review of Other Postretirement Benefits (OPEB) as of June 30, 2019, dated July 1, 2020, which reflects:

- The benefit provisions of the OPEB plan;
- The characteristics of covered active participants and retired participants and beneficiaries as of June 30, 2019;
- The assets as of June 30, 2019;
- 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.

Significant issues

Accounting and Financial Reporting

1. The Net OPEB Liability (NOL) is equal to the difference between the Total OPEB Liability (TOL) and the Plan’s Fiduciary Net Position. The Plan’s Fiduciary Net Position is equal to the market value of assets.
 - a. The NOL for the City decreased from \$2,415,335,177 as of June 30, 2019 to \$2,273,281,157 as of June 30, 2020 and the Plan’s Fiduciary Net Position as a percent of the TOL increased from 19.75% to 22.38%.
 - b. The NOL for the PHC decreased from \$130,494,474 as of June 30, 2019 to \$109,920,919 as of June 30, 2020 and the Plan’s Fiduciary Net Position as a percent of the TOL increased from 15.65% to 19.92%.
2. The NOL measured as of June 30, 2020 and June 30, 2019 was determined based upon the results of the actuarial valuation as of June 30, 2019 and June 30, 2017, respectively.

Section 1: Actuarial Valuation Summary

3. The discount rate used for the City to measure the TOL and NOL as of June 30, 2020 and June 30, 2019 was 6.25% and 6.75%, respectively.
4. The discount rate used for the PHC to measure the TOL and NOL as of June 30, 2020 and June 30, 2019 was 4.53% and 4.58%, respectively.
5. The Annual OPEB Expense for the City decreased from \$225,635,200 for the year ending June 30, 2019 to -\$224,140,590 for the year ending June 30, 2020.
6. The Annual OPEB Expense for the PHC decreased from \$11,773,106 for the year ending June 30, 2019 to -\$13,790,084 for the year ending June 30, 2020.
7. The Coronavirus (COVID-19) pandemic is rapidly evolving and is having a significant impact on the US economy in 2020, including most retiree health plans, and will likely continue to have an impact in the future. Our results do not include the impact of the following:
 - Short-term increases in health plan costs related to the testing or treatment of COVID-19;
 - Changes in the market value of plan assets since June 30, 2020;
 - Changes in interest rates since June 30, 2020;
 - Short-term or long-term impacts on mortality of the covered population; and
 - The potential for federal or state fiscal relief.

Section 1: Actuarial Valuation Summary

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 Boston 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 Boston.
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

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.

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 Boston and the Public Health Commission (PHC). 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 Boston or the PHC 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 Boston and the PHC 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 Boston and the PHC upon delivery and review. The City of Boston and the PHC 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: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 1 – General Information About the OPEB Plan

Plan Description

Plan membership. At June 30, 2019, the City of Boston’s plan membership consisted of the following:

	June 30, 2019
Retired members or beneficiaries currently receiving benefits	14,274
Active members	<u>14,516</u>
Total	28,790

We have assumed other general information about the Plan will be provided by the City of Boston’s auditors.

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 2 – Net OPEB Liability

The components of the net OPEB liability of the City of Boston are as follows:

Components of the Net OPEB Liability	June 30, 2020	June 30, 2019
Total OPEB Liability	\$2,928,560,507	\$3,009,584,130
Plan Fiduciary Net Position	655,279,350	594,248,953
Net OPEB Liability	2,273,281,157	2,415,335,177
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability*	22.38%	19.75%

* These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

Actuarial assumptions. The Total OPEB Liability as of June 30, 2020 was measured by an actuarial valuation as of June 30, 2019, using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Wage inflation	3.25%
Salary increases	4.0% per year for Group 1 employees (excluding Teachers), 4.25% per year for Group 2 employees and 4.5% per year for Group 4 employees Service related increases for Teachers: 7.5% decreasing over 20 years to an ultimate level of 4.0%
Discount rate	6.25% as of June 30, 2020 and 6.75% as of June 30, 2019
Investment rate of return	6.25% as of June 30, 2020 and 6.75% as of June 30, 2019
Health care cost trend rates	Non-Medicare trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare cost trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare Part B: 4.5% per year Contributions: Retiree contributions are expected to increase with medical trend

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Mortality Rates:¹ Groups 1 and 2 (Excluding Teachers)	Pre-Retirement (Non-Teachers): Pub-2010 General Employee Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019 Healthy (Non-Teachers): Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019 Disabled (Non-Teachers): Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019 Surviving Spouse (Non-Teachers): Pub-2010 General Contingent Survivor Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019
Group 4	Pre-Retirement: Pub-2010 Safety Employee Headcount-Weighted Mortality Table projected generationally using scale MP-2019 Healthy: Pub-2010 Safety Healthy Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019 Disabled: Pub-2010 Disabled Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019 Surviving Spouse: Pub-2010 Safety Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2019
Teachers	Pre-Retirement (Teachers): Pub-2010 Teacher Employee Headcount-Weighted Mortality Table projected generationally with Scale MP-2019 Healthy (Teachers): Pub-2010 Teacher Healthy Retiree Headcount-Weighted Mortality Table projected generationally with Scale MP-2019 Disabled (Teachers): Pub-2010 Teacher Healthy Retiree Headcount-Weighted Mortality Table projected generationally with Scale MP-2019 Surviving Spouse (Teachers): Pub-2010 Teacher Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2019

¹ Due to software limitations, the Contingent Survivor mortality table is only applied to current beneficiaries.

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 3 – Determination of Discount Rate and Investment Rate of Return

Development of long-term rate

The long-term expected rate of return on OPEB plan investments was determined using a building block method in which expected future rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target allocation as of June 30, 2020 and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	25.00%	6.15%
International developed markets equity	20.00%	6.78%
International emerging markets equity	5.00%	8.65%
Core fixed income	27.00%	1.11%
High-yield fixed income	3.00%	3.51%
Real estate	6.00%	4.33%
Hedge fund, GTAA, Risk parity	<u>14.00%</u>	3.19%
Total	100.00%	

Note:

Some asset classes included in the pension plan's target asset allocation have been combined.

Nature of Assets: The assets are in an irrevocable OPEB Trust.

Development of blended discount rate

The discount rate used to measure the total OPEB liability was 6.25% as of June 30, 2020. The OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investment was applied to all periods of projected benefit payments to determine the total OPEB liability.

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 4 – Sensitivity

The following presents the NOL of the City of Boston as well as what the NOL would be if it were calculated using a discount rate that is 1-percentage-point lower (5.25%) or 1-percentage-point higher (7.25%) than the current rate. Also, shown is the NOL as if it were calculated using health care cost trend rates that were 1-percentage-point lower or 1-percentage-point higher than the current health care cost trend rates.

	1% Decrease (5.25%)	Current Discount Rate (6.25%)	1% Increase (7.25%)
Net OPEB Liability (Asset)	\$2,666,880,926	\$2,273,281,157	\$1,947,236,531
	1% Decrease in Health Care Cost Trend Rates	Current Health Care Cost Trend Rates	1% Increase in Health Care Cost Trend Rates
Net OPEB Liability (Asset)	\$1,863,406,380	\$2,273,281,157	\$2,777,744,895

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 5 – Schedule of Changes in Net OPEB Liability – Last Two Fiscal Years

Measurement Date	June 30, 2020	June 30, 2019
Total OPEB Liability		
Service cost	\$72,030,081	\$69,658,303
Interest	203,806,970	194,459,280
Changes of benefit terms	-498,654,977	0
Differences between expected and actual experience	4,981,226	6,623,983
Changes of assumptions	261,316,467	0
Benefit payments, including refunds of member contributions	-124,503,390	-136,017,934
Net change in Total OPEB Liability	-\$81,023,623	\$134,723,632
Total OPEB Liability – beginning	<u>3,009,584,130</u>	<u>2,874,860,498</u>
Total OPEB Liability – ending	\$2,928,560,507	\$3,009,584,130
Plan Fiduciary Net Position		
Contributions – employer	\$164,503,390	\$176,017,934
Contributions – employee	0	0
Net investment income	21,035,404	33,623,748
Benefit payments, including refunds of member contributions	-124,503,390	-136,017,934
Administrative expenses	-5,007	-3,889
Net change in Plan Fiduciary Net Position	\$61,030,397	\$73,619,859
Plan Fiduciary Net Position – beginning	<u>594,248,953</u>	<u>520,629,094</u>
Plan Fiduciary Net Position – ending	\$655,279,350	\$594,248,953
Net OPEB Liability – ending	\$2,273,281,157	2,415,335,177
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	22.38%	19.75%
Covered employee payroll	N/A	\$1,696,838,000
Plan Net OPEB Liability as percentage of covered employee payroll	N/A	142.34%

Note: Please enter covered payroll.

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Notes to schedule:

Changes in Actuarial Assumptions:

Changes as of June 30, 2019:

- None

Changes as of June 30, 2020:

- The discount rate decreased from 6.75% as of June 30, 2019 to 6.25% as of June 30, 2020.
- The per capita health care costs, retiree contributions, and trend assumptions were updated.
- The mortality assumptions were updated to the Pub-2010 headcount-weighted mortality tables released by the Society of Actuaries in 2019.
- The impact of the excise tax on high cost health plans scheduled to begin in 2022 was repealed effective December 20, 2019 and as such has been removed with this valuation.

Changes in Plan Provisions:

Changes as of June 30, 2019:

- None

Changes as of June 30, 2020:

- Effective January 1, 2018, the Tufts Medicare Preferred Supplement plan switched from fully insured to self-insured medical coverage, increased hospital copays, and increased office visit copays.
 - Effective January 1, 2018, the Harvard Pilgrim Health Care Medicare Enhance plan increased hospital copays.
 - Effective January 1, 2019, the Blue Cross Blue Shield Master Medical Carve Out A&B plan was replaced by the Blue Cross Blue Shield Medex plan, which was anticipated to lower member out-of-pocket costs. Additionally, the Medex plan transitioned from self-insured prescription drug coverage to a fully insured PDP.
 - Effective July 1, 2020, the Harvard Pilgrim Health Care Medicare Enhance plan transitioned from self-insured prescription drug coverage to a fully insured PDP.
 - Reflects all plan changes as negotiated in the PEC agreement effective July 1, 2020.
-

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 6 – OPEB Expense

Reporting Date for Employer under GASB 75	June 30 2020	June 30, 2019
Measurement Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Components of OPEB Expense		
Service cost	\$72,030,081	\$69,658,303
Interest on the Total OPEB Liability	203,806,970	194,459,280
Current-period benefit changes	-498,654,977	0
Expensed portion of current-period difference between expected and actual experience in the Total OPEB Liability	711,602	946,283
Expensed portion of current-period changes of assumptions	37,330,923	0
Member contributions	0	0
Projected earnings on OPEB plan investments	-41,461,635	-36,492,333
Expensed portion of current-period differences between actual and projected earnings on OPEB plan investments	4,085,247	573,743
Administrative expenses	5,007	3,889
Recognition of beginning of year deferred outflows of resources as OPEB expense	2,474,256	0
Recognition of beginning of year deferred inflows of resources as OPEB expense	-4,468,064	-3,513,834
OPEB Expense	-\$224,140,590	\$225,635,200

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Deferred Outflows of Resources and Deferred Inflows of Resources

Reporting Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Measurement Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Deferred Outflows of Resources		
Changes of assumptions	\$223,985,544	\$0
Net difference between projected and actual earnings on OPEB plan investments	15,547,857	0
Difference between expected and actual experience in the Total OPEB Liability	<u>9,401,323</u>	<u>6,178,052</u>
Total Deferred Outflows of Resources	\$248,934,724	\$6,178,052
Deferred Inflows of Resources		
Changes of assumptions	\$0	\$0
Net difference between projected and actual earnings on OPEB plan investments	0	3,587,900
Difference between expected and actual experience in the Total OPEB Liability	<u>736,162</u>	<u>981,550</u>
Total Deferred Inflows of Resources	\$736,162	\$4,569,450
Deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized as follows:		
Reporting Date for Employer under GASB 75 Year Ended June 30:		
2020	N/A	-\$1,993,808
2021	\$40,133,965	-1,993,809
2022	44,356,642	2,228,868
2023	43,502,485	1,374,711
2024	43,174,129	1,046,355
2025	38,988,813	946,285
Thereafter	38,042,528	0

Note: Average expected remaining service lives as of June 30, 2019 is 7 years.

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 7 – Schedule of Reconciliation of Net OPEB Liability

Measurement Date	June 30, 2020	June 30, 2019
Beginning Net OPEB Liability	\$2,415,335,177	\$2,354,231,404
OPEB expense	-224,140,590	225,635,200
Employer contributions	-164,503,390	-176,017,934
New net deferred inflows/outflows	244,596,152	7,972,673
Recognition of prior deferred inflows/outflows	<u>1,993,808</u>	<u>3,513,834</u>
Ending Net OPEB Liability	\$2,273,281,157	\$2,415,335,177

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Exhibit 8 – Schedule of Contributions – Last Ten Fiscal Years

Year Ended June 30	Actuarially Determined Contribution	Contributions in Relation to the Actuarially Determined Contribution	Contribution Deficiency / (Excess)	Covered-Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2017	\$167,787,497	\$157,463,469	\$10,324,028	\$1,582,695,000	9.95%
2018	190,991,205	159,965,680	31,025,525	1,611,911,000	9.92%
2019	199,399,826	176,017,934	23,381,892	1,696,838,000	10.37%
2020	182,364,224	164,503,390	17,860,834	N/A	N/A

Note: Please enter covered payroll.

Notes to Schedule:

Methods and assumptions used to establish “actuarially determined contribution” rates:

Valuation date	Actuarially determined contribution for the fiscal year ending June 30, 2020 was determined with the June 30, 2019 actuarial valuation.
Actuarial cost method	Entry Age Normal - Level Percentage of Payroll
Amortization method	Level percent of payroll, payments increase 3.25% per year
Remaining amortization period	26 years as of July 1, 2019
Asset valuation method	Market value
Investment rate of return	6.75%
Wage inflation	3.25%
Health care cost trend rates	Non-Medicare trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare cost trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare Part B: 4.5% per year Contributions: Retiree contributions are expected to increase with medical trend

Section 2: GASB Information – Total City (Boston Public Schools and All Other City Departments)

Mortality Rates:¹ Groups 1 and 2 (Excluding Teachers)	Pre-Retirement (Non-Teachers): Pub-2010 General Employee Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019 Healthy (Non-Teachers): Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019 Disabled (Non-Teachers): Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019 Surviving Spouse (Non-Teachers): Pub-2010 General Contingent Survivor Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019
Group 4	Pre-Retirement: Pub-2010 Safety Employee Headcount-Weighted Mortality Table projected generationally using scale MP-2019 Healthy: Pub-2010 Safety Healthy Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019 Disabled: Pub-2010 Disabled Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019 Surviving Spouse: Pub-2010 Safety Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2019
Teachers	Pre-Retirement (Teachers): Pub-2010 Teacher Employee Headcount-Weighted Mortality Table projected generationally with Scale MP-2019 Healthy (Teachers): Pub-2010 Teacher Healthy Retiree Headcount-Weighted Mortality Table projected generationally with Scale MP-2019 Disabled (Teachers): Pub-2010 Teacher Healthy Retiree Headcount-Weighted Mortality Table projected generationally with Scale MP-2019 Surviving Spouse (Teachers): Pub-2010 Teacher Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2019

¹ Due to software limitations, the Contingent Survivor mortality table is only applied to current beneficiaries.

Section 3: GASB Information – Public Health Commission

Exhibit 1 – General Information About the OPEB Plan

Plan Description

Plan membership. At June 30, 2019, the Public Health Commission’s plan membership consisted of the following:

	June 30, 2019
Retired members or beneficiaries currently receiving benefits	280
Active members	<u>911</u>
Total	1,191

We have assumed other general information about the Plan will be provided by the Public Health Commission’s auditors.

Section 3: GASB Information – Public Health Commission

Exhibit 2 – Net OPEB Liability

The components of the net OPEB liability of the Public Health Commission are as follows:

Components of the Net OPEB Liability	June 30, 2020	June 30, 2019
Total OPEB Liability	\$137,264,177	\$154,709,976
Plan Fiduciary Net Position	27,343,258	24,215,502
Net OPEB Liability	109,920,919	130,494,474
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability*	19.92%	15.65%

* These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

Actuarial assumptions. The Total OPEB Liability as of June 30, 2020 was measured by an actuarial valuation as of June 30, 2019, using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Wage inflation	3.25%
Salary increases	4.0% per year for Group 1 employees and 4.5% per year for Group 4 employees
Discount rate	4.53% as of June 30, 2020 and 4.58% as of June 30, 2019
Investment rate of return	6.25% as of June 30, 2020 and 6.75% as of June 30, 2019
Health care cost trend rates	Non-Medicare trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare cost trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare Part B: 4.5% per year Contributions: Retiree contributions are expected to increase with medical trend

Section 3: GASB Information – Public Health Commission

Mortality Rates: ¹

Group 1

Pre-Retirement: Pub-2010 General Employee Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019

Healthy: Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019

Disabled: Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019

Surviving Spouse: Pub-2010 General Contingent Survivor Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019

Group 4

Pre-Retirement: Pub-2010 Safety Employee Headcount-Weighted Mortality Table projected generationally using scale MP-2019

Healthy: Pub-2010 Safety Healthy Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019

Disabled: Pub-2010 Disabled Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019

Surviving Spouse: Pub-2010 Safety Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2019

¹ Due to software limitations, the Contingent Survivor mortality table is only applied to current beneficiaries.

Section 3: GASB Information – Public Health Commission

Exhibit 3 – Determination of Discount Rate and Investment Rate of Return

Development of long-term rate

The long-term expected rate of return on OPEB plan investments was determined using a building block method in which expected future rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target allocation as of June 30, 2020 and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	25.00%	6.15%
International developed markets equity	20.00%	6.78%
International emerging markets equity	5.00%	8.65%
Core fixed income	27.00%	1.11%
High-yield fixed income	3.00%	3.51%
Real estate	6.00%	4.33%
Hedge fund, GTAA, Risk parity	<u>14.00%</u>	3.19%
Total	100.00%	

Note:

Some asset classes included in the pension plan's target asset allocation have been combined.

Nature of Assets: The assets are in an irrevocable OPEB Trust.

Development of blended discount rate

The discount rate is a blend of the long-term expected rate of return on OPEB Trust assets (6.75% as of June 30, 2019 and 6.25% as of June 30, 2020) and a yield or index rate for 20-year, tax exempt general obligation municipal bonds with an average rating of AA/Aa or higher (3.50% as of June 30, 2019 and 2.21% as of June 30, 2020). The blending is based on the sufficiency of projected assets to make projected benefits payments. Since assets are partially sufficient to cover projected benefit payments, the blended discount rate used to measure the total OPEB liability was 4.58% as of June 30, 2019 and 4.53% as of June 30, 2020.

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Exhibit 4 – Sensitivity

The following presents the NOL of the Public Health Commission as well as what the NOL would be if it were calculated using a discount rate that is 1-percentage-point lower (3.53%) or 1-percentage-point higher (5.53%) than the current rate. Also, shown is the NOL as if it were calculated using health care cost trend rates that were 1-percentage-point lower or 1-percentage-point higher than the current health care cost trend rates.

	1% Decrease (3.53%)	Current Discount Rate (4.53%)	1% Increase (5.53%)
Net OPEB Liability (Asset)	\$131,305,281	\$109,920,919	\$92,385,710
	1% Decrease in Health Care Cost Trend Rates	Current Health Care Cost Trend Rates	1% Increase in Health Care Cost Trend Rates
Net OPEB Liability (Asset)	\$88,001,090	\$109,920,919	\$138,032,365

Section 3: GASB Information – Public Health Commission

Exhibit 5 – Schedule of Changes in Net OPEB Liability – Last Two Fiscal Years

Measurement Date	June 30, 2020	June 30, 2019
Total OPEB Liability		
Service cost	\$8,529,548	\$7,582,918
Interest	7,403,399	6,941,476
Changes of benefit terms	-26,676,704	0
Differences between expected and actual experience	-359,276	-610,282
Changes of assumptions	-3,156,241	7,630,085
Benefit payments, including refunds of member contributions	-3,186,525	-2,402,398
Net change in Total OPEB Liability	-\$17,445,799	\$19,141,799
Total OPEB Liability – beginning	154,709,976	135,568,177
Total OPEB Liability – ending	\$137,264,177	\$154,709,976
Plan Fiduciary Net Position		
Contributions – employer	\$5,436,525	\$4,652,398
Contributions – employee	0	0
Net investment income	877,962	1,358,989
Benefit payments, including refunds of member contributions	-3,186,525	-2,402,398
Administrative expenses	-206	95
Net change in Plan Fiduciary Net Position	\$3,127,756	\$3,609,084
Plan Fiduciary Net Position – beginning	24,215,502	20,606,418
Plan Fiduciary Net Position – ending	\$27,343,258	\$24,215,502
Net OPEB Liability – ending	109,920,919	130,494,474
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	19.92%	15.65%
Covered employee payroll	N/A	N/A
Plan Net OPEB Liability as percentage of covered employee payroll	N/A	N/A

Note: Please enter covered payroll.

Section 3: GASB Information – Public Health Commission

Notes to schedule:

Changes in Actuarial Assumptions:

Changes as of June 30, 2019:

- The discount rate decreased from 4.90% as of June 30, 2018 to 4.58% as of June 30, 2019.

Changes as of June 30, 2020:

- The discount rate decreased from 4.58% as of June 30, 2019 to 4.53% as of June 30, 2020.
- The per capita health care costs, retiree contributions, and trend assumptions were updated.
- The mortality assumptions were updated to the Pub-2010 headcount-weighted mortality tables released by the Society of Actuaries in 2019.
- The impact of the excise tax on high cost health plans scheduled to begin in 2022 was repealed effective December 20, 2019 and as such has been removed with this valuation.

Changes in Plan Provisions:

Changes as of June 30, 2019:

- None

Changes as of June 30, 2020:

- Effective January 1, 2018, the Tufts Medicare Preferred Supplement plan switched from fully insured to self-insured medical coverage, increased hospital copays, and increased office visit copays.
- Effective January 1, 2018, the Harvard Pilgrim Health Care Medicare Enhance plan increased hospital copays.
- Effective January 1, 2019, the Blue Cross Blue Shield Master Medical Carve Out A&B plan was replaced by the Blue Cross Blue Shield Medex plan, which was anticipated to lower member out-of-pocket costs. Additionally, the Medex plan transitioned from self-insured prescription drug coverage to a fully insured PDP.
- Effective July 1, 2020, the Harvard Pilgrim Health Care Medicare Enhance plan transitioned from self-insured prescription drug coverage to a fully insured PDP.
- Reflects all plan changes as negotiated in the PEC agreement effective July 1, 2020.

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Exhibit 6 – OPEB Expense

Reporting Date for Employer under GASB 75 Measurement Date for Employer under GASB 75	June 30 2020 June 30, 2020	June 30, 2019 June 30, 2019
Components of OPEB Expense		
Service cost	\$8,529,548	\$7,582,918
Interest on the Total OPEB Liability	7,403,399	6,941,476
Current-period benefit changes	-26,676,704	0
Expensed portion of current-period difference between expected and actual experience in the Total OPEB Liability	-32,666	-50,857
Expensed portion of current-period changes of assumptions	-286,931	635,840
Member contributions	0	0
Projected earnings on OPEB plan investments	-1,583,775	-1,466,871
Expensed portion of current-period differences between actual and projected earnings on OPEB plan investments	141,161	21,576
Administrative expenses	206	-95
Recognition of beginning of year deferred outflows of resources as OPEB expense	689,617	0
Recognition of beginning of year deferred inflows of resources as OPEB expense	-1,973,939	-1,890,881
OPEB Expense	-\$13,790,084	\$11,773,106

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Deferred Outflows of Resources and Deferred Inflows of Resources

Reporting Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Measurement Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Deferred Outflows of Resources		
Changes of assumptions	\$6,358,405	\$6,994,245
Net difference between projected and actual earnings on OPEB plan investments	531,948	0
Difference between expected and actual experience in the Total OPEB Liability	<u>0</u>	<u>0</u>
Total Deferred Outflows of Resources	\$6,890,353	\$6,994,245
Deferred Inflows of Resources		
Changes of assumptions	\$17,301,950	\$16,179,689
Net difference between projected and actual earnings on OPEB plan investments	0	140,762
Difference between expected and actual experience in the Total OPEB Liability	<u>960,155</u>	<u>698,600</u>
Total Deferred Inflows of Resources	\$18,262,105	\$17,019,051
Deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized as follows:		
Reporting Date for Employer under GASB 75 Year Ended June 30:		
2020	N/A	-\$1,284,322
2021	-\$1,462,751	-1,284,322
2022	-1,300,917	-1,122,488
2023	-1,333,115	-1,154,686
2024	-1,354,693	-1,176,264
2025	-1,495,856	-1,176,264
Thereafter	-4,424,420	-2,826,460

Note: Average expected remaining service lives as of June 30, 2019 is 11 years.

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Exhibit 7 – Schedule of Reconciliation of Net OPEB Liability

Measurement Date	June 30, 2020	June 30, 2019
Beginning Net OPEB Liability	\$130,494,474	\$114,961,759
OPEB expense	-13,790,084	11,773,106
Employer contributions	-5,436,525	-4,652,398
New net deferred inflows/outflows	-2,631,268	6,521,126
Recognition of prior deferred inflows/outflows	<u>1,284,322</u>	<u>1,890,881</u>
Ending Net OPEB Liability	\$109,920,919	\$130,494,474

Section 3: GASB Information – Public Health Commission

Exhibit 8 – Schedule of Contributions – Last Ten Fiscal Years

Year Ended June 30	Actuarially Determined Contribution	Contributions in Relation to the Actuarially Determined Contribution	Contribution Deficiency / (Excess)	Covered- Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2017	\$10,624,187	\$4,575,990	\$6,048,197	N/A	N/A
2018	8,609,776	4,625,538	3,984,238	N/A	N/A
2019	9,032,761	4,652,398	4,380,363	N/A	N/A
2020	8,040,598	5,436,525	2,604,073	N/A	N/A

Note: Please enter covered payroll.

Notes to Schedule:

Methods and assumptions used to establish “actuarially determined contribution” rates:

Valuation date	Actuarially determined contribution for the fiscal year ending June 30, 2020 was determined with the June 30, 2019 actuarial valuation.
Actuarial cost method	Entry Age Normal - Level Percentage of Payroll
Amortization method	Level percent of payroll, payments increase 3.25% per year
Remaining amortization period	30 years as of July 1, 2019
Asset valuation method	Market value
Investment rate of return	6.75%
Wage inflation	3.25%
Health care cost trend rates	Non-Medicare trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare cost trend rate: 7.0% decreasing by 0.25% for 10 years to an ultimate level of 4.5% per year Medicare Part B: 4.5% per year Contributions: Retiree contributions are expected to increase with medical trend

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Mortality Rates:¹	
Group 1	<p>Pre-Retirement: Pub-2010 General Employee Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019</p> <p>Healthy: Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019</p> <p>Disabled: Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019</p> <p>Surviving Spouse: Pub-2010 General Contingent Survivor Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2019</p>
Group 4	<p>Pre-Retirement: Pub-2010 Safety Employee Headcount-Weighted Mortality Table projected generationally using scale MP-2019</p> <p>Healthy: Pub-2010 Safety Healthy Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019</p> <p>Disabled: Pub-2010 Disabled Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2019</p> <p>Surviving Spouse: Pub-2010 Safety Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2019</p>

¹ Due to software limitations, the Contingent Survivor mortality table is only applied to current beneficiaries.