

City of Boston

Actuarial Valuation and Review of Other Postemployment Benefits (OPEB)

Measured at June 30, 2023



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Segal



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April 19, 2024

Mr. Scott Finn
City Auditor
City of Boston
City Hall, Room M-4
Boston, MA 02201

Dear Mr. Finn:

We are pleased to submit this report on our actuarial valuation of postemployment welfare benefits as of June 30, 2023. The purpose of this report is to calculate an Actuarially Determined Contribution for the City of Boston Other Postemployment Benefit (OPEB) Plan for the fiscal years ending June 30, 2024 and June 30, 2025. 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, 2024 will be provided in a separate report when the June 30, 2024 financial information is available.

This report has been prepared in accordance with generally accepted actuarial principles and practices for the exclusive use and benefit of the City, based upon information provided by the City and the City's other service providers.

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 scope of the assignment did not include performing an analysis of the potential change of such future measurements except where noted.

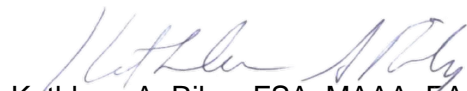
Segal makes no representation or warranty as to the future status of the Plan and does not guarantee any particular result. This document does not constitute legal, tax, accounting or investment advice or create or imply a fiduciary relationship. The City of Boston is encouraged to discuss any issues raised in this report with the Plan's legal, tax and other advisors before taking, or refraining from taking, any action.

The actuarial calculations were directed under the supervision of Kathleen A. Riley, FSA, MAAA, EA and Daniel J. Rhodes, FSA, MAAA. 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. The assumptions used in this actuarial valuation were selected by the City of Boston based upon our analysis and recommendations. In our opinion, the assumptions are reasonable and take into account the experience of the Plan and reasonable expectations. In addition, in our opinion, the combined effect of these assumptions is expected to have no significant bias.

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 Lamenza at PERAC. His email address is jlamenzo@per.state.ma.us.

We look forward to reviewing this report with you and to answering any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kathleen A. Riley".

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

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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 Boston other postemployment welfare benefit plan as of June 30, 2023. The purpose of this report is to calculate a recommended Actuarially Determined Contribution for the OPEB plan for the fiscal years ending June 30, 2024 and June 30, 2025. 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;
- The characteristics of covered active members, retired members and beneficiaries as of June 30, 2023, provided by the City;
- The assets of the Plan as of June 30, 2023, provided by the City;
- 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 is the expected return on assets. Based on the investment allocation of the OPEB Trust, we recommend maintaining the expected return on assets of 6.25%.
- The unfunded actuarial accrued liability (UAAL) as of June 30, 2023 is \$2,677 million based on an actuarial accrued liability (AAL) of \$3,658 million and an actuarial value of assets of \$982 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, 2023 the ratio of assets to the AAL (the funded ratio) is 26.83%, compared to 29.05% 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 following assumptions were revised with this valuation:
 - The per capita costs, retiree contributions, and trends were updated to reflect current experience;
 - The actuarial factors used to estimate individual retiree and spouse costs by age and by gender were updated. The new factors are based on a review of historical claims experience by age, gender, and status (active vs retired) from Segal's claims data warehouse; and
 - The trend on Medicare plans was adjusted to estimate the impact of the Inflation Reduction Act of 2022 (IRA):
 - The Inflation Reduction Act of 2022 (IRA) includes material benefit cost-sharing changes for 2025, most notably implementing a \$2,000 member out-of-pocket maximum, as well as various funding changes that are used to reduce premiums for Medicare prescription drug plans. Both changes are expected to significantly increase premiums. Our projections include an estimated impact of the IRA on the Plan in calendar year 2025 based on preliminary information. Final guidance, rules, and clarifications will be provided by the Centers for Medicare & Medicaid Services in the summer of 2024.
- The UAAL was expected to increase by \$105 million from \$2,194 million as of June 30, 2021 to \$2,299 million as of June 30, 2023. The actual unfunded liability of \$2,677 million is \$378 million more than expected. The difference between the actual and expected increase was the net effect of the following:

Item	Amounts (In Millions)
June 30, 2021 unfunded actuarial liability	\$2,194
June 30, 2023 expected unfunded actuarial liability	2,299
Change due to:	
• Experience gain	-\$136
• Investment loss	125
• Updating per capita costs and contributions (including the updated actuarial factors)	-62
• Updating future trends	356
• Estimated impact of the IRA	<u>95</u>
Net increase	\$378
June 30, 2023 unfunded actuarial accrued liability	\$2,677

- The participant data received for the June 30, 2023 actuarial valuation included 16,028 active employees with health coverage and 15,389 retirees and beneficiaries receiving retiree health benefits compared to 16,405 active employees and 15,387 retirees and beneficiaries in the prior valuation.

Section 1: Actuarial Valuation Summary

- The Actuarially Determined Contribution (ADC) for fiscal year 2024 is \$253 million for the City and \$9 million for the Public Health Commission (PHC). The ADC is calculated using a 22-year closed amortization of the UAAL for the City and a 30-year open amortization of the UAAL for the PHC, with payments increasing at 3.25% per year.
- A projection of the ADC for the City appears on page 13. The projection for the City reflects the City's policy to contribute \$40 million per year to the OPEB Trust until the Boston Retirement System is fully funded and \$100 million per year thereafter. Based on the funding schedule include in the Boston Retirement System Actuarial Valuation Report as of January 1, 2022, the \$100 million contribution to the OPEB Trust will begin in fiscal 2028. The liabilities are projected to be fully funded in 2048, if all assumptions are met and there are no future changes in assumptions or the plan of benefits. This is four years later than in the prior valuation report.
- The City will pay projected benefit payments in addition to the contribution to the OPEB Trust through fiscal 2047. In fiscal 2048, the payment to the OPEB Trust will equal the normal cost payment and a payment on the remaining unfunded liability and benefit payments will be made from the Trust. The contribution to the Trust in fiscal 2049 will be the normal cost payment. The OPEB liabilities are projected to be fully funded when the fiscal 2048 payment is made, assuming that there are no assumption or plan changes and that experience develops as assumed.
- We have included an additional schedule for the City that shows the impact of delaying the contribution increase to the OPEB Trust by two years to 2030. We have included this additional schedule as an illustration of the impact of delaying the increase in the City's contribution to the OPEB Trust in case the Retirement Board extends the BRS funding schedule to absorb the investment losses that were experienced in 2022. As shown on page 14, delaying the increase in contribution to 2030 delays the projected full funding of the OPEB obligations by one year.
- A projection of the ADC for the PHC appears on page 15. The projection for the PHC reflects the PHC's policy to contribute \$2.25 million per year to the OPEB Trust. Similar to prior valuations, the obligations are not projected to be fully funded at the end of the 30-year projection period, although the projected unfunded liability is peaking in fiscal 2040.

Section 1: Actuarial Valuation Summary

OPEB Trust information

As of June 30, 2023, OPEB Trust has \$940 million allocated to the City of Boston and \$41 million allocated to the PHC. The table below shows the increase in assets from June 30, 2021 to June 30, 2023.

Reconciliation of OPEB Balance from June 30, 2021 through June 30, 2022

	City	PHC	Total
Balance as of June 30, 2021	\$861,814,542	\$36,654,616	\$898,469,158
• Contributions	40,000,000	2,250,000	42,250,000
• Net investment income	<u>-77,648,274</u>	<u>-3,354,873</u>	<u>-81,003,147</u>
Balance as of June 30, 2022	\$824,166,268	\$35,549,743	\$859,716,011
Rate of return as of June 30, 2022	-8.80%	-8.88%	-8.81%

Reconciliation of OPEB Balance from June 30, 2022 through June 30, 2023

	City	PHC	Total
Balance as of June 30, 2022	\$824,166,268	\$35,549,743	\$859,716,011
• Contributions	40,000,000	2,250,000	42,250,000
• Net investment income	<u>76,087,473</u>	<u>3,450,242</u>	<u>79,537,715</u>
Balance as of June 30, 2023	\$940,253,741	\$41,249,985	\$981,503,726
Rate of return as of June 30, 2023	9.01%	9.41%	9.03%

Section 1: Actuarial Valuation Summary

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.

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:

Input	Description
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 asset values as of the valuation date, 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

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. 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 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 and is not acting as a fiduciary to the Plan. This valuation is based on Segal's 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 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 upon delivery and review. The City of Boston should notify Segal immediately of any questions or concerns about the final content.

Section 2: Valuation Results

Summary of valuation results

	(A) Boston Public Schools	(B) All Other Departments (City)	(C) Total City: (A) + (B)	(D) Public Health Commission	All Departments Total: (C) + (D)
Actuarial Accrued Liability by Participant Category					
1. Current retirees, beneficiaries and dependents	\$801,156,308	\$1,071,607,898	\$1,872,764,206	\$61,823,037	\$1,934,587,243
2. Current active employees	<u>899,015,056</u>	<u>763,771,026</u>	<u>1,662,786,082</u>	<u>60,755,661</u>	<u>1,723,541,743</u>
3. Total as of June 30, 2023: (1) + (2)	\$1,700,171,364	\$1,835,378,924	\$3,535,550,288	\$122,578,698	\$3,658,128,986
4. Actuarial value of assets as of June 30, 2023	<u>452,168,024</u>	<u>488,085,717</u>	<u>940,253,741</u>	<u>41,249,985</u>	<u>981,503,726</u>
5. Unfunded actuarial accrued liability (UAAL) as of June 30, 2023: (3) - (4)	\$1,248,003,340	\$1,347,293,207	\$2,595,296,547	\$81,328,713	\$2,676,625,260
6. Funded ratio: (4) / (3)	26.60%	26.59%	26.59%	33.65%	26.83%
Actuarially Determined Contribution for Fiscal Year Ending June 30, 2024					
7. Normal Cost as of June 30, 2023	\$47,677,271	\$48,163,157	\$95,840,428	\$4,772,245	\$100,612,673
8. Amortization payment	<u>75,379,803</u>	<u>81,376,943</u>	<u>156,756,746</u>	<u>3,983,111</u>	<u>160,739,857</u>
9. Total Actuarially Determined Contribution (ADC): (7) + (8)	\$123,057,074	\$129,540,100	\$252,597,174	\$8,755,356	\$261,352,530
10. Projected benefit payments	56,945,636	75,277,540	132,223,176	3,960,211	136,183,387
Actuarially Determined Contribution for Fiscal Year Ending June 30, 2025					
11. Normal cost as of June 30, 2024	\$49,300,622	\$49,803,052	\$99,103,675	\$4,934,734	\$104,038,409
12. Amortization payment	<u>80,520,905</u>	<u>86,927,065</u>	<u>167,447,970</u>	<u>4,163,382</u>	<u>171,611,352</u>
13. Total Actuarially Determined Contribution (ADC): (11) + (12)	\$129,821,527	\$136,730,118	\$266,551,645	\$9,098,116	\$275,649,761
14. Projected benefit payments	63,044,242	82,069,722	145,113,964	4,482,503	149,596,468

Notes:

Assumes payment at beginning of fiscal year.

Assets are allocated to the Boston Public Schools and All Other Departments in proportion to the Actuarial Accrued Liability.

Amortization payments for the City for fiscal 2024 and fiscal 2025 are 22-year and 21-year closed payments, respectively, and for the PHC are 30-year open payments, increasing 3.25% per year.

Section 2: Valuation Results

Projection of the Actuarially Determined Contribution

Total City (Boston Public Schools and All Other City Departments)

Fully Funded in 2049, 22-Year Closed Amortization

\$100,000,000 Contribution to OPEB Trust Beginning in 2028

Fiscal Year Ending June 30	(1) Normal Cost	(2) Amortization of UAAL	(3) Actuarially Determined Contribution: (1) + (2)	(4) Projected Benefits to be paid by the City	(5) Projected Benefits to be paid by OPEB Trust	(6) Contribution to OPEB Trust	(7) Total City Cost: (4) + (6)	(8) Assets at End of Year	(9) AAL at End of Year	(10) UAAL at End of Year: (9) - (8)
2024	\$95,840,428	\$156,756,746	\$252,597,174	\$132,223,176	\$0	\$40,000,000	\$172,223,176	\$1,041,519,600	\$3,722,060,105	\$2,680,540,505
2025	99,103,675	167,447,970	266,551,645	145,113,964	0	40,000,000	185,113,964	1,149,114,575	3,910,406,466	2,761,291,891
2026	102,478,031	178,790,667	281,268,698	160,223,968	0	40,000,000	200,223,968	1,263,434,236	4,098,534,692	2,835,100,456
2027	105,967,280	190,736,533	296,703,813	173,048,164	0	40,000,000	213,048,164	1,384,898,875	4,288,909,380	2,904,010,505
2028	109,575,333	203,550,402	313,125,735	186,672,284	0	100,000,000	286,672,284	1,577,705,055	4,480,972,622	2,903,267,567
2029	113,306,236	212,658,322	325,964,558	200,705,227	0	100,000,000	300,705,227	1,782,561,621	4,674,539,075	2,891,977,454
2030	117,164,172	222,120,058	339,284,230	214,743,978	0	100,000,000	314,743,978	2,000,221,722	4,869,831,674	2,869,609,952
2031	121,153,466	231,997,713	353,151,179	228,596,123	0	100,000,000	328,596,123	2,231,485,580	5,067,290,221	2,835,804,641
2032	125,278,590	242,387,481	367,666,071	243,388,686	0	100,000,000	343,388,686	2,477,203,429	5,266,225,046	2,789,021,617
2033	129,544,169	253,309,109	382,853,278	257,571,153	0	100,000,000	357,571,153	2,738,278,643	5,467,506,524	2,729,227,881
2034	133,954,986	264,942,552	398,897,538	271,346,938	0	100,000,000	371,346,938	3,015,671,058	5,671,854,833	2,656,183,774
2035	138,515,986	277,510,848	416,026,834	285,418,318	0	100,000,000	385,418,318	3,310,400,499	5,879,316,527	2,568,916,027
2036	143,232,282	291,243,515	434,475,797	298,262,142	0	100,000,000	398,262,142	3,623,550,531	6,091,516,531	2,467,966,000
2037	148,109,162	306,665,752	454,774,914	311,683,939	0	100,000,000	411,683,939	3,956,272,439	6,308,325,849	2,352,053,410
2038	153,152,094	324,308,608	477,460,702	325,709,716	0	100,000,000	425,709,716	4,309,789,466	6,529,586,424	2,219,796,958
2039	158,366,732	345,000,363	503,367,095	340,366,653	0	100,000,000	440,366,653	4,685,401,308	6,755,108,313	2,069,707,005
2040	163,758,921	370,113,893	533,872,814	355,683,152	0	100,000,000	455,683,152	5,084,488,890	6,984,666,634	1,900,177,744
2041	169,334,707	402,110,833	571,445,540	371,688,894	0	100,000,000	471,688,894	5,508,519,445	7,217,998,283	1,709,478,837
2042	175,100,343	445,901,992	621,002,335	388,414,894	0	100,000,000	488,414,894	5,959,051,911	7,454,798,380	1,495,746,470
2043	181,062,290	512,928,537	693,990,827	405,893,565	0	100,000,000	505,893,565	6,437,742,655	7,694,716,453	1,256,973,797
2044	187,227,235	637,486,711	824,713,946	424,158,775	0	100,000,000	524,158,775	6,946,351,571	7,937,352,310	991,000,739
2045	193,602,088	991,000,739	1,184,602,827	443,245,920	0	100,000,000	543,245,920	7,486,748,544	8,182,251,612	695,503,068
2046	200,193,997	695,503,068	895,697,065	463,191,986	0	100,000,000	563,191,986	8,060,920,328	8,428,901,089	367,980,760
2047	207,010,353	367,980,760	574,991,113	484,035,626	0	100,000,000	584,035,626	8,670,977,849	8,676,723,404	5,745,555
2048	214,058,797	5,745,555	219,804,352	0	505,817,229	219,804,351	219,804,351	8,925,071,622	8,925,071,622	0
2049	221,347,231	0	221,347,231	0	528,579,004	221,347,231	221,347,231	9,173,223,265	9,173,223,265	0
2050	228,883,828	0	228,883,828	0	552,365,059	228,883,828	228,883,828	9,420,373,915	9,420,373,915	0
2051	236,677,036	0	236,677,036	0	577,221,487	236,677,036	236,677,036	9,665,630,345	9,665,630,345	0

Notes:

Assumes payment at the beginning of the fiscal year.

Normal cost is projected to increase 3.25% per year for inflation and 0.15% per year for mortality improvement and does not reflect the future impact of pension reform for new hires.

Section 2: Valuation Results

Total City (Boston Public Schools and All Other City Departments) Fully Funded in 2049, 22-Year Closed Amortization \$100,000,000 Contribution to OPEB Trust Beginning in 2030

Fiscal Year Ending June 30	(1) Normal Cost	(2) Amortization of UAAL	(3) Actuarially Determined Contribution: (1) + (2)	(4) Projected Benefits to be paid by the City	(5) Projected Benefits to be paid by OPEB Trust	(6) Contribution to OPEB Trust	(7) Total City Cost: (4) + (6)	(8) Assets at End of Year	(9) AAL at End of Year	(10) UAAL at End of Year: (9) - (8)
2024	\$95,840,428	\$156,756,746	\$252,597,174	\$132,223,176	\$0	\$40,000,000	\$172,223,176	\$1,041,519,600	\$3,722,060,105	\$2,680,540,505
2025	99,103,675	167,447,970	266,551,645	145,113,964	0	40,000,000	185,113,964	1,149,114,575	3,910,406,466	2,761,291,891
2026	102,478,031	178,790,667	281,268,698	160,223,968	0	40,000,000	200,223,968	1,263,434,236	4,098,534,692	2,835,100,456
2027	105,967,280	190,736,533	296,703,813	173,048,164	0	40,000,000	213,048,164	1,384,898,875	4,288,909,380	2,904,010,505
2028	109,575,333	203,550,402	313,125,735	186,672,284	0	40,000,000	226,672,284	1,513,955,055	4,480,972,622	2,967,017,567
2029	113,306,236	217,327,877	330,634,113	200,705,227	0	40,000,000	240,705,227	1,651,077,246	4,674,539,075	3,023,461,829
2030	117,164,172	232,218,794	349,382,966	214,743,978	0	100,000,000	314,743,978	1,860,519,574	4,869,831,674	3,009,312,100
2031	121,153,466	243,292,133	364,445,599	228,596,123	0	100,000,000	328,596,123	2,083,052,047	5,067,290,221	2,984,238,174
2032	125,278,590	255,074,684	380,353,274	243,388,686	0	100,000,000	343,388,686	2,319,492,800	5,266,225,046	2,946,732,246
2033	129,544,169	267,632,963	397,177,132	257,571,153	0	100,000,000	357,571,153	2,570,711,100	5,467,506,524	2,896,795,423
2034	133,954,986	281,209,340	415,164,326	271,346,938	0	100,000,000	371,346,938	2,837,630,544	5,671,854,833	2,834,224,289
2035	138,515,986	296,112,036	434,628,022	285,418,318	0	100,000,000	385,418,318	3,121,232,453	5,879,316,527	2,758,084,074
2036	143,232,282	312,689,902	455,922,184	298,262,142	0	100,000,000	398,262,142	3,422,559,481	6,091,516,531	2,668,957,049
2037	148,109,162	331,640,599	479,749,761	311,683,939	0	100,000,000	411,683,939	3,742,719,449	6,308,325,849	2,565,606,400
2038	153,152,094	353,753,973	506,906,067	325,709,716	0	100,000,000	425,709,716	4,082,889,415	6,529,586,424	2,446,697,010
2039	158,366,732	380,265,120	538,631,852	340,366,653	0	100,000,000	440,366,653	4,444,320,003	6,755,108,313	2,310,788,310
2040	163,758,921	413,225,087	576,984,008	355,683,152	0	100,000,000	455,683,152	4,828,340,003	6,984,666,634	2,156,326,631
2041	169,334,707	456,316,416	625,651,123	371,688,894	0	100,000,000	471,688,894	5,236,361,253	7,217,998,283	1,981,637,029
2042	175,100,343	516,891,979	691,992,322	388,414,894	0	100,000,000	488,414,894	5,669,883,832	7,454,798,380	1,784,914,549
2043	181,062,290	612,091,438	793,153,728	405,893,565	0	100,000,000	505,893,565	6,130,501,571	7,694,716,453	1,564,214,881
2044	187,227,235	793,307,070	980,534,305	424,158,775	0	100,000,000	524,158,775	6,619,907,919	7,937,352,310	1,317,444,391
2045	193,602,088	1,317,444,391	1,511,046,479	443,245,920	0	100,000,000	543,245,920	7,139,902,164	8,182,251,612	1,042,349,447
2046	200,193,997	1,042,349,447	1,242,543,444	463,191,986	0	100,000,000	563,191,986	7,692,396,050	8,428,901,089	736,505,039
2047	207,010,353	736,505,039	943,515,392	484,035,626	0	100,000,000	584,035,626	8,279,420,803	8,676,723,404	397,302,601
2048	214,058,797	397,302,601	611,361,398	505,817,229	0	100,000,000	605,817,229	8,903,134,603	8,925,071,622	21,937,019
2049	221,347,231	21,937,019	243,284,250	0	528,579,004	243,284,250	243,284,250	9,173,223,265	9,173,223,265	0
2050	228,883,828	0	228,883,828	0	552,365,059	228,883,828	228,883,828	9,420,373,915	9,420,373,915	0
2051	236,677,036	0	236,677,036	0	577,221,487	236,677,036	236,677,036	9,665,630,345	9,665,630,345	0

Notes:

Assumes payment at the beginning of the fiscal year.

Normal cost is projected to increase 3.25% per year for inflation and 0.15% per year for mortality improvement and does not reflect the future impact of pension reform for new hires.

Section 2: Valuation Results

Public Health Commission 30-Year Open Amortization

Fiscal Year Ending June 30	(1) Normal Cost	(2) Amortization of UAAL	(3) Actuarially Determined Contribution: (1) + (2)	(4) Projected Benefits to be paid by the PHC	(5) Contribution to OPEB Trust	(6) Total PHC Cost: (4) + (5)	(7) Assets at End of Year	(8) AAL at End of Year	(9) UAAL at End of Year: (8) - (7)
2024	\$4,772,245	\$3,983,111	\$8,755,356	\$3,960,211	\$2,250,000	\$6,210,211	\$46,218,734	\$131,228,285	\$85,009,551
2025	4,934,734	4,163,382	9,098,116	4,482,503	2,250,000	6,732,503	51,498,030	140,052,749	88,554,719
2026	5,102,756	4,337,008	9,439,764	5,045,353	2,250,000	7,295,353	57,107,282	149,027,093	91,919,811
2027	5,276,498	4,501,815	9,778,313	5,533,721	2,250,000	7,783,721	63,067,112	158,243,536	95,176,424
2028	5,456,156	4,661,309	10,117,465	6,069,170	2,250,000	8,319,170	69,399,431	167,674,966	98,275,535
2029	5,641,931	4,813,089	10,455,020	6,687,147	2,250,000	8,937,147	76,127,521	177,256,250	101,128,730
2030	5,834,032	4,952,826	10,786,858	7,253,792	2,250,000	9,503,792	83,276,116	187,056,387	103,780,271
2031	6,032,674	5,082,686	11,115,360	7,793,896	2,250,000	10,043,896	90,871,498	197,123,363	106,251,865
2032	6,238,079	5,203,733	11,441,812	8,481,511	2,250,000	10,731,511	98,941,592	207,328,990	108,387,398
2033	6,450,477	5,308,322	11,758,799	9,094,250	2,250,000	11,344,250	107,516,066	217,766,546	110,250,480
2034	6,670,108	5,399,567	12,069,675	9,757,518	2,250,000	12,007,518	116,626,445	228,406,126	111,779,680
2035	6,897,217	5,474,461	12,371,678	10,396,857	2,250,000	12,646,857	126,306,223	239,292,967	112,986,744
2036	7,132,059	5,533,577	12,665,636	10,864,715	2,250,000	13,114,715	136,590,987	250,627,498	114,036,510
2037	7,374,896	5,584,990	12,959,886	11,353,627	2,250,000	13,603,627	147,518,549	262,424,492	114,905,943
2038	7,626,002	5,627,571	13,253,573	11,864,541	2,250,000	14,114,541	159,129,083	274,698,962	115,569,878
2039	7,885,658	5,660,087	13,545,745	12,398,445	2,250,000	14,648,445	171,465,276	287,466,134	116,000,858
2040	8,154,155	5,681,195	13,835,350	12,956,375	2,250,000	15,206,375	184,572,481	300,741,431	116,168,951
2041	8,431,794	5,689,427	14,121,221	13,539,412	2,250,000	15,789,412	198,498,886	314,540,445	116,041,559
2042	8,718,886	5,683,188	14,402,074	14,148,685	2,250,000	16,398,685	213,295,691	328,878,908	115,583,217
2043	9,015,753	5,660,741	14,676,494	14,785,376	2,250,000	17,035,376	229,017,297	343,772,660	114,755,363
2044	9,322,728	5,620,196	14,942,924	15,450,718	2,250,000	17,700,718	245,721,503	359,237,614	113,516,111
2045	9,640,155	5,559,503	15,199,658	16,146,000	2,250,000	18,396,000	263,469,722	375,289,713	111,819,992
2046	9,968,390	5,476,435	15,444,825	16,872,570	2,250,000	19,122,570	282,327,204	391,944,888	109,617,683
2047	10,307,802	5,368,576	15,676,378	17,631,836	2,250,000	19,881,836	302,363,280	409,219,002	106,855,722
2048	10,658,769	5,233,308	15,892,077	18,425,269	2,250,000	20,675,269	323,651,610	427,127,800	103,476,190
2049	11,021,687	5,067,794	16,089,481	19,254,406	2,250,000	21,504,406	346,270,460	445,686,842	99,416,382
2050	11,396,962	4,868,963	16,265,925	20,120,854	2,250,000	22,370,854	370,302,989	464,911,440	94,608,451
2051	11,785,014	4,633,492	16,418,506	21,026,293	2,250,000	23,276,293	395,837,551	484,816,576	88,979,026
2052	12,186,279	4,357,788	16,544,067	21,972,476	2,250,000	24,222,476	422,968,023	505,416,824	82,448,802
2053	12,601,207	4,037,968	16,639,175	22,961,237	2,250,000	25,211,237	451,794,149	526,726,257	74,932,107

Notes:

Assumes payment at the beginning of the fiscal year.

Normal cost is projected to increase 3.25% per year for inflation and 0.15% per year for mortality improvement and does not reflect the future impact of pension reform for new hires.

Section 3: Supporting Information

Exhibit 1: Summary of Participant Data as of June 30, 2023 and June 30, 2021

Summary of Participant Data as of June 30, 2023	Boston Public Schools (A)	All Other Departments (City) (B)	Total City (C): (A) + (B)	Public Health Commission (D)	All Departments Total (E): (C) + (D)
Retirees and Beneficiaries					
• Number	6,553	8,440	14,993	396	15,389
• Average age	74.6	72.7	73.6	67.7	73.5
Active Employees					
• Number	8,656	6,536	15,192	836	16,028
• Average age	44.4	46.1	45.1	44.9	45.1
• Average years of service	13.7	16.4	14.8	11.1	14.6
• Average age at hire	30.8	29.7	30.3	33.8	30.5

Summary of Participant Data as of June 30, 2021	Boston Public Schools (A)	All Other Departments (City) (B)	Total City (C): (A) + (B)	Public Health Commission (D)	All Departments Total (E): (C) + (D)
Retirees and Beneficiaries					
• Number	5,518	9,555	15,073	314	15,387
• Average age	73.7	73.0	73.3	66.0	73.1
Active Employees					
• Number	8,661	6,779	15,440	965	16,405
• Average age	44.2	46.4	45.2	44.4	45.1
• Average years of service	13.6	16.9	15.0	11.4	14.8
• Average age at hire	30.6	29.6	30.1	33.0	30.3

Section 3: Supporting Information

Exhibit 2: Actuarial Assumptions and Actuarial Cost Method

Data

Detailed census data, claims experience, administrative fees, premium rates and summary plan descriptions for postemployment welfare benefits were provided by the City of Boston.

Actuarial Cost Method

Entry Age Normal – Level percentage of payroll

Per Capita Cost Development

Medicare Plans – Fully Insured

- Blue Cross Blue Shield Managed Blue for Seniors
- Blue Cross Blue Shield Medicare HMO Blue
- Tufts Medicare Preferred HMO

Per capita costs were based on the following:

- The fully insured premium rates effective January 1, 2023 and January 1, 2024 were averaged to estimate the premium rate for the valuation year. Actuarial factors were applied to the premium to estimate individual retiree and spouse costs by age and by gender.

Medicare Plans – Self-Insured medical coverage with Fully Insured PDP (prescription drugs)

- Blue Cross Blue Shield Medex
- Harvard Pilgrim Health Care Medicare Enhance
- Tufts Medicare Preferred Supplement

Per capita costs were based on a combination of the following:

- The fully insured PDP rates effective January 1, 2023 and January 1, 2024 were averaged to estimate the premium rate for the valuation year. Actuarial factors were applied to the premium to estimate individual retiree and spouse costs by age and by gender.
- The monthly paid medical claims experience for the period February 1, 2022 through January 31, 2024 for BCBS Medex and Tufts Medicare Preferred Supplement, and January 1, 2022 through December 31, 2023 for HPHC Medicare Enhance were separated into two 12-month periods and adjusted as follows:
 - Claims provided on a paid basis were multiplied by a factor to yield an estimate of incurred claims;

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- Total claims were divided by the number of adult members to yield a per capita claim cost; and
- The per capita claim cost was trended to the midpoint of the valuation year at assumed trend rates.

Taking a weighted average, per capita claims for the two periods were combined. The weights used in this average account for a number of factors including each plan year's volatility of claims experience and distance to the valuation year. Actuarial factors were then applied to the weighted average cost to estimate individual retiree and spouse costs by age and by gender.

Non-Medicare Plans – Self-Insured

- Mass General Brigham Health Plan HMO
- Blue Care Elect Preferred PPO
- Blue Cross Blue Shield HMO

Per capita claims costs were based on the following:

- The monthly claims experience by participant group for the period February 1, 2022 through January 31, 2024 were separated into two 12-month periods and adjusted as follows:
 - Pharmacy claims were adjusted to reflect estimated rebates;
 - Total claims were divided by the number of adult members to yield a per capita claim cost; and
 - The per capita claim cost was trended to the midpoint of the valuation year at assumed trend rates.

Taking a weighted average, per capita claims for the two periods were combined. The weights used in this average account for a number of factors including each plan year's volatility of claims experience and distance to the valuation year. Actuarial factors were then applied to the weighted average cost to estimate individual retiree and spouse costs by age and by gender.

Actuarial Valuation Date

June 30, 2023

Roll-Forward Techniques

The results of the June 30, 2023 actuarial valuation were rolled forward using standard actuarial techniques to determine the Actuarially Determined Contribution for the fiscal year ending June 30, 2025 and later years.

Expected Return on Assets

6.25%

The long-term expected rate of return on OPEB investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed

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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

6.25%

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

Asset Valuation Method

Market Value

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Salary Increases

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

Note:

Includes allowance for inflation of 3.25%.

Section 3: Supporting Information

Mortality Rates

Groups 1 and 2 (Excluding Teachers)

Pre-Retirement: Pub-2010 General Employee Headcount-Weighted Mortality Table set forward one year projected generationally using Scale MP-2021

Healthy and Disabled: Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Table set forward one year projected generationally using Scale MP-2021

Surviving Spouse: Pub-2010 General Contingent Survivor Headcount-Weighted Mortality Table set forward one year projected generationally using scale MP-2021

Group 4

Pre-Retirement: Pub-2010 Safety Employee Headcount-Weighted Mortality Table projected generationally using scale MP-2021

Healthy: Pub-2010 Safety Healthy Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2021

Disabled: Pub-2010 Disabled Retiree Headcount-Weighted Mortality Table projected generationally using scale MP-2021

Surviving Spouse: Pub-2010 Safety Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2021

Teachers

Pre-Retirement: Pub-2010 Teacher Employee Headcount-Weighted Mortality Table projected generationally with Scale MP-2021

Healthy and Disabled: Pub-2010 Teacher Healthy Retiree Headcount-Weighted Mortality Table projected generationally with Scale MP-2021

Surviving Spouse: Pub-2010 Teacher Contingent Survivor Headcount-Weighted Mortality Table projected generationally with Scale MP-2021

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

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

Section 3: Supporting Information

Annuitant Mortality Rates — Groups 1 and 2 (Excluding Teachers)

Age	Healthy and Disabled Male	Healthy and Disabled Female
60	0.85%	0.49%
70	2.02%	1.30%
80	6.03%	3.99%
90	17.36%	13.57%

Note:

Rates shown are before generational projection.

Annuitant Mortality Rates — Group 4

Age	Healthy Male	Healthy Female	Disabled Male	Disabled Female
60	0.63%	0.52%	0.94%	0.87%
70	1.74%	1.45%	2.22%	1.89%
80	5.70%	4.05%	6.04%	5.32%
90	16.90%	11.82%	16.90%	12.60%

Note:

Rates shown are before generational projection.

Annuitant Mortality Rates — Teachers

Age	Healthy and Disabled Male	Healthy and Disabled Female
60	0.42%	0.32%
70	1.16%	0.80%
80	4.09%	2.88%
90	13.75%	10.40%

Note:

Rates shown are before generational projection.

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Surviving Spouse Mortality Rates — Groups 1 and 2 (Excluding Teachers)

Age	Male	Female
60	1.21%	0.81%
70	2.56%	1.72%
80	6.28%	4.38%
90	16.13%	13.22%

Note:
Rates shown are before generational projection.

Surviving Spouse Mortality Rates — Group 4 and Teachers

Age	Male	Female
60	1.15%	0.75%
70	2.35%	1.59%
80	5.71%	3.96%
90	14.71%	11.91%

Note:
Rates shown are before generational projection.

Section 3: Supporting Information

Termination Rates Before Retirement — Groups 1 and 2 (excluding Teachers)

Age	Mortality Male	Mortality Female	Disability	Withdrawal
20	0.04%	0.01%	0.03%	6.58%
25	0.04%	0.01%	0.04%	5.27%
30	0.05%	0.02%	0.06%	4.83%
35	0.06%	0.03%	0.07%	4.47%
40	0.09%	0.05%	0.11%	3.84%
45	0.13%	0.07%	0.18%	3.21%
50	0.19%	0.11%	0.30%	1.52%
55	0.28%	0.15%	0.50%	0.33%
60	0.40%	0.23%	0.81%	0.00%

Notes:

50% of the disability rates shown represent accidental disability.

20% of the mortality rates shown represent accidental death.

Rates shown are before generational projection.

Section 3: Supporting Information

Termination Rates Before Retirement — Group 4

Age	Mortality Male	Mortality Female	Disability	Withdrawal
20	0.04%	0.02%	0.15%	0.00%
25	0.04%	0.02%	0.21%	0.00%
30	0.05%	0.03%	0.28%	0.00%
35	0.05%	0.04%	0.37%	0.00%
40	0.07%	0.05%	0.55%	0.00%
45	0.09%	0.08%	0.90%	0.00%
50	0.13%	0.10%	1.51%	0.00%
55	0.20%	0.14%	2.52%	0.00%
60	0.30%	0.20%	4.07%	0.00%

Notes:

90% of the disability rates shown represent accidental disability.

50% of the mortality rates shown represent accidental death.

Rates shown are before generational projection.

Section 3: Supporting Information

Termination Rates Before Retirement — Teachers

Age	Mortality Male	Mortality Female	Disability
20	0.04%	0.01%	0.00%
25	0.02%	0.01%	0.01%
30	0.03%	0.02%	0.01%
35	0.04%	0.02%	0.01%
40	0.05%	0.03%	0.01%
45	0.08%	0.05%	0.03%
50	0.13%	0.08%	0.05%
55	0.19%	0.12%	0.07%
60	0.29%	0.18%	0.07%

Notes:

35% of the rates shown represent accidental disability.

75% of the mortality rates shown represent accidental death.

Rates shown are before generational projection.

Withdrawal Rates — Teachers

Age	Male 0–4 Years of Service	Female 0–4 Years of Service	Male 5–9 Years of Service	Female 5–9 Years of Service	Male 10+ Years of Service	Female 10+ Years of Service
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 — Non-Teachers

Age	Groups 1 and 2	Group 4
50	0.0%	1.0%
51	0.0%	1.0%
52	0.0%	1.0%
53	0.0%	1.0%
54	0.0%	1.0%
55	3.0%	10.0%
56	3.0%	5.0%
57	3.0%	5.0%
58	3.0%	5.0%
59	3.0%	5.0%
60	8.0%	10.0%
61	8.0%	15.0%
62	15.0%	15.0%
63	10.0%	15.0%
64	10.0%	25.0%
65	35.0%	100.0%
66	20.0%	--
67	20.0%	--
68	20.0%	--
69	20.0%	--
70	100.0%	--

Section 3: Supporting Information

Retirement Rates — Non-TARP Teachers

Age	Male Less than 20 Years of Service	Female Less than 20 Years of Service	Male 20 or more Years of Service	Female 20 or more Years of Service
50	0.0%	0.0%	2.0%	1.0%
51	0.0%	0.0%	2.0%	1.0%
52	0.0%	0.0%	2.0%	1.5%
53	0.0%	0.0%	2.0%	2.0%
54	0.0%	0.0%	3.0%	2.0%
55	3.5%	3.5%	3.0%	4.0%
56	3.5%	3.5%	3.5%	4.0%
57	5.0%	3.5%	4.0%	4.0%
58	5.5%	5.0%	5.0%	6.0%
59	6.0%	6.5%	6.0%	8.0%
60	7.5%	8.5%	15.0%	15.0%
61	12.0%	10.0%	25.0%	20.0%
62	14.0%	12.0%	30.0%	20.0%
63	14.0%	12.0%	30.0%	25.0%
64	14.0%	20.0%	30.0%	30.0%
65	30.0%	30.0%	30.0%	40.0%
66	30.0%	30.0%	25.0%	30.0%
67	30.0%	30.0%	25.0%	30.0%
68	30.0%	30.0%	25.0%	30.0%
69	30.0%	30.0%	25.0%	30.0%
70	100.0%	100.0%	100.0%	100.0%

Section 3: Supporting Information

Retirement Rates — TARP Teachers

Age	Male Less than 20 Years of Service	Female Less than 20 Years of Service	Male 20 – 29 Years of Service	Female 20 – 29 Years of Service	Male 30 or more Years of Service	Female 30 or more Years of Service
50	0.0%	0.0%	1.0%	1.0%	2.0%	1.5%
51	0.0%	0.0%	1.0%	1.0%	2.0%	1.5%
52	0.0%	0.0%	1.0%	1.0%	2.0%	1.5%
53	0.0%	0.0%	1.5%	1.0%	2.0%	1.5%
54	0.0%	0.0%	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%	40.0%	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%

Section 3: Supporting Information

Dependents

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

Per Capita Health Costs

2023-2024 medical and prescription drug claims costs are shown in the table below for retirees and for spouses at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.

Age	Non-Medicare Male	Non-Medicare Female
45	\$12,368	\$13,575
50	13,956	14,737
55	15,749	15,997
60	18,133	17,342
64	22,037	18,827
65	23,137	19,217
70	25,987	21,499
75	28,707	22,602
80	30,059	24,125

Age	Self Insured Medicare with PDP Male	Self Insured Medicare with PDP Female
65	\$4,007	\$3,328
70	4,501	3,724
75	4,972	3,915
80	5,206	4,178

Section 3: Supporting Information

Age	Medicare Fully Insured Male	Medicare Fully Insured Female
65	\$4,725	\$3,924
70	5,307	4,390
75	5,862	4,616
80	6,138	4,927

Medicare Part B Premium

\$2,038

Weighted Average Annual Retiree Contribution Amounts

Plan	Retiree	Married Spouse
Non-Medicare Plans	\$2,996	\$4,947
Medicare Plans – Self-Insured Medical with PDP	618	618
Medicare Plans – Fully Insured	715	715

Section 3: Supporting Information

Health Care Cost Trend Rates

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

Year Ending June 30	Non-Medicare	Medicare Plans– Self-Insured Medical with PDP	Medicare Plans– Fully Insured	Medicare Part B
2024	8.00%	10.62%	8.67%	4.50%
2025	7.75%	11.88%	11.09%	4.50%
2026	7.50%	7.50%	7.50%	4.50%
2027	7.25%	7.25%	7.25%	4.50%
2028	7.00%	7.00%	7.00%	4.50%
2029	6.75%	6.75%	6.75%	4.50%
2030	6.50%	6.50%	6.50%	4.50%
2031	6.25%	6.25%	6.25%	4.50%
2032	6.00%	6.00%	6.00%	4.50%
2033	5.75%	5.75%	5.75%	4.50%
2034	5.50%	5.50%	5.50%	4.50%
2035	5.25%	5.25%	5.25%	4.50%
2036	5.00%	5.00%	5.00%	4.50%
2037	4.75%	4.75%	4.75%	4.50%
2038 & later	4.50%	4.50%	4.50%	4.50%

The trend rate assumptions were developed using Segal’s internal guidelines, which are established each year using data sources such as the 2024 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. The trend assumptions also include an estimated impact of the IRA on the City’s Medicare plans in calendar year 2025 as described on the following page.

Retiree Contribution Increase Rate

Retiree contributions for medical and prescription drug coverage are expected to increase with medical trend. Contributions are adjusted for increases in contribution percentages negotiated in the 2020-2025 PEC Agreement.

Section 3: Supporting Information

Administrative Expenses

Administrative expense loads of \$538 per participant for non-Medicare plans (MGBHP HMO, BCBS PPO, and BCBS HMO) and \$370 per participant for the Medicare self-insured medical with PDP plans (BCBS Medex, HPHC Medicare Enhance, Tufts Medicare Supplement). Administrative expenses were based on the current contractual rates for each vendor. Administrative expenses are assumed to increase at 3.0% per year.

Administrative expenses are not added to fully insured premium rates, as these expenses are a component of the rate.

Participation and Coverage Election

100% of active employees with coverage are assumed to elect retiree coverage. This assumption includes an allowance for current and future inactive vested participants who may elect retiree coverage at retirement.

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, 85% are assumed to be eligible for Medicare and are assumed to enroll in a self-insured Medicare plan upon reaching age 65. 15% are assumed to be ineligible for Medicare and remain enrolled in the non-Medicare plans. This assumption includes an allowance for retirees and beneficiaries who are not required to enroll in Medicare until the later of the retiree or spouse turning age 65.

For future retirees hired after 1986, 100% are assumed to enroll in a self-insured Medicare plan.

The participation and coverage election assumptions were based on a review of recent experience.

Plan Design

Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit 3.

Health Care Reform Assumption

The valuation does not reflect the potential impact of any future changes due to prior or pending legislation, other than those described below.

The Inflation Reduction Act of 2022 (IRA) includes material benefit cost-sharing changes for Medicare prescription drug plans in 2025, most notably implementing a \$2,000 member out-of-pocket maximum, as well as various funding changes that are expected to significantly increase plan premiums. Our projections include an estimated impact of the IRA on the Plan in calendar year 2025 based on preliminary information. Final guidance, rules, and clarifications will be provided by the Centers for Medicare & Medicaid Services in the summer of 2024.

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.

Section 3: Supporting Information

Demographic and Salary Increase Assumptions

The demographic and salary increase assumptions used in this valuation, are the same as used in the Boston Retirement System Actuarial Valuation and Review as of January 1, 2022, completed by Segal, with the exception of the headcount-weighted versus amount-weighted mortality tables for the non-Teachers.

A review of the demographic assumptions is beyond the scope of this assignment however, we have no reason to doubt the reasonableness of the 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.

The results are also based on models for cost projections developed by Segal actuaries and programmers. The client team customized and validates the models and reviews the results under the supervision of the responsible actuaries.

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.

Justification for Assumption Changes Since Prior Valuation

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

- The per capita health care costs, retiree contributions, and trend assumptions were updated;
- The actuarial factors used to estimate individual retiree and spouse costs by age and by gender were updated; and
- The Medicare trend was adjusted to estimate the impact of the Inflation Reduction Act on Medicare Prescription Drug plans.

Section 3: Supporting Information

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 Boston Retirement System.

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

Disability

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

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

Section 3: Supporting Information

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 not enrolled in Medicare through a variety of plans offered by Mass General Brigham Health Plan and Blue Cross Blue Shield of Massachusetts. Medical and prescription drug benefits are provided to retirees enrolled in Medicare through supplemental plans offered by Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim Health Care, and Tufts Health Plan. The City of Boston also pays 50% of the retiree life insurance premium and reimburses retirees 50% of their Medicare Part B premium.

Medicare Part B Penalty

Actual penalty amounts for 2,359 retirees and spouses were provided by the City.

Duration of Coverage

Lifetime.

Dependent Benefits

Medical and Prescription Drugs.

Dependent Coverage

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

Retiree Life

\$5,000

Section 3: Supporting Information

Retiree Contributions

Premium rates and retiree contributions as of January 1, 2023 (for Medicare plans) and July 1, 2023 (for non-Medicare plans) are summarized below:

Non-Medicare Actives and Retirees	Monthly Premium as of July 1, 2023	City cost (\$)	Retiree cost (\$)	Retiree cost (%)
BCBS HMO				
• Individual	\$978.33	\$767.99	\$210.34	21.50%
• Family	\$2,593.95	\$2,036.25	\$557.70	21.50%
MGBHP HMO				
• Individual	\$812.05	\$637.46	\$174.59	21.50%
• Family	\$2,153.16	\$1,690.23	\$462.93	21.50%
Blue Care Elect Preferred PPO				
• Individual	\$1,223.65	\$838.20	\$385.45	31.50%
• Family	\$3,243.40	\$2,221.73	\$1,021.67	31.50%

Medicare Retirees	Monthly Premium as of January 1, 2023	City cost (\$)	Retiree cost (\$)	Retiree cost (%)
BCBS Medex	\$384.21	\$332.34	\$51.87	13.50%
Harvard Pilgrim Medicare Enhance	\$362.55	\$313.60	\$48.94	13.50%
Tufts Medicare Preferred Supplement	\$426.58	\$368.99	\$57.59	13.50%
BCBS Managed Blue for Seniors	\$469.71	\$406.30	\$63.41	13.50%
Medicare HMO Blue	\$397.74	\$344.05	\$53.69	13.50%
Tufts Medicare Preferred HMO	\$374.00	\$323.51	\$50.49	13.50%

Plan Changes

None

Section 3: Supporting Information

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

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

Section 3: Supporting Information

Entry Age Actuarial Cost Method

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

Healthcare Cost Trend Rates

The rate of change in per capita health costs over time

Discount Rate

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

Expected Return on Assets

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

Real Rate of Return

The rate of return on an investment after removing inflation