

Massachusetts Water Resources Authority

Actuarial Valuation and Review of Other Postemployment Benefits (OPEB)

Measured at December 31, 2021



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June 3, 2022

Mr. William Kibaja
Controller
Massachusetts Water Resources Authority
100 First Avenue, Building 39
Charlestown Navy Yard
Boston, MA 02129

Dear Mr. Kibaja:

We are pleased to submit this report on our actuarial valuation of postemployment welfare benefits as of December 31, 2021. The purpose of this report is to calculate an Actuarially Determined Contribution for the Massachusetts Water Resources Authority Other Postemployment Benefit (OPEB) Plan for the fiscal years ending June 30, 2022 and June 30, 2023. It summarizes the actuarial data used in the valuation and analyzes the experience and changes in assumptions since the prior valuation. The GASB Statements No. 74 and 75 disclosure information for the Authority for the fiscal year ending June 30, 2022 will be provided in a separate report when the June 30, 2022 financial information is available.

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

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

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience or rates of return on assets differing from that anticipated by the assumptions; changes in assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to

changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

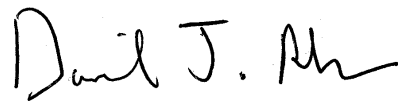
The actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and collectively meet the Qualification Standards of the American Academy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



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



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

Table of Contents

Section 1: Actuarial Valuation Summary	5
Purpose and basis	5
Highlights of the valuation.....	5
Other considerations.....	8
Important information about actuarial valuations.....	9
Section 2: Valuation Results	11
Summary of valuation results.....	11
Projection of actuarially determined contribution.....	12
Section 3: Supporting Information	13
Exhibit 1 – Summary of Participant Data as of December 31, 2021 and December 31, 2019	13
Exhibit 2 – Statement of Actuarial Assumption, Methods and Models	14
Exhibit 3 – Summary of Plan.....	23
Exhibit 4 – Definition of Terms	26

Section 1: Actuarial Valuation Summary

Purpose and basis

This report presents the results of our actuarial valuation of the Massachusetts Water Resources Authority (MWRA) other postemployment welfare benefit plan as of December 31, 2021. The purpose of this report is to calculate a recommended Actuarially Determined Contribution for the OPEB plan for the fiscal years ending June 30, 2022 and June 30, 2023. Determinations for purposes other than meeting funding requirements may be significantly different from the results reported here. This valuation is based on:

- The benefit provisions of the OPEB plan, as administered by the Massachusetts Water Resources Authority;
- The characteristics of covered active members, terminated vested members, and retired members and beneficiaries as of December 31, 2021, provided by the Massachusetts Water Resources Authority;
- The assets of the Plan as of December 31, 2021, provided by the Massachusetts Water Resources Authority;
- Economic assumptions regarding future salary increases and investment earnings;
- Health care assumptions regarding per capita costs, trend rates and participation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

Highlights of the valuation

- The discount rate used to determine the liabilities that are the basis of the Actuarially Determined Contribution (ADC) is the expected return on assets. Based on the investment allocation of the OPEB Trust, we recommend lowering the expected return on assets from 7.00% to 6.75% for this valuation.
- The unfunded actuarial accrued liability (UAAL) as of December 31, 2021 is \$45.00 million based on an actuarial accrued liability (AAL) of \$111.27 million and an actuarial value of assets of \$66.27 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.

Section 1: Actuarial Valuation Summary

- As of December 31, 2021 the ratio of assets to the AAL (the funded ratio) is 59.56%, compared to 30.27% in the prior valuation. This funded percentage is not necessarily appropriate for assessing the sufficiency of OPEB assets to cover the estimated cost of settling the benefit obligations or the need for or the amount of future contributions.
- The participant data received for the December 31, 2021 actuarial valuation included 885 active employees with health coverage, 32 terminated vested employees, and 908 retirees and beneficiaries receiving retiree health benefits compared to 941 active employees, 35 terminated vested employees, and 802 retirees and beneficiaries in the prior valuation.
- In addition to lowering the expected rate of return from 7.00% to 6.75% as noted on the prior page, the following assumptions were revised with this valuation:
 - The per capita health costs and contributions were updated to reflect current premiums and the most recent Commonwealth OPEB valuation report.
 - The trend assumptions were revised, per the most recent Commonwealth OPEB valuation report
 - The mortality assumption was updated.
 - The retirement assumption for employees hired on or after April 2, 2012 was updated.
- The UAAL was expected to decrease by \$1.89 million from \$89.99 million as of December 31, 2019 to \$88.10 million as of December 31, 2021. The actual unfunded liability of \$45.00 million is \$43.10 million less than expected. The difference between the actual and expected increase was the net effect of the following:

December 31, 2019 unfunded actuarial liability	\$89,988,809
December 31, 2021 expected unfunded actuarial liability	\$88,100,165
Change due to:	
• Net experience gain	\$1,467,812
• Investment gain and contributions greater than expected	-10,217,550
• Updating per capita costs and contributions and future trends	-37,207,661
• Updating mortality and retirement assumptions	-219,071
• Lowering the discount rate	3,075,714
• Net decrease	-\$43,100,756
December 31, 2021 unfunded actuarial accrued liability	\$44,999,409

- The ADC for fiscal year 2022 is \$5,772,224. The ADC is calculated using a 26-year amortization of the UAAL, with payments increasing at 3.00% per year.

Section 1: Actuarial Valuation Summary

- We have included a funding schedule that reflects the Authority's policy to contribute 50% of the Actuarially Determined Contribution per year to the OPEB trust. The MWRA will pay projected benefits plus a contribution to the OPEB trust through 2030. In fiscal 2031, a larger payment to the OPEB trust will be made and benefit payments will be made from the OPEB trust. The contribution to the OPEB trust in fiscal 2032 will be the employer normal cost payment. The OPEB liabilities are projected to be fully funded when the June 30, 2031 payment is made, assuming that there are no assumption or plan changes and that experience develops as assumed. This is four years earlier than projected in the prior valuation.
- The long term impact of the Coronavirus (COVID-19) pandemic is still unknown. Our results do not include the impact of the following:
 - The short-term impact on health plan costs;
 - Short-term or long-term impacts on mortality of the covered population; or
 - The potential for federal or state fiscal relief.

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:

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 Massachusetts Water Resources Authority 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 Massachusetts Water Resources Authority.
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 Massachusetts Water Resources Authority. 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 Massachusetts Water Resources Authority 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 Massachusetts Water Resources Authority 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 Massachusetts Water Resources Authority upon delivery and review. The Massachusetts Water Resources Authority should notify Segal immediately of any questions or concerns about the final content.

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

Section 2: Valuation Results

Summary of valuation results

	December 31, 2021 (6.75% discount rate)	December 31, 2019 (7.0% discount rate)
Actuarial Accrued Liability (AAL) by Participant Category		
1. Current retirees, beneficiaries and dependents	\$47,755,473	\$55,909,249
2. Current active employees	53,725,724	69,117,633
3. Current vested terminated employees	<u>9,786,607</u>	<u>4,024,077</u>
4. Total AAL: (1) + (2) + (3)	\$111,267,804	\$129,050,959
5. Actuarial value of assets	<u>66,268,395</u>	<u>39,062,150</u>
6. Unfunded actuarial accrued liability (UAAL): (4) - (5)	\$44,999,409	\$89,988,809
7. Funded ratio: (5) / (4)	59.56%	30.27%
Actuarially Determined Contribution for fiscal year ending		
	June 30, 2022	June 30, 2020
8. Normal cost, including adjustment for interest	\$3,074,227	\$3,691,427
9. Amortization payment on UAAL, including adjustment for interest	<u>2,697,998</u>	<u>5,305,486</u>
10. Total Actuarially Determined Contribution: (8) + (10)	\$5,772,224	\$8,996,913
11. Projected benefit payments	4,855,641	4,923,207
Actuarially Determined Contribution for fiscal year ending		
	June 30, 2023	June 30, 2021
12. Normal cost, including adjustment for interest	\$3,171,203	\$3,807,873
13. Amortization payment on UAAL, including adjustment for interest	<u>2,529,406</u>	<u>5,335,990</u>
14. Total Actuarially Determined Contribution: (13) + (15)	\$5,700,609	\$9,143,863
15. Projected benefit payments	5,306,449	5,440,161

Notes:

Assumes payment at the end of the fiscal year.

Amortization payment for 2020 and 2021 are 28-year and 27-year payments, respectively, increasing at 3.00% per year.

Amortization payment for 2022 and 2023 are 26-year and 25-year payments, respectively, increasing at 3.00% per year.

Section 2: Valuation Results

Projection of actuarially determined contribution

Fiscal Year Ending June 30	(1) Normal Cost	(2) Amortization of UAAL	(3) Total Funding Requirement	(4) Projected Benefit Payments to be paid by MWRA	(5) Contributions to OPEB Trust	(6) Total Cost to MWRA: (4) + (5)	(7) Assets at Mid Fiscal-Year	(8) AAL at Mid Fiscal-Year	(9) UAAL at Mid Fiscal-Year: (8) - (7)
2022	\$3,074,227	\$2,697,998	\$5,772,224	\$4,855,641	\$4,673,624	\$9,529,265	\$66,268,395	\$111,267,804	\$44,999,409
2023	3,171,203	2,529,406	5,700,609	5,306,449	2,850,305	8,156,754	75,570,295	116,756,494	41,186,199
2024	3,271,239	2,427,491	5,698,730	5,897,908	2,849,365	8,747,273	83,616,222	122,146,981	38,530,759
2025	3,374,430	2,275,268	5,649,698	6,522,761	2,824,849	9,347,610	92,204,278	127,351,379	35,147,101
2026	3,480,876	2,067,676	5,548,552	7,170,371	2,774,276	9,944,646	101,346,698	132,375,801	31,029,103
2027	3,590,680	1,793,472	5,384,152	7,749,085	2,692,076	10,441,161	111,053,979	137,149,021	26,095,042
2028	3,703,948	1,458,501	5,162,449	8,249,424	2,581,224	10,830,648	121,331,573	141,862,358	20,530,785
2029	3,820,789	1,051,383	4,872,172	8,690,946	2,436,086	11,127,032	132,188,372	146,472,500	14,284,128
2030	3,941,316	574,458	4,515,774	9,020,894	2,257,887	11,278,780	143,628,049	151,140,559	7,512,510
2031	4,065,645	22,679	4,088,324	-	4,359,731	4,359,731	155,655,789	155,940,425	284,636
2032	4,193,896	-	4,193,896	-	4,193,896	4,193,896	160,773,489	160,773,489	-
2033	4,326,192	-	4,326,192	-	4,326,192	4,326,192	165,801,869	165,801,869	-
2034	4,462,662	-	4,462,662	-	4,462,662	4,462,662	170,798,504	170,798,504	-

Notes:

The fiscal 2022 contribution is set equal to the budgeted amount from the prior valuation.

Assumes payment at the end of the fiscal year.

Assets are assumed to return 6.75% per year.

Amortization payments are based on a 26-year period as of July 1, 2022 with payments increasing 3.00% per year.

Normal cost is projected to increase at the wage inflation assumption of 3.00% per year and 0.15% for future mortality improvement and does not reflect the future impact of pension reform for new hires.

Section 3: Supporting Information

Exhibit 1 – Summary of Participant Data as of December 31, 2021 and December 31, 2019

Summary of Participant Data	December 31, 2021	December 31, 2019
Retirees, Beneficiaries, and Dependents		
Number ¹	908	802
Average Age	70.4	69.8
Active Employees Covered for Medical Benefits		
Number	885	941
Average Age	51.4	51.3
Average years of service	17.0	17.1
Average age at hire	34.4	34.3
Terminated vested employees		
Number	32	35
Average age	55.7	54.3

¹ Does not include 77 and 71 retirees with life only in the December 31, 2021 and December 31, 2019 counts respectively.

Section 3: Supporting Information

Exhibit 2 – Statement of Actuarial Assumption, Methods and Models

Data:	Detailed census data, premium rates and summary plan descriptions for postemployment welfare benefits were provided by the Massachusetts Water Resources Authority.
Actuarial Cost Method:	Entry Age Normal – Level percentage of payroll.
Per Capita Cost Development:	Per capita costs were taken from the June 30, 2021 Commonwealth of Massachusetts Postemployment Benefit Plans Other than Pensions GASB Statement No. 74 Valuation Report, dated January 2022, completed by Deloitte Consulting. Costs for each plan offering were combined by taking a weighted average based on the number of participants enrolled in each plan, and were then trended to the valuation year at assumed trend rates. Segal did not review the accuracy of the costs or the underlying claims experience.
Actuarial Valuation Date:	December 31, 2021
Roll-Forward Techniques:	The results of the December 31, 2021 actuarial valuation are used to determine the Actuarially Determined Contribution for the fiscal year ending June 30, 2022. To project the Actuarially Determined Contribution for fiscal year 2023 and later, liabilities were rolled forward from December 31, 2021 using standard actuarial techniques.
Expected Return on Assets:	6.75% (previously, 7.00%) The long-term expected rate of return was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expenses and inflation) are developed for each major asset class. These ranges are combined to produce a long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.
Discount Rate:	6.75% (previously, 7.00%) The discount rate is equal to the expected return on assets.
Asset Valuation Method:	Market Value

Section 3: Supporting Information

Salary Increases:

Years of Service	Rate
0	5.75%
1	5.25%
2	5.25%
3	5.00%
4	5.00%
5	4.50%
6	4.50%
7	4.25%
8	4.25%
9+	4.00%

Note: Total payroll is assumed to increase by 3.00% per year.

Mortality Rates:

Pre-Retirement: Pub-2010 General Employee Mortality Table (headcount weighted) projected generationally with Scale MP-2020 (previously, RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017)

Healthy: Pub-2010 General Healthy Retiree Mortality Table (headcount weighted) projected generationally with Scale MP-2020 (previously, RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017)

Disabled: Pub-2010 General Healthy Retiree Mortality Table (headcount weighted) projected generationally with Scale MP-2020 set forward 1 year (previously, RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017 set forward 1 year)

Surviving Spouse: Pub-2010 General Contingent Survivor Mortality Table (headcount weighted) projected generationally with Scale MP-2020 (previously, RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017)

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.

Section 3: Supporting Information

Annuitant Mortality Rates:

Age	Rate per year (%)							
	Current				Previous			
	Healthy		Disabled		Healthy		Disabled	
	Male	Female	Male	Female	Male	Female	Male	Female
60	0.83	0.48	2.92	2.20	0.83	0.58	0.89	0.63
70	1.69	1.02	4.23	2.93	1.89	1.30	2.07	1.44
80	4.84	3.25	7.81	6.41	4.81	3.57	5.33	3.97
90	14.80	11.59	17.09	14.81	13.78	10.70	15.23	11.89

Note: Rates shown are projected generationally to the valuation date.

Termination Rates before Retirement:

Age	Rate per year (%)					
	Mortality					
	Current			Previous		
	Male	Female	Disability	Male	Female	Disability
20		0.04	0.02	0.05	0.02	0.01
25		0.04	0.02	0.06	0.02	0.02
30		0.06	0.03	0.06	0.03	0.03
35		0.09	0.04	0.07	0.03	0.06
40		0.11	0.05	0.08	0.05	0.10
45		0.13	0.06	0.12	0.07	0.15
50		0.17	0.09	0.20	0.12	0.19
55		0.25	0.14	0.34	0.18	0.24
60		0.39	0.22	0.59	0.28	0.28

Notes: 55% of the disability rates shown represent accidental disability.
 20% of the death rates shown represent accidental death.
 Rates shown are projected generationally to the valuation date.

Section 3: Supporting Information

Withdrawal Rates:

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

Section 3: Supporting Information

Retirement Rates¹:

Age	Rate per year (%)	
	Male	Female
50	0.750	1.125
51	0.750	1.125
52	0.750	1.500
53	0.750	1.875
54	1.500	1.875
55	1.500	4.125
56	1.875	4.875
57	1.875	4.875
58	3.750	4.875
59	4.875	4.875
60	9.000 ²	3.750 ³
61	15.000	9.750
62	22.500	11.250
63	18.750	9.375
64	16.500	13.500
65	30.000	11.250
66	18.750	15.000
67	18.750	15.000
68	22.500	18.750
69	22.500	15.000
70	100.000	100.000

¹ Rates are 0% for employees are not eligible to retire.

² Rate is 9.00% for employees hired before April 2, 2012 and 15.00% for employees hired on or after April 2, 2012 (previously, 9.00% for all employees).

³ Rate is 3.75% for employees hired before April 2, 2012 and 6.25% for employees hired on or after April 2, 2012 (previously, 3.75% for all employees).

Section 3: Supporting Information

Dependents:

For current retirees, the spouse date of birth was obtained from the companion pension data if applicable and available; otherwise, husbands were assumed to be three years older than their spouses. 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, 65% were assumed to have an eligible spouse who also opts for health coverage at that time.

Per Capita Health Costs:

Calendar year 2022 medical and prescription drug claims costs are shown in the table below for retirees and for spouses at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.

Age	Non-Medicare Plans	Medicare Plans
45	\$7,232	N/A
50	8,815	N/A
55	10,820	N/A
60	13,219	N/A
65	16,516	\$3,391
70	19,842	3,723
75	23,497	3,999
80	27,306	4,202

Weighted Average Annual Retiree Contribution Amounts:

	Retired on or before July 1, 1994 and surviving spouses	Retired after July 1, 1994 and before October 1, 2009	Retired after October 1, 2009
Non-Medicare:	\$1,299	\$1,921	\$2,543
Medicare:	532	786	1,035

Contribution amounts above are the weighted average for each group shown. Actual retiree contributions are provided in the data. Retirees currently under age 65 are assumed to contribute the respective Medicare amounts shown when they enroll in a Medicare plan.

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 December 31	Non-Medicare	Medicare
2022	6.52%	3.00%
2023	7.06%	4.49%
2024	6.83%	4.57%
2025	6.59%	4.66%
2026	6.36%	4.75%
2027	6.00%	4.50%
2028	5.75%	4.50%
2029	5.50%	4.50%
2030	5.25%	4.50%
2031	5.00%	4.50%
2032	4.75%	4.50%
2033 & later	4.50%	4.50%

The trend rate assumptions for the first year reflect known increases from 2022 to 2023 rates (including the migration out of Fallon plans no longer offered), the next 4 years are the same as used in the June 30, 2021 Commonwealth of Massachusetts Postemployment Benefit Other than Pensions GASB Statement Nos. 74/75 Valuation Report, dated January 2022, completed by Deloitte Consulting.

The trend rate assumptions for 2027 and later were developed using Segal’s internal guidelines, which are established each year using data sources such as the 2022 Segal Health Trend Survey, internal client results, trends from other published surveys prepared by the S&P Dow Jones Indices, consulting firms and brokers, and CPI statistics published by the Bureau of Labor Statistics..

Retiree Contribution Increase Rate:

Retiree contributions for medical and prescription drug coverage are expected to increase with health care cost trend.

Administrative Expenses:

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

Section 3: Supporting Information

Participation and Coverage Election:	<ul style="list-style-type: none"> • 100% of active employees with medical coverage are assumed to elect retiree medical coverage • 100% of active employees with medical coverage are assumed to elect life coverage. • 100% of retirees over age 65 are assumed to remain with their current medical plan for life. • For future retirees and current retirees under age 65, 100% are assumed to be eligible for Medicare and enroll in a Medicare plan upon reaching age 65. • 80% of future and current terminated vested employees are assumed to elect retiree medical coverage with benefits assumed to commence at age 60, and to be eligible for Medicare and enroll in a Medicare plan upon reaching age 65. <p>The participation and coverage election assumptions were based on a review of recent experience.</p>
Plan Design:	<p>Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit III.</p>
Missing Participant Data:	<p>With the exception of missing dates of birth for spouses, a missing census item for a given participant was assumed to equal the average value of that item over all other participants of the same status for whom the item is known.</p>
Actuarial Models	<p>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.</p> <p>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.</p>
Demographic and Salary Scale Assumptions:	<p>The demographic and salary scale assumptions used in this valuation are the same as used in the Massachusetts Water Resources Authority Employees' Retirement System Actuarial Valuation and Review as of January 1, 2021, completed by Segal. 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.</p> <p>The remaining demographic assumptions, such as percent married, relative ages of spouses and enrollment elections, were based on the experience of the Plan and the experience of similar plans.</p>

Section 3: Supporting Information

Justification for Assumption Changes Since Prior Valuation:

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

- The per capita health costs and contributions were updated to reflect current premiums and the costs in the most recent Commonwealth OPEB valuation report.
- The trend assumptions were revised, per the most recent Commonwealth OPEB valuation report.
- The mortality assumption was updated.
- The retirement assumption for employees hired on or after April 2, 2012 was updated
- The discount rate and the expected return on assets were lowered from 7.00% to 6.75%.

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 Massachusetts Water Resources Authority Contributory Retirement System . <ul style="list-style-type: none"> • Members hired before April 2, 2012 <ul style="list-style-type: none"> – Retirees with at least 10 years of creditable service are eligible at age 55; – Retirees with at least 20 years of creditable service are eligible at any age. • Members hired on or after April 2, 2012 <ul style="list-style-type: none"> – Retirees with at least 10 years of creditable service are eligible at age 60.
Disability:	Accidental (job-related) Disability has no age or service requirement. Ordinary (non-job related) Disability has no age requirement but requires 10 years of creditable service.
Pre-Retirement Death:	Surviving spouses of members who die in active service on Accidental (job-related) Death are eligible at any age. Surviving spouses of members who die in active service on Ordinary (non-job related) Death are eligible after two years of service.
Post-Retirement Death:	Surviving spouse is eligible.
Benefit Types:	Medical and prescription drug benefits are provided to all eligible retirees through the Group Insurance Commission. The employer pays 50% of the retiree life insurance premium.
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:	\$1,000
Retiree Contributions:	Premium rates and retiree contributions are summarized below:

Section 3: Supporting Information

Non-Medicare Actives and Retirees	Monthly Premium (eff. 7/1/2021)	Retiree Contributions		
		Retired on or before July 1, 1994, and Surviving Spouses	Retired after July 1, 1994 and before October 1, 2009	Retired after October 1, 2009
Fallon Direct				
Individual	\$641.70	\$64.17	\$96.26	\$128.34
Family	\$1,612.50	\$161.25	\$241.88	\$322.50
Fallon Select				
Individual	\$866.40	\$86.64	\$129.96	\$173.28
Family	\$2,099.70	\$209.97	\$314.96	\$419.94
Harvard Pilgrim Independence				
Individual	\$967.30	\$96.73	\$145.10	\$193.46
Family	\$2,354.30	\$235.43	\$353.15	\$470.86
Harvard Pilgrim Primary Choice				
Individual	\$701.90	\$70.19	\$105.29	\$140.38
Family	\$1,782.10	\$178.21	\$267.32	\$356.42
Health New England				
Individual	\$634.50	\$63.45	\$95.18	\$126.90
Family	\$1,505.60	\$150.56	\$225.84	\$301.12
Allways Health Partners Complete				
Individual	\$771.70	\$77.17	\$115.76	\$154.34
Family	\$2,005.10	\$200.51	\$300.77	\$401.02
Tufts Navigator				
Individual	\$840.10	\$84.01	\$126.02	\$168.02
Family	\$2,045.20	\$204.52	\$306.78	\$409.04

Section 3: Supporting Information

	Non-Medicare Actives and Retirees	Monthly Premium (eff. 7/1/2021)	Retiree Contributions		
			Retired on or before July 1, 1994, and Surviving Spouses	Retired after July 1, 1994 and before October 1, 2009	Retired after October 1, 2009
Tufts Spirit					
	Individual	\$642.90	\$64.29	\$96.44	\$128.58
	Family	\$1,542.90	\$154.29	\$231.44	\$308.58
Unicare Basic/CIC					
	Individual	\$1,206.39	\$174.99	\$232.29	\$289.59
	Family	\$2,671.19	\$390.86	\$517.55	\$644.23
Unicare Community Choice					
	Individual	\$598.20	\$59.82	\$89.73	\$119.64
	Family	\$1,477.10	\$147.71	\$221.57	\$295.42
Unicare Plus					
	Individual	\$785.70	\$78.57	\$117.86	\$157.14
	Family	\$1,866.60	\$186.66	\$279.99	\$373.32
Medicare Retirees					
	Unicare OME/CIC	\$413.78	\$51.89	\$72.00	\$92.10
	HPHC Medicare Enhance	\$418.40	\$41.84	\$62.76	\$83.68
	Tufts Medicare Complement	\$397.60	\$39.76	\$59.64	\$79.52
	Tufts Medicare Preferred	\$337.90	\$33.79	\$50.69	\$67.58
	Unicare OME w/o CIC	\$402.10	\$40.21	\$60.32	\$80.42
	Health New England Medicare	\$419.10	\$41.91	\$62.87	\$83.82
Plan Changes Since the Prior Valuation:	None Effective July 1, 2022, Fallon plans are no longer offered by the GIC. We have accounted for migration away from these plans through our medical trend assumption.				

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: <ol style="list-style-type: none"> 1. Investment return — the rate of investment yield that the Plan will earn over the long-term future; 2. Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates; 3. Retirement rates — the rate or probability of retirement at a given age; 4. Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.
Actuarial Accrued Liability (AAL):	Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.
Unfunded Actuarial Accrued Liability (UAAL):	The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There are many approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.
Normal Cost:	The amount of contributions required to fund the benefit allocated to the current year of service.
Actuarially Determined Contribution (ADC):	A target or recommended contribution to an OPEB plan for the reporting period based on the most recent measurement available.
Valuation Date:	The date at which the actuarial valuation is performed
Covered Employee Payroll:	The payroll of the employees that are provided OPEB benefits
Entry Age Actuarial Cost Method:	An actuarial cost method where the present value of the projected benefits for an individual is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age
Health Care Cost Trend Rates:	The rate of change in per capita health costs over time
Discount Rate:	The interest rate used to determine the actuarial present value of projected benefit payments.
Expected Return on Assets:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.