



Commonwealth of Massachusetts
Postemployment Benefits Other Than Pensions
GASB Statement Nos. 74/75 Valuation Report

Measurement Date of June 30, 2021

Prepared by Deloitte Consulting LLP

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Actuarial Valuation Opinion

This report presents results of the actuarial valuation of the Commonwealth of Massachusetts's Other Post-Employment Benefit Plan ("OPEB Plan" or "the Plan") measured as of June 30, 2021. In this report, we present disclosure information measured as of June 30, 2021 as required by Government Accounting Standards Board Statement Nos. 74 and 75 ("GASB Nos. 74/75"). In our opinion, this report is complete and accurate and represents fairly the actuarial position of the Plan for the purposes stated herein.

Actuarial information under GASB Nos. 74/75 is for purposes of fulfilling trust and employer financial accounting requirements. The results have been prepared on a basis consistent with our understanding of GASB Nos. 74/75 and are based upon assumptions prescribed by the Commonwealth of Massachusetts ("the Commonwealth"). Determinations for purposes other than meeting trust financial accounting requirements may be significantly different from the results reported herein.

The Commonwealth provided the participant data, financial information, and plan descriptions used in this valuation. The actuary has analyzed the data and other information provided for reasonableness but has not independently audited the data or other information provided. The actuary has no reason to believe the data or other information provided is not complete and accurate and knows of no further information that is essential to the preparation of the actuarial valuation.

In our opinion, all costs, liabilities, rates of interest, and other factors underlying these actuarial computations have been determined on the basis of actuarial assumptions and methods that are each reasonable (or consistent with authoritative guidance) for the purposes herein taking into account the experience of the Plan and future expectations.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operations of the methodology used for these measurements (such as the additional cost or contribution requirements based on the Plan's funded status); and changes in program provisions or applicable law. Our scope for this actuarial valuation did not include analyzing the potential range of such future measurements, and we did not perform that analysis.

The undersigned with actuarial credentials collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

This report was prepared solely for the benefit and internal use of the plan sponsor. This report is not intended for the benefit of any other party and may not be relied upon by any third party for any purpose, and Deloitte Consulting accepts no responsibility or liability with respect to any party other than the plan sponsor.

To the best of our knowledge, no employee of the Deloitte U.S. Firms is an officer or director of the employer. In addition, we are not aware of any relationship between the Deloitte U.S. Firms and the employer that may impair or appear to impair the objectivity of the work detailed in this report.

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Executive Summary

Governmental Accounting Requirements and Report Purpose

The Governmental Accounting Standards Board released the Statement of Governmental Accounting Standards Nos. 74 and 75 in June 2015. GASB No. 74 establishes financial reporting requirements for OPEB plans that have assets accumulated in a trust or equivalent arrangement for the purpose of funding OPEB. GASB No. 75 details the reporting and disclosure requirements for employers with payables (OPEB liabilities) to employees of state and local governmental employers through defined benefit OPEB plans.

The purpose of this actuarial valuation report is to provide information for the Commonwealth's trust and employer financial reporting. The information provided herein will be used for the fiscal year ended June 30, 2021 for the GASB No. 74 disclosures and fiscal year ending June 30, 2022 for the GASB No. 75 disclosures (the Commonwealth has elected to use a measurement date as of the end of the prior fiscal year end for GASB No. 75).

Summary of Results

The key results for the measurement period ended June 30, 2021 are:

- Net OPEB Liability (NOL) is \$16.0 billion, 263.0% of covered employee payroll.
- Plan Fiduciary Net Position (FNP) as a percentage of Total OPEB Liability (TOL), also known as the funded ratio, is 10.7%.

Significant Changes from the Previous Actuarial Valuation

For the June 30, 2021 measurement, there was a decrease in TOL of \$4.2 billion compared to the previous valuation, with the decrease primarily due to the following:

- There was an expected \$1.0 billion increase in TOL due to the passage of time (service cost, interest, actual benefit payments, retiree contributions);
- There was a \$1.4 billion decrease in TOL due to the increase in the discount rate assumption from 2.28% to 2.77%;
- There was a \$0.9 billion decrease in TOL due to other actuarial assumptions, primarily due to the change in mortality projection scale assumption from MP-2016 to MP-2020;
- There was a \$2.9 billion decrease in TOL due to experience over the past year, primarily due to changes in FY22 premium rates.

The effect of these changes on the TOL is summarized in the Actuarial Experience section of the report.

Background and Comments

Overview of Plan

The Commonwealth administers a single employer defined benefit Other Post-Employment Benefit (OPEB) plan. Benefits are managed by the Group Insurance Commission (GIC) and investments are managed by PRIM. The GIC has representation on the Board of Trustees of the State Retirees' Benefits Trust (SRBT).

Under Chapter 32A of the Massachusetts General Laws (MGL) the Commonwealth is required to provide certain health care and life insurance benefits for retired employees of the Commonwealth, housing authorities, redevelopment authorities and certain other governmental agencies. Substantially all of the Commonwealth's employees may become eligible for these benefits upon reaching retirement age if they are eligible for a retirement allowance from the State Employees' Retirement System.

Eligible retirees are required to contribute a specified percentage of the health care/benefit costs based on the date of retirement. Employer and retiree contribution rates are set in MGL.

Funding Policy

In addition to funding the pay-as-you-go cost of the OPEB Plan, the Commonwealth is required by statute to allocate to the SRBT a portion of revenue received under the Master Settlement Agreement with tobacco companies, increasing from 10% in FY14 to 100% by FY23. The percentage of tobacco settlement proceeds to be transferred to the SRBT in FY21 was set at 10% or approximately \$25 million, overriding existing statute. Based on recent contribution history, it is assumed that approximately \$50 million of tobacco settlement proceeds will be transferred to the SRBT in future years, subject to annual evaluation.

The SRBT is set up solely to fund OPEB benefits and the cost to administer those benefits. It can only be revoked when all such health care and other non-pension benefits, current and future, have been paid or defeased. GIC administers benefit payments, while the Trustees are responsible for reviewing the applications of entities that wish to invest their OPEB funds with PRIM. The SRBT is administered by the board of trustees and is reported as an OPEB Trust Fund and does not issue a stand-alone audited financial report.

The SRBT is required statutorily to invest in the PRIT Fund. The SRBT's target asset allocation as of June 30, 2021 is shown in the table below.

Asset Class	Target Allocation
Global Equity	34% - 44%
Core Fixed Income	12% - 18%
Value Added Fixed Income	5% - 11%
Private Equity	11% - 17%
Real Estate	7% - 13%
Timberland	1% - 7%
Portfolio Completion Strategies	7% - 13%
Total	100%

Health Care Reform

The Patient Protection and Affordable Care Act ("PPACA") was signed into law on March 23, 2010. The primary objective of the act is to increase the number of Americans with health insurance coverage. There are several provisions within PPACA with potentially significant short- and long-term cost implications for employers. On December 18, 2015, the Consolidated Appropriations Act, 2016 became law. This legislation delayed the effective date of the high cost plan excise tax from 2018 to 2020 and made it tax deductible. On January 22, 2018, the Federal Register Printing Savings Act further delayed the effective date from 2020 to 2022. The excise tax on "Cadillac Plans" was repealed on December 20, 2019 so there is no longer any liability associated with this tax and it has been removed for purposes of determining the liabilities presented in this report. On December 20, 2019, the health insurance provider fee for calendar years beginning after December 31, 2020 were repealed. The health insurance provider fee remains only for calendar year 2020. In future years, there may continue to be increased cost impact to the extent the health & welfare program experiences increased utilization due to these changes, all of which are assumed to be in place indefinitely.

The provisions of PPACA considered are as follows:

- Prohibiting lifetime and annual limits on the dollar value of coverage for "essential health benefits"
- Increasing the dependent child age limit to age 26
- Elimination of cost sharing for in-network preventive services
- Reflecting manufacturer discounts available to certain Medicare beneficiaries receiving applicable covered Part D drugs (mostly brand) while in the coverage gap
- Out-of-pocket limit includes both medical and Rx expenses.

The impact of applicable provisions was incorporated in the per capita claims costs summarized in the Actuarial Assumptions section of this report.

Actuarial Methods and Assumptions

The Public Employee Retirement Administration Commission (PERAC) performs experience studies of the Commonwealth of Massachusetts State Employees' Retirement System (SERS) periodically to determine reasonable and appropriate economic and demographic assumptions for purposes of valuing the defined benefit pension plan. The most recent SERS experience study covered the years 2006 through 2011 and was published in February 2014. The approved recommendations from that study were used to determine the assumptions for this valuation, where applicable. PERAC last updated the mortality assumption in the January 1, 2017 valuation, to reflect their analysis of post-retirement mortality from 2012 through 2016. PERAC updated the mortality projection scale in the January 1, 2021 MSERS actuarial valuation to MP-2020, reflecting the most current assumption from the Society of Actuaries. The long-term expected rate of return assumption of 7.00% as of June 30, 2021 is based on the assumption adopted by PERAC at the March 10, 2021 meeting for the Commonwealth's pension valuations, which includes SERS. Based on documentation provided by PERAC, the inflation assumption underlying the 7.00% long-term rate of return assumption is 2.50%. In addition, Deloitte reviews actuarial assumptions only applicable to the OPEB Plan outside of the experience study, such as medical trend rates and age-graded medical rates.

One significant assumption where the PERAC recommendations is not applicable to this OPEB Plan is the discount rate. For June 30, 2021, the single discount rate was based on the long-term expected rate of return on SRBT investments of 7.00% and a municipal bond rate of 2.16% (based on the 20-year Bond Buyer GO Index as of the end of June 2021). Based on the stated assumptions and the projection of cash flows, the Plan's Fiduciary Net Position and future contributions were not sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on SRBT investments was applied to projected benefit payments through year 2040 and the municipal bond rate was applied to all remaining future years to determine the Total OPEB Liability. The projection of cash flows used to determine the single discount rate for each fiscal year end assumed that employer

contributions will be made based on the current funding policy for future years. The analysis is provided in the Development of June 30, 2021 Discount Rate section of this report.

The actuarial methods and assumptions are described in the Basis for the Valuation section of this report.

Cash Costs vs. Implicit Rate Subsidy

GASB Nos. 74/75 require that employers recognize the expected claims of the retiree population less the expected contributions by those retirees. This is not necessarily the same determination as the expected cash payments of the employer for retiree health benefits. The difference is that many post-employment health plans (including the Commonwealth's OPEB Plan) charge the same premium rates for all participants in a non-Medicare plan regardless of their age. This single premium rate is called a blended premium rate because it blends the expected claims of both active and retired participants. Retirees are generally older than the average participant in a non-Medicare plan, which means they are expected to generate higher claims than the average participant of the plan; therefore, they are receiving a subsidy even if they pay 100% of the blended premium rate because they would be paying less in premiums than their expected claims costs. This subsidy is referred to as the "Implicit Rate Subsidy".

Another way of considering the Implicit Rate Subsidy is to assume the retirees were removed from a blended plan and, instead, separately rated. In this scenario, the premium rate for the remaining active population would be lower; therefore, the retirees' premium rate is being subsidized by the premiums for active employees. Since the employer generally pays a portion of the premiums for the active employees, this subsidy creates a liability for the employer.

By comparison, the cash costs are the actual dollars paid by the employer to cover a portion or all of the retirees' premium rates. This is sometimes referred to as the "Explicit Rate Subsidy". This is the benefit that is explicitly stated by the Commonwealth that will be paid on behalf of retirees.

GASB Nos. 74/75 Disclosures

GASB Nos. 74/75 requires disclosure of notes to the financial statements and required supplementary information that includes information shown in this section.

Schedule of Changes in Net OPEB Liability

(All dollar amounts are in thousands)

	Discount Rate	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a)-(b)
Measurement Date of June 30, 2020	2.28%	\$ 22,105,511	\$ 1,414,312	\$ 20,691,199
Service Cost		992,669		992,669
Interest		521,143		521,143
Changes In Benefit Terms		-		-
Changes In Assumptions - Discount Rate		(1,390,961)		(1,390,961)
Changes In Assumptions - Others		(906,688)		(906,688)
Differences Between Expected And Actual Experience		(2,926,517)		(2,926,517)
Benefit Payments*		(484,752)	(484,752)	-
Contributions - Employer	\$ 569,989		569,989	(569,989)
Contributions - Employee			-	-
Contributions - Retiree		-	-	-
Other Additions			200	(200)
Administrative Expenses			(247)	247
Net Investment Income				
Expected Investment Earnings	\$ 104,116			
Differences Between Projected And Actual Earnings	<u>307,322</u>			
Total			\$ 411,438	\$ (411,438)
Net Change		\$ (4,195,106)	\$ 496,628	\$ (4,691,734)
Measurement Date of June 30, 2021	2.77%	\$ 17,910,405	\$ 1,910,940	\$ 15,999,465
Measurement Date			June 30, 2021	June 30, 2020
Plan Fiduciary Net Position As A Percentage Of Total OPEB Liability			10.7%	6.4%
Covered Employee Payroll			\$ 6,086,567	\$ 6,608,652
Net OPEB Liability As A Percentage Of Covered Employee Payroll			262.9%	313.1%
Sensitivity of Liability to Changes in Discount Rate			\$ Change	% Change
A One Percentage point change in discount rate would have the following effect on Total OPEB Liability as of June 30, 2021:				
One Percent Increase (3.77%)			\$ (2,422,702)	-14%
One Percent Decrease (1.77%)			\$ 3,007,774	17%
Net OPEB Liability at a One Percentage point change in discount rate as of June 30, 2021 is as follows:				Net OPEB Liability
One Percent Increase (3.77%)				\$ 13,576,763
One Percent Decrease (1.77%)				\$ 19,007,239
Sensitivity of Liability to Changes in Trend Rate			\$ Change	% Change
A One Percentage point change in trend rate would have the following effect on Total OPEB Liability as of June 30, 2021:				
One Percent Increase (8.3% / 5.4% grading to 5.0%)			\$ 3,778,622	21%
One Percent Decrease (6.3% / 3.4% grading to 3.0%)			\$ (2,899,193)	-16%
Net OPEB Liability at a One Percentage point change in trend rate as of June 30, 2021 is as follows:				Net OPEB Liability
One Percent Increase (8.3% / 5.4% grading to 5.0%)				\$ 19,778,087
One Percent Decrease (6.3% / 3.4% grading to 3.0%)				\$ 13,100,272
Key Assumptions			June 30, 2021	June 30, 2020
Discount Rate			2.77%	2.28%
Investment Rate of Return			7.00%	7.15%
Inflation			2.50%	2.50%
Initial Medical Trend Rate			7.3% / 4.4%	6.7% / 4.9%
Ultimate Medical Trend Rate			4.0%	4.0%
Year Ultimate Trend Rate Reached			2075	2075

*Benefit Payments reflect actual claims, including the effect of implicit subsidy, net of retiree contributions.

**Development of OPEB Expense for Fiscal Year Ending June 30, 2022
(Measurement Year June 30, 2021)**

(All dollar amounts are in thousands)

Components of OPEB Expense	Measurement Year Ended 06/30/2021	Measurement Year Ended 06/30/2020
Service Cost	\$ 992,669	\$ 785,689
Interest	521,143	732,808
Expected Investment Earnings	(104,116)	(100,017)
Contributions - Employee	-	-
Administrative Expenses	247	175
Other	(200)	(122)
Changes In Benefit Terms	-	-
Recognition of Deferred Outflows and (Inflows)		
Changes in assumptions	(789,785)	(390,888)
Differences between expected and actual experience	(458,210)	49,866
Differences between expected and actual investment earnings	(53,067)	8,397
OPEB Expense	\$ 108,681	\$ 1,085,908

Assumptions Used to Determine OPEB Expense	Measurement Year Ended 06/30/2021	Measurement Year Ended 06/30/2020
Assumptions as of Measurement Date*	6/30/2020	6/30/2019
Discount Rate	2.28%	3.63%
Investment Rate of Return	7.15%	7.25%
Inflation	2.50%	2.50%
Initial Medical Trend Rate	6.7% / 4.9%	4.5% - 7.5%
Ultimate Medical Trend Rate	4.0%	4.5%
Year Ultimate Trend Rate Reached	2075	2026

*Measurement Date June 30, 2019 information was prepared by the prior plan actuary.

Schedule of Deferred Outflows and Deferred Inflows of Resources*

(All dollar amounts are in thousands)

Measurement Date Established	Initial Amount	Deferred Outflows of Resources as of 06/30/2021	Deferred (Inflows) of Resources as of 06/30/2021**	Initial Years	Remaining Years	Outflows/(Inflows) Recognized in Measurement Year Ended 06/30/2021
Changes In Assumptions						
06/30/2017	\$ (2,393,745)	\$ -	\$ (326,609)	5.79	0.79	\$ (413,427)
06/30/2018	21,504	6,648	-	5.79	1.79	3,714
06/30/2019	(1,935,139)	-	(921,976)	5.73	2.73	(337,721)
06/30/2020	2,050,139	1,337,047	-	5.75	3.75	356,546
06/30/2021	(2,297,649)	-	(1,898,752)	5.76	4.76	(398,897)
Total		\$ 1,343,695	\$ (3,147,337)			\$ (789,785)
Differences Between Expected And Actual Plan Experience						
06/30/2017	\$ (48,616)	\$ -	\$ (6,634)	5.79	0.79	\$ (8,396)
06/30/2018	218,891	67,671	-	5.79	1.79	37,805
06/30/2019	715,192	340,746	-	5.73	2.73	124,815
06/30/2020	(600,057)	-	(391,341)	5.75	3.75	(104,358)
06/30/2021	(2,926,517)	-	(2,418,441)	5.76	4.76	(508,076)
Total		\$ 408,417	\$ (2,816,416)			\$ (458,210)
Net Difference Between Projected And Actual Earnings On Investments						
06/30/2017	\$ (39,995)	\$ -	\$ -	5.00	0.00	\$ (7,999)
06/30/2018	(16,540)	-	(3,308)	5.00	1.00	(3,308)
06/30/2019	21,885	8,754	-	5.00	2.00	4,377
06/30/2020	76,637	45,983	-	5.00	3.00	15,327
06/30/2021	(307,322)	-	(245,858)	5.00	4.00	(61,464)
Total***		\$ 54,737	\$ (249,166)			\$ (53,067)
Contributions subsequent to measurement date****						
TBD						
Balance as of 06/30/2021		\$ 1,806,849	\$ (6,212,919)			\$ (1,301,062)
Deferred Outflows And Deferred (Inflows) Of Resources Will Be Recognized In Expense As Follows:						
Measurement Year Ending:						Outflows/(Inflows)
06/30/2022						\$ (1,204,483)
06/30/2023						(876,651)
06/30/2024						(856,338)
06/30/2025						(779,297)
06/30/2026						(689,301)
Thereafter						-

*Deferred Outflows and Inflows of Resources established on or prior to June 30, 2019 were prepared by the prior plan actuary.

** Deferred (Inflows) should be disclosed as positive numbers in the Annual Financial Report.

*** Per GASB 75 Paragraph 43.b, Deferred outflows of resources and deferred inflows of resources arising from differences between projected and actual OPEB plan investment earnings in different measurement periods should be aggregated and reported as a net deferred outflow of resources related to OPEB or a net deferred inflow or resources related to OPEB. Therefore, a net deferred inflow of \$194,429 is recognized as of June 30, 2021.

**** This will be recognized as a reduction in Net OPEB Liability next year.

Schedule of Net OPEB Liability

(All dollar amounts are in thousands)

Measurement Year Ended	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (c)	Plan Fiduciary Net Position As A Percentage Of Total OPEB Liability (d)	Covered Employee Payroll (e)	Net OPEB Liability As A Percentage Of Covered Employee Payroll (f)
			(a)-(b)	(b)/(a)		(c)/(e)
June 30, 2017	\$18,480,936	\$996,407	\$17,484,529	5.4%	\$5,927,012	295.0%
June 30, 2018	\$19,761,333	\$1,187,569	\$18,573,764	6.0%	\$6,155,194	301.8%
June 30, 2019	\$19,662,106	\$1,368,548	\$18,293,558	7.0%	\$6,354,473	287.9%
June 30, 2020	\$22,105,511	\$1,414,312	\$20,691,199	6.4%	\$6,608,652	313.1%
June 30, 2021	\$17,910,405	\$1,910,940	\$15,999,465	10.7%	\$6,086,567	262.9%

Basis for the Valuation

Plan Participation Summary

The participant data used in the valuation was provided by the Commonwealth as of January 1, 2021. While the participant data was checked for reasonableness, the data was not audited, and the valuation results presented in this report are dependent upon the accuracy of the participant data provided. This section presents a summary of the basic participant information for the active, terminated vested, and retired participants covered under the terms of the Plan.

a. Active Participants		Job Group				Total
		1	2	3	4	
Counts		59,947	1,954	1,948	6,291	70,140
Average Age		48.4	48.8	43.0	41.8	47.6
Average Service		13.1	16.2	16.5	13.2	13.3
b. Terminated Vested - Eligible for Participation						
Counts		3,923				
Average Age		53.3				
		Former	Dependent			
c. Retired Participants		Employees ¹	Spouses			
Counts						
Under Age 65 Non-Medicare		11,638	8,274			
Under Age 65 Medicare		271	262			
Over Age 65 Non-Medicare		4,081	413			
Over Age 65 Medicare		43,414	16,893			
Total Counts ²		59,404	25,842			
Average Age		73.0	68.7			
d. Total Participants ³		133,467				

¹Former employees include 52,247 retirees and disabled participants and 7,157 surviving spouses.

²Retired participants cover 7,220 dependent children in addition to the total counts.

³Total participant count includes active participants, vested terminated participants, and former employees.

Plan Participation Summary (cont.)

Distribution of Service Groups by Age Groups									
Age Group	Retired Participant	Active Participants - Years of Service							Total
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
<25	-	497	1	-	-	-	-	-	498
25-29	-	4,449	794	4	-	-	-	-	5,247
30-34	10	4,252	3,328	499	3	-	-	-	8,082
35-39	34	2,626	2,729	2,000	574	6	-	-	7,935
40-44	73	1,889	1,920	1,732	1,575	527	3	-	7,646
45-49	371	1,468	1,437	1,482	1,505	1,795	438	22	8,147
50-54	1,237	1,415	1,424	1,417	1,597	1,980	1,538	821	10,192
55-59	3,109	1,129	1,266	1,248	1,375	1,581	1,281	2,218	10,098
60-64	7,075	724	1,000	962	1,180	1,188	978	1,778	7,810
65-69	11,417	214	438	447	509	551	388	721	3,268
70+	36,078	39	99	144	194	180	126	435	1,217
Total	59,404	18,702	14,436	9,935	8,512	7,808	4,752	5,995	70,140

Actuarial Experience

Actuarial gains and losses arise from experience different from that assumed, changes in actuarial assumptions and methods, and changes in plan provisions. The following summarizes the changes in the Total OPEB Liability due to these sources from June 30, 2020 to June 30, 2021. Dollar amounts are in thousands.

1. Total OPEB Liability as of June 30, 2020		\$22,105,511
2. Service Cost for year ending June 30, 2021		\$992,669
3. Actual Benefit Payments for the year ended June 30, 2021		(\$484,752)
4. Interest at 2.28% on (1), (2) and (3)		\$521,143
5. Expected Total OPEB Liability as of June 30, 2021 (1) + (2) + (3) + (4)		<u>\$23,134,571</u>
6. (Gain)/Loss		
i. Assumption Changes - Discount Rate was increased from 2.28% to 2.77%	(1,390,961)	
ii. Assumption Changes - Others	(906,688)	
a. Mortality projection scale was updated from MP-2016 to MP-2020	(968,508)	
b. Per capita claims costs for the Medicare HMO plan (Tufts Medicare Preferred plan) was no longer age-graded	(17,512)	
c. Healthcare trend rates were updated to reflect short-term expectations based on a review of the Commonwealth's historical trend rates during fiscal years 2020 and 2021, along with industry surveys, separately for non-Medicare and Medicare benefits	79,332	
iii. Experience	(2,926,517)	
a. Per capita claims costs were updated to reflect lower-than-expected FY22 rates, driven primarily by an increase in expected Pharmacy Benefits Manager rebates	(2,754,597)	
b. Demographic and benefit payments experience	(171,920)	
iv. Total (Gain)/Loss		<u>(5,224,166)</u>
7. Actual Total OPEB Liability as of June 30, 2021 (5) + (6)(iv)		<u>\$17,910,405</u>

OPEB Plan Provisions Summary

This section summarizes overall provisions for the OPEB Plan.

Covered Employees

Commonwealth retirees entitled to a pension or retirement allowance from SERS may continue Basic Life and Health Insurance coverage, and Additional Life Insurance by applying to continue the coverage and continue paying the required premium. Membership in the SERS is mandatory for nearly all state employees who are regularly employed on a part-time (minimum of half-time) or full-time permanent basis. SERS also covers active and retirees who are non-Commonwealth employees.

There are four group classifications in SERS:

Group 1: Officials and general employees including clerical, administrative and technical workers, laborers, mechanics, and all others not otherwise classified

Group 2: Probation officers, court officers, certain correctional positions whose major duties require them to have the care, custody, instruction or supervision of prisoners, and certain positions who provide direct care, custody, instruction, or supervision of persons with mental illness or developmental disabilities

Group 3: State police officers

Group 4: Certain public safety officers and officials, correction officers and certain other correction positions, and parole officers or parole supervisors

Covered Family Members

Spouses and dependents are eligible for subsidized Health Insurance coverage while the retiree is alive. Surviving spouses may elect to remain insured only for Health Insurance coverage until their remarriage or death.

Eligibility

Eligible employees who meet one of the following SERS eligibility criteria are eligible to receive subsidized Basic Life and Health Insurance coverage.

Superannuation Retirement

- An employee hired before April 2, 2012:
 - completion of 20 years of creditable service; or
 - attainment of age 55 if hired prior to 1978 or classified in Group 4; or
 - attainment of age 55 with 10 years of service, if hired after 1978, and classified in Group 1 or 2
- An employee hired on or after April 2, 2012:
 - attainment of age 60 with 10 years of creditable service if classified in Group 1; or
 - attainment of age 55 with 10 years of creditable service if classified in Group 2; or
 - attainment of age 55 if classified in Group 4
- An employee classified in Group 3:
 - completion of 20 years of creditable service; or
 - attainment of age 55

Deferred Vested

Deferred retirees (eligible employees who have at least ten years of full-time creditable service upon termination) retain the right to receive a retirement allowance from SERS so long as they do not withdraw their pension monies from SERS.

OPEB Plan Provisions Summary (cont.)

Disability Retirement

Ordinary Disability: Non-veterans who become totally and permanently disabled by reason of a non-job related condition with at least ten years of creditable service

Accidental Disability: Applies to members who became permanently and totally unable to perform the essential duties of the position as a result of a personal injury sustained or hazard undergone while in the performance of duties. There is no minimum age or service requirement.

Death in Active Service

If a participant dies during active service and had GIC health coverage, their survivor is eligible to continue health coverage.

Retiree Contributions

Eligible retirees and surviving spouses are required to contribute a specified percentage of the health care/benefit costs, as determined by the GIC.

- Retirements on or before July 1, 1994: 10%
- Retirements after July 1, 1994 and on or before October 1, 2009: 15%
- Retirements after October 1, 2009: 20%
- Surviving spouses of deceased retirees, regardless of retirement date: 10%

Changes in OPEB Plan Provisions

None.

GIC Benefits Provisions Summary

This section summarizes the various medical and prescription drug plans, and life insurance coverage offered by the GIC effective July 1, 2021.

Non-Medicare Medical Plans

The following tables list the non-Medicare medical plans and sample 10% retiree contribution rate effective July 1, 2021 offered to retirees and provide the basic benefit provisions.

Medical	Benefit Provisions		Sample 10% Monthly Retiree Contribution Rate
UniCare State Indemnity Plan/Basic with CIC (Comprehensive) <i>Indemnity</i>	Out-of-pocket Maximum Fiscal Year Deductible Primary Care Provider Office Visit Specialist Physician Office Visit Retail Clinic and Urgent Care Center Emergency Room Care	\$5,000 individual, \$10,000 family \$500 individual, \$1,000 family \$20/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$60/visit \$20/visit \$100/visit (waived if admitted)	<u>With CIC</u> Individual: \$174.99 Family: \$390.86 <u>Without CIC</u> Individual: \$114.60 Family: \$253.37
UniCare State Indemnity Plan/PLUS <i>PPO-Type</i>	Out-of-pocket Maximum Fiscal Year Deductible Primary Care Provider Office Visit Specialist Physician Office Visit Retail Clinic and Urgent Care Center Emergency Room Care	\$5,000 individual, \$10,000 family \$500 individual, \$1,000 family Centered Care PCPs: \$15/visit Other PCPs: \$20/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit \$20/visit \$100/visit (waived if admitted)	Individual: \$78.57 Family: \$186.66
Tufts Health Plan Navigator <i>POS</i>	Out-of-pocket Maximum Fiscal Year Deductible Primary Care Provider Office Visit Specialist Physician Office Visit Retail Clinic and Urgent Care Center Emergency Room Care	\$5,000 individual, \$10,000 family \$500 individual, \$1,000 family Tier 1: \$10/visit Tier 2: \$20/visit Tier 3: \$40/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit \$20/visit \$100/visit (waived if admitted)	Individual: \$84.01 Family: \$204.52

GIC Benefits Provisions Summary (cont.)

Medical	Benefit Provisions	Sample 10% Monthly Retiree Contribution Rate
Fallon Health Select Care <i>HMO</i>	Out-of-pocket Maximum \$5,000 individual, \$10,000 family Fiscal Year Deductible \$500 individual, \$1,000 family Primary Care Provider Office Visit \$20/visit Specialist Physician Office Visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit Retail Clinic and Urgent Care Center \$20/visit Emergency Room Care \$100/visit (waived if admitted)	Individual: \$86.64 Family: \$209.97
Harvard Pilgrim Independence Plan <i>POS</i>	Out-of-pocket Maximum \$5,000 individual, \$10,000 family Fiscal Year Deductible \$500 individual, \$1,000 family Primary Care Provider Office Visit Tier 1: \$10/visit Tier 2: \$20/visit Tier 3: \$40/visit Specialist Physician Office Visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit Retail Clinic and Urgent Care Center Retail Clinic: \$10/visit Urgent Care: \$20/visit Emergency Room Care \$100/visit (waived if admitted)	Individual: \$96.73 Family: \$235.43
Health New England <i>HMO</i>	Out-of-pocket Maximum \$5,000 individual, \$10,000 family Fiscal Year Deductible \$400 individual, \$800 family Primary Care Provider Office Visit \$20/visit Specialist Physician Office Visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: N/A Retail Clinic and Urgent Care Center \$20/visit Emergency Room Care \$100/visit (waived if admitted)	Individual: \$63.45 Family: \$150.56
AllWays Health Partners Complete HMO <i>HMO</i>	Out-of-pocket Maximum \$5,000 individual, \$10,000 family Fiscal Year Deductible \$500 individual, \$1,000 family Primary Care Provider Office Visit \$20/visit Specialist Physician Office Visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: N/A Retail Clinic and Urgent Care Center \$20/visit Emergency Room Care \$100/visit (waived if admitted)	Individual: \$77.17 Family: \$200.51

GIC Benefits Provisions Summary (cont.)

Medical	Benefit Provisions		Sample 10% Monthly Retiree Contribution Rate
UniCare State Indemnity Plan/Community Choice <i>PPO-Type</i>	Out-of-pocket Maximum Fiscal Year Deductible Primary Care Provider Office Visit Specialist Physician Office Visit Retail Clinic and Urgent Care Center Emergency Room Care	\$5,000 individual, \$10,000 family \$400 individual, \$800 family Centered Care PCPs: \$15/visit Other PCPs: \$20/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit \$20/visit \$100/visit (waived if admitted)	Individual: \$59.82 Family: \$147.71
Tufts Health Plan Spirit <i>EPO (HMO-Type)</i>	Out-of-pocket Maximum Fiscal Year Deductible Primary Care Provider Office Visit Specialist Physician Office Visit Retail Clinic and Urgent Care Center Emergency Room Care	\$5,000 individual, \$10,000 family \$400 individual, \$800 family \$20/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit \$20/visit \$100/visit (waived if admitted)	Individual: \$64.29 Family: \$154.29
Fallon Health Direct Care <i>HMO</i>	Out-of-pocket Maximum Fiscal Year Deductible Primary Care Provider Office Visit Specialist Physician Office Visit Retail Clinic and Urgent Care Center Emergency Room Care	\$5,000 individual, \$10,000 family \$400 individual, \$800 family \$15/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit \$15/visit \$100/visit (waived if admitted)	Individual: \$64.17 Family: \$161.25
Harvard Pilgrim Primary Choice Plan <i>HMO</i>	Out-of-pocket Maximum Fiscal Year Deductible Primary Care Provider Office Visit Specialist Physician Office Visit Retail Clinic and Urgent Care Center Emergency Room Care	\$5,000 individual, \$10,000 family \$400 individual, \$800 family \$20/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: N/A \$20/visit \$100/visit (waived if admitted)	Individual: \$70.19 Family: \$178.21

GIC Benefits Provisions Summary (cont.)

Medicare Medical Plans

The following tables list the Medicare medical plans and sample 10% retiree contribution rate effective July 1, 2021 offered to retirees and provide the basic benefit provisions.

Medical	Benefit Provisions		Sample 10% Monthly Retiree Contribution Rate
Tufts Health Plan Medicare Preferred <i>HMO</i>	Calendar Year Deductible Physician's Office Visit (except behavioral health) Retail Clinic Emergency Room Care (includes out-of-area)	None \$15/visit \$15/visit \$50/visit (waived if admitted)	\$33.79 per person
Tufts Health Plan Medicare Complement <i>Indemnity</i>	Calendar Year Deductible Physician's Office Visit (except behavioral health) Retail Clinic Emergency Room Care (includes out-of-area)	None \$15/visit \$15/visit \$50/visit (waived if admitted)	\$39.76 per person
Harvard Pilgrim Medicare Enhance <i>Indemnity</i>	Calendar Year Deductible Physician's Office Visit (except behavioral health) Retail Clinic Emergency Room Care (includes out-of-area)	None \$15/visit \$15/visit \$50/visit (waived if admitted)	\$41.84 per person
Health New England Medicare Supplement Plus Indemnity	Calendar Year Deductible Physician's Office Visit (except behavioral health) Retail Clinic Emergency Room Care (includes out-of-area)	None \$15/visit \$15/visit \$50/visit (waived if admitted)	\$41.91 per person
UniCare State Indemnity Plan Medicare Extension (OME) with CIC (Comprehensive) Indemnity	Calendar Year Deductible Physician's Office Visit (except behavioral health) Retail Clinic Emergency Room Care (includes out-of-area) Without CIC, deductibles are higher and coverage is only 80% for some services.	None \$10/visit \$10/visit \$50/visit (waived if admitted)	With CIC \$51.89 per person Without CIC \$40.21 per person

GIC Benefits Provisions Summary (cont.)

Prescription Drug

Prescription Drug Deductible: \$100 for individual coverage and \$200 for family coverage, separate from the health plan deductible. Once the prescription drug deductible is reached, covered prescriptions are subject to a copay.

The co-payments for all prescriptions covered by the plan are:

Retail (30-day supply): \$10 Tier 1 / \$30 Tier 2 / \$65 Tier 3

Mail Order Maintenance Drugs (90-day supply): \$25 Tier 1 / \$75 Tier 2 / \$165 Tier 3

Life Insurance

\$5,000 in basic life insurance coverage.

Sample 10% retiree contribution rate: \$0.64/month

Changes in GIC Benefits Provisions

None.

Actuarial Methods

Actuarial Cost Method

The Actuarial Cost Method used to determine the Total OPEB Liability is the Entry Age Normal (EAN) method as prescribed by GASB Nos. 74/75. This method is in the family of future benefit cost methods, which requires an estimate of the projected benefit payable at retirement to determine costs and liabilities.

The Normal Cost (or Service Cost) is the annual allocation required for each participant from entry date to the assumed retirement date so that the accumulated allocation at retirement is equal to the liability for the projected benefit. The projected benefits are based on estimates of future years of service and projected health benefit costs. The normal cost is developed as a level percent of compensation as prescribed by GASB Nos. 74/75.

The Present Value of Future Benefits is equal to the value of the projected benefit payable at retirement discounted back to the participant's current age. Discounts include such items as interest and mortality. The present value of future normal cost allocations is equal to the discounted value of the normal costs allocated from the participant's current age to retirement age.

The difference between the Present Value of Future Benefits and the Present Value of Future Normal Cost allocations represents the Total OPEB Liability at the participant's current age.

The Total OPEB Liability for participants currently receiving payments is calculated as the actuarial present value of future benefits expected to be paid. No normal cost is allocated for these participants.

Financial and Census Data

The Commonwealth of Massachusetts provided the participant data, financial information and plan descriptions used in this valuation. The actuary has checked the data for reasonableness but has not independently audited the data. The actuary has no reason to believe the data is not complete and accurate and knows of no further information that is essential to the preparation of the actuarial valuation.

Plan Fiduciary Net Position

Market Value of Assets as of the measurement date.

Census Date

January 1, 2021.

Measurement Date

June 30, 2021.

Method Changes Since Prior Valuation

None.

Actuarial Assumptions

Economic Assumptions

The economic assumptions were selected for consistency with SERS where applicable. The discount rate was selected based on the requirements prescribed in GASB Nos. 74/75.

Discount Rate	2.77% (2.28% in 2020)																																																								
Long-Term Expected Rate of Return ¹	7.00% (7.15% in 2020)																																																								
Inflation ¹	2.50%																																																								
Payroll Growth ¹	4.00%																																																								
Salary Scale ¹	<p>Percent of salary increases each year is based on Group classifications and years of service.</p> <table><tr><th colspan="4">Salary Increases (%)</th></tr><tr><th>Service</th><th>Groups 1 and 2</th><th>Group 3</th><th>Group 4</th></tr><tr><td>0</td><td>7.00</td><td>7.00</td><td>9.00</td></tr><tr><td>1</td><td>6.50</td><td>7.00</td><td>8.00</td></tr><tr><td>2</td><td>6.00</td><td>7.00</td><td>7.50</td></tr><tr><td>3</td><td>5.50</td><td>7.00</td><td>7.00</td></tr><tr><td>4</td><td>5.50</td><td>6.75</td><td>6.75</td></tr><tr><td>5</td><td>5.25</td><td>6.25</td><td>6.25</td></tr><tr><td>6</td><td>5.00</td><td>5.25</td><td>5.75</td></tr><tr><td>7</td><td>4.75</td><td>4.75</td><td>5.25</td></tr><tr><td>8-12</td><td>4.75</td><td>4.75</td><td>4.75</td></tr><tr><td>13-15</td><td>4.50</td><td>4.75</td><td>4.75</td></tr><tr><td>16-19</td><td>4.25</td><td>4.75</td><td>4.75</td></tr><tr><td>20+</td><td>4.00</td><td>4.50</td><td>4.50</td></tr></table>	Salary Increases (%)				Service	Groups 1 and 2	Group 3	Group 4	0	7.00	7.00	9.00	1	6.50	7.00	8.00	2	6.00	7.00	7.50	3	5.50	7.00	7.00	4	5.50	6.75	6.75	5	5.25	6.25	6.25	6	5.00	5.25	5.75	7	4.75	4.75	5.25	8-12	4.75	4.75	4.75	13-15	4.50	4.75	4.75	16-19	4.25	4.75	4.75	20+	4.00	4.50	4.50
Salary Increases (%)																																																									
Service	Groups 1 and 2	Group 3	Group 4																																																						
0	7.00	7.00	9.00																																																						
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16-19	4.25	4.75	4.75																																																						
20+	4.00	4.50	4.50																																																						

¹ For consistency with the pension plan of which these participants are members, these assumptions are based on those used for the SERS Actuarial Valuation Report as of January 1, 2021 and experience study issued in 2014.

Actuarial Assumptions (cont.)

Demographic Assumptions

The demographic assumptions were selected for consistency with SERS where applicable. The retiree health specific assumptions were selected based on recent experience.

Mortality ¹	<p>Pre-Retirement Mortality:</p> <p>RP-2014 Blue Collar Employees table projected generationally with Scale MP-2020 set forward 1 year for females.</p> <p>Post-Retirement Mortality:</p> <p>RP-2014 Blue Collar Healthy Annuitant table projected generationally with Scale MP-2020 set forward 1 year for females. For disabled retirees, table is set forward 1 year.</p>																																													
Disability Incidence ¹	<p>Percent of employees expected to become disabled each year is based on Group classifications and age.</p> <table><tr><th colspan="5">Sample Disability Rates (%)</th></tr><tr><th>Age</th><th>Group 1</th><th>Group 2</th><th>Group 3</th><th>Group 4</th></tr><tr><td>25</td><td>0.01</td><td>0.062</td><td>0.11</td><td>0.20</td></tr><tr><td>30</td><td>0.01</td><td>0.072</td><td>0.16</td><td>0.21</td></tr><tr><td>35</td><td>0.034</td><td>0.10</td><td>0.23</td><td>0.40</td></tr><tr><td>40</td><td>0.068</td><td>0.21</td><td>0.36</td><td>0.71</td></tr><tr><td>45</td><td>0.10</td><td>0.30</td><td>0.58</td><td>1.00</td></tr><tr><td>50</td><td>0.133</td><td>0.42</td><td>0.94</td><td>1.10</td></tr><tr><td>55</td><td>0.14</td><td>0.50</td><td>1.90</td><td>0.80</td></tr></table>	Sample Disability Rates (%)					Age	Group 1	Group 2	Group 3	Group 4	25	0.01	0.062	0.11	0.20	30	0.01	0.072	0.16	0.21	35	0.034	0.10	0.23	0.40	40	0.068	0.21	0.36	0.71	45	0.10	0.30	0.58	1.00	50	0.133	0.42	0.94	1.10	55	0.14	0.50	1.90	0.80
Sample Disability Rates (%)																																														
Age	Group 1	Group 2	Group 3	Group 4																																										
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¹ For consistency with the pension plan of which these participants are members, these assumptions are based on those used for the SERS Actuarial Valuation Report as of January 1, 2021 and experience study issued in 2014.

Actuarial Assumptions (cont.)

Withdrawal¹

Percent of employees expected to terminate each year is based on Group classifications, age and years of service. No withdrawal is assumed after a member is first assumed to retire.

Sample Withdrawal Rates (%)

Age	Group 1 and 2										
	Years of Service										
	0	1	2	3	4	5	6	7	8	9	10+
20	27.0	25.0	22.0	15.0	15.0	12.0	9.0	8.0	8.0	6.0	4.5
25	25.0	22.0	19.0	14.0	13.0	11.0	9.0	8.0	8.0	6.0	4.5
30	23.0	18.0	15.0	13.0	12.0	10.0	9.0	8.0	5.5	5.5	4.5
35	18.0	14.0	13.0	12.0	11.0	9.0	8.0	6.5	5.0	5.0	3.3
40	16.0	12.0	11.0	9.5	9.0	8.0	7.0	6.0	4.5	3.5	3.0
45	15.0	10.0	8.5	8.0	7.0	7.0	5.5	5.0	4.0	3.5	3.0
50	18.0	9.0	8.0	7.0	6.5	6.0	5.0	5.0	3.5	3.0	3.0
55	18.0	10.0	8.0	6.0	6.0	5.0	4.0	4.0	3.0	2.5	0.0*
60	18.0	10.0	8.0	7.5	7.5	5.0	5.0	3.5	3.5	3.5	0.0
65+	25.0	15.0	15.0	15.0	15.0	12.0	10.0	10.0	8.0	7.0	0.0

* For members hired on or after April 2, 2012, probability of withdrawal is 3.0% for ages 55 to 59 with 10+ years of service.

Group	All Ages				
	Years of Service				
	1	5	10	15	20+
3	0.7	0.7	0.5	0.5	0.5
4	9.0	6.0	3.5	2.0	1.5

Retirement¹

Percent of employees expected to retire each year is based on Group classifications, age and years of service.

Sample Retirement Rates (%)

Age	Group 1		Group 2		Group 3		Group 4	
	Male	Female	Male	Female	Male	Female	Male	Female
50*	3.0	3.0	2.0	2.0	5.0	5.0	6.0	6.0
55*	3.5	5.0	7.5	7.5	10.0	10.0	25.0	25.0
60	9.0	7.5	15.0	15.0	14.0	14.0	20.0	20.0
65	20.0	20.0	20.0	20.0	25.0	25.0	50.0	50.0
70	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* For Group 1 and 2 members hired on or after April 2, 2012, probability of retirement is 0% until retirement eligibility.

¹ For consistency with the pension plan of which these participants are members, these assumptions are based on those used for the SERS Actuarial Valuation Report as of January 1, 2021 and experience study issued in 2014.

Actuarial Assumptions (cont.)

Spouse Age Difference ¹	Females are assumed to be 3 years younger than males. For all retired participants, spouse age is based on actual data.												
Proportion of Retirees Covering a Spouse	60% of active employees are assumed to cover an adult member at retirement. Retirees are assumed to continue their current coverage status (Individual/Family coverage).												
Participation Rate	100% of employees currently electing healthcare coverage are assumed to elect coverage at retirement. In addition, 35% of employees currently opting out of active employee health coverage are assumed to elect to enroll in retiree coverage. An 8% load was applied to the active liability to estimate the impact of this population. This assumption is based on the percentage of actives and retirees in the OPEB plan vs. SERS and assumes SERS and the OPEB plan have an exact overlap of participant eligibility. 85% of current and future vested terminated participants will elect health care benefits at age 55 or, if later, the participant's current age. Retirees who currently elect to waive their coverage are assumed to remain uncovered in the future.												
Surviving Spouse Continuing Coverage	100% of spouses are assumed to elect to continue coverage after the retiree's death.												
Health Plan Election	<p>Current non-Medicare eligible retirees and spouses (if covered) under age 65 who are in a POS/PPO plan are assumed to move to an Indemnity plan if they are Medicare eligible at 65. All others are assumed to remain in their currently elected product type (Indemnity/POS/PPO/HMO).</p> <p>Future retirees are assumed to enroll in the existing plans in the same proportion as the current retiree mix, as shown in the table below. These proportions are established separately for non-Medicare and Medicare coverage for each product type.</p> <table><tr><td></td><td>Under 65</td><td>Age 65+</td></tr><tr><td>Indemnity</td><td>28%</td><td>96%</td></tr><tr><td>POS/PPO</td><td>60%</td><td>0%</td></tr><tr><td>HMO</td><td>12%</td><td>4%</td></tr></table>		Under 65	Age 65+	Indemnity	28%	96%	POS/PPO	60%	0%	HMO	12%	4%
	Under 65	Age 65+											
Indemnity	28%	96%											
POS/PPO	60%	0%											
HMO	12%	4%											
Medicare Eligibility	<p>Current non-Medicare eligible retirees and spouses (if covered) over age 65 are assumed to remain non-Medicare eligible.</p> <p>Current Medicare eligible retirees and spouses (if covered) under age 65 are assumed to remain Medicare eligible.</p> <p>All other retirees and spouses (if covered) are assumed to be non-Medicare eligible prior to age 65 and Medicare eligible at age 65, unless their spouse is over age 65 and non-Medicare eligible.</p>												

¹ For consistency with the pension plan of which these participants are members, these assumptions are based on those used for the SERS Actuarial Valuation Report as of January 1, 2021 and experience study issued in 2014.

Actuarial Assumptions (cont.)

Benefit Assumptions

Per Capita Claims Costs

The per capita claims costs used in the valuation were developed from the Fiscal Year 2022 premiums which represents the expected claims costs and administrative expenses effective July 1, 2021. The Fiscal Year 2022 premiums appropriately reflect any COVID-19 effect and therefore were not adjusted. Adjustments were made to offset cross-subsidizations between products and coverage tiers.

The first-year per capita claims costs below are on a “net basis” – they reflect plan costs after reduction from the total benefit costs of the member cost-sharing (deductibles, coinsurance, co-pays, provider savings, Medicare, etc.). These claims were blended based on the current enrollment mix by plan (see Health Plan Election section above), separately for the non-Medicare eligible and Medicare eligible population, resulting in an average claims cost per member.

Age-graded claims were developed to project the increases in costs related to aging for retirees, spouses, and surviving spouses. Average claims costs associated with the Medicare Indemnity and Non-Medicare plans were age-graded using the retiree age and gender distribution. The aging factors are based on the Society of Actuaries age-curve study “Health Care Costs—From Birth to Death.” The Medicare Advantage HMO Plan was not age-graded as “the age-independent cost curve created by federal subsidies supports the practice of not age-rating the premiums for these individual or group MA, MA-PD, or stand-alone Medicare Part D drug plans.”* These claims costs are the basis for projecting the gross cost for each individual, before member contributions for coverage. Future year per capita costs were projected by applying trend assumptions to the first-year costs.

2021 Annual Per Capita Claims Costs					
Age	Non-Medicare Indemnity	Non-Medicare PPO	Non-Medicare HMO	Medicare Indemnity	Medicare HMO
45	\$ 7,178	\$ 6,791	\$ 6,353	\$ 3,234	\$ 3,453
50	8,749	8,278	7,744	3,234	3,453
55	10,739	10,160	9,505	3,234	3,453
60	13,121	12,413	11,613	3,234	3,453
65	16,393	15,509	14,510	3,234	3,453
70	19,694	18,632	17,431	3,574	3,453
75	23,322	22,064	20,642	3,856	3,453
80	27,102	25,641	23,988	4,064	3,453
85	30,816	29,155	27,275	4,163	3,453
90	34,112	32,273	30,192	4,154	3,453
95	35,970	34,030	31,837	4,033	3,453

* Actuarial Standard of Practice (ASOP) No. 6 Practice Note: Development of Age-Specific Retiree Health Cost Assumptions, Including Applications to Pooled and Non-Pooled Health Plans (www.actuary.org/sites/default/files/2021-03/ASOP_No_6_Practice_Note.pdf).

Expenses

Per Capita Claims Costs were developed to include administrative expenses.

Actuarial Assumptions (cont.)

Trend Rates	<p>The trend rates illustrated below are used to project age-graded claims and flat rates into future years. Trend rates were developed based on the most recently published SOA-Getzen trend rate model, version 2021_b. The short-term trend assumptions were based on a review of the Commonwealth's historical trend rates during fiscal years 2020 and 2021, along with industry surveys, separately for non-Medicare and Medicare benefits. The industry surveys were used to predict short-term future per capita cost increases. The most recently published SOA-Getzen model was then used to determine the trend rates beginning in 2022 and thereafter, based on the plan's long-term inflation assumption and reasonable macro-economic assumptions for the growth of health care expenditures during this period relative to the general economy.</p> <table><tr><th>Year</th><th>Medicare Benefits</th><th>Non-Medicare Benefits</th></tr><tr><td>2021</td><td>4.40%</td><td>7.30%</td></tr><tr><td>2022</td><td>4.49%</td><td>7.06%</td></tr><tr><td>2023</td><td>4.57%</td><td>6.83%</td></tr><tr><td>2024</td><td>4.66%</td><td>6.59%</td></tr><tr><td>2025</td><td>4.75%</td><td>6.36%</td></tr><tr><td>2030</td><td colspan="2">5.18%</td></tr><tr><td>2040</td><td colspan="2">5.18%</td></tr><tr><td>2050</td><td colspan="2">5.18%</td></tr><tr><td>2060</td><td colspan="2">4.83%</td></tr><tr><td>2070</td><td colspan="2">4.38%</td></tr><tr><td>2075+</td><td colspan="2">4.04%</td></tr></table> <p>Getzen long run growth factors assumptions:</p> <ul style="list-style-type: none">• Inflation: 2.5%• Real GDP Growth: 1.5%• Excess Medical Growth: 1.1%	Year	Medicare Benefits	Non-Medicare Benefits	2021	4.40%	7.30%	2022	4.49%	7.06%	2023	4.57%	6.83%	2024	4.66%	6.59%	2025	4.75%	6.36%	2030	5.18%		2040	5.18%		2050	5.18%		2060	4.83%		2070	4.38%		2075+	4.04%	
Year	Medicare Benefits	Non-Medicare Benefits																																			
2021	4.40%	7.30%																																			
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2070	4.38%																																				
2075+	4.04%																																				
Model Use	<p>Actuarial Standard of Practice No. 56 – Modeling requires disclosure of certain information regarding the actuary's use of models when issuing actuarial reports for work performed on or after October 1, 2020. For this valuation, the liability calculations were determined using industry-leading defined benefit valuation software developed and maintained by a third-party vendor. The model was designed specifically for the measurement of defined benefit pension and postretirement medical plan liabilities and the actuary has updated the applicable parameters for the specific plan provisions and assumptions selected for this valuation.</p> <p>The medical inflation trend rate assumptions were set using the Getzen Model of Long-Run Medical Cost Trends ("Getzen Model"), which adds transparency to the economic assumptions behind medical and prescription drug trends. The Getzen Model is an excel based projection of expected growth rates in medical premiums and expenditures from 2025 to 2100. Development of the model was sponsored by the Society of Actuaries, and it is used primarily in the estimation of reportable liabilities for retiree health benefits in accordance with FASB and GASB standards. It projects medical care cost increases and the health share of GDP for the next 80 years using linked formulas and assumptions developed by the author, Professor Thomas Getzen, with the assistance of a Society of Actuaries project oversight group.</p>																																				
Changes in Assumptions	<p>Please see the Actuarial Experience section of this report for the changes and their impacts.</p>																																				

Rationale for Assumptions

Discount Rate	The single discount rate was based on the long-term expected rate of return on SRBT investments of 7.00% and a municipal bond rate of 2.16% (based on the 20-year Bond Buyer GO Index as of the end of June 2021). Based on the stated assumptions and the projection of cash flows, the Plan's Fiduciary Net Position and future contributions were not sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on SRBT investments was applied to projected benefit payments through year 2040 and the municipal bond rate was applied to all remaining future years to determine the Total OPEB Liability. The projection of cash flows used to determine the single discount rate for each fiscal year end assumed that employer contributions will be made based on the current funding policy for future years.
Long-Term Expected Rate of Return, Inflation, Payroll Growth, Salary Scale, Mortality, Disability Incidence, Withdrawal, Retirement and Spouse Age Difference	Consistent with the assumptions used for the SERS Actuarial Valuation Report as of January 1, 2021 and experience study issued in 2014.
Proportion of Retirees Covering a Spouse	This assumption is based on the experience of the retiree population in the last four years. Due to the level of benefits, employees in this program are not expected to change their behavior upon retirement.
Participation Rate – Employees	This assumption is based on the percentage of actives and retirees in the OPEB plan vs. SERS and assumes SERS and OPEB have an exact overlap of participant eligibility.

Development of June 30, 2021 Discount Rate

Projection of Contributions

(All dollar amounts are in thousands)

Year Ending June 30	Total Employer Contributions	Contributions Related to Service Cost of Future Employees*	Employer Contributions for Current Participants
	(a)	(b)	(c) = (a)-(b)
2022	576,927	25,059	551,868
2023	612,335	47,153	565,182
2024	649,518	71,887	577,631
2025	687,143	94,548	592,595
2026	724,388	116,484	607,904
2027	761,513	138,680	622,833
2028	798,799	163,706	635,093
2029	834,729	192,684	642,045
2030	869,115	218,132	650,983
2031	903,259	243,413	659,846
2032	936,544	270,126	666,418
2033	968,117	301,004	667,113
2034	997,279	333,739	663,540
2035	1,024,572	363,774	660,798
2036	1,050,373	393,822	656,551
2037	1,075,800	425,446	650,354
2038	1,102,433	461,169	641,264
2039	1,130,665	498,679	631,986
2040	1,160,607	534,251	626,356
2041	1,191,047	570,828	620,219
2042	1,220,730	608,156	612,574
2043	1,250,099	649,637	600,462
2044	1,280,310	693,301	587,009
2045	1,308,846	735,662	573,184
2046	1,335,063	779,164	555,899
2047	1,358,250	823,996	534,254
2048	1,377,762	871,898	505,864
2049	1,392,899	923,885	469,014
2050	1,398,729	973,998	424,731
2051	1,395,965	1,025,683	370,282

* Determined using an open group valuation assuming a level population.

Development of June 30, 2021 Discount Rate (cont.)

Projection of Fiduciary Net Position

(All dollar amounts are in thousands)

Year Ending June 30	Beginning Fiduciary Net Position	Employer Contributions for Current Participants	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.0%	Ending Fiduciary Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2022	1,910,940	551,868	526,927	247	132,895	2,068,529
2023	2,068,529	565,182	562,335	253	143,166	2,214,289
2024	2,214,289	577,631	599,518	239	152,519	2,344,682
2025	2,344,682	592,595	637,143	209	160,867	2,460,792
2026	2,460,792	607,904	674,388	169	168,242	2,562,381
2027	2,562,381	622,833	711,513	127	174,591	2,648,165
2028	2,648,165	635,093	748,799	89	179,736	2,714,106
2029	2,714,106	642,045	784,729	59	183,355	2,754,718
2030	2,754,718	650,983	819,115	36	185,324	2,771,874
2031	2,771,874	659,846	853,259	20	185,655	2,764,096
2032	2,764,096	666,418	886,544	10	184,192	2,728,152
2033	2,728,152	667,113	918,117	5	180,614	2,657,757
2034	2,657,757	663,540	947,279	2	174,560	2,548,576
2035	2,548,576	660,798	974,572	1	165,883	2,400,684
2036	2,400,684	656,551	1,000,373	-	154,497	2,211,359
2037	2,211,359	650,354	1,025,800	-	140,156	1,976,069
2038	1,976,069	641,264	1,052,433	-	122,457	1,687,357
2039	1,687,357	631,986	1,080,665	-	100,956	1,339,634
2040	1,339,634	626,356	1,110,607	-	75,392	930,775
2041	930,775	620,219	1,141,047	-	45,513	455,460
2042	455,460	612,574	1,170,730	-	10,957	-
2043	-	600,462	1,200,099	-	-	-
2044	-	587,009	1,230,310	-	-	-
2045	-	573,184	1,258,846	-	-	-
2046	-	555,899	1,285,063	-	-	-
2047	-	534,254	1,308,250	-	-	-
2048	-	505,864	1,327,762	-	-	-
2049	-	469,014	1,342,899	-	-	-
2050	-	424,731	1,348,729	-	-	-
2051	-	370,282	1,345,965	-	-	-

Development of June 30, 2021 Discount Rate (cont.)

Development of the Single Discount Rate

(All dollar amounts are in thousands)

Year Ending June 30	Beginning Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments at 7.0%	Present Value of Unfunded Benefit Payments at 2.16%	Present Value of Benefit Payments Using the Single Discount Rate of 2.77%
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
2022	1,910,940	526,927	526,927	-	509,400	-	519,781
2023	2,068,529	562,335	562,335	-	508,065	-	539,764
2024	2,214,289	599,518	599,518	-	506,224	-	559,951
2025	2,344,682	637,143	637,143	-	502,798	-	579,061
2026	2,460,792	674,388	674,388	-	497,374	-	596,398
2027	2,562,381	711,513	711,513	-	490,425	-	612,278
2028	2,648,164	748,799	748,799	-	482,359	-	627,003
2029	2,714,105	784,729	784,729	-	472,434	-	639,386
2030	2,754,718	819,115	819,115	-	460,875	-	649,423
2031	2,771,874	853,259	853,259	-	448,678	-	658,268
2032	2,764,096	886,544	886,544	-	435,683	-	665,520
2033	2,728,152	918,117	918,117	-	421,682	-	670,654
2034	2,657,757	947,279	947,279	-	406,612	-	673,313
2035	2,548,575	974,572	974,572	-	390,961	-	674,051
2036	2,400,684	1,000,373	1,000,373	-	375,057	-	673,255
2037	2,211,359	1,025,800	1,025,800	-	359,430	-	671,769
2038	1,976,069	1,052,433	1,052,433	-	344,637	-	670,642
2039	1,687,357	1,080,665	1,080,665	-	330,731	-	670,079
2040	1,339,634	1,110,607	1,110,607	-	317,658	-	670,092
2041	930,775	1,141,047	-	1,141,047	-	752,188	669,911
2042	455,460	1,170,730	-	1,170,730	-	755,437	668,820
2043	-	1,200,099	-	1,200,099	-	758,015	667,127
2044	-	1,230,310	-	1,230,310	-	760,667	665,496
2045	-	1,258,846	-	1,258,846	-	761,854	662,586
2046	-	1,285,063	-	1,285,063	-	761,277	658,163
2047	-	1,308,250	-	1,308,250	-	758,627	651,987
2048	-	1,327,762	-	1,327,762	-	753,662	643,884
2049	-	1,342,899	-	1,342,899	-	746,138	633,680
2050	-	1,348,729	-	1,348,729	-	733,533	619,285
2051	-	1,345,965	-	1,345,965	-	716,552	601,366
2052	-	1,334,859	-	1,334,859	-	695,614	580,336
2053	-	1,315,252	-	1,315,252	-	670,905	556,407
2054	-	1,289,982	-	1,289,982	-	644,103	531,014
2055	-	1,258,047	-	1,258,047	-	614,875	503,916
2056	-	1,220,364	-	1,220,364	-	583,847	475,653
2057	-	1,180,915	-	1,180,915	-	553,028	447,877
2058	-	1,140,136	-	1,140,136	-	522,642	420,761
2059	-	1,097,592	-	1,097,592	-	492,502	394,148
2060	-	1,058,908	-	1,058,908	-	465,098	370,012
2061	-	1,028,593	-	1,028,593	-	442,230	349,736

Development of June 30, 2021 Discount Rate (cont.)

Development of the Single Discount Rate

(All dollar amounts are in thousands)

Year Ending June 30	Beginning Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments at 7.0%	Present Value of Unfunded Benefit Payments at 2.16%	Present Value of Benefit Payments Using the Single Discount Rate of 2.77%
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
2062	-	1,002,869	-	1,002,869	-	422,055	331,803
2063	-	980,053	-	980,053	-	403,732	315,518
2064	-	961,417	-	961,417	-	387,681	301,180
2065	-	944,131	-	944,131	-	372,661	287,796
2066	-	926,103	-	926,103	-	357,816	274,696
2067	-	906,987	-	906,987	-	343,021	261,778
2068	-	886,146	-	886,146	-	328,053	248,872
2069	-	863,207	-	863,207	-	312,805	235,898
2070	-	838,232	-	838,232	-	297,332	222,902
2071	-	811,277	-	811,277	-	281,686	209,922
2072	-	782,319	-	782,319	-	265,888	196,975
2073	-	751,384	-	751,384	-	249,975	184,089
2074	-	718,531	-	718,531	-	233,991	171,297
2075	-	683,853	-	683,853	-	217,989	158,638
2076	-	647,517	-	647,517	-	202,043	146,162
2077	-	609,903	-	609,903	-	186,282	133,963
2078	-	571,362	-	571,362	-	170,821	122,116
2079	-	532,099	-	532,099	-	155,719	110,661
2080	-	492,358	-	492,358	-	141,042	99,637
2081	-	452,420	-	452,420	-	126,861	89,088
2082	-	412,600	-	412,600	-	113,249	79,058
2083	-	373,241	-	373,241	-	100,280	69,590
2084	-	334,713	-	334,713	-	88,027	60,725
2085	-	297,382	-	297,382	-	76,556	52,499
2086	-	261,607	-	261,607	-	65,922	44,939
2087	-	227,734	-	227,734	-	56,173	38,066
2088	-	196,061	-	196,061	-	47,338	31,889
2089	-	166,845	-	166,845	-	39,433	26,406
2090	-	140,277	-	140,277	-	32,452	21,603
2091	-	116,461	-	116,461	-	26,373	17,452
2092	-	95,433	-	95,433	-	21,154	13,916
2093	-	77,159	-	77,159	-	16,742	10,948
2094	-	61,519	-	61,519	-	13,066	8,494
2095	-	48,328	-	48,328	-	10,048	6,493

Development of June 30, 2021 Discount Rate (cont.)

Development of the Single Discount Rate

(All dollar amounts are in thousands)

Year Ending June 30	Beginning Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments at 7.0%	Present Value of Unfunded Benefit Payments at 2.16%	Present Value of Benefit Payments Using the Single Discount Rate of 2.77%
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
2096	-	37,382	-	37,382	-	7,607	4,887
2097	-	28,452	-	28,452	-	5,668	3,619
2098	-	21,286	-	21,286	-	4,151	2,635
2099	-	15,638	-	15,638	-	2,985	1,883
2100	-	11,272	-	11,272	-	2,106	1,321
2101	-	7,965	-	7,965	-	1,457	908
2102	-	5,513	-	5,513	-	987	612
2103	-	3,736	-	3,736	-	655	403
2104	-	2,476	-	2,476	-	425	260
2105	-	1,605	-	1,605	-	270	164
2106	-	1,017	-	1,017	-	167	101
2107	-	630	-	630	-	101	61
2108	-	381	-	381	-	60	36
2109	-	225	-	225	-	35	21
2110	-	130	-	130	-	20	12
2111	-	73	-	73	-	11	6
2112	-	41	-	41	-	6	3
2113	-	22	-	22	-	3	2
2114	-	11	-	11	-	2	1
2115	-	6	-	6	-	1	-
2116	-	3	-	3	-	-	-
2117	-	1	-	1	-	-	-
2118	-	1	-	1	-	-	-
2119	-	-	-	-	-	-	-
Total					8,261,083	20,133,777	28,394,857

Glossary

Brief explanations of terms used in this report:

Annual OPEB Expense

The change in Net OPEB Liability less the change in the Deferred Outflows of Resources plus the change in the Deferred Inflows of Resources.

Collective deferred outflows of resources and deferred inflows of resources related to OPEB

Deferred outflows of resources and deferred inflows of resources related to OPEB arising from certain changes in the collective net OPEB liability or collective total OPEB liability.

Covered Employee Payroll

Annual compensation paid (or expected to be paid) to active employees covered by an OPEB plan, in aggregate.

Implicit Rate Subsidy

Many post-employment health plans charge the same premium rates for all participants in a non-Medicare plan regardless of their age. This single premium rate is called a blended premium rate because it blends the expected claims of both active and retired participants. Retirees are generally older than the average participant in a non-Medicare plan, which means they are expected to generate higher claims than the average participant of the plan; therefore, they are receiving a subsidy even if they pay 100% of the blended premium rate because they would be paying less in premiums than their expected claims costs. This subsidy is referred to as the "Implicit Rate Subsidy".

Net OPEB liability (NOL)

The liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit OPEB plan that is administered through a trust that meets the criteria of the GASB Statements.

Normal Cost or Service Cost

The portion of the Total Present Value of Future Benefits attributed to employee service during the current fiscal year by the actuarial cost method. These terms are used interchangeably.

Other Postemployment Benefits (OPEB)

Retiree health care benefits and post-employment benefits provided separately from a pension plan (excluding termination offers and benefits).

Fiduciary Net Position (FNP)

Set equal to the market value of assets as of the measurement date

Present Value of Future Benefits (PVFB)

The value, as of the valuation date, of the projected benefits payable to all members for their accrued service and their expected future service, discounted to reflect the time value (present value) of money and adjusted for the probabilities of retirement, withdrawal, death and disability.

Total OPEB liability (TOL)

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service in conformity with the GASB Statements. The total OPEB liability is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit OPEB plan that is not administered through a trust that meets the criteria of the GASB Statements.