



Commonwealth of Massachusetts
Postemployment Benefits Other Than Pensions
GASB Statement No. 74 Valuation Report

Measurement Date of June 30, 2020

Prepared by Deloitte Consulting LLP

April 2021

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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, 2020. In this report, we present disclosure information measured as of June 30, 2020 as required by Government Accounting Standards Board Statement Nos. 74 ("GASB No. 74"). 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 No. 74 is for purposes of fulfilling trust financial accounting requirements. The results have been prepared on a basis consistent with our understanding of GASB No. 74 and are based upon assumptions prescribed by the Commonwealth of Massachusetts. Determinations for purposes other than meeting trust financial accounting requirements may be significantly different from the results reported herein.

The Commonwealth of Massachusetts 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 financial reporting. The information provided herein will be used for the fiscal year ended June 30, 2020 GASB No. 74 disclosure. GASB No. 75 disclosure information to fulfill the Commonwealth's employer financial reporting requirements will be provided separately.

Summary of Results

The key results for the measurement period ended June 30, 2020 are:

- Net OPEB Liability (NOL) is \$20.7 billion, 313.1% of covered employee payroll.
- Plan Fiduciary Net Position (FNP) as a percentage of Total OPEB Liability (TOL), also known as the funded ratio, is 6.4%.

Significant Changes from the Previous Actuarial Valuation

For the June 30, 2020 measurement, there was an increase in TOL of \$2.4 billion compared to the previous valuation, with the increase primarily due to the following:

- There was an expected \$0.9 billion increase in TOL due to the passage of time (service cost, interest, actual benefit payments, retiree contributions);
- There was a \$4.3 billion increase in TOL due to the decrease in discount rate assumption from 3.63% to 2.28%;
- There was a \$2.2 billion decrease in TOL due to changes in other actuarial assumptions, driven primarily by updates to the per capita claims cost assumption and methodology, coverage election percentage, salary scale, and the discontinuation of the Excise Tax, partially offset by updates to the health care trend rates to be based on the Getzen model, and actives currently opting out, opting back in upon retirement. Assumption changes are described in the Actuarial Assumptions and Rationale for Assumptions sections of this report;
- There was a \$0.6 billion decrease in TOL due to experience over the past year, primarily due to changes in FY21 premium rates.

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 pension annuity 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 FY20 was set at 10% or approximately \$23 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 pay for 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 investment decisions. 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 to invest in the PRIT Fund. The SRBT's target asset allocation as of June 30, 2020 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	10% - 16%
Real Estate	7% - 13%
Timberland	1% - 7%
Portfolio Completion Strategies	8% - 14%
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 Commonwealth of Massachusetts State Employees’ Retirement System (SERS) performs experience studies 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. SERS last updated the mortality assumption in the January 1, 2017 valuation, to reflect their analysis of post-retirement mortality from 2012 through 2016. The long-term expected rate of return assumption of 7.15% as of June 30, 2020 is based on the assumption adopted by the Commonwealth’s Public Employee Retirement Administration Commission (PERAC) at the March 11, 2020 meeting for the Commonwealth’s pension valuations, which includes SERS. Based on documentation provided by PERAC, the inflation assumption underlying the 7.15% 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 SERS recommendations is not applicable to this OPEB Plan is the discount rate. For June 30, 2020, the single discount rate was based on the long-term expected rate of return on SRBT investments of 7.15% and a municipal bond rate of 2.21% (based on the 20-year Bond Buyer GO Index as of the end of June 2020). 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 2027 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, 2020 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 No. 75 requires 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 No. 74 Disclosures

GASB No. 74 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, 2019*	3.63%	\$ 19,662,106	\$ 1,368,548	\$ 18,293,558
Service Cost		785,689		785,689
Interest		732,808		732,808
Changes In Benefit Terms		-		-
Changes In Assumptions - Discount Rate		4,272,139		4,272,139
Changes In Assumptions - Others		(2,222,000)		(2,222,000)
Differences Between Expected And Actual Experience		(600,057)		(600,057)
Benefit Payments**		(525,174)	(525,174)	-
Contributions - Employer	\$ 547,611		547,611	(547,611)
Contributions - Employee			-	-
Contributions - Retiree		-	-	-
Other Additions			122	(122)
Administrative Expenses			(175)	175
Net Investment Income				
Expected Investment Earnings	\$ 100,017			
Differences Between Projected And Actual Earnings	(76,637)			
Total			\$ 23,380	\$ (23,380)
Net Change		\$ 2,443,405	\$ 45,764	\$ 2,397,641
Measurement Date of June 30, 2020	2.28%	\$ 22,105,511	\$ 1,414,312	\$ 20,691,199
Measurement Date			June 30, 2020	June 30, 2019*
Plan Fiduciary Net Position As A Percentage Of Total OPEB Liability			6.4%	7.0%
Covered Employee Payroll			\$ 6,608,652	\$ 6,354,473
Net OPEB Liability As A Percentage Of Covered Employee Payroll			313.1%	287.9%
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, 2020:				
One Percent Increase (3.28%)			\$ (3,297,842)	-15%
One Percent Decrease (1.28%)			\$ 4,173,841	19%
Net OPEB Liability at a One Percentage point change in discount rate as of June 30, 2020 is as follows:				Net OPEB Liability
One Percent Increase (3.28%)			\$ 17,393,357	
One Percent Decrease (1.28%)			\$ 24,865,040	
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, 2020:				
One Percent Increase (7.7% / 5.9% grading to 5.0%)			\$ 5,161,768	23%
One Percent Decrease (5.7% / 3.9% grading to 3.0%)			\$ (3,885,154)	-18%
Net OPEB Liability at a One Percentage point change in trend rate as of June 30, 2020 is as follows:				Net OPEB Liability
One Percent Increase (7.7% / 5.9% grading to 5.0%)			\$ 25,852,967	
One Percent Decrease (5.7% / 3.9% grading to 3.0%)			\$ 16,806,045	
Key Assumptions			June 30, 2020	June 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.

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

Basis for the Valuation

Plan Participation Summary

The participant data used in the valuation was provided by the Commonwealth as of January 1, 2020. 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	59,828	1,987	1,872	6,384	70,071
Average Age	48.2	48.6	43.4	41.5	47.5
Average Service	13.0	16.1	17.0	12.8	13.2
b. Terminated Vested - Eligible for Participation					
Counts	3,351				
Average Age	52.2				
c. Retired Participants					
	Former	Dependent			
	Employees ¹	Spouses			
Counts					
Under Age 65 Non-Medicare	12,623	8,901			
Under Age 65 Medicare	153	229			
Over Age 65 Non-Medicare	4,472	694			
Over Age 65 Medicare	42,652	16,367			
Total Counts ²	59,900	26,191			
Average Age	72.8	68.3			
d. Total Participants ³	133,322				

¹Former employees include 52,898 retirees and disabled participants and 7,002 surviving spouses.

²Retired participants cover 7,672 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	-	543	3	-	-	-	-	-	546
25-29	-	4,652	874	-	-	-	-	-	5,526
30-34	12	4,261	3,057	612	11	-	-	-	7,941
35-39	29	2,721	2,454	2,217	498	8	-	-	7,898
40-44	92	1,876	1,726	1,810	1,535	495	3	-	7,445
45-49	464	1,537	1,433	1,705	1,589	1,800	554	30	8,648
50-54	1,360	1,425	1,294	1,517	1,639	1,833	1,533	917	10,158
55-59	3,282	1,164	1,245	1,430	1,377	1,531	1,229	2,288	10,264
60-64	7,537	752	917	995	1,134	1,111	924	1,629	7,462
65-69	11,773	201	419	437	466	469	341	657	2,990
70+	35,351	32	90	136	187	140	107	501	1,193
Total	59,900	19,164	13,512	10,859	8,436	7,387	4,691	6,022	70,071

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.

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) are considered to be employees on leaves of absence without pay for as long as they retain the right to receive a retirement allowance from SERS and 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

While there are no changes to the plan provisions, this valuation reflects retirement eligibility rules for members hired on or after April 2, 2012.

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, 2020.

Non-Medicare Medical Plans

The following tables list the non-Medicare medical plans and sample 10% retiree contribution rate effective July 1, 2020 offered to retirees and provide the basic benefit provisions.

Medical	Benefit Provisions	Sample 10% Monthly Retiree Contribution Rate												
<p align="center">UniCare State Indemnity Plan/Basic with CIC (Comprehensive)</p> <p align="center"><i>Indemnity</i></p>	<table border="0"> <tr> <td>Out-of-pocket Maximum</td> <td>\$5,000 individual, \$10,000 family</td> </tr> <tr> <td>Fiscal Year Deductible</td> <td>\$500 individual, \$1,000 family</td> </tr> <tr> <td>Primary Care Provider Office Visit</td> <td>\$20/visit</td> </tr> <tr> <td>Specialist Physician Office Visit</td> <td>Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$60/visit</td> </tr> <tr> <td>Retail Clinic and Urgent Care Center</td> <td>\$20/visit</td> </tr> <tr> <td>Emergency Room Care</td> <td>\$100/visit (waived if admitted)</td> </tr> </table>	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: \$60/visit	Retail Clinic and Urgent Care Center	\$20/visit	Emergency Room Care	\$100/visit (waived if admitted)	<p><u>With CIC</u> Individual: \$167.15 Family: \$373.09</p> <p><u>Without CIC</u> Individual: \$111.01 Family: \$245.24</p>
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: \$60/visit													
Retail Clinic and Urgent Care Center	\$20/visit													
Emergency Room Care	\$100/visit (waived if admitted)													
<p align="center">UniCare State Indemnity Plan/PLUS</p> <p align="center"><i>PPO-Type</i></p>	<table border="0"> <tr> <td>Out-of-pocket Maximum</td> <td>\$5,000 individual, \$10,000 family</td> </tr> <tr> <td>Fiscal Year Deductible</td> <td>\$500 individual, \$1,000 family</td> </tr> <tr> <td>Primary Care Provider Office Visit</td> <td>Centered Care PCPs: \$15/visit Other PCPs: \$20/visit</td> </tr> <tr> <td>Specialist Physician Office Visit</td> <td>Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit</td> </tr> <tr> <td>Retail Clinic and Urgent Care Center</td> <td>\$20/visit</td> </tr> <tr> <td>Emergency Room Care</td> <td>\$100/visit (waived if admitted)</td> </tr> </table>	Out-of-pocket Maximum	\$5,000 individual, \$10,000 family	Fiscal Year Deductible	\$500 individual, \$1,000 family	Primary Care Provider Office Visit	Centered Care PCPs: \$15/visit Other PCPs: \$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)	<p>Individual: \$72.77 Family: \$172.30</p>
Out-of-pocket Maximum	\$5,000 individual, \$10,000 family													
Fiscal Year Deductible	\$500 individual, \$1,000 family													
Primary Care Provider Office Visit	Centered Care PCPs: \$15/visit Other PCPs: \$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)													
<p align="center">Tufts Health Plan Navigator</p> <p align="center"><i>POS</i></p>	<table border="0"> <tr> <td>Out-of-pocket Maximum</td> <td>\$5,000 individual, \$10,000 family</td> </tr> <tr> <td>Fiscal Year Deductible</td> <td>\$500 individual, \$1,000 family</td> </tr> <tr> <td>Primary Care Provider Office Visit</td> <td>Tier 1: \$10/visit Tier 2: \$20/visit Tier 3: \$40/visit</td> </tr> <tr> <td>Specialist Physician Office Visit</td> <td>Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: \$75/visit</td> </tr> <tr> <td>Retail Clinic and Urgent Care Center</td> <td>\$20/visit</td> </tr> <tr> <td>Emergency Room Care</td> <td>\$100/visit (waived if admitted)</td> </tr> </table>	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	\$20/visit	Emergency Room Care	\$100/visit (waived if admitted)	<p>Individual: \$80.28 Family: \$195.12</p>
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	\$20/visit													
Emergency Room Care	\$100/visit (waived if admitted)													

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 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: \$75/visit \$20/visit \$100/visit (waived if admitted)	Individual: \$83.98 Family: \$203.25
Harvard Pilgrim Independence Plan <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 Retail Clinic: \$10/visit Urgent Care: \$20/visit \$100/visit (waived if admitted)	Individual: \$92.05 Family: \$223.79
Health New England <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: \$59.87 Family: \$141.64
AllWays Health Partners Complete HMO <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 \$500 individual, \$1,000 family \$20/visit Tier 1: \$30/visit Tier 2: \$60/visit Tier 3: N/A \$20/visit \$100/visit (waived if admitted)	Individual: \$69.20 Family: \$178.97

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: \$55.71 Family: \$136.98
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: \$61.11 Family: \$146.30
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: \$62.29 Family: \$156.25
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: \$66.96 Family: \$169.76

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, 2020 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)	\$33.05 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)	\$38.90 per person
UniCare State Indemnity Plan Medicare Extension (OME) with CIC (Comprehensive) <i>Indemnity</i>	Calendar Year Deductible Physician's Office Visit (except behavioral health) Retail Clinic Emergency Room Care (includes out-of-area)	None \$10/visit \$10/visit \$50/visit (waived if admitted)	<u>With CIC</u> \$50.42 per person <u>Without CIC</u> \$39.39 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)	\$40.91 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: \$0.65/month

Changes in GIC Benefits Provisions

Effective July 1, 2020, changes were made to the UniCare Basic, Choice, and Plus behavioral health benefits to put them more in line with the medical benefits under those plans. The GIC eliminated or reduced some copays and deductibles.

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. 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 No. 74.

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

December 31, 2019.

Measurement Date

June 30, 2020.

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 No. 74.

Discount Rate	2.28% as of June 30, 2020			
Long-Term Expected Rate of Return	7.15%			
Inflation¹	2.50%			
Payroll Growth¹	4.00%			
Salary Scale¹	Percent of salary increases each year is based on Group classifications and years of service.			
	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

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, 2019 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.

Mortality¹	<p>Pre-Retirement Mortality: RP-2014 Blue Collar Employees table projected generationally with Scale MP-2016 set forward 1 year for females.</p> <p>Post-Retirement Mortality: RP-2014 Blue Collar Healthy Annuitant table projected generationally with Scale MP-2016 set forward 1 year for females. For disabled retirees, table is set forward 1 year.</p>																																								
Disability Incidence¹	<p>Percent of employees expected to become disabled each year is based on Group classifications and age.</p> <p style="text-align: center;">Sample Disability Rates (%)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Age</th> <th>Group 1</th> <th>Group 2</th> <th>Group 3</th> <th>Group 4</th> </tr> </thead> <tbody> <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> </tbody> </table>	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
Age	Group 1	Group 2	Group 3	Group 4																																					
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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, 2019 and experience study issued in 2014.

Actuarial Assumptions (cont.)

Spouse Age Difference¹	<p>Females are assumed to be 3 years younger than males.</p> <p>For all retired participants, spouse age is based on actual data.</p>												
Proportion of Retirees Covering a Spouse	<p>60% of active employees are assumed to cover an adult member at retirement.</p> <p>Retirees are assumed to continue their current coverage status (Individual/Family coverage).</p>												
Participation Rate	<p>100% of employees currently electing healthcare coverage are assumed to elect coverage at retirement.</p> <p>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.</p> <p>85% of current and future vested terminated participants will elect health care benefits at age 55 or, if later, the participant's current age.</p> <p>Retirees who currently elect to waive their coverage are assumed to remain uncovered in the future.</p>												
Surviving Spouse Continuing Coverage	<p>100% of spouses are assumed to elect to continue coverage after the retiree's death.</p>												
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 border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Under 65</th> <th>Age 65+</th> </tr> </thead> <tbody> <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> </tbody> </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, 2019 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 Fiscal Year 2020 and Fiscal Year 2021 premiums that represent the expected claims costs and administrative expenses for 2020. 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.

Average claims costs were age-graded using the retiree age and gender distribution, separately for the non-Medicare eligible and Medicare eligible population. These age-graded claims costs are the basis for projecting the gross cost for each individual, before member contributions for coverage. The aging factors are based on the Society of Actuaries age-curve study “Health Care Costs—From Birth to Death.” Future year per capita costs were projected by applying trend assumptions to the first-year costs.

Age-graded claims were developed to project the increases in costs related to aging for retirees, spouses, and surviving spouses.

Age	2020 Annual Per Capita Claims Costs				
	Non-Medicare Indemnity	Non-Medicare PPO	Non-Medicare HMO	Medicare Indemnity	Medicare HMO
45	\$ 6,622	\$ 6,336	\$ 6,137	\$ 3,628	\$ 3,156
50	8,076	7,727	7,484	3,628	3,156
55	9,917	9,489	9,190	3,628	3,156
60	12,121	11,597	11,232	3,628	3,156
65	15,146	14,492	14,036	3,628	3,156
70	18,197	17,411	16,863	4,009	3,488
75	21,551	20,619	19,970	4,326	3,764
80	25,045	23,963	23,209	4,559	3,967
85	28,476	27,246	26,388	4,670	4,063
90	31,522	30,160	29,210	4,659	4,054
95	33,246	31,810	30,809	4,524	3,936

Expenses

Per Capita Claims Costs were developed to include administrative expenses.

Actuarial Assumptions (cont.)

Trend Rates

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 2020_b. The short-term trend assumptions were based on a review of the Commonwealth's historical trend rates during fiscal years 2019 and 2020, 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 2024 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.

Year	January 1, 2020 Assumption	
	Medicare Benefits	Non-Medicare Benefits
2020	4.90%	6.70%
2021	4.80%	6.60%
2022	4.70%	6.50%
2023	4.60%	6.40%
2024	4.70%	6.20%
2030	5.18%	
2040	5.18%	
2050	5.18%	
2060	4.84%	
2070	4.38%	
2075+	4.04%	

Getzen long run growth factors assumptions:

- Inflation: 2.5%
- Real GDP Growth: 1.5%
- Excess Medical Growth: 1.1%

Actuarial Assumptions (cont.)

Changes in Assumptions	<p>Impact of these changes as of the Measurement Date, June 30, 2020, is indicated in parenthesis.</p> <ul style="list-style-type: none">• The discount rate was decreased from 3.63% to 2.28%. (\$4,272M loss)• The excise tax was removed. (\$502M gain)• Assumptions underlying the development of per capita claims costs such as aging factors, decreasing post-65 administrative cost decreased from 10% to 5%, utilizing premiums that represent the expected claims costs and admin expenses, etc. (\$1,749M gain. This excludes impact of differences between expected and actual claims costs which were categorized as a change in plan experience)• The trend rates were updated based on the SOA-Getzen trend rate model version 2020_b, the impact of the discontinuation of the ACA Health Insurer Fee and Excise Tax. The short-term trend assumptions were based on a review of the Commonwealth's historical trend rates during fiscal years 2019 and 2020, along with industry surveys, separately for non-Medicare and Medicare benefits. (\$706M loss)• The salary scale assumption was updated from a constant 4% assumption to rates that vary by years of service and group classification, consistent with SERS. (\$441 gain)• The proportion of future retirees covering a spouse was reduced from 80% to 60% and actual spouse date of birth was used when available. (\$1,116M gain)• 35% of employees currently opting out of active employee health coverage are assumed to enroll in retiree coverage. An 8% load was applied to the active liability to estimate the impact of this population. (\$531M loss, including correction of vested terminated election rate from 80% to 85%)• 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. (\$350M loss)
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Rationale for Assumptions

Discount Rate	The single discount rate was based on the long-term expected rate of return on SRBT investments of 7.15% and a municipal bond rate of 2.21% (based on the 20-year Bond Buyer GO Index as of the end of June 2020). 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 2027 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	The long-term expected rate of return assumption was based on the assumption adopted by the Commonwealth's Public Employee Retirement Administration Commission (PERAC) at the March 11, 2020 meeting for the Commonwealth's pension valuations, which includes SERS.
Mortality	Consistent with the assumptions used for the SERS Actuarial Valuation Report as of January 1, 2019. The assumption was updated in the January 1, 2017 actuarial valuation to reflect actual experience from 2012 through 2016 for post-retirement mortality.
Inflation, Payroll Growth, Salary Scale, Disability Incidence, Withdrawal, Retirement and Spouse Age Difference	Consistent with the assumptions used for the SERS Actuarial Valuation Report as of January 1, 2019 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, 2020 Discount Rate

Projection of Contributions

(All dollar amounts are in thousands)

Year Ending June 30	Projected Payroll			Projected Contributions		
	Payroll for Current Employees	Payroll for Future Employees	Total Payroll	Total Employer Contributions	Contributions Related to Service Cost of Future Employees	Employer Contributions for Current Participants
	(a)	(b) = (c)-(a)	(c)	(d)	(e) = (b) x 11.4%	(f) = (d)-(e)
2021	6,238,858	634,140	6,872,998	595,664	72,263	523,401
2022	6,004,361	1,143,557	7,147,918	631,948	130,314	501,634
2023	5,784,035	1,649,800	7,433,835	669,202	188,003	481,199
2024	5,572,938	2,158,250	7,731,188	708,217	245,943	462,274
2025	5,367,336	2,673,100	8,040,436	747,987	304,613	443,374
2026	5,168,755	3,193,298	8,362,053	787,913	363,892	424,021
2027	4,972,879	3,723,656	8,696,535	828,130	424,329	403,801
2028	4,775,451	4,268,945	9,044,396	869,136	486,467	382,669
2029	4,581,545	4,824,627	9,406,172	909,490	549,790	359,700
2030	4,383,687	5,398,732	9,782,419	948,557	615,212	333,345
2031	4,186,712	5,987,004	10,173,716	987,977	682,248	305,729
2032	3,995,705	6,584,959	10,580,664	1,027,169	750,388	276,781
2033	3,808,711	7,195,180	11,003,891	1,064,766	819,925	244,841
2034	3,625,293	7,818,754	11,444,047	1,100,198	890,985	209,213
2035	3,443,903	8,457,906	11,901,809	1,134,214	963,819	170,395
2036	3,264,855	9,113,026	12,377,881	1,167,009	1,038,473	128,536

Development of June 30, 2020 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 7.15%	Ending Fiduciary Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2021	1,414,312	523,401	545,664	179	98,578	1,490,448
2022	1,490,448	501,634	581,948	184	101,982	1,511,932
2023	1,511,932	481,199	619,202	188	101,491	1,475,232
2024	1,475,232	462,274	658,217	193	96,832	1,375,928
2025	1,375,928	443,374	697,987	198	87,670	1,208,787
2026	1,208,787	424,021	737,913	203	73,637	968,329
2027	968,329	403,801	778,130	208	54,320	648,112
2028	648,112	382,669	819,136	213	29,242	240,674
2029	240,674	359,700	859,490	219	-	-
2030	-	333,345	898,557	224	-	-
2031	-	305,729	937,977	230	-	-
2032	-	276,781	977,169	235	-	-
2033	-	244,841	1,014,766	241	-	-
2034	-	209,213	1,050,198	247	-	-
2035	-	170,395	1,084,214	253	-	-
2036	-	128,536	1,117,009	260	-	-

Development of June 30, 2020 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 7.15%	Present Value of Unfunded Benefit Payments at 2.21%	Present Value of Benefit Payments Using the Single Discount Rate of 2.28%
	(a)	(b)	(d)	(e)	(f)	(g)	(h)
2021	1,414,312	545,664	545,664	-	527,144	-	539,550
2022	1,490,447	581,948	581,948	-	524,682	-	562,605
2023	1,511,932	619,202	619,202	-	521,017	-	585,281
2024	1,475,232	658,217	658,217	-	516,888	-	608,294
2025	1,375,928	697,987	697,987	-	511,544	-	630,673
2026	1,208,787	737,913	737,913	-	504,717	-	651,890
2027	968,329	778,130	778,130	-	496,710	-	672,101
2028	648,113	819,136	-	819,136	-	695,273	691,752
2029	240,674	859,490	-	859,490	-	713,752	709,657
2030	-	898,557	-	898,557	-	730,060	725,380
2031	-	937,977	-	937,977	-	745,610	740,329
2032	-	977,169	-	977,169	-	759,969	754,075
2033	-	1,014,766	-	1,014,766	-	772,145	765,639
2034	-	1,050,198	-	1,050,198	-	781,827	774,714
2035	-	1,084,214	-	1,084,214	-	789,698	781,985
2036	-	1,117,009	-	1,117,009	-	795,993	787,685
2037	-	1,149,331	-	1,149,331	-	801,316	792,416
2038	-	1,182,628	-	1,182,628	-	806,703	797,203
2039	-	1,217,036	-	1,217,036	-	812,224	802,116
2040	-	1,252,446	-	1,252,446	-	817,783	807,059
2041	-	1,288,074	-	1,288,074	-	822,861	811,520
2042	-	1,322,360	-	1,322,360	-	826,498	814,556
2043	-	1,355,470	-	1,355,470	-	828,874	816,345
2044	-	1,388,902	-	1,388,902	-	830,954	817,840
2045	-	1,420,283	-	1,420,283	-	831,356	817,681
2046	-	1,448,656	-	1,448,656	-	829,629	815,431
2047	-	1,473,381	-	1,473,381	-	825,544	810,867
2048	-	1,493,471	-	1,493,471	-	818,707	803,607
2049	-	1,507,202	-	1,507,202	-	808,369	792,923
2050	-	1,511,140	-	1,511,140	-	792,957	777,279
2051	-	1,507,733	-	1,507,733	-	774,063	758,245
2052	-	1,497,463	-	1,497,463	-	752,167	736,298
2053	-	1,479,421	-	1,479,421	-	727,037	711,217
2054	-	1,455,763	-	1,455,763	-	699,942	684,248
2055	-	1,425,953	-	1,425,953	-	670,785	655,301
2056	-	1,391,604	-	1,391,604	-	640,473	625,265
2057	-	1,356,715	-	1,356,715	-	610,914	596,004

Development of June 30, 2020 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 7.15%	Present Value of Unfunded Benefit Payments at 2.21%	Present Value of Benefit Payments Using the Single Discount Rate of 2.28%
	(a)	(b)	(d)	(e)	(f)	(g)	(h)
2058	-	1,320,581	-	1,320,581	-	581,786	567,203
2059	-	1,286,470	-	1,286,470	-	554,503	540,239
2060	-	1,258,941	-	1,258,941	-	530,905	516,897
2061	-	1,234,524	-	1,234,524	-	509,351	495,577
2062	-	1,212,073	-	1,212,073	-	489,275	475,721
2063	-	1,192,538	-	1,192,538	-	470,981	457,624
2064	-	1,173,646	-	1,173,646	-	453,497	440,338
2065	-	1,153,475	-	1,153,475	-	436,066	423,126
2066	-	1,132,116	-	1,132,116	-	418,738	406,037
2067	-	1,109,035	-	1,109,035	-	401,331	388,895
2068	-	1,083,521	-	1,083,521	-	383,620	371,481
2069	-	1,055,646	-	1,055,646	-	365,670	353,859
2070	-	1,025,431	-	1,025,431	-	347,523	336,071
2071	-	992,932	-	992,932	-	329,233	318,168
2072	-	958,256	-	958,256	-	310,865	300,214
2073	-	921,480	-	921,480	-	292,471	282,260
2074	-	882,707	-	882,707	-	274,107	264,358
2075	-	842,071	-	842,071	-	255,835	246,568
2076	-	799,790	-	799,790	-	237,735	228,969
2077	-	756,316	-	756,316	-	219,951	211,698
2078	-	712,040	-	712,040	-	202,598	194,863
2079	-	667,157	-	667,157	-	185,723	178,512
2080	-	621,883	-	621,883	-	169,376	162,690
2081	-	576,458	-	576,458	-	153,609	147,445
2082	-	531,149	-	531,149	-	138,476	132,829
2083	-	486,243	-	486,243	-	124,027	118,889
2084	-	442,064	-	442,064	-	110,320	105,679
2085	-	398,936	-	398,936	-	97,405	93,243
2086	-	357,185	-	357,185	-	85,325	81,624
2087	-	317,136	-	317,136	-	74,120	70,857
2088	-	279,082	-	279,082	-	63,816	60,965
2089	-	243,302	-	243,302	-	54,431	51,965
2090	-	210,022	-	210,022	-	45,970	43,857
2091	-	179,395	-	179,395	-	38,417	36,627
2092	-	151,547	-	151,547	-	31,752	30,252
2093	-	126,525	-	126,525	-	25,936	24,694
2094	-	104,298	-	104,298	-	20,918	19,902

Development of June 30, 2020 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 7.15%	Present Value of Unfunded Benefit Payments at 2.21%	Present Value of Benefit Payments Using the Single Discount Rate of 2.28%
	(a)	(b)	(d)	(e)	(f)	(g)	(h)
2095	-	84,814	-	84,814	-	16,642	15,824
2096	-	67,977	-	67,977	-	13,050	12,400
2097	-	53,638	-	53,638	-	10,075	9,566
2098	-	41,622	-	41,622	-	7,649	7,258
2099	-	31,733	-	31,733	-	5,705	5,410
2100	-	23,747	-	23,747	-	4,177	3,958
2101	-	17,425	-	17,425	-	2,999	2,840
2102	-	12,526	-	12,526	-	2,109	1,996
2103	-	8,812	-	8,812	-	1,452	1,373
2104	-	6,062	-	6,062	-	977	923
2105	-	4,074	-	4,074	-	642	607
2106	-	2,672	-	2,672	-	412	389
2107	-	1,710	-	1,710	-	258	243
2108	-	1,067	-	1,067	-	158	148
2109	-	648	-	648	-	94	88
2110	-	383	-	383	-	54	51
2111	-	220	-	220	-	30	29
2112	-	123	-	123	-	17	16
2113	-	66	-	66	-	9	8
2114	-	35	-	35	-	4	4
2115	-	17	-	17	-	2	2
2116	-	8	-	8	-	1	1
2117	-	4	-	4	-	-	-
2118	-	2	-	2	-	-	-
2119	-	1	-	1	-	-	-
2120	-	-	-	-	-	-	-
Total					3,602,702	32,665,661	36,268,361

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.