

Cambridge Redevelopment Authority Other Postemployment Benefits Plan

GASB 74 & GASB 75 Actuarial Valuation

With a Valuation Date of January 1, 2019

As of the Measurement Date:
December 31, 2019

For the Reporting Date:
December 31, 2019

Delivered May 21, 2020



TABLE OF CONTENTS

	<u>PAGE</u>
<u>EXECUTIVE SUMMARY</u>	I
<u>PRINCIPAL RESULTS OF THE VALUATION</u>	1
<u>EXHIBITS</u>	
A FINANCIAL STATEMENT DISCLOSURES	4
B REQUIRED SUPPLEMENTARY INFORMATION	16
<u>APPENDIX</u>	
I LIABILITIES, ASSETS, & CASH FLOWS	22
II PLAN PROVISIONS	29
III ACTUARIAL METHODS & ASSUMPTIONS	31
IV PLAN DEMOGRAPHICS	38
V OVERVIEW OF GASB 74 & 75	40
<u>GLOSSARY</u>	42



East Coast
11 Hayward Ave, Building 4
Colchester, CT 06415
(860) 537-9080

West Coast
1350 E. Flamingo Road, Suite 254
Las Vegas, NV 89119
(702) 979-2880

May 21, 2020

Personal and Confidential

Ms. Ellen Shore
Operations Manager
Cambridge Redevelopment Authority
255 Main Street, 4th Floor
Cambridge, MA 02142

Dear Ms. Shore:

We have performed an actuarial valuation of the Cambridge Redevelopment Authority Other Postemployment Benefits Plan for the Reporting Date & fiscal year ending December 31, 2019 with a Measurement Date of December 31, 2019 and a Valuation Date of January 1, 2019. The figures presented in this report reflect the adoption, by the Cambridge Redevelopment Authority, of Statement Nos. 74 and 75 of the Governmental Accounting Standards Board ("GASB 74/75") effective for the fiscal years ending December 31, 2017 and December 31, 2018 respectively.

The financial results of the actuarial valuation are summarized in the report. The Executive Summaries highlight the results of the valuation. Additional information summarizing census data, actuarial assumptions, claim rates and the methodology for developing them, as well as a glossary of selected terms used in this study, is also included in the report.

All costs, liabilities and other factors under the plan were determined in accordance with generally accepted actuarial principles and procedures. In our opinion, the actuarial assumptions used are reasonable, reflecting the experience of the plan and reasonable expectations and, in combination, represent our best estimate of the anticipated experience under the plan.

We will be pleased to answer any questions that you may have regarding this actuarial valuation report.

Very truly yours,

A handwritten signature in black ink, appearing to read 'P. Elmore', written over a light blue horizontal line.

Parker E. Elmore, ASA, EA, FCA, MAAA
President, CEO & Actuary

May 21, 2020

ACTUARIAL CERTIFICATION

This is to certify that Odyssey Advisors has conducted an actuarial valuation of certain benefit obligations of the Cambridge Redevelopment Authority other postemployment benefit programs with a Valuation Date of January 1, 2019 with a Measurement Date of December 31, 2019 for the Reporting Date & fiscal year ending December 31, 2019 in accordance with Government Account Standards Board Statement No. 74 & 75 and Actuarial Standards of Practice as issued by the American Academy of Actuaries. The actuarial calculations presented in this report have been made on a basis consistent with our understanding of GASB Statements Numbers 74 & 75 for the determination of the liability for postemployment benefits other than pensions.

The actuarial data is based on the plan of benefits verified by the Authority and on participant claims or premium data provided by the Authority and/or vendors employed by the Authority.

The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may yield results significantly different than those reported here. As such, additional determinations may be needed for other purposes including determining the benefit security at termination and/or adequacy of the funding of an ongoing plan.

To the best of our knowledge, this report is complete and accurate and in our opinion represents the information necessary to comply with GASB Statements Number 74 and 75 with respect to the benefit obligations addressed. The signing actuaries are members of the Society of Actuaries, the American Academy of Actuaries and other professional actuarial organizations and meet their "General Qualification Standards for Statements of Actuarial Opinion" to render the actuarial opinion contained herein. Further, in our opinion, the assumptions as approved by the Authority are reasonably related to the experience and expectations of the postemployment benefits programs.



Parker E. Elmore, ASA, EA, FCA, MAAA
President, CEO & Actuary



Sarah F. Rothenberg, ASA, MAAA
Consulting Actuary

EXECUTIVE SUMMARY

How did plan liabilities to change from FY 18 to FY 19?

For the year ending on the Measurement Date of December 31, 2019, the Plan saw an experience gain of \$144,672 or 16.81% of the beginning Total OPEB Liability ("TOL"). This was mainly due to premiums for Medicare Supplement plans increasing 1% rather than the expected 16% increase and a decrease in the number of retired participants. During the period there was an investment gain of \$2,713 above the expected return.

Assumption Changes

Some key assumptions have changed since the prior valuation - their impact is detailed below.

- ✓ Due to the GASB 75 standards the discount rate has been changed from 5.00% to 5.50% decreasing the disclosed liability by \$38 thousand.
- ✓ Based on recommendations by PERAC, the mortality table has been updated from the RP-2000 Employees Mortality Table projected generationally with scale BB and a base year 2009 to the RP-2014 Mortality Table projected generationally with scale MP-2016 for males and females increasing the disclosed liability by \$29 thousand.
- ✓ The expected long-term medical trend has been updated to 4.50% decreasing the disclosed liability by \$50 thousand.
- ✓ Assumption changes caused Service Cost to decrease by \$4,200.

It is important to remember that actuarial assumptions or changes in such do not impact the actual cost of the Plan. Rather, they impact the timing of the recognition of such costs.

Changes in Benefits Terms

- ✓ To the best of our knowledge there have been no material changes in benefit terms that would impact the figures shown in this report.

EXECUTIVE SUMMARY

Recognition Period

- ✓ Changes in assumptions & plan experience are amortized into the net OPEB expense over 5.00 years.
- ✓ Differences between projected & actual earnings on OPEB plan investments are amortized into the net OPEB expense over 5.00 years
- ✓ Changes in benefit terms are to be recognized in full immediately

Events Subsequent to the Measurement Date

To the best of our knowledge there were no material events subsequent to the Measurement Date that would impact the figures shown in this report.

Discount Rate Determinants

- ✓ Employer Current and Future Benefit Payments
- ✓ Municipal Bond Rate – The municipal bond rate was 3.26% as of December 31, 2019.
- ✓ Current Asset Level – The Authority had \$32,446 of OPEB assets as of December 31, 2019.
- ✓ Funding Policy - The Authority is expected to contribute \$7,000 per year.
- ✓ Investment Policy - The Authority is expected to earn 6.08% on assets based on its investment policy.

Key Drivers of Plan Liabilities

Several key drivers of plan costs and liabilities are:

- ✓ Premiums for Post 65 (Medicare supplement) plans - represent 90.53% of the total plan liabilities
- ✓ Age at which plan participants retire
- ✓ Percentage of plan participants who elect coverage for themselves and/or a spouse
- ✓ Medical care cost inflation rate - We currently assume medical costs increase at 4.50% per year for Active plans and 4.50% per year for Medicare supplement plans.
- ✓ Discount Rate (5.50%) – Higher discount rates yield lower liabilities and vice versa
- ✓ Cost Sharing

EXECUTIVE SUMMARY

Key Plan Metrics

While an actuarial valuation under GASB 74/75 can be very complex with many variables, we find it helpful to look at several key metrics (shown below) to better allow you to manage your plan.

Representative Plan Statistics		
Valuation Date	January 1, 2019	January 1, 2017
Measurement Date & Period Ending	December 31, 2019	December 31, 2018
Reporting Date/Fiscal Year End	December 31, 2019	December 31, 2018
Total OPEB Liability	677,305	860,656
Per Eligible Active Plan Participant	31,857	39,509
Per Retiree/Spouse Plan Participant	51,802	55,259
Total Annual Service Cost (Annual Benefit Accrual)	17,087	22,849
Per Eligible Active Plan Participant	3,417	4,570
Expected Employer Share of Retiree Costs	39,773	53,909
Per Retiree/Spouse Plan Participant	3,977	4,492
Net OPEB Liability as a % of Covered Payroll	127.10%	208.20%
Average Annual Medical Plan Premium (Single Coverage)	5,390	5,243
Average Annual Medical Plan Premium (Family Coverage)	18,393	21,142

EXECUTIVE SUMMARY

Liabilities & Benefit Payments in Today's Dollars

With the growth of medical care costs over time, the nominal accrued liabilities ("TOL") and benefit payments can appear daunting. However, it is important to remember that a dollar paid in the future is worth less than a dollar paid today.

For the Period Ending on the Measurement Date of:	Number of Retirees, Spouses, & Surviving Spouses	Total OPEB Liability	Present Value at 3.00% of Total OPEB Liability	Employer Share of Premiums/Claims Including "Implicit Cost"	Present Value at 3.00% of Employer Share of Premiums / Claims Including "Implicit Cost"
December 31, 2019	10	677,305	677,305	39,773	39,773
December 31, 2024	8	749,788	646,774	39,856	34,380
December 31, 2029	7	822,408	611,949	44,803	33,338
December 31, 2034	6	889,374	570,855	53,868	34,576
December 31, 2039	5	987,834	546,940	59,232	32,795
December 31, 2044	5	1,118,254	534,084	61,615	29,428
December 31, 2049	5	1,336,169	550,484	61,045	25,150

PRINCIPAL RESULTS OF THE VALUATION

Cambridge Redevelopment Authority Assuming Funding - 5.50% discount rate Comparison of Plan Liabilities to Prior Valuation

Valuation Date	January 1, 2019	January 1, 2017
For the Measurement Period ending on the Measurement Date of:	December 31, 2019	December 31, 2018
For the Reporting Period & Fiscal Year ending on:	December 31, 2019	December 31, 2018
I. Total OPEB Liability		
A. Actives	159,287	197,546
B. Retirees/Disabled	<u>518,018</u>	<u>663,110</u>
C. Total	677,305	860,656
II. Fiduciary Net Position [Plan Assets]	32,446	21,232
III. Net OPEB Liability (Asset) [I. - II.]	644,859	839,424
IV. Funded Ratio [II. / I.]	4.79%	2.47%
V. Number of Eligible Participants		
A. Actives	5	5
B. Retirees/Disabled & Dependents	<u>10</u>	<u>12</u>
C. Total	15	17
VI. Service Cost	17,087	22,849
VII. Financial Statement Expense	11,382	65,260
VIII. Employer Contribution to the OPEB Trust	(7,000)	(7,000)
IX. Deferred Inflow of Resources	(200,466)	(47,310)
X. Deferred Outflow of Resources	5,379	11,397
XI. Money Weighted Rate of Return	19.36%	(7.64%)
XII. 20-year Municipal Bond Rate (SAPIHG)	3.26%	3.64%
XIII. Expected Long Term Rate of Return (Net of Expense)	6.08%	5.37%
XIV. Crossover Year	Immediate	Immediate
XV. Discount Rate	5.50%	5.00%

PRINCIPAL RESULTS OF THE VALUATION

**Cambridge Redevelopment Authority
Plan Liabilities as of the December 31, 2019 Measurement Date**

	Authority Employees and Retirees	Total
I. Total OPEB Liability		
A. Actives	159,287	159,287
B. Retirees/Disabled	<u>518,018</u>	<u>518,018</u>
C. Total	677,305	677,305
II. Fiduciary Net Position [Plan Assets]	32,446	32,446
III. Net OPEB Liability (Asset) [I. - II.]	644,859	644,859
IV. Number of Eligible Participants		
A. Actives	5	5
B. Retirees/Disabled	<u>10</u>	<u>10</u>
C. Total	15	15
For the Reporting Date and Fiscal Year Ending December 31, 2019		
V. Service Cost	17,087	17,087
VI. Financial Statement Expense	11,382	11,382
VII. Employer Share of Costs	(39,773)	(39,773)
VIII. Employer (Payments)/Withdrawals to/from OPEB Trust	(7,000)	(7,000)
IX. Total Employer Contribution [VII. + VIII.]	(46,773)	(46,773)

PRINCIPAL RESULTS OF THE VALUATION

Cambridge Redevelopment Authority

Assuming Funding - 5.50% discount rate

For the Period Ending on the December 31, 2019 Measurement Date

	Actives			Retirees/Disabled			Grand Total
	Under Age 65	Age 65+	Actives Total	Under Age 65	Age 65 +	Retirees Total	
Present Value of Future Benefits							
A. Participants	36,325	135,100	171,425	17,010	295,695	312,705	484,130
B. Spouses	<u>39,072</u>	<u>96,887</u>	<u>135,959</u>	<u>0</u>	<u>205,313</u>	<u>205,313</u>	<u>341,272</u>
C. Total	75,397	231,987	307,384	17,010	501,008	518,018	825,402
Total OPEB Liability							
A. Participants	21,465	63,753	85,218	17,010	295,695	312,705	397,923
B. Spouses	<u>25,669</u>	<u>48,400</u>	<u>74,069</u>	<u>0</u>	<u>205,313</u>	<u>205,313</u>	<u>279,382</u>
C. Total	47,134	112,153	159,287	17,010	501,008	518,018	677,305
Service Cost							
A. Participants	1,489	8,605	10,094	0	0	0	10,094
B. Spouses	<u>1,353</u>	<u>5,640</u>	<u>6,993</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>6,993</u>
C. Total	2,842	14,245	17,087	0	0	0	17,087

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

The GASB Standards for accounting and financial reporting for postemployment benefits other than pensions require the following disclosures in the financial statements:

1. OPEB Expense Development

Components of the Authority's OPEB Expenses for the Fiscal Year Ending December 31, 2019	
Description	Amount
I. Service Cost	17,087
II. Interest on Total OPEB Liability (Asset), Service Cost, and Benefit Payments	42,905
III. Deferred (Inflows)/Outflows from Plan Experience*	(23,375)
IV. Deferred (Inflows)/Outflows from Changes of Assumptions*	(23,476)
V. Projected Earnings on OPEB Plan Investments	(1,501)
VI. Deferred (Inflows)/Outflows from Earnings on Plan Investments**	(258)
VII. Financial Statement Expense Prior to Plan Design Changes [I. + II.+ III. + IV. + V. + VI.]	11,382
VIII. Deferred (Inflows)/Outflows from Plan Design Changes***	0
IX. Financial Statement Expense [VII. + VIII.]	11,382

* Amortized over 5.00 years

** Amortized over 5.00 years

*** Recognized Immediately

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

2. Changes in Net OPEB Liability

Changes in Net OPEB Liability				
		Increase (Decrease)		
		Total OPEB	Plan Fiduciary	Net OPEB
		Liability	Net Position	Liability
I.	Balances for December 31, 2018	860,656	21,232	839,424
II.	Prior Period Adjustment	0	0	0
III.	Balances for December 31, 2018 with Adjustment [I. + II.]	860,656	21,232	839,424
Changes for the year:				
IV.	Service Cost	17,087	0	17,087
V.	Interest on Total OPEB Liability, Service Cost, and Benefit Payments	42,905	0	42,905
VI.	Changes in Benefit Terms *	0	0	0
VII.	Change in Assumptions **	(58,898)	0	(58,898)
VIII.	Differences Between Actual and Expected Experience **	(144,672)	0	(144,672)
IX.	Net Investment Income	0	4,214	(4,214)
X.	Employer Contributions to Trust	0	46,773	(46,773)
XI.	Benefit Payments Withdrawn from Trust	0	(39,773)	39,773
XII.	Benefit Payments Excluding Implicit Cost	N/A	0	N/A
XIII.	Implicit Cost Amount	N/A	0	N/A
XIV.	Total Benefit Payments Including Implicit Cost [XII. + XIII.]	(39,773)	0	(39,773)
XV.	Administrative Expense	0	0	0
XVI.	Other Charges	0	0	0
XVII.	Net Changes [IV.+V.+VI.+VII.+VIII.+IX.+X.+XI.+XIV.+XV.+XVI.]	(183,351)	11,214	(194,565)
XVIII.	Balances at December 31, 2019 [III.+XVII.]	677,305	32,446	644,859

* Recognized Immediately

** Amortized over 5.00 years

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES

(As of the December 31, 2019 Measurement Date)

3. Changes in Net OPEB Expense

Deferred (Inflows)/Outflows in OPEB Expense Arising from the Recognition of the Effects of Differences Between Expected & Actual Experience									
Fiscal	Differences Between			2019	2020	2021	2022	2023	2024
	Actual & Expected Experience	Recognition Period (Years)	Remaining Balance						
2017	20,678	3.72	4,001	5,559	4,001				
2018	0	5.00	0	0	0	0	0		
2019	(144,672)	5.00	(115,738)	(28,934)	(28,934)	(28,934)	(28,934)	(28,936)	
2020									
2021									
2022									
2023									
2024									
2025									
2026									
Total Remaining Balance			(111,737)						
Net increase (decrease) in OPEB Expense				(23,375)	(24,933)	(28,934)	(28,934)	(28,936)	0

Deferred (Inflows)/Outflows in OPEB Expense Arising from the Recognition of the Effects of Changes in Assumptions									
Fiscal	Differences from			2019	2020	2021	2022	2023	2024
	Changes in Actuarial Assumptions	Recognition Period (years)	Remaining Balance						
2017	0	3.72	0	0	0				
2018	(58,482)	5.00	(35,090)	(11,696)	(11,696)	(11,696)	(11,698)		
2019	(58,898)	5.00	(47,118)	(11,780)	(11,780)	(11,780)	(11,780)	(11,778)	
2020									
2021									
2022									
2023									
2024									
2025									
2026									
Total Remaining Balance			(82,208)						
Net increase (decrease) in OPEB Expense				(23,476)	(23,476)	(23,476)	(23,478)	(11,778)	0

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

3. Changes in Net OPEB Expense (Continued)

Deferred (Inflows)/Outflows in OPEB Expense Arising from the Recognition of Differences Between Projected & Actual Earnings on OPEB Plan Investments									
Fiscal	Differences Between			2019	2020	2021	2022	2023	2024
	Actual & Expected Earnings	Recognition Period (years)	Remaining Balance						
2017	(872)	5.00	(350)	(174)	(174)	(176)			
2018	2,296	5.00	1,378	459	459	459	460		
2019	(2,713)	5.00	(2,170)	(543)	(543)	(543)	(543)	(541)	
2020									
2021									
2022									
2023									
2024									
2025									
2026									
Total Remaining Balance			(1,142)						
Net increase (decrease) in OPEB Expense				(258)	(258)	(260)	(83)	(541)	0

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

3. Changes in Net OPEB Expense (Continued)

Statement of Outflows & Inflows Arising from Current & Prior Reporting Periods for the Measurement Period Ending on December 31, 2019 to be Reported for the Fiscal Year Ending December 31, 2019			
	Deferred Outflows of Resources	Deferred Inflows of Resources	Total
I. Contributions made subsequent to the Measurement Date	0	0	0
II. Differences Between Actual & Expected Experience	4,001	(115,738)	(111,737)
III. Changes of Assumptions	0	(82,208)	(82,208)
IV. Net Difference Between Projected & Actual Earnings on OPEB Plan Investments	<u>1,378</u>	<u>(2,520)</u>	<u>(1,142)</u>
V. Total [I.+II.+III.+IV.]	5,379	(200,466)	(195,087)

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

3. Changes in Net OPEB Expense (Continued)

Annual Amortization of Deferred (Inflows)/Outflows

The balance of deferred (inflows)/outflows as of December 31, 2019 will be recognized in future years as shown below.

Year ending December 31:

2020	(48,667)
2021	(52,670)
2022	(52,495)
2023	(41,255)
2024	0
Thereafter	0

4. Discount Rate

The discount rate used to measure the Total OPEB liability was 5.50% as of December 31, 2019 and 5.00% as of December 31, 2018. The projection of cash flows used to determine the discount rate assumed that contributions will be made in accordance with the Authority's funding policy. Based on these assumptions, the OPEB Plan's Fiduciary Net Position is projected to be insufficient to make all projected benefit payments to current plan members. Therefore, the long-term expected rate of return on the OPEB Plan assets is applied to the projected benefits payments which the Fiduciary Net Position is expected to be sufficient to cover and the Municipal Bond Rate is applied thereafter. The Municipal Bond Rate is based on the S&P Municipal Bond 20 - Year High Grade Index ("SAPIHG"), which was 3.26% as of December 31, 2019. The S&P Municipal Bond 20 - Year High Grade Index is the index rate for 20 year, tax exempt general obligation municipal bonds with an average rate of AA/Aa or higher.

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES

(As of the December 31, 2019 Measurement Date)

5. Funding Policy

The contribution requirements of plan members and the Authority are established and may be amended through Authority ordinances. For the period ending on the December 31, 2019 Measurement Date, total Authority premiums plus implicit costs for the retiree medical program were \$39,773. The Authority also contributed \$7,000 to an OPEB Trust for a total contribution during the measurement period of \$46,773 to be reported on the financial statement for the fiscal year ending December 31, 2019.

6. Investment Policy

The chart below shows how the long-term rate of return on assets is developed based on the Authority's Investment Policy.

Investment Target Allocation & Expected Long-Term Real Rate of Return			
Asset Class	Target Allocation	Asset Class	Long-Term Expected Real Rate of Return*
Domestic Equity - Large Cap	37.10%	Domestic Equity - Large Cap	4.80%
Domestic Equity - Small/Mid Cap	0.00%	Domestic Equity - Small/Mid Cap	5.29%
International Equity - Developed Market	15.90%	International Equity - Developed Market	5.45%
International Equity-Emerging Market	0.00%	International Equity-Emerging Market	6.42%
Domestic Fixed Income	39.00%	Domestic Fixed Income	2.05%
International Fixed Income	0.00%	International Fixed Income	3.00%
Alternatives	0.00%	Alternatives	6.50%
Real Estate	8.00%	Real Estate	6.25%
Cash & Cash Equivalents	0.00%	Cash & Cash Equivalents	0.00%
Total	<u>100.00%</u>		
		I. Real Rate of Return**	3.95%
		II. Inflation Assumption	2.50%
		III. Total Nominal Return [I. + II.]	6.45%
		IV. Investment Expense	0.37%
		V. Net Investment Return [III.-IV.]	6.08%

* Based on 2019 Horizon Survey of Capital Market Assumptions

** Geometric Mean

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES

(As of the December 31, 2019 Measurement Date)

7. Schedule of The Authority's Contributions

For the Fiscal Year Ending	Actuarial Determined Contribution	Contributions in Relation to the Actuarially Determined Contribution	Contribution Deficiency (Excess)	Covered Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
December 31, 2019	59,144	(46,773)	12,371	507,332	9.22%
December 31, 2018	74,854	(60,909)	13,945	403,194	15.11%
December 31, 2017	71,434	(80,619)	(9,185)	391,450	20.59%

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

8. Effect of 1% Change in Healthcare Trend

<u>Impact of a 1% Change in the Healthcare Trend Rate as of the December 31, 2019 Measurement Date</u>			
	<u>1% Decrease</u>	<u>Current Trend Rate</u>	<u>1% Increase</u>
I. Total OPEB Liability	603,914	677,305	767,509
II. Fiduciary Net Position	<u>32,446</u>	<u>32,446</u>	<u>32,446</u>
III. Net OPEB Liability (Asset) [I.-II.]	571,468	644,859	735,063
IV. Service Cost	13,363	17,087	22,120

9. Effect of 1% Change in Discount Rates

<u>Impact of a 1% Change in the Discount Rate as of the December 31, 2019 Measurement Date</u>			
	<u>1% Decrease</u>	<u>Current Discount Rate</u>	<u>1% Increase</u>
I. Total OPEB Liability	761,190	677,305	608,206
II. Fiduciary Net Position	<u>32,446</u>	<u>32,446</u>	<u>32,446</u>
III. Net OPEB Liability (Asset) [I.-II.]	728,744	644,859	575,760
IV. Service Cost	21,562	17,087	13,696

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

10. Money Weighted Rate of Return

	Plan Investments / Net External Cash Flows	Periods Invested	Period Weight
I. Beginning value - December 31, 2018	21,232	12	1.0000
Monthly net external cash flows:			
January	0	11	0.9167
February	0	10	0.8333
March	0	9	0.7500
April	0	8	0.6667
May	0	7	0.5833
June	0	6	0.5000
July	0	5	0.4167
August	0	4	0.3333
September	0	3	0.2500
October	0	2	0.1667
November	7,000	1	0.0833
<u>December</u>	<u>0</u>	0	0.0000
II. Total net external cash flow	7,000		
III. Earnings and increase in fair value	4,214		
IV. Ending value - December 31, 2019 [I.+II.+III.]	32,446		
Money Weighted Rate of Return	19.36%		
Asset Value - December 31, 2019	32,446		

EXHIBIT A
FINANCIAL STATEMENT DISCLOSURES
(As of the December 31, 2019 Measurement Date)

11. OPEB Liability, OPEB Expense

	Fiscal Year Ending December 31, 2019	
	Authority	
	Employees and Retirees	Total
I. Total OPEB Liability as of December 31, 2019	677,305	677,305
II. Fiduciary Net Position as of December 31, 2019	32,446	32,446
III. Net OPEB Liability (Asset) as of December 31, 2019 [I. - II.]	644,859	644,859
IV. Service Cost	17,087	17,087
V. Interest on Total OPEB Liability (Asset), Service Cost, and Benefit Payments	42,905	42,905
VI. Projected Earnings on OPEB Plan Investments	(1,501)	(1,501)
VII. Net Recognition of Deferred (Inflows)/Outflows	(47,109)	(47,109)
VIII. Expense Related to Change in Benefit Terms	0	0
IX. Financial Statement Expense [IV. + V. + VII. + VIII.]	11,382	11,382
X. Employer Share of Costs	(39,773)	(39,773)
XI. Employer (Payments) Withdrawals to/from OPEB Trust	(7,000)	(7,000)
XII. Total Employer Contribution [X. + XI.]	(46,773)	(46,773)
XIII. Net OPEB Expense [IX. + XII.]	(35,391)	(35,391)

EXHIBIT A

FINANCIAL STATEMENT DISCLOSURES

(As of the December 31, 2019 Measurement Date)

12. OPEB Liability, OPEB Expense and Deferred Inflow/Outflow

Valuation Date	January 1, 2019
For the Measurement Period ending on the Measurement Date of:	December 31, 2019
For the Reporting Period & Fiscal Year ending on:	December 31, 2019
Source of Deferred Inflow/Outflow	
I. Deferred (Inflow)/Outflow from Actual vs. Expected Experience	(111,737)
II. Deferred (Inflow)/Outflow from Investment Experience	(1,142)
III. Deferred (Inflow)/Outflow from Changes in Assumptions	(82,208)
Change in Deferred Inflow/Outflow	
I. Deferred Outflow at the beginning of the period	11,397
II. Deferred Outflow created during the period	0
III. Deferred Outflow recognized during the period	6,018
IV. Change in Deferred Outflow (II. - III.)	(6,018)
V. Deferred Outflow at end of the period (I. + IV.)	5,379
VI. Deferred Inflow at the beginning of the period	(47,310)
VII. Deferred Inflow created during the period	(206,283)
VIII. Deferred Inflow recognized during the period	(53,127)
IX. Change in Deferred Inflow (VII. - VIII.)	(153,156)
X. Deferred Inflow at end of the period (VI. + IX.)	(200,466)
Net OPEB Liability	
I. Net OPEB Liability at beginning of period	839,424
II. Service Cost	17,087
III. Interest on Total OPEB Liability, Service Cost, and Payments	42,905
IV. Projected Investment Income	(1,501)
V. Total Employer Contributions	(46,773)
VI. Expense Related to Change in Benefit Terms	0
VII. Net OPEB Expense - Before Recognition of Deferred (Inflow)/Outflow (II. + III. + IV. + V. + VI.)	11,718
VIII. Deferred Outflow created during the period	0
IX. Deferred Inflow created during the period	(206,283)
X. Net OPEB Liability at end of period (I. + VII. + VIII. + IX.)	644,859
Net OPEB Expense	
I. Service Cost	17,087
II. Interest on Total OPEB Liability, Service Cost, and Payments	42,905
III. Projected Investment Income	(1,501)
IV. Recognition of Deferred (Inflow)/Outflow	(47,109)
V. Expense Related to Change in Benefit Terms	0
VI. Financial Statement Expense (I. + II. + III. + IV. + V.)	11,382
VII. Benefit Payments	(39,773)
VIII. Contributions to Trust	(7,000)
IX. Total Employer Payments (VII. + VIII.)	(46,773)
X. Total Net OPEB Expense under GASB 75 (VI. + IX.)	(35,391)

EXHIBIT B

REQUIRED SUPPLEMENTARY INFORMATION

(As of the December 31, 2019 Measurement Date)

The Authority's Actuarially Determined Contribution (ADC) is an amount actuarially determined in accordance with the parameters of GASB Statement No. 74/75 which is composed of the service cost and an amortization of the unfunded liability. We have used a 30 year flat dollar amortization of the Authority's unfunded liability for the purpose of calculating ADC. The following table shows the components of the Authority's annual ADC and the amount actually contributed to the plan:

	Actuarially Determined Contribution - Deficiency / (Excess)		
	<u>December 31, 2019</u>	<u>December 31, 2018</u>	<u>December 31, 2017</u>
		For the Fiscal Year Ending:	
		<u>December 31, 2018</u>	<u>December 31, 2017</u>
I. Service Cost	17,087	22,849	19,251
II. 30 Year Level Dollar Amortization of NOL	<u>42,057</u>	<u>52,005</u>	<u>52,183</u>
III. Actuarial Determined Contribution [I. + II.]	59,144	74,854	71,434
IV. Contributions in Relation to the Actuarially Determined Contribution	<u>(46,773)</u>	<u>(60,909)</u>	<u>(80,619)</u>
V. Contribution Deficiency / (Excess) [III. + IV.]	<u>12,371</u>	<u>13,945</u>	<u>(9,185)</u>
Covered Employee Payroll	507,332	403,194	391,450
Contributions as a % of Covered Employee Payroll	9.22%	15.11%	20.59%
Discount Rate	5.50%	5.00%	4.50%
Money Weighted Rate of Return	19.36%	<u>(7.64%)</u>	11.82%

EXHIBIT B

REQUIRED SUPPLEMENTARY INFORMATION

(As of the December 31, 2019 Measurement Date)

Schedule of Changes in the Authority's Net OPEB Liability and Related Ratios			
Valuation Date	January 1, 2019	January 1, 2017	January 1, 2017
GASB 75 Measurement Date	December 31, 2019	December 31, 2018	December 31, 2017
For the Reporting Period & Fiscal Year Ending on:	December 31, 2019	December 31, 2018	December 31, 2017
Total OPEB Liability	677,305	860,656	900,917
I. Service Cost	17,087	22,849	19,251
II. Interest on Total OPEB Liability, Service Cost, and Benefit Payments	42,905	49,281	39,355
III. Changes in Benefit Terms	0	0	0
IV. Difference Between Expected & Actual Plan Experience	(144,672)	0	20,678
V. Changes of Assumptions	(58,898)	(58,482)	0
VI. Benefit Payments Excluding Implicit Cost	N/A	(53,371)	N/A
VII. Implicit Cost Amount	N/A	(538)	N/A
VIII. Total Benefit Payments Including Implicit Cost [VI.+VII.]	(39,773)	(53,909)	(66,619)
IX. Net Change in OPEB Liability [I.+II.+III.+IV.+V.+VIII.]	(183,351)	(40,261)	12,665
X. Total OPEB Liability - Beginning of Period	860,656	900,917	888,252
XI. Prior Period Adjustment	0	0	0
XII. Total OPEB Liability - Beginning of Period with Adjustment	860,656	900,917	888,252
XIII. Total OPEB Liability - End of Period [IX.+XII.]	677,305	860,656	900,917
Plan Fiduciary Net Position	32,446	21,232	15,510
XIV. Earning from Plan Investments	4,214	(1,278)	1,510
XV. Employer Contribution to Trust	46,773	60,909	80,619
XVI. Benefit Payments from Trust, Including Refunds of Member Contributions	(39,773)	(53,909)	(66,619)
XVII. Administrative Expense	0	0	0
XVIII. Other	0	0	0
XIX. Net Change in Plan Fiduciary Net Position [XIV.+XV.+XVI.+XVII.+XVIII.]	11,214	5,722	15,510
XX. Plan Fiduciary Net Position - Beginning of Period	21,232	15,510	0
XXI. Prior Period Adjustment	0	0	0
XXII. Plan Fiduciary Net Position - Beginning of Period with Adjustment	21,232	15,510	0
XXIII. Plan Fiduciary Net Position - End of Period [XIX.+XXII.]	32,446	21,232	15,510
XXIV. Net OPEB Liability [XIII.-XXIII.]	644,859	839,424	885,407
XXV. Plan Fiduciary Net Position as % of Total OPEB Liability [XXIII. / XIII.]	4.79%	2.47%	1.72%
XXVI. Covered Employee Payroll	507,332	403,194	391,450
XXVII. Plan NOL as % of Covered Employee Payroll [XXIV. / XXVI.]	127.11%	208.19%	226.19%
Single Discount Rate to calculate Plan Liabilities	5.50%	5.00%	4.50%

EXHIBIT BREQUIRED SUPPLEMENTARY INFORMATION

(As of the December 31, 2019 Measurement Date)

Notes to Required Supplementary Information:

Valuation Date:	Actuarially Determined Contribution was calculated as of January 1, 2019.
Actuarial Cost Method:	Individual Entry Age Normal
Asset-Valuation Method:	Market Value of Assets as of the Measurement Date, December 31, 2019.

Actuarial Assumptions:

Investment Rate of Return:	6.08%, net of OPEB plan investment expense, including inflation.
Municipal Bond Rate	3.26% as of December 31, 2019 (source: S&P Municipal Bond 20-Year High Grade Index – SAPIHG)
Single Equivalent Discount Rate:	5.50%, net of OPEB plan investment expense, including inflation.
Inflation:	2.50% as of December 31, 2019 and for future periods
Salary Increases:	3.00% annually as of December 31, 2019 and for future periods
Cost of Living Adjustment:	Not Applicable

EXHIBIT B

REQUIRED SUPPLEMENTARY INFORMATION

(As of the December 31, 2019 Measurement Date)

Pre-Retirement Mortality:	General: RP-2014 Mortality Table for Blue Collar Employees projected generationally with scale MP-2016 for males and females Teachers: RP-2014 Mortality Table for White Collar Employees projected generationally with scale MP-2016 for males and females
Post-Retirement Mortality:	General: RP-2014 Mortality Table for Blue Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females Teachers: RP-2014 Mortality Table for White Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females
Disabled Mortality:	General: RP-2014 Mortality Table for Blue Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females, set forward 1 year Teachers: RP-2014 Mortality Table for White Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females

EXHIBIT BREQUIRED SUPPLEMENTARY INFORMATION

(As of the December 31, 2019 Measurement Date)

Plan Membership

At January 1, 2019, OPEB plan membership consisted of the following:

Inactive employees or beneficiaries currently receiving benefits:	10
Active Employees:	<u>5</u>
Total:	15

Events Subsequent to the Measurement Date

To the best of our knowledge there were no material events subsequent to the Measurement Date that would impact the figures shown in this report.

Changes in Assumptions: From December 31, 2018 to December 31, 2019

- ✓ Due to the GASB 75 standards the discount rate has been changed from 5.00% to 5.50%
- ✓ Based on recommendations by PERAC, the mortality table has been updated from the RP-2000 Employees Mortality Table projected generationally with scale BB and a base year 2009 to the RP-2014 Mortality Table projected generationally with scale MP-2016 for males and females
- ✓ The expected long-term medical trend has been updated to 4.50%

Contributions:

The contribution requirements of plan members and the Authority are established and may be amended through Authority ordinances. The Authority contributed \$7,000 beyond the pay-as-you-go cost for the period ending on the December 31, 2019 Measurement Date. For the year ending on the December 31, 2019 Measurement Date total Authority premiums plus implicit costs for the retiree medical program were \$39,773.f

EXHIBIT BREQUIRED SUPPLEMENTARY INFORMATION

(As of the December 31, 2019 Measurement Date)

Census Data Manipulation:

In the absence of data, the following was assumed:

Spouse Sex:	Male participants had female spouses and vice versa.
Spouse Age:	Male spouses were three years older than female spouses and same sex spouses were the same age.
Hire Age:	Participants who were not on the previous valuation were hired halfway between last valuation and the current valuation. If we did not have census data related to the last valuation, the participants were assumed to have been hired at age forty.
Retiree Age:	Retirees had the same birth date as they had the prior valuation. If we did not have census data related to the last valuation, retirees who were enrolled in Active plans were assumed to be age sixty-two and retirees who were enrolled in Medicare Supplement plans were assumed to be age seventy-two.
School Demographics:	Two thirds of school participants were teachers.
Other Material Changes:	No other data changes were deemed to be material.

APPENDIX I - LIABILITIES, ASSETS, & CASH FLOWS

CURRENT FUNDING POLICY (OPEN GROUP)

Funding - 5.50% discount rate

For the Fiscal Year	Period Ending on the Measurement Date of:	I. Total OPEB Liability ("TOL") as of Measurement Date	II. Fiduciary Net Position as of Measurement Date with an expected 6.08% return	III. Net OPEB Liability (Asset) [I. - II.]	IV. Funded Ratio [II. / I.]	V. Service Cost	VI. Employer Share of Benefit Payments (With Implicit Cost)	VII. Trust Contributions Beyond Pay-as-you-go	VIII. Gross Trust Contributions [VI. + VII.]	IX. Benefit Payments Reimbursed from the Trust	X. Administrative & Investment Expenses Reimbursed from the Trust	XI. Total Employer Payments Less Reimbursements [VIII. - IX. - X.]
2019	December 31, 2019	677,305	32,446	644,859	4.79%	17,087	39,773	7,000	46,773	39,773	0	7,000
2020	December 31, 2020	691,499	41,628	649,871	6.02%	16,978	39,887	7,000	46,887	39,887	0	7,000
2021	December 31, 2021	703,866	51,369	652,497	7.30%	16,984	39,950	7,000	46,950	39,950	0	7,000
2022	December 31, 2022	718,199	61,702	656,497	8.59%	17,070	39,969	7,000	46,969	39,969	0	7,000
2023	December 31, 2023	733,448	72,663	660,785	9.91%	17,224	39,940	7,000	46,940	39,940	0	7,000
2024	December 31, 2024	749,788	84,291	665,497	11.24%	17,446	39,856	7,000	46,856	39,856	0	7,000
2025	December 31, 2025	770,571	96,626	673,945	12.54%	17,728	40,841	7,000	47,841	40,841	0	7,000
2026	December 31, 2026	780,945	109,711	671,234	14.05%	14,746	44,717	7,000	51,717	44,717	0	7,000
2027	December 31, 2027	793,551	123,591	669,960	15.57%	16,410	44,848	7,000	51,848	44,848	0	7,000
2028	December 31, 2028	807,278	138,315	668,963	17.13%	16,879	44,877	7,000	51,877	44,877	0	7,000
2029	December 31, 2029	822,408	153,934	668,474	18.72%	17,385	44,803	7,000	51,803	44,803	0	7,000
2030	December 31, 2030	837,505	170,503	667,002	20.36%	17,871	46,136	7,000	53,136	46,136	0	7,000
2031	December 31, 2031	851,964	188,079	663,885	22.08%	17,852	47,517	7,000	54,517	47,517	0	7,000
2032	December 31, 2032	865,303	206,724	658,579	23.89%	18,200	49,759	7,000	56,759	49,759	0	7,000
2033	December 31, 2033	877,595	226,502	651,093	25.81%	18,698	52,039	7,000	59,039	52,039	0	7,000
2034	December 31, 2034	889,374	247,483	641,891	27.83%	19,322	53,868	7,000	60,868	53,868	0	7,000
2035	December 31, 2035	903,551	269,740	633,811	29.85%	20,071	52,929	7,000	59,929	52,929	0	7,000
2036	December 31, 2036	916,963	293,350	623,613	31.99%	20,726	55,196	7,000	62,196	55,196	0	7,000
2037	December 31, 2037	928,155	318,395	609,760	34.30%	21,386	58,754	7,000	65,754	58,754	0	7,000
2038	December 31, 2038	942,925	344,963	597,962	36.58%	22,143	56,564	7,000	63,564	56,564	0	7,000
2039	December 31, 2039	987,834	373,146	614,688	37.77%	22,923	59,232	7,000	66,232	59,232	0	7,000
2040	December 31, 2040	1,004,760	403,043	601,717	40.11%	23,728	61,179	7,000	68,179	61,179	0	7,000
2041	December 31, 2041	1,021,225	434,758	586,467	42.57%	24,607	63,465	7,000	70,465	63,465	0	7,000
2042	December 31, 2042	1,045,107	468,401	576,706	44.82%	25,567	57,920	7,000	64,920	57,920	0	7,000
2043	December 31, 2043	1,069,575	504,089	565,486	47.13%	26,567	59,716	7,000	66,716	59,716	0	7,000
2044	December 31, 2044	1,118,254	541,947	576,307	48.46%	27,602	61,615	7,000	68,615	61,615	0	7,000
2045	December 31, 2045	1,154,582	582,107	572,475	50.42%	28,642	54,922	7,000	61,922	54,922	0	7,000
2046	December 31, 2046	1,209,498	624,709	584,789	51.65%	29,781	56,002	7,000	63,002	56,002	0	7,000
2047	December 31, 2047	1,248,801	669,901	578,900	53.64%	30,973	58,512	7,000	65,512	58,512	0	7,000
2048	December 31, 2048	1,290,276	717,841	572,435	55.63%	32,262	59,759	7,000	66,759	59,759	0	7,000
2049	December 31, 2049	1,336,169	768,695	567,474	57.53%	33,593	61,045	7,000	68,045	61,045	0	7,000
2050	December 31, 2050	1,385,937	822,641	563,296	59.36%	34,977	62,673	7,000	69,673	62,673	0	7,000

APPENDIX I – LIABILITIES, ASSETS, & CASH FLOWS

CONTRIBUTION PROJECTION DISCLOSURES

Projection of Contributions using a January 1, 2019 Valuation Date

For the Period Ending on the Measurement Date	I. Payroll for current employees	II. Payroll for future employees	III. Total Payroll [I.+II.]	IV. Contributions from current employees	V. Employer Payments for current plan members	VI. Employer Payments for future employees	VII. Total Payments [IV.+V.+VI.]
December 31, 2019	507,332	0	507,332	0	39,773	0	39,773
December 31, 2020	471,403	51,149	522,552	0	39,887	0	39,887
December 31, 2021	443,652	94,577	538,229	0	39,950	0	39,950
December 31, 2022	421,624	132,752	554,376	0	39,969	0	39,969
December 31, 2023	404,354	166,653	571,007	0	39,940	0	39,940
December 31, 2024	390,331	197,806	588,137	0	39,856	0	39,856
December 31, 2025	379,150	226,631	605,781	0	40,841	0	40,841
December 31, 2026	295,135	328,819	623,954	0	44,717	0	44,717
December 31, 2027	289,402	353,271	642,673	0	44,848	0	44,848
December 31, 2028	284,228	377,725	661,953	0	44,877	0	44,877
December 31, 2029	279,956	401,856	681,812	0	44,803	0	44,803
December 31, 2030	276,496	425,770	702,266	0	45,985	151	46,136
December 31, 2031	241,936	481,398	723,334	0	47,149	368	47,517
December 31, 2032	227,406	517,628	745,034	0	49,094	665	49,759
December 31, 2033	215,180	552,205	767,385	0	50,967	1,072	52,039
December 31, 2034	191,335	599,072	790,407	0	52,294	1,574	53,868
December 31, 2035	155,842	658,277	814,119	0	50,989	1,940	52,929
December 31, 2036	114,951	723,592	838,543	0	52,755	2,441	55,196
December 31, 2037	91,624	772,075	863,699	0	55,633	3,121	58,754
December 31, 2038	79,712	809,898	889,610	0	52,932	3,632	56,564
December 31, 2039	72,356	843,942	916,298	0	55,017	4,215	59,232
December 31, 2040	67,617	876,170	943,787	0	56,150	5,029	61,179
December 31, 2041	65,344	906,757	972,101	0	57,455	6,010	63,465
December 31, 2042	64,157	937,107	1,001,264	0	50,910	7,010	57,920
December 31, 2043	63,863	967,439	1,031,302	0	51,256	8,460	59,716
December 31, 2044	63,863	998,378	1,062,241	0	51,478	10,137	61,615
December 31, 2045	63,285	1,030,823	1,094,108	0	43,339	11,583	54,922
December 31, 2046	63,995	1,062,936	1,126,931	0	42,678	13,324	56,002
December 31, 2047	64,644	1,096,095	1,160,739	0	43,032	15,480	58,512
December 31, 2048	65,497	1,130,064	1,195,561	0	42,249	17,510	59,759
December 31, 2049	66,359	1,165,069	1,231,428	0	41,522	19,523	61,045
December 31, 2050	67,232	1,201,139	1,268,371	0	40,877	21,796	62,673
December 31, 2051	68,104	1,238,318	1,306,422	0	41,224	24,038	65,262
December 31, 2052	45,132	1,300,483	1,345,615	0	41,291	26,175	67,466
December 31, 2053	29,912	1,356,071	1,385,983	0	41,662	28,843	70,505
December 31, 2054	19,827	1,407,735	1,427,562	0	41,982	31,654	73,636
December 31, 2055	13,140	1,457,249	1,470,389	0	39,657	34,459	74,116
December 31, 2056	8,706	1,505,795	1,514,501	0	39,477	37,608	77,085
December 31, 2057	5,763	1,554,173	1,559,936	0	39,237	41,273	80,510
December 31, 2058	4,120	1,602,614	1,606,734	0	38,932	45,079	84,011

APPENDIX I – LIABILITIES, ASSETS, & CASH FLOWS

CONTRIBUTION PROJECTION DISCLOSURES (CONTINUED)

Projection of Contributions using a January 1, 2019 Valuation Date

For the Period Ending on the Measurement Date	I. Payroll for current employees	II. Payroll for future employees	III. Total Payroll [I.+II.]	IV. Contributions from current employees	V. Employer Payments for current plan members	VI. Employer Payments for future employees	VII. Total Payments [IV.+V.+VI.]
December 31, 2059	2,932	1,652,004	1,654,936	0	38,562	48,734	87,296
December 31, 2060	0	1,704,584	1,704,584	0	38,783	52,552	91,335
December 31, 2061	0	1,755,722	1,755,722	0	38,151	56,420	94,571
December 31, 2062	0	1,808,394	1,808,394	0	37,457	60,430	97,887
December 31, 2063	0	1,862,646	1,862,646	0	36,696	64,732	101,428
December 31, 2064	0	1,918,525	1,918,525	0	35,855	69,265	105,120
December 31, 2065	0	1,976,081	1,976,081	0	34,927	74,121	109,048
December 31, 2066	0	2,035,363	2,035,363	0	33,903	79,265	113,168
December 31, 2067	0	2,096,424	2,096,424	0	32,771	84,623	117,394
December 31, 2068	0	2,159,317	2,159,317	0	31,529	90,220	121,749
December 31, 2069	0	2,224,097	2,224,097	0	30,169	95,957	126,126
December 31, 2070	0	2,290,820	2,290,820	0	28,709	101,753	130,462
December 31, 2071	0	2,359,545	2,359,545	0	27,149	107,737	134,886
December 31, 2072	0	2,430,331	2,430,331	0	25,516	114,021	139,537
December 31, 2073	0	2,503,241	2,503,241	0	23,827	120,655	144,482
December 31, 2074	0	2,578,338	2,578,338	0	22,100	127,629	149,729
December 31, 2075	0	2,655,688	2,655,688	0	20,361	135,018	155,379
December 31, 2076	0	2,735,359	2,735,359	0	18,625	142,771	161,396
December 31, 2077	0	2,817,420	2,817,420	0	16,920	150,620	167,540
December 31, 2078	0	2,901,943	2,901,943	0	15,267	158,895	174,162
December 31, 2079	0	2,989,001	2,989,001	0	13,682	167,465	181,147
December 31, 2080	0	3,078,671	3,078,671	0	12,185	176,125	188,310
December 31, 2081	0	3,171,031	3,171,031	0	10,787	185,148	195,935
December 31, 2082	0	3,266,162	3,266,162	0	9,500	194,614	204,114
December 31, 2083	0	3,364,147	3,364,147	0	8,330	204,442	212,772
December 31, 2084	0	3,465,071	3,465,071	0	7,273	214,715	221,988
December 31, 2085	0	3,569,023	3,569,023	0	6,329	225,500	231,829
December 31, 2086	0	3,676,094	3,676,094	0	5,479	236,761	242,240
December 31, 2087	0	3,786,377	3,786,377	0	4,719	248,446	253,165
December 31, 2088	0	3,899,968	3,899,968	0	4,038	260,707	264,745
December 31, 2089	0	4,016,967	4,016,967	0	3,429	273,532	276,961
December 31, 2090	0	4,137,476	4,137,476	0	2,880	286,876	289,756
December 31, 2091	0	4,261,600	4,261,600	0	2,390	300,802	303,192
December 31, 2092	0	4,389,448	4,389,448	0	1,951	315,362	317,313
December 31, 2093	0	4,521,131	4,521,131	0	1,564	330,564	332,128

APPENDIX I – LIABILITIES, ASSETS, & CASH FLOWS

FIDUCIARY NET POSITION PROJECTION DISCLOSURES

Projection of OPEB Plan's Fiduciary Net Position using a January 1, 2019 Valuation Date

For the Period Ending on the Measurement Date	I. Beginning Fiduciary Net Position for Current Plan Members	II. Employer Share of Benefit Payments for Current Plan Members	III. Contributions to Trust for Current Plan Members beyond Pay-as-you- go	IV. Gross Contributions to Trust for Current Plan Members [II. + III.]	V. Administrative Expenses Withdrawn from the Trust for Current Plan Members	VI. Benefit Payments Withdrawn from the Trust for Current Plan Members	VII. Trust Withdrawals for Current Plan Members [V. +VI.]	VIII. Investment Earnings	IX. Ending Fiduciary Net Position for Current Plan Members
December 31, 2019	21,232	39,773	7,000	46,773	0	39,773	39,773	4,214	32,446
December 31, 2020	32,446	39,887	6,315	46,202	0	39,887	39,887	1,968	40,729
December 31, 2021	40,729	39,950	5,770	45,720	0	39,950	39,950	2,649	49,148
December 31, 2022	49,148	39,969	5,324	45,293	0	39,969	39,969	3,148	57,620
December 31, 2023	57,620	39,940	4,957	44,897	0	39,940	39,940	3,652	66,229
December 31, 2024	66,229	39,856	4,646	44,502	0	39,856	39,856	4,166	75,041
December 31, 2025	75,041	40,841	4,381	45,222	0	40,841	40,841	4,694	84,116
December 31, 2026	84,116	44,717	3,311	48,028	0	44,717	44,717	5,213	92,640
December 31, 2027	92,640	44,848	3,152	48,000	0	44,848	44,848	5,727	101,519
December 31, 2028	101,519	44,877	3,006	47,883	0	44,877	44,877	6,262	110,787
December 31, 2029	110,787	44,803	2,874	47,677	0	44,803	44,803	6,822	120,483
December 31, 2030	120,483	45,985	2,756	48,741	0	45,985	45,985	7,408	130,496
December 31, 2031	130,496	47,149	2,341	49,490	0	47,149	47,149	8,004	140,473
December 31, 2032	140,473	49,094	2,137	51,231	0	49,094	49,094	8,605	150,550
December 31, 2033	150,550	50,967	1,963	52,930	0	50,967	50,967	9,212	160,653
December 31, 2034	160,653	52,294	1,695	53,989	0	52,294	52,294	9,818	170,592
December 31, 2035	170,592	50,989	1,340	52,329	0	50,989	50,989	10,412	180,404
December 31, 2036	180,404	52,755	960	53,715	0	52,755	52,755	10,997	189,920
December 31, 2037	189,920	55,633	743	56,376	0	55,633	55,633	11,569	199,111
December 31, 2038	199,111	52,932	627	53,559	0	52,932	52,932	12,125	208,231
December 31, 2039	208,231	55,017	553	55,570	0	55,017	55,017	12,677	217,246
December 31, 2040	217,246	56,150	502	56,652	0	56,150	56,150	13,224	225,943
December 31, 2041	225,943	57,455	471	57,926	0	57,455	57,455	13,751	234,155
December 31, 2042	234,155	50,910	449	51,359	0	50,910	50,910	14,250	241,844
December 31, 2043	241,844	51,256	433	51,689	0	51,256	51,256	14,717	248,534
December 31, 2044	248,534	51,478	421	51,899	0	51,478	51,478	15,123	253,941
December 31, 2045	253,941	43,339	405	43,744	0	43,339	43,339	15,452	258,215
December 31, 2046	258,215	42,678	398	43,076	0	42,678	42,678	15,711	261,000
December 31, 2047	261,000	43,032	390	43,422	0	43,032	43,032	15,880	261,790
December 31, 2048	261,790	42,249	383	42,632	0	42,249	42,249	15,928	260,591
December 31, 2049	260,591	41,522	377	41,899	0	41,522	41,522	15,855	257,300
December 31, 2050	257,300	40,877	371	41,248	0	40,877	40,877	15,655	251,530
December 31, 2051	251,530	41,224	365	41,589	0	41,224	41,224	15,304	243,161
December 31, 2052	243,161	41,291	235	41,526	0	41,291	41,291	14,791	232,012
December 31, 2053	232,012	41,662	151	41,813	0	41,662	41,662	14,111	217,431
December 31, 2054	217,431	41,982	97	42,079	0	41,982	41,982	13,223	199,097
December 31, 2055	199,097	39,657	63	39,720	0	39,657	39,657	12,107	176,808
December 31, 2056	176,808	39,477	40	39,517	0	39,477	39,477	10,751	149,991
December 31, 2057	149,991	39,237	26	39,263	0	39,237	39,237	9,120	117,864
December 31, 2058	117,864	38,932	18	38,950	0	38,932	38,932	7,167	79,970

APPENDIX I – LIABILITIES, ASSETS, & CASH FLOWS

FIDUCIARY POSITION PROJECTION DISCLOSURES (CONTINUED)

Projection of OPEB Plan's Fiduciary Net Position using a January 1, 2019 Valuation Date										
For the Period Ending on the Measurement Date	I. Beginning Fiduciary Net Position for Current Plan Members	II. Employer Share of Benefit Payments for Current Plan Members	III. Contributions to Trust for Current Plan Members beyond Pay-as-you-go	IV. Gross Contributions to Trust for Current Plan Members [III. + III.]	V. Administrative Expenses Withdrawn from the Trust for Current Plan Members	VI. Benefit Payments Withdrawn from the Trust for Current Plan Members	VII. Trust Withdrawals for Current Plan Members [V. +VI.]	VIII. Investment Earnings	IX. Ending Fiduciary Net Position for Current Plan Members	
December 31, 2059	79,970	38,562	12	38,574	0	38,562	38,562	4,863	36,111	
December 31, 2060	36,111	38,783	0	38,783	0	38,783	38,783	2,196	2,196	
December 31, 2061	2,196	38,151	0	38,151	0	38,151	38,151	134	134	
December 31, 2062	134	37,457	0	37,457	0	37,457	37,457	8	8	
December 31, 2063	8	36,696	0	36,696	0	36,696	36,696	0	0	
December 31, 2064	0	35,855	0	35,855	0	35,855	35,855	0	0	
December 31, 2065	0	34,927	0	34,927	0	34,927	34,927	0	0	
December 31, 2066	0	33,903	0	33,903	0	33,903	33,903	0	0	
December 31, 2067	0	32,771	0	32,771	0	32,771	32,771	0	0	
December 31, 2068	0	31,529	0	31,529	0	31,529	31,529	0	0	
December 31, 2069	0	30,169	0	30,169	0	30,169	30,169	0	0	
December 31, 2070	0	28,709	0	28,709	0	28,709	28,709	0	0	
December 31, 2071	0	27,149	0	27,149	0	27,149	27,149	0	0	
December 31, 2072	0	25,516	0	25,516	0	25,516	25,516	0	0	
December 31, 2073	0	23,827	0	23,827	0	23,827	23,827	0	0	
December 31, 2074	0	22,100	0	22,100	0	22,100	22,100	0	0	
December 31, 2075	0	20,361	0	20,361	0	20,361	20,361	0	0	
December 31, 2076	0	18,625	0	18,625	0	18,625	18,625	0	0	
December 31, 2077	0	16,920	0	16,920	0	16,920	16,920	0	0	
December 31, 2078	0	15,267	0	15,267	0	15,267	15,267	0	0	
December 31, 2079	0	13,682	0	13,682	0	13,682	13,682	0	0	
December 31, 2080	0	12,185	0	12,185	0	12,185	12,185	0	0	
December 31, 2081	0	10,787	0	10,787	0	10,787	10,787	0	0	
December 31, 2082	0	9,500	0	9,500	0	9,500	9,500	0	0	
December 31, 2083	0	8,330	0	8,330	0	8,330	8,330	0	0	
December 31, 2084	0	7,273	0	7,273	0	7,273	7,273	0	0	
December 31, 2085	0	6,329	0	6,329	0	6,329	6,329	0	0	
December 31, 2086	0	5,479	0	5,479	0	5,479	5,479	0	0	
December 31, 2087	0	4,719	0	4,719	0	4,719	4,719	0	0	
December 31, 2088	0	4,038	0	4,038	0	4,038	4,038	0	0	
December 31, 2089	0	3,429	0	3,429	0	3,429	3,429	0	0	
December 31, 2090	0	2,880	0	2,880	0	2,880	2,880	0	0	
December 31, 2091	0	2,390	0	2,390	0	2,390	2,390	0	0	
December 31, 2092	0	1,951	0	1,951	0	1,951	1,951	0	0	
December 31, 2093	0	1,564	0	1,564	0	1,564	1,564	0	0	

APPENDIX I – LIABILITIES, ASSETS, & CASH FLOWS

BENEFIT PAYMENT PROJECTION DISCLOSURES

Actuarial Present Values of Projected Benefit Payments using a January 1, 2019 Valuation Date

For the Period Ending on the Measurement Date	I. Beginning Fiduciary Net Position for Current Plan Members	II. Benefit Payments	III. Funded Portion of Benefit Payments	IV. Unfunded Portion of Benefit Payments	V. Present Value of Funded Benefit Payments	VI. Present Value of Unfunded Benefit Payments	VII. Present Value of
							Benefit Payments using Single Equivalent Discount Rate
December 31, 2019	21,232	39,773	21,232	18,541	21,232	18,541	39,773
December 31, 2020	32,446	39,887	32,446	7,441	30,586	7,206	37,860
December 31, 2021	40,729	39,950	39,950	0	35,502	0	35,993
December 31, 2022	49,148	39,969	39,969	0	33,483	0	34,180
December 31, 2023	57,620	39,940	39,940	0	31,541	0	32,420
December 31, 2024	66,229	39,856	39,856	0	29,671	0	30,708
December 31, 2025	75,041	40,841	40,841	0	28,661	0	29,868
December 31, 2026	84,116	44,717	44,717	0	29,583	0	31,041
December 31, 2027	92,640	44,848	44,848	0	27,969	0	29,550
December 31, 2028	101,519	44,877	44,877	0	26,383	0	28,066
December 31, 2029	110,787	44,803	44,803	0	24,830	0	26,596
December 31, 2030	120,483	45,985	45,985	0	24,024	0	25,911
December 31, 2031	130,496	47,149	47,149	0	23,220	0	25,217
December 31, 2032	140,473	49,094	49,094	0	22,793	0	24,923
December 31, 2033	150,550	50,967	50,967	0	22,306	0	24,559
December 31, 2034	160,653	52,294	52,294	0	21,575	0	23,918
December 31, 2035	170,592	50,989	50,989	0	19,831	0	22,136
December 31, 2036	180,404	52,755	52,755	0	19,342	0	21,739
December 31, 2037	189,920	55,633	55,633	0	19,228	0	21,760
December 31, 2038	199,111	52,932	52,932	0	17,246	0	19,651
December 31, 2039	208,231	55,017	55,017	0	16,898	0	19,387
December 31, 2040	217,246	56,150	56,150	0	16,257	0	18,781
December 31, 2041	225,943	57,455	57,455	0	15,682	0	18,241
December 31, 2042	234,155	50,910	50,910	0	13,099	0	15,342
December 31, 2043	241,844	51,256	51,256	0	12,432	0	14,661
December 31, 2044	248,534	51,478	51,478	0	11,770	0	13,977
December 31, 2045	253,941	43,339	43,339	0	9,341	0	11,169
December 31, 2046	258,215	42,678	42,678	0	8,672	0	10,440
December 31, 2047	261,000	43,032	43,032	0	8,242	0	9,991
December 31, 2048	261,790	42,249	42,249	0	7,629	0	9,311
December 31, 2049	260,591	41,522	41,522	0	7,068	0	8,686
December 31, 2050	257,300	40,877	40,877	0	6,559	0	8,116
December 31, 2051	251,530	41,224	41,224	0	6,236	0	7,769
December 31, 2052	243,161	41,291	41,291	0	5,888	0	7,387
December 31, 2053	232,012	41,662	41,662	0	5,600	0	7,074
December 31, 2054	217,431	41,982	41,982	0	5,320	0	6,766
December 31, 2055	199,097	39,657	39,657	0	4,737	0	6,067
December 31, 2056	176,808	39,477	39,477	0	4,445	0	5,732
December 31, 2057	149,991	39,237	39,237	0	4,165	0	5,408
December 31, 2058	117,864	38,932	38,932	0	3,896	0	5,093

APPENDIX I – LIABILITIES, ASSETS, & CASH FLOWS

BENEFIT PAYMENT PROJECTION DISCLOSURES (CONTINUED)

Actuarial Present Values of Projected Benefit Payments using a January 1, 2019 Valuation Date

For the Period Ending on the Measurement Date	I. Beginning Fiduciary Net Position for Current Plan Members	II. Benefit Payments	III. Funded Portion of Benefit Payments	IV. Unfunded Portion of Benefit Payments	V. Present Value of Funded Benefit Payments	VI. Present Value of Unfunded Benefit Payments	VII. Present Value of Benefit Payments using Single Equivalent Discount Rate
December 31, 2059	79,970	38,562	38,562	0	3,638	0	4,789
December 31, 2060	36,111	38,783	36,111	2,672	3,211	718	4,571
December 31, 2061	2,196	38,151	2,196	35,955	184	9,358	4,268
December 31, 2062	134	37,457	134	37,323	11	9,407	3,978
December 31, 2063	8	36,696	8	36,688	1	8,955	3,699
December 31, 2064	0	35,855	0	35,855	0	8,476	3,430
December 31, 2065	0	34,927	0	34,927	0	7,996	3,172
December 31, 2066	0	33,903	0	33,903	0	7,517	2,922
December 31, 2067	0	32,771	0	32,771	0	7,037	2,681
December 31, 2068	0	31,529	0	31,529	0	6,557	2,449
December 31, 2069	0	30,169	0	30,169	0	6,076	2,224
December 31, 2070	0	28,709	0	28,709	0	5,600	2,009
December 31, 2071	0	27,149	0	27,149	0	5,128	1,803
December 31, 2072	0	25,516	0	25,516	0	4,668	1,609
December 31, 2073	0	23,827	6,796	17,031	281	3,017	1,426
December 31, 2074	0	22,100	6,131	15,969	239	2,740	1,255
December 31, 2075	0	20,361	5,507	14,854	202	2,468	1,098
December 31, 2076	0	18,625	4,917	13,708	170	2,206	953
December 31, 2077	0	16,920	4,347	12,573	142	1,959	822
December 31, 2078	0	15,267	3,831	11,436	118	1,726	704
December 31, 2079	0	13,682	3,357	10,325	97	1,509	599
December 31, 2080	0	12,185	2,919	9,266	80	1,312	506
December 31, 2081	0	10,787	2,530	8,257	65	1,132	425
December 31, 2082	0	9,500	2,189	7,311	53	971	356
December 31, 2083	0	8,330	1,889	6,441	43	828	296
December 31, 2084	0	7,273	1,627	5,646	35	703	245
December 31, 2085	0	6,329	1,401	4,928	28	594	203
December 31, 2086	0	5,479	1,202	4,277	23	500	166
December 31, 2087	0	4,719	1,027	3,692	19	418	136
December 31, 2088	0	4,038	874	3,164	15	347	111
December 31, 2089	0	3,429	739	2,690	12	285	89
December 31, 2090	0	2,880	618	2,262	9	232	71
December 31, 2091	0	2,390	511	1,879	7	187	56
December 31, 2092	0	1,951	416	1,535	6	148	43
December 31, 2093	0	1,564	333	1,231	4	115	33

APPENDIX II – PLAN PROVISIONS

<u>Effective Date</u>	GASB 74 was adopted for the fiscal year ending December 31, 2017 GASB 75 was adopted for the fiscal year ending December 31, 2018
<u>Plan Year</u>	January 1 through December 31.
<u>Premium Effective Date</u>	Medicare Supplement Plans: effective July 1, 2020 Non-Medicare Plans: effective July 1, 2020 Dental Plans: effective July 1, 2020
<u>Creditable Service</u>	Elapsed time from date of hire to termination of service date.
<u>Benefits Offered</u>	Comprehensive Medical, Dental & \$5,000 of Life Insurance offered through the Group Insurance Commission.
<u>Medicare Part B</u>	Medicare Part B Premium reimbursements by the Authority were not reflected in this valuation. Medicare Part B Penalty reimbursements by the Authority were not reflected in this valuation.
<u>Surviving Spouse Coverage</u>	Surviving spouses pay 10% of premiums.

APPENDIX II – PLAN PROVISIONS

Eligibility

Hire Date	Eligibility
Before April 2, 2012	<ul style="list-style-type: none"> • Age 55 with 10 years of creditable service • 20 years of service regardless of age
On or after April 2, 2012	<ul style="list-style-type: none"> • Age 60 with 10 years of creditable service

Participant Contributions

Group	Individual	Two-Person / Family
Medical	<ul style="list-style-type: none"> • Participants who retire on or after October 1, 2009 pay 20% • Participants who retire between July 1, 1994 and October 1, 2009 pay 15% • All others pay 10% • Retirees who elect CIC coverage shall pay 100% of the incremental cost of such coverage 	<ul style="list-style-type: none"> • Participants who retire on or after October 1, 2009 pay 20% • Participants who retire between July 1, 1994 and October 1, 2009 pay 15% • All others pay 10% • Retirees who elect CIC coverage shall pay 100% of the incremental cost of such coverage
Dental	100%	100%
Life	Same as Medical	N/A

APPENDIX III - ACTUARIAL METHODS & ASSUMPTIONS

Pre-Retirement Mortality

General: RP-2014 Mortality Table for Blue Collar Employees projected generationally with scale MP-2016 for males and females
Teachers: RP-2014 Mortality Table for White Collar Employees projected generationally with scale MP-2016 for males and females

Post-Retirement Mortality

General: RP-2014 Mortality Table for Blue Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females
Teachers: RP-2014 Mortality Table for White Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females

Disabled Mortality

General: RP-2014 Mortality Table for Blue Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females, set forward 1 year
Teachers: RP-2014 Mortality Table for White Collar Healthy Annuitants projected generationally with scale MP-2016 for males and females

Assumption Experience Study

The actuarial assumptions used to calculate the actuarial accrued liability and the service cost primarily reflect the latest experience studies of the Massachusetts PERAC issued in 2014 and their most recent analysis of retiree mortality during 2015 and 2016.

Discount Rate

5.50% per annum (previously 5.00%, used in the calculation of the Interest Cost)

Net Long Term Rate of Return

6.08% (based on investment policy)

Municipal Bond Rate

3.26% as of December 31, 2019 (source: S&P Municipal Bond 20-Year High Grade Index – SAPIHG)

Actuarial Cost Method

Individual Entry Age Normal

Asset-Valuation Method

Market Value of Assets as of the Measurement Date, December 31, 2019

APPENDIX III – ACTUARIAL METHODS & ASSUMPTIONS

Employee Termination

It was assumed that employees would terminate employment in accordance with the sample rates shown in the following table:

Non-Public Safety Employees

Age	0-4 Years of Service	0-4 Years of Service	5-9 Years of Service	5-9 Years of Service	10+ Years of Service	10+ Years of Service
	(Males)	(Females)	(Males)	(Females)	(Males)	(Females)
20	27.00%	27.00%	12.00%	12.00%	6.00%	6.00%
30	23.00%	23.00%	10.00%	10.00%	5.50%	5.50%
40	16.00%	16.00%	8.00%	8.00%	3.50%	3.50%
50	18.00%	18.00%	6.00%	6.00%	3.00%	3.00%
60	18.00%	18.00%	5.00%	5.00%	3.50%	3.50%

Public Safety Employees

Service	Male	Female
0	9.00%	9.00%
5	6.00%	6.00%
10	3.50%	3.50%
15	2.00%	2.00%
20	1.50%	1.50%
25	1.50%	1.50%
30	1.50%	1.50%

APPENDIX III – ACTUARIAL METHODS & ASSUMPTIONS

Retirement Rates for Eligible Employees

Age	Standard Male	Standard Female	Male Teachers	Female Teachers	Public Safety
45 - 49	0.00%	0.00%	0.00%	0.00%	6.00%
50 - 51	3.00%	3.00%	2.00%	1.50%	6.00%
52	3.00%	3.00%	2.00%	1.50%	6.00%
53	3.00%	3.00%	2.00%	1.50%	7.50%
54	3.00%	3.50%	2.00%	2.00%	15.00%
55	3.50%	5.00%	6.00%	5.00%	25.00%
56	3.50%	5.00%	20.00%	15.00%	15.00%
57	4.00%	5.50%	40.00%	35.00%	15.00%
58	5.00%	6.00%	50.00%	35.00%	15.00%
59	6.00%	6.50%	50.00%	35.00%	15.00%
60	9.00%	7.50%	40.00%	35.00%	20.00%
61	11.00%	10.00%	40.00%	35.00%	20.00%
62	15.00%	15.00%	35.00%	35.00%	20.00%
63	15.00%	15.00%	35.00%	35.00%	20.00%
64	16.00%	15.00%	35.00%	35.00%	30.00%
65	20.00%	20.00%	35.00%	35.00%	50.00%
66	20.00%	20.00%	40.00%	35.00%	25.00%
67	20.00%	20.00%	40.00%	30.00%	25.00%
68	20.00%	20.00%	40.00%	30.00%	25.00%
69	20.00%	20.00%	40.00%	30.00%	25.00%
70	100.00%	100.00%	100.00%	100.00%	100.00%
71	100.00%	100.00%	100.00%	100.00%	100.00%
72	100.00%	100.00%	100.00%	100.00%	100.00%

Permanent Disability Rates

Age	Standard	Teachers	Public
20	0.01%	0.05%	0.20%
30	0.01%	0.07%	0.21%
40	0.07%	0.21%	0.71%
50	0.13%	0.42%	1.10%
60	0.12%	0.50%	0.80%

APPENDIX III – ACTUARIAL METHODS & ASSUMPTIONSTrend Rate

Medicare Supplement Plans: Initial Trend of 4.50% for 2019 grading down 0.00% per year for an ultimate trend rate of 4.50%.

Non-Medicare Plans: Initial Trend of 4.50% for 2019 grading down 0.00% per year for an ultimate trend rate of 4.50%.

Dental Plans: Initial Trend of 4.50% for 2019 grading down 0.00% per year for an ultimate trend rate of 4.50%.

Participation Rate

It was assumed that 80% of employees eligible to receive retirement benefits would enroll in the retiree medical plans upon retirement. For life insurance plans, it was assumed that 80% of eligible employees would elect coverage upon retirement.

Spouse Participation Rate

It was assumed that 80% of male employees and 70% of female employees who elect retiree healthcare coverage for themselves would also elect coverage for a spouse upon retirement.

Spouse Demographics

It was assumed that a male spouse is three years older than a female spouse and same sex spouses were assumed to be the same age. For current retirees, the actual census information was used, if available.

School Demographics

In the absence of census data specifying which participants were teachers it was assumed that two thirds of school participants were teachers. If available, actual census data was used.

Compensation Increases

3.00% per year.

Inflation Rate

2.50% per year.

APPENDIX III – ACTUARIAL METHODS & ASSUMPTIONS

Implicit Subsidy

The implicit subsidy arises because retirees who are not eligible for Medicare are charged the same premium as active employees, even though their actual medical costs are higher on average. Consequently, a portion of the premiums being paid for active employees are being used to “subsidize” the premiums of retirees. Actuarial Standards of Practice and GASB standards require the liability associated with this implicit subsidy to be valued. The chart below shows a breakdown of how implicit cost impacts reported liabilities. Actuarial Standard of Practice No. 6 (“ASOP 6”) requires us to recognize this implicit subsidy while the plan sponsor may only pay the premiums billed by an insurance provider.

Impact of Implicit Subsidy		
	As of the Measurement Date	
Impact on Liability	<u>December 31, 2019</u>	<u>December 31, 2018</u>
I. Total OPEB Liability	677,305	860,656
II. Total OPEB Liability (Excluding Implicit Subsidy)	<u>674,723</u>	<u>855,248</u>
III. Liability from Implicit Subsidy [I. - II.]	2,582	5,408

APPENDIX III – ACTUARIAL METHODS & ASSUMPTIONS

Pre-65 and post-65 per capita costs were developed using fully insured premium rates.

ANNUAL PER CAPITA CLAIMS*

ACTIVE EMPLOYEES			RETIREE - NOT MEDICARE ELIGIBLE			RETIREE - MEDICARE ELIGIBLE		
Age Bracket	Female	Male	Age Bracket	Female	Male	Age Bracket	Female	Male
24 & Under	3,854	2,430	44 & Under	7,576	4,964	65 to 69	4,696	4,696
25 to 29	5,687	2,528	45 to 49	8,322	6,268	70 to 74	4,696	4,696
30 to 34	7,186	3,174	50 to 54	9,789	8,255	75 to 79	4,696	4,696
35 to 39	7,402	3,984	55 to 59	11,317	10,732	80 to 84	4,696	4,696
40 to 44	7,576	4,964	60 to 64	13,467	13,772	85 to 89	4,696	4,696
45 to 49	8,322	6,268	65 to 69	16,143	17,179	90 & Over	4,696	4,696
50 to 54	9,789	8,255	70 to 74	19,037	20,587			
55 to 59	11,317	10,732	75 to 79	22,108	24,314			
60 to 64	13,467	13,772	80 to 84	25,349	27,948			
65 to 69	16,143	17,179	85 to 89	28,935	31,990			
70 & Over	19,037	20,587	90 & Over	28,935	31,990			

*Based on SOA 'Health Care Costs--From Birth to Death' study published in 2013

APPENDIX III – ACTUARIAL METHODS & ASSUMPTIONS

Open Group Forecast

For the projection of plan liabilities in future years, it was assumed that the number of active employees will remain constant and those who terminate employment or retire will be replaced with new employees with the demographics below:

Open Group Forecast Population Demographics		
Age	Male	Female
20	8.0%	5.0%
30	7.0%	14.0%
40	20.0%	19.0%
50	10.0%	10.0%
60	<u>3.0%</u>	<u>4.0%</u>
Total	48.0%	52.0%

Additional Comments

The liabilities being reported as of the Measurement Date of December 31, 2019 reflect a closed group and do not reflect any new entrants after the valuation date.

To the best of our knowledge all employees who are eligible on the valuation date are included in the actuarial valuation.

APPENDIX IV - PLAN DEMOGRAPHICS

Active Employees

Valuation Date	January 1, 2019	January 1, 2017
A. Average Age at Hire	40.25	39.84
B. Average Service	<u>5.16</u>	<u>6.11</u>
C. Average Current Age	45.41	45.95

Retired Employees & Spouses

Valuation Date	January 1, 2019	January 1, 2017
A. Under Age 65	1	1
B. Age 65 & Over	<u>9</u>	<u>11</u>
C. Total	10	12

Average Service Age

Age	Years of Service								Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39		40+
0-24										
25-29	1									1
30-34										
35-39										
40-44	1		1							2
45-49	1									1
50-54										
55-59										
60-64	1									1
65-69										
70+										
Total	4		1							5

APPENDIX IV - PLAN DEMOGRAPHICS

<u>Plan Offerings</u>	<u>Number of Contracts</u>			
	<u>Single</u>	<u>Two-Person</u>	<u>Family</u>	<u>Total</u>
Harvard Pilgrim			1	1
Harvard Primary Choice			2	2
Allways Health Partners	1			1
Unicare Basic w/ CIC				0
Unicare Basic w/o CIC				0
Unicare Comm Choice			2	2
Unicare OME w/ CIC	1	3		4
Unicare OME w/o CIC				0
Tufts Medicare Complement	1			1
Harvard Senior		1		1
Total	3	4	5	12

	<u>Per Contract Costs (monthly)</u>		
	<u>Single</u>	<u>Two-Person</u>	<u>Family</u>
Harvard Pilgrim	917.18		2,239.19
Harvard Primary Choice	665.43		1,697.02
Allways Health Partners	687.87		1,789.45
Unicare Basic w/ CIC	1,163.76		2,582.71
Unicare Basic w/o CIC	1,107.42		2,454.41
Unicare Comm Choice	552.57		1,368.05
Unicare OME w/ CIC	399.86	799.72	
Unicare OME w/o CIC	388.80	777.60	
Tufts Medicare Complement	383.88	767.76	
Harvard Senior	404.04	808.08	
Dental Plan	29.92		72.07

APPENDIX V - OVERVIEW OF GASB 74 & 75

Before Statements 74 and 75, GASB statement 45 established the reporting standards for Other Postemployment Benefit (“OPEB”) plans. It was designed to recognize the Other Postemployment Benefits earned by employees throughout their working career vs. when they are paid in retirement – accrual accounting vs. “pay-as-you-go” accounting. Additionally, each eligible active employee earns benefits each year representing benefits to be paid in retirement or a “Service Cost”. These amounts are reflected in your financial statement each year so that OPEB benefits for an eligible employee shall be fully charged to the financial statement when that eligible employee terminates employment.

In 2012 GASB issued GASB Statements 67 and 68 to update and standardize the financial reporting of pension liabilities. This increased the transparency of pension liabilities by moving them to the balance sheet and made financial statement disclosures of pension liabilities more comparable between municipal entities. GASB Statements 74 and 75 are designed to have the same effect on OPEB plans.

GASB 74 and 75 require retiree medical plans to disclose information about asset and liability levels and show historical contribution information. GASB 74 only applies in situations where a separate trust is established to prefund these benefits. GASB 75 requires employers to perform periodic actuarial valuations to determine annual accounting costs and to keep a running tally of the extent to which these amounts are over or under funded.

GASB 74 and 75 apply to those benefits provided after retirement, except for pension benefits, such as medical, dental and life insurance. The philosophy behind the accounting standard is that these postemployment benefits are part of the compensation earned by employees in return for their services, and the cost of these benefits should be recognized while employees are providing those services, rather than after they have retired. This philosophy has already been applied for years to defined benefit pensions; GASB 74 and 75 extend this practice to all other postemployment benefits.

APPENDIX V – OVERVIEW OF GASB 74 & 75

The process of determining the liability for OPEB benefits is based on many assumptions about future events. The key actuarial assumptions are:

Turnover and retirement rates – How likely is it that an employee will qualify for postemployment benefits and when will they start?

Medical inflation and claims cost assumptions – When an employee starts receiving postemployment benefits many years from now, how much will be paid each year for the benefits and how rapidly will the costs grow?

Mortality assumption – How long is a retiree likely to receive benefits?

Discount rate assumption – What is the present value of those future benefit payments in terms of today's dollars?

Since the liability is being recognized over the employee's whole career with the Authority, the present value is divided into three pieces: the part that is attributed to past years (the "Total OPEB Liability" or "Past Service Liability"), the part that is being earned this year (the "Service Cost"), and the part that will be earned in future years (the "Future Service Liability").

Once the Accrued Liability and the Service Cost have been calculated, the next step is to determine an actuarially determined contribution. This is an amount that if paid annually would fully prefund the benefits for current active and retired employees. This consists of two pieces:

- ✓ Service Cost – because the benefits earned by active employees each year should be paid for each year
- ✓ Past Service Cost – a catch-up payment to fund the Accrued Liability over a period of time determined by an actuary

The final step is to keep track going forward of how much of the contribution is actually paid. There is no requirement to actually fund these benefits, but the cumulative deficiency must be disclosed on the Authority's financial statements as the Net OPEB Liability (NOL). If you decide to fully fund the NOL this will appear in the financial statement as a Net OPEB Asset. In addition, the Discount Rate used to calculate the liabilities must reflect the expected investment income of whatever funds are set aside to prefund the benefits; if there is no prefunding then the Discount Rate will be much lower and the liabilities significantly higher than if the benefits are prefunded.

GLOSSARY

Accrual Accounting – A system of accounting in which revenues are recorded when earned and outlays are recorded when goods are received or services performed, even though the actual receipt of revenues and payment for goods or services may occur, in whole or in part, at a different time.

Actuarially Determined Contribution – Amount of funding required annually to fully fund plan benefits. Determined by the actuary using a consistent methodology.

Amortization – Allows the recognition of liability over a fixed period of time.

Cash Basis Accounting – A system of accounting in which revenues are recorded when received and outlays are recorded when payment is made.

Deferred Inflows/Outflows of Resources – Amounts arising from experience gains and losses that have not been recognized into the OPEB Expense but will be recognized in the future.

Discount Rate – The interest rate used to calculate the present value of future cash flows. Under GASB 75, the rate should be the expected long-term rate of return on investments for a plan that is being fully funded, the 20-year municipal bond index for a pay-as-you-go plan, and a blend of the two rates for a plan that is being partially funded.

Entry Age Normal – Under this method, the annual service cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement. The annual service cost for each active member is a level percent of payroll. The total OPEB liability is the actuarial present value of the projected benefit times the ratio of past service to expected total service at retirement/termination.

Fiduciary Net Position – The value of cash, investments, other assets and property belonging to an OPEB trust.

GLOSSARY

Government Accounting Standards Board (GASB) – “The Governmental Accounting Standards Board (GASB) was organized in 1984 by the Financial Accounting Foundation (FAF) to establish standards of financial accounting and reporting for state and local governmental entities. Its standards guide the preparation of external financial reports of those entities.”

Implicit Subsidy – The liability that arises because retirees who are not eligible for Medicare are charged the same premium as active employees even though their actual medical costs are higher on average.

Irrevocable Contribution – The transfer of assets to a qualified trust in which assets may only be withdrawn for the purpose of providing retiree other postemployment benefits.

Net OPEB Liability (NOL) – Total OPEB Liability less the Fiduciary Net Position.

Other Postemployment Benefits (OPEB) – Benefits that an employee will begin to receive at the start of retirement. This does not include pension benefits paid to the retired employee.

OPEB Trust – An entity which holds assets for the sole purpose of funding OPEB. All contributions and earnings within this entity must be irrevocable and protected from creditors.

Pay-as-you-go funding – Paying benefits (such as pensions or OPEB) on a cash basis, with no money set aside for future liabilities which are already incurred.

Service Cost – The actuarially determined present value contribution needed to fund benefits which are earned for employee service rendered during the current year. Service cost depends on many factors, including the interest rate used to discount future cashflows, and expected inflation.

Total OPEB Liability (TOL) – That portion, as determined by the Individual Entry Age Normal Actuarial Cost Method, of the Actuarial Present Value of benefits and expenses which are not provided for by future Service Costs.