



# **CITY OF BEVERLY, MASSACHUSETTS**

**OTHER POSTEMPLOYMENT BENEFITS PROGRAM**

**FINANCIAL REPORTING AND DISCLOSURES**  
**Governmental Accounting Standards Board**  
**Statements 74 and 75**

**Disclosures as of**  
**June 30, 2022**

KMS Actuarial, LLC  
52 Hunt Road  
Kingston, NH 03848

November, 2022





November 8, 2022

Mr. Bryant Ayles  
Director of Municipal Finance/Treasurer  
City of Beverly, Massachusetts  
191 Cabot Street  
Beverly, MA 01915

Dear Bryant:

We are pleased to present the enclosed report of the July 1, 2021 actuarial valuation of the retiree health care benefits for the City of Beverly, Massachusetts. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2022 under the following Governmental Accounting Standards Board (GASB) Statements:

- ◆ GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans (GASB 74)
- ◆ GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (GASB 75)

Results are based on liabilities developed in an actuarial valuation performed as of July 1, 2021 and rolled forward to the plan's measurement date of June 30, 2022.

The Principal Valuation Results, including assets, liabilities and the development of future contributions, are provided in Section 1. The Notes to the Financial Statements and the Required Supplementary Information are provided in Sections 2 and 3, respectively. Employer Reporting Amounts under GASB 75 are provided in Section 4. The Summary of Plan Provisions and Actuarial Assumptions and Methods are shown in Sections 5 and 6, respectively. Section 7 summarizes the demographic profile of active members and retired members, covered spouses and survivors. Finally, a Glossary of Terms is provided in Section 8.

Our calculations are based on member census data and other information provided by the City of Beverly, Massachusetts as well as health plan rates provided by the City. Although we did not audit the data used in the valuation and disclosure calculations, we believe that the information is complete and reliable.

Liabilities presented in this report are based on a discount rate of 3.54%, the rate that reflects a tax-exempt, high quality municipal bond rate. The municipal bond rate of 3.54% is based on the Bond Buyer 20-Bond GO Index published on June 30, 2022.

This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions other than those explicitly applicable to the postemployment benefit plans are consistent with those used by the Beverly and Massachusetts Teachers Retirement Systems' actuaries for the Retirement System pension valuations.

Future actuarial valuation results may differ significantly from the current results presented in this report. Examples of potential sources of volatility include plan experience differing from that anticipated by the economic or demographic assumptions, the effect of new entrants, changes in economic or demographic assumptions, the effect of law changes and the delayed effect of smoothing techniques.

Our valuation follows generally accepted actuarial methods and we perform such tests as we consider necessary to assure the accuracy of the results. The amounts presented in this report have been appropriately determined according to the actuarial assumptions and methods stated herein.

This report is intended for the sole use of the City of Beverly, Massachusetts and is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

The expected claims, cost trend rates, and analysis of regulatory changes have been developed based on the expertise of the undersigned health and welfare actuary, Christopher E. Bean, ASA, MAAA. The undersigned credentialed actuaries are Members of the American Academy of Actuaries and together meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained herein. They are available to answer any questions with regard to this report.

KMS Actuaries is completely independent of the City of Beverly, Massachusetts and any of its officers or key personnel. None of the actuaries signing this report or anyone closely associated with them has a relationship with the City of Beverly, Massachusetts, other than as consulting actuary for this assignment, that would impair our independence.

Respectfully submitted,



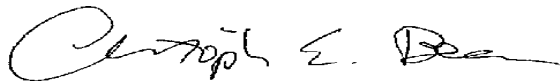
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# EXECUTIVE SUMMARY

## Purpose of Report

This report presents the results of the actuarial valuation of the City of Beverly, Massachusetts's retiree health care benefits as of July 1, 2021. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2022 under the following Governmental Accounting Standards Board (GASB) Statements:

- ◆ GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans (GASB 74)
- ◆ GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (GASB 75)

The results as of the measurement date are based on a roll forward of the liabilities developed in the most recent actuarial valuation.

## GASB Accounting Standards

In June 2015, the GASB approved two related Statements that significantly changed the way other postemployment benefits (OPEB) plans and governments account and report OPEB liabilities. GASB Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, replaced the requirements of Statement No. 43 and GASB Statement No. 75 (GASB 75), *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, replaced the requirements of Statement No. 45.

The effective date for GASB 74 is for plan years beginning after June 15, 2016, which is the plan year ending June 30, 2017 for the City of Beverly, Massachusetts. The effective date for GASB 75 is for fiscal years beginning after June 15, 2017, which is the fiscal year ending June 30, 2018 for the City of Beverly, Massachusetts.

GASB 74 requires OPEB plans to present a statement of fiduciary net position (OPEB plan assets) and a statement of changes in fiduciary net position. Further, the statement requires that notes to financial statements include descriptive information such as the types of benefits provided, the classes of plan members covered and the authority under which benefit terms are established or may be amended. Finally, GASB 74 requires OPEB plans to present in required supplementary information the sources of the changes in the net OPEB liability and information about the actuarially determined contributions compared with the actual contributions made to the plan and related ratios.

GASB 74 and GASB 75 require projected benefit payments be discounted to their actuarial present value using the single rate that reflects (1) a long-term expected rate of return on OPEB plan investments to the extent that the OPEB plan's assets are sufficient to pay benefits and OPEB plan assets are expected to be invested using a strategy to achieve that return and (2) a tax-exempt, high-quality municipal bond rate to the extent that the conditions for use of the long-term expected rate of return are not met.

GASB 75 establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources and OPEB expense by state and local governments.

## EXECUTIVE SUMMARY

### City of Beverly, Massachusetts Other Postemployment Benefits Program

The City of Beverly, Massachusetts administers the retiree health care benefits program - a single-employer defined benefit plan that is used to provide postemployment benefits other than pensions (OPEB) for all permanent full-time employees. The City provides health care benefits for retirees and their dependents. Benefits are provided through the City, and the full cost of benefits is shared between the City and retirees.

### Summary of Principal Results

A summary of principal results from the current and prior measurement dates follows:

Disclosure Date	June 30, 2022	June 30, 2021	% Change
<b>Valuation Date</b>	<b>July 1, 2021</b>	<b>July 1, 2019</b>	
<b>Membership Data</b>			
Active Plan Members	994	959	3.6%
Inactive Plan Members (excludes covered spouses)	806	813	(0.9%)
Total Plan Members	1,800	1,772	1.6%
Covered Spouses	345	350	(1.4%)
Covered Payroll	\$65,168,439	\$61,708,660	5.6%
<b>Net OPEB Liability</b>			
Discount Rate	3.54%	2.16%	
Total OPEB Liability (TOL)	\$280,877,862	\$421,808,987	(33.4%)
Fiduciary Net Position (FNP)	\$1,979,239	\$1,748,939	13.2%
Net OPEB Liability	\$278,898,623	\$420,060,048	(33.6%)
FNP as % of TOL	0.7%	0.4%	75.0%
<b>OPEB Expense</b>			
OPEB Expense	\$12,636,896	\$36,358,401	(65.2%)
Deferred Outflows	\$58,016,677	\$77,467,371	
Deferred Inflows	\$156,362,962	\$30,750,395	
Recognition Period	6.29	6.11	

## EXECUTIVE SUMMARY

### Experience Gain and Loss

In developing the Total OPEB Liability, various assumptions are made regarding future premium rates, mortality, retirement, disability and turnover rates. A comparison of the results of the current and prior measurements is made to determine how closely actual experience relates to expected. For the current measurement period, the difference between expected and actual experience resulted in an actuarial gain of approximately \$60,475,000. This gain is primarily due to lower than expected medical premiums and active employee turnover since the prior valuation. In addition, several retirees status codes were recharacterized as disabled retirees in this valuation.

### Changes of Assumptions

The discount rate changed from 2.16% as of June 30, 2021 to 3.54% as of June 30, 2022. In addition, many other assumptions were updated in this valuation, including the inflation rate, healthcare trend rates, and mortality tables and mortality improvement rates. A summary of the impact on the Total OPEB Liability (TOL) of each assumption change is provided below:

◆ Decrease due to change in Inflation Assumption	(2,028,000)
◆ Decrease due to change in Trend Assumption	(2,778,000)
◆ Decrease due to change in Mortality Tables and Mortality Improvement Rates	(21,991,000)
◆ Decrease due to change in Discount Rate	(72,656,000)
Total	\$ (99,453,000)

All of the assumptions used in this valuation are shown in Section 6, Actuarial Assumptions and Methods.

### Changes of Benefit Terms

The percent of premium contributed by surviving spouses decreased from 51% to 50%. All other benefit terms are the same as those used in the prior measurement. A Summary of the Principal Plan Provisions is provided in Section 5.

### Total OPEB Liability

The Total OPEB Liability as of the current measurement date, June 30, 2022, is \$280,877,862. The Total OPEB Liability as of the prior measurement date, June 30, 2021, was \$421,808,987. During the current measurement period ending June 30, 2022, the Total OPEB Liability decreased by \$140,931,125, or -33.4%. The development of the Total OPEB Liability for the current measurement period is shown in Section 1, Exhibit 1.2.

### Fiduciary Net Position

The Fiduciary Net Position is equal to the market value of assets and as of the current measurement date, June 30, 2022, is \$1,979,239. The Fiduciary Net Position as of the prior measurement date, June 30, 2021, was \$1,748,939. During the plan years ended June 30, 2022 and June 30, 2021, the actual rates of return were -3.76% and 29.41%, respectively. The expected long-term rate of return is 6.90%. The Fiduciary Net Position is shown in Section 1, Exhibit 1.1.



## EXECUTIVE SUMMARY

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### Employer Future Period Contributions

The City's policy is to transfer an amount each year into the OPEB liability trust fund of at least 2% of the City's certified free cash balance. In addition, the City contributes the value of one sick day per employee to the OPEB trust.

### Discount Rate

As of the June 30, 2022 measurement date, the OPEB plan's fiduciary net position was projected to be insufficient to make all projected benefit payments of current plan members. Therefore, the 3.54% municipal bond rate was applied to all periods to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 3.54%.

### OPEB Expense

The OPEB Expense for the current measurement period ending June 30, 2022, is \$12,636,896. Benefit changes are recognized immediately and experience gains and losses and assumption changes developed in this valuation are recognized over 6.29 years. Investment gains and losses are recognized over 5 years. The OPEB Expense for the prior measurement period was \$36,358,401. The development of the OPEB expense for the current measurement period is shown in Section 4, Exhibit 4.2.

### COVID-19 Pandemic

The assumptions in this report do not reflect the potential impact of the COVID-19 pandemic on the OPEB program. Especially in the short range, the pandemic is likely to materially affect the economic, demographic and healthcare-specific experience in a way not anticipated by the assumptions on which the projections are based.

## SECTION 1 - PRINCIPAL VALUATION RESULTS

### Exhibit 1.1 - OPEB Trust Assets

The City has established an irrevocable trust pursuant to Section 20 of Chapter 32B of the Massachusetts General Laws for the purpose of accumulating assets to prefund the OPEB liabilities. Plan assets segregated and restricted in an OPEB trust must be dedicated to providing plan benefits to retirees and beneficiaries in accordance with the terms of the plan and must be legally protected from creditors of the employer. Further, employer contributions to the trust must be irrevocable. Asset information for the current and prior fiscal years was provided by the City and is presented below:

Fiscal Year Ended June 30	2022	2021
<b>Trust Fund Composition at Fiscal Year-End</b>		
Global Equity	\$629,034	\$716,789
Core Fixed Income	243,666	256,835
Value-Added Fixed Income	113,879	115,828
Private Equity	309,168	243,406
Real Estate	179,248	139,329
Timberland	53,304	50,360
Portfolio Completion Strategies	145,052	139,329
Overlay	9,845	87,063
Cash & Equivalents	296,043	-
<b>Total Market Value of Assets</b>	<b>1,979,239</b>	<b>1,748,939</b>
<b>Asset Activity</b>		
Market value, beginning of year	\$1,748,939	\$1,133,453
Employer Premiums	8,439,017	8,507,968
OPEB Trust Employer Contributions	296,043	268,960
Benefit Payments	(8,439,017)	(8,507,968)
Administrative Expenses	-	-
Investment Return	(65,743)	346,526
<b>Market value, end of year</b>	<b>\$1,979,239</b>	<b>\$1,748,939</b>
<b>Money-Weighted Rate of Return</b>	<b>-3.76%</b>	<b>29.41%</b>
<b>(Gain) / Loss on OPEB Plan Investments</b>		
Projected earnings	\$118,928	\$86,273
Actual earnings	(65,743)	346,526
<b>(Gain) / Loss on OPEB plan investments</b>	<b>\$184,671</b>	<b>(\$260,253)</b>

## SECTION 1 - PRINCIPAL VALUATION RESULTS

### Exhibit 1.2 - Total OPEB Liability

The Total OPEB Liability, developed using the Entry Age Normal funding method, is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service. The total OPEB liability as of the June 30, 2022 measurement date was developed from an actuarial valuation as of July 1, 2021 and rolled forward to the OPEB plan's fiscal year-end.

The Service Cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year. Only active employees who have not reached the age at which the probability of retirement is 100% incur a service cost.

Actuarial experience gains and losses arise from the difference between expected and actual experience, excluding amounts related to benefit changes and changes in assumptions or other inputs.

The development of the Total OPEB Liability from the beginning of the measurement period, June 30, 2021 to the end of the measurement period, June 30, 2022 is shown below:

Measurement Date	June 30, 2022
<b>1. Total OPEB Liability, beginning of year:</b>	
a. Actives	\$223,976,408
b. Retirees, Covered Spouses and Survivors	197,832,579
c. Total OPEB Liability at 2.16% (a. + b.)	\$421,808,987
<b>2. Service Cost</b>	<b>\$17,526,161</b>
<b>3. Expected Benefit Payments</b>	
a. Current retirees	(\$8,025,004)
b. Future retirees	(414,013)
c. Total (a. + b.)	(\$8,439,017)
<b>4. Interest [2.16% x (1.c. + 2. + .5 x 3.c)]</b>	<b>\$9,398,498</b>
<b>5. Changes of benefit terms</b>	<b>\$510,686</b>
<b>6. Differences between expected and actual experience</b>	<b>(\$60,474,532)</b>
<b>7. Changes of assumptions or other inputs</b>	<b>(\$99,452,921)</b>
<b>8. Total OPEB Liability, end of year (1.c. + 2. + 3.c. + 4. + 5. + 6. + 7.)</b>	
a. Actives	\$121,723,267
b. Retirees, Covered Spouses and Survivors	159,154,595
c. Total OPEB Liability at 3.54% (a. + b.)	\$280,877,862

## SECTION 1 - PRINCIPAL VALUATION RESULTS

### Exhibit 1.3 - Development of Actuarially Determined Employer Contributions

The City's policy is to transfer an amount each year into the OPEB liability trust fund of at least 2% of the City's certified free cash balance. In addition, the City contributes the value of one sick day per employee to the OPEB trust.

The Actuarially Determined Employer Contribution (ADEC) equals the Normal Cost plus a provision for amortizing the Unfunded Actuarial Accrued Liability. We have assumed increasing dollar amortization over an amortization period of 30 years.

Fiscal Year Ending	June 30, 2022	June 30, 2023
<b>Discount Rate</b>	<b>2.16%</b>	<b>3.54%</b>
1. Normal Cost	\$17,526,161	\$10,977,843
2. Unfunded Actuarial Accrued Liability		
a. Actuarial Accrued Liability	\$421,808,987	\$280,877,862
b. Actuarial Value of Plan Assets	\$1,748,939	\$1,979,239
c. Unfunded Actuarial Accrued Liability (a. - b.)	\$420,060,048	\$278,898,623
3. Amortization of Unfunded Actuarial Accrued Liability		
a. Unfunded Actuarial Accrued Liability	\$420,060,048	\$278,898,623
b. Amortization Period in years	30	30
c. Payroll Growth Rate	3.5%	3.5%
d. Amortization Factor	36.47	29.83
e. Amortization Amount (3.a. / 3.d.)	\$11,517,961	\$9,349,602
4. Interest on 1. and 3.e.	\$627,353	\$719,592
5. Actuarially Determined Employer Contribution (1. + 3.e. + 4.)	\$29,671,475	\$21,047,037
6. Actual Employer Contribution to OPEB Trust	\$296,043	TBD
7. Expected Benefit Payments	\$8,439,017	
8. Total Contribution (6. + 7.)	\$8,735,060	

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.1 - Plan Description

#### Plan Administration

The City of Beverly, Massachusetts administers the retiree health care benefits program - a single-employer defined benefit plan that is used to provide postemployment benefits other than pensions (OPEB) for all permanent full-time employees.

#### Plan Membership

At June 30, 2022, OPEB plan membership consisted of the following:

Inactive plan members or beneficiaries currently receiving benefit payments <sup>1</sup>	806
Inactive plan members entitled to but not yet receiving benefit payments	0
Active plan members	994
	<u>1,800</u>

<sup>1</sup>Per paragraph 34a of GASB 74 and further clarified by Question 4.67 of the 2017-2 GASB 74 Implementation Guide, the total shown for inactive plan members or beneficiaries currently receiving benefit payments does not include covered spouses or other dependents.

#### Benefits Provided

The City provides health care benefits for retirees and their dependents. Benefits are provided through the City, and the full cost of benefits is shared between the City and retirees.

#### Employer Future Period Contributions

The City's policy is to transfer an amount each year into the OPEB liability trust fund of at least 2% of the City's certified free cash balance. In addition, the City contributes the value of one sick day per employee to the OPEB trust.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

The components of the net OPEB liability at June 30, 2022, were as follows:

Total OPEB liability	\$ 280,877,862
Fiduciary net position	(1,979,239)
Net OPEB liability	\$ 278,898,623

Fiduciary net position as a percentage of the total OPEB liability 0.70%

#### Actuarial Assumptions

The total OPEB liability was determined by an actuarial valuation as of July 1, 2021, rolled forward to the measurement date and using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.4% per year, based on current economic data, analyses from economists and other experts, and professional judgment.
Discount rate	3.54 percent, net of investment expenses, including inflation.
Healthcare cost trend rate	7.5 percent for 2021, decreasing 0.6 percent per year to 5.7 percent, then grading down to an ultimate trend rate of 3.9 percent, utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate medical inflation rate is reached in 2075.
Pre-Retirement Mortality - General and Public Safety employees	RP-2014 Blue Collar Mortality Table, base year 2014, projected with generational mortality improvement using Scale MP-2020.
Healthy Retiree Mortality - General and Public Safety employees	RP-2014 Blue Collar Mortality Table, projected with generational mortality improvement using scale MP-2020.
Disabled Retiree Mortality - General and Public Safety employees	RP-2014 Blue Collar Mortality Table set forward one year with full generational mortality improvement using Scale MP-2020.
Pre-Retirement Mortality - Teachers	PUB-2010 Teachers Headcount-Weighted Employee Mortality Table, base year 2010, projected with generational mortality using Scale MP-2020.
Healthy Retiree Mortality - Teachers	PUB-2010 Teachers Headcount-Weighted Retiree Mortality Table, base year 2010, projected with generational mortality using Scale MP-2020.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

Disabled Retiree Mortality - Teachers

PUB-2010 Teachers Headcount-Weighted Disabled Mortality Table, base year 2010, projected with generational mortality using Scale MP-2020.

#### Long-Term Expected Rate of Return

The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of OPEB plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage provided in the investment policy statement and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation as of June 30, 2022 are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rates of Return <sup>1</sup>
Global Equity	38%	4.21%
Core Fixed Income	15%	0.19%
Value-Added Fixed Income	8%	4.00%
Private Equity	15%	7.70%
Real Estate	10%	3.60%
Timberland	4%	4.20%
Portfolio Completion Strategies	10%	3.00%
Total	100%	

<sup>1</sup> provided by the Pension Reserves Investment Management Board.

#### Discount Rate

The discount rate used to measure the total OPEB liability was 3.54%. The projection of cash flows used to determine the discount rate assumed that contributions from the City will be made in accordance with the plan's funding policy. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be insufficient to make all projected benefit payments of current plan members. Therefore, the 3.54% municipal bond rate was applied to all periods to determine the total OPEB liability.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

#### Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

The following presents the net OPEB liability calculated using the current discount rate of 3.54 percent, as well as what the net OPEB liability would be if it were calculated using a discount rate 1-percentage point lower (2.54 percent) or 1-percentage point higher (4.54 percent) than the current rate:

	<b>1% Decrease (2.54%)</b>	<b>Assumed Discount Rate (3.54%)</b>	<b>1% Increase (4.54%)</b>
Total OPEB Liability	\$331,021,127	\$280,877,862	\$241,269,913
Fiduciary Net Position	(1,979,239)	(1,979,239)	(1,979,239)
Net OPEB Liability	\$329,041,888	\$278,898,623	\$239,290,674
% Change in NOL	18.0%		-14.2%

#### Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rates

The following presents the net OPEB liability calculated using the current healthcare cost trend rates as well as what the net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage point lower (6.5% year 1 decreasing to 2.9%) or 1-percentage point higher (8.5% year 1 decreasing to 4.9%) than the current healthcare cost trend rates:

	<b>1% Decrease 6.5% Year 1 Decreasing to 2.9%</b>	<b>Assumed Healthcare Cost Trend Rates 7.5% Year 1 Decreasing to 3.9%</b>	<b>1% Increase 8.5% Year 1 Decreasing to 4.9%</b>
Total OPEB Liability	\$236,381,658	\$280,877,862	\$338,698,708
Fiduciary Net Position	(1,979,239)	(1,979,239)	(1,979,239)
Net OPEB Liability	\$234,402,419	\$278,898,623	\$336,719,469
% Change in NOL	-16.0%		20.7%



## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.1 - Changes in Net OPEB Liability and Related Ratios

Fiscal Year Ended June 30	2022	2021	2020	2019	2018
<b>Total OPEB Liability</b>					
Service cost	\$ 17,526,161	\$ 16,659,598	\$ 12,487,073	\$ 10,712,734	\$ 11,262,144
Interest	9,398,498	9,075,862	12,223,153	12,057,663	11,221,219
Changes of benefit terms	510,686	-	(13,143,133)	-	-
Differences between expected and actual experience	(60,474,532)	-	(37,404,740)	-	-
Changes of assumptions	(99,452,921)	6,314,640	91,305,783	21,221,912	(15,767,549)
Benefit payments	(8,439,017)	(8,507,968)	(7,894,312)	(8,308,148)	(7,773,326)
<b>Net change in total OPEB liability</b>	<b>\$(140,931,125)</b>	<b>\$ 23,542,132</b>	<b>\$ 57,573,824</b>	<b>\$ 35,684,161</b>	<b>\$ (1,057,512)</b>
<b>Total OPEB liability—beginning</b>	<b>\$ 421,808,987</b>	<b>\$398,266,855</b>	<b>\$340,693,031</b>	<b>\$305,008,870</b>	<b>\$ 306,066,382</b>
<b>Total OPEB liability—ending (a)</b>	<b>\$ 280,877,862</b>	<b>\$421,808,987</b>	<b>\$398,266,855</b>	<b>\$340,693,031</b>	<b>\$ 305,008,870</b>
<b>Plan Fiduciary Net Position</b>					
Contributions—employer	\$ 8,735,060	\$ 8,776,928	\$ 8,145,932	\$ 8,512,865	\$ 8,312,390
Net investment income	(65,743)	346,526	15,495	33,304	-
Benefit payments	(8,439,017)	(8,507,968)	(7,894,312)	(8,308,148)	(7,773,326)
Administrative expenses	-	-	-	-	-
Other	-	-	-	-	-
<b>Net change in plan fiduciary net position</b>	<b>\$ 230,300</b>	<b>\$ 615,486</b>	<b>\$ 267,115</b>	<b>\$ 238,021</b>	<b>\$ 539,064</b>
<b>Plan fiduciary net position—beginning</b>	<b>\$ 1,748,939</b>	<b>\$ 1,133,453</b>	<b>\$ 866,338</b>	<b>\$ 628,317</b>	<b>\$ 89,253</b>
<b>Plan fiduciary net position—ending (b)</b>	<b>\$ 1,979,239</b>	<b>\$ 1,748,939</b>	<b>\$ 1,133,453</b>	<b>\$ 866,338</b>	<b>\$ 628,317</b>
<b>Net OPEB liability—ending (a) – (b)</b>	<b>\$ 278,898,623</b>	<b>\$420,060,048</b>	<b>\$397,133,402</b>	<b>\$339,826,693</b>	<b>\$ 304,380,553</b>
Plan fiduciary net position as a percentage of the total OPEB liability	0.70%	0.41%	0.28%	0.25%	0.21%
Covered payroll	\$ 65,168,439	\$ 61,708,660	\$ 59,584,305	\$ 60,536,053	\$ 56,736,247
Net OPEB liability as a percentage of covered payroll	427.97%	680.71%	666.51%	561.36%	536.48%
<b>Discount Rate</b>	<b>3.54%</b>	<b>2.16%</b>	<b>2.21%</b>	<b>3.50%</b>	<b>3.87%</b>

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.1 - Changes in Net OPEB Liability and Related Ratios

Fiscal Year Ended June 30	2017	2016	2015	2014	2013
<b>Total OPEB Liability</b>					
Service cost	\$ 13,620,811				
Interest	9,784,213				
Changes of benefit terms	-				
Differences between expected and actual experience	-				
Changes of assumptions	(43,321,936)				
Benefit payments	(7,403,168)				
<b>Net change in total OPEB liability</b>	<b>\$ (27,320,080)</b>				
<b>Total OPEB liability—beginning</b>	<b>\$333,386,462</b>				
<b>Total OPEB liability—ending (a)</b>	<b>\$306,066,382</b>				
<b>Plan Fiduciary Net Position</b>					
Contributions—employer	\$ 7,492,421				
Net investment income	-				
Benefit payments	(7,403,168)				
Administrative expenses	-				
Other	-				
<b>Net change in plan fiduciary net position</b>	<b>\$ 89,253</b>				
<b>Plan fiduciary net position—beginning</b>	<b>\$ -</b>				
<b>Plan fiduciary net position—ending (b)</b>	<b>\$ 89,253</b>				
<b>Net OPEB liability—ending (a) – (b)</b>	<b>\$305,977,129</b>				
Plan fiduciary net position as a percentage of the total OPEB liability	0.03%				
Covered payroll	\$ 49,052,868				
Net OPEB liability as a percentage of covered payroll	623.77%				
<b>Discount Rate</b>	<b>3.58%</b>				

Note: Only 6 years are presented here and on the previous page, beginning with the year of implementation; 10 years of information will be required.

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

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### Exhibit 3.1 - Changes in Net OPEB Liability and Related Ratios

#### Changes of Benefit Terms

The percent of premium contributed by surviving spouses decreased from 51% to 50%. All other benefit terms are the same as those used in the prior measurement.

#### Changes of Assumptions

The discount rate changed from 2.16% as of June 30, 2021 to 3.54% as of June 30, 2022. In addition, many other assumptions were updated in this valuation, including the inflation rate, healthcare trend rates, and mortality tables and mortality improvement rates.

**SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION**

**Exhibit 3.2 - Investment Returns**

Fiscal Year Ended June 30	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Annual money-weighted rate of return, net of investment expenses	-3.76%	29.41%	1.60%	4.94%	0.00%	N/A				

The money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of OPEB plan investments by the proportion of time they are available to earn a return during that period. The rate of return is then calculated by solving, through an iterative process, for the rate that equates the sum of the weighted external cash flows into and out of the OPEB plan investments to the ending fair value of OPEB plan investments.

Note: Only 6 years are presented here, beginning with the year of implementation; 10 years of information will be required.

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.2 - Investment Returns

#### Calculation of Money-Weighted Rate of Return

	Plan Investments/ Net External Cash Flows (a)	Periods Invested (b)	Period Weight (c)=(b)÷12	(d)=(a) x (1+r <sub>mw</sub> ) <sup>(c)</sup>
Beginning value - July 1, 2021	\$ 1,748,939	12	1.00	\$ 1,683,196
Monthly net external cash flows:				
July	-	11	0.92	-
August	-	10	0.83	-
September	-	9	0.75	-
October	-	8	0.67	-
November	-	7	0.58	-
December	-	6	0.50	-
January	-	5	0.42	-
February	-	4	0.33	-
March	-	3	0.25	-
April	-	2	0.17	-
May	-	1	0.08	-
June	296,043	0	0.00	296,043
Ending value - June 30, 2022				\$ 1,979,239
Money-weighted rate of return:				-3.76%

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.3 - Schedule of Employer Contributions

Fiscal Year Ended June 30	2022	2021	2020	2019	2018
Actuarially determined contribution	\$ 29,671,475	\$ 28,240,760	\$ 24,648,141	\$ 21,476,256	\$21,622,323
Contributions in relation to the actuarially determined contribution	<u>8,735,060</u>	<u>8,776,928</u>	<u>8,145,932</u>	<u>8,512,865</u>	<u>8,312,390</u>
Contribution deficiency (excess)	<u>\$ 20,936,415</u>	<u>\$ 19,463,832</u>	<u>\$ 16,502,209</u>	<u>\$ 12,963,391</u>	<u>\$13,309,933</u>
Covered payroll	\$ 65,168,439	\$ 61,708,660	\$ 59,584,305	\$ 60,536,053	\$56,736,247
Contributions as a percentage of covered payroll	13.40%	14.22%	13.67%	14.06%	14.65%
Discount rate	2.16%	2.21%	3.50%	3.87%	3.58%
Inflation	2.40%	2.20%	2.40%	2.60%	2.60%

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.3 - Schedule of Employer Contributions

Fiscal Year Ended June 30	2017	2016	2015	2014	2013
Actuarially determined contribution	N/A				
Contributions in relation to the actuarially determined contribution	<u>7,492,421</u>				
Contribution deficiency (excess)	<u>N/A</u>				
Covered payroll	\$ 49,052,868				
Contributions as a percentage of covered payroll	15.27%				
Discount rate	N/A				
Inflation	2.60%				

Note: Only 6 years are presented here and on the previous page, beginning with the year of implementation; 10 years of information will be required.

#### Notes to Schedule

#### Valuation Date

Actuarially determined contributions are determined as of July 1, one year prior to the end of the fiscal year in which contributions are reported.

#### Methods and Assumptions as of Current Measurement Date

Actuarial cost method	Entry Age Normal
Amortization method	Increasing at 3.5% over 30 years on an open amortization period for partial pre-funding.
Amortization period	30 years
Asset valuation method	Market value
Healthcare cost trend rates	7.5 percent for 2021, decreasing 0.6 percent per year to 5.7 percent, then grading down to an ultimate trend rate of 3.9 percent, utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate medical inflation rate is reached in 2075.

## SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

### Exhibit 4.1 - Deferred Outflows and Deferred Inflows of Resources

Deferred Outflows of Resources and Deferred Inflows of Resources arising from differences between expected and actual experience are recognized in OPEB Expense over the average expected remaining service life of all active and inactive participants.

					Balances at June 30, 2022	
	Experience Losses	Experience Gains	Amounts Recognized in OPEB Expense through June 30, 2022	Deferred Outflows of Resources	Deferred Inflows of Resources	
Year	(a)	(b)	(c)	(a) - (c)	(b) + (c)	
2018	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2019	-	-	-	-	-	-
2020	-	37,404,740	(18,365,667)	-	19,039,073	
2021	-	-	-	-	-	
2022	-	60,474,532	(9,614,393)	-	50,860,139	
Total				<u>\$ -</u>	<u>\$ 69,899,212</u>	

Deferred Outflows of Resources and Deferred Inflows of Resources arising from changes of assumptions are recognized in OPEB Expense over the average expected remaining service life of all active and inactive participants.

					Balances at June 30, 2022	
	Increases in the Total OPEB Liability	Decreases in the Total OPEB Liability	Amounts Recognized in OPEB Expense through June 30, 2022	Deferred Outflows of Resources	Deferred Inflows of Resources	
Year	(a)	(b)	(c)	(a) - (c)	(b) + (c)	
2018	\$ -	\$ 15,767,549	\$ (12,945,445)	\$ -	\$ 2,822,104	
2019	21,221,912	-	13,938,860	7,283,052	-	
2020	91,305,783	-	44,830,989	46,474,794	-	
2021	6,314,640	-	2,066,986	4,247,654	-	
2022	-	99,452,921	(15,811,275)	-	83,641,646	
Total				<u>\$ 58,005,500</u>	<u>\$ 86,463,750</u>	



## SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

### Exhibit 4.1 - Deferred Outflows and Deferred Inflows of Resources

Deferred Outflows of Resources and Deferred Inflows of Resources arising from differences between projected and actual earnings on OPEB Plan investments are recognized in OPEB Expense over five years.

					Balances at June 30, 2022	
Year	Investment Earnings Less Than Projected  (a)	Investment Earnings Greater Than Projected  (b)	Amounts Recognized in OPEB Expense through June 30, 2022  (c)	Deferred Outflows of Resources  (a) - (c)	Deferred Inflows of Resources  (b) + (c)	
2018	\$ 10,764	\$ -	\$ 10,764	\$ -	\$ -	
2019	-	15,776	(12,620)	-	3,156	
2020	56,869	-	34,122	22,747	-	
2021	-	260,253	(104,102)	-	156,151	
2022	184,671	-	36,934	147,737	-	
Subtotal				\$ 170,484	\$ 159,307	
Net				\$ 11,177	\$ -	

Amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources will be recognized in OPEB expense as follows:

Year ended June 30	
2023	\$ (14,681,674)
2024	\$ (12,322,444)
2025	\$ (15,271,895)
2026	\$ (23,384,841)
2027	\$ (25,311,986)
Thereafter	(7,373,445)
<b>Deferred Outflows</b>	<b>\$ 58,016,677</b>
<b>Deferred Inflows</b>	<b>\$ 156,362,962</b>

## SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

### Exhibit 4.2 - OPEB Expense

The OPEB Expense and deferred outflows and inflows of resources primarily result from changes in the components of the net OPEB liability (NOL). Most changes in the NOL are included in the OPEB Expense in the period of the change, including service cost, interest on total OPEB liability, changes in benefit terms and projected earnings on the OPEB plan's investments. Other changes in the net OPEB liability are included in OPEB Expense over the current and future periods. These include the effects on the total OPEB liability of changes of economic and demographic assumptions and differences between expected and actual experience. In addition, the effect on the net OPEB liability of differences between the projected earnings on OPEB plan investments and actual experience with regard to those earnings are included in OPEB expense over the current and future periods. The OPEB Expense for the reporting period ending June 30, 2022 is presented below:

#### Fiscal Year Ended June 30, 2022

Measurement Date	6/30/2022
1. Service cost	\$ 17,526,161
2. Interest on the total OPEB liability	
a. Total OPEB liability, beginning of year	421,808,987
b. Service cost, beginning of year	17,526,161
c. Benefit payments	(8,439,017)
d. Interest on total OPEB liability = 2.16% times (a. + b. + .5 times c.)	9,398,498
3. Differences between expected and actual experience	(15,736,282)
4. Changes of benefit terms	510,686
5. Changes of assumptions	1,061,507
6. Projected earnings on OPEB plan investments	
a. Plan fiduciary net position, beginning of year	1,748,939
b. Contributions - Employer	8,735,060
c. Benefit payments	(8,439,017)
d. Administrative expenses and other	-
e. Total projected earnings	(118,928)
7. Differences between projected and actual earnings on OPEB plan investments	(4,746)
8. OPEB plan administrative expenses	-
9. Other changes in fiduciary net position	-
<b>10. Total OPEB Expense</b>	<b>\$ 12,636,896</b>

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

**Eligibility for Postemployment Benefits** Employees of the City and their dependents are eligible for postemployment medical, dental and life insurance based on the eligibility requirements under the Beverly and Massachusetts Teachers Retirement Systems.

**Retirement Eligibility** General employees hired before April 2, 2012: retire after attaining age 55 with 10 or more years of service or any age with 20 or more years of service

General employees hired after April 1, 2012: retire after attaining age 60 with 10 or more years of service

Public Safety employees hired before April 2, 2012: retire after attaining age 55 or any age with 20 or more years of service

Public Safety employees hired after April 1, 2012: retire after attaining age 55

**Ordinary Disability Eligibility** Any member who is unable to perform his or her duties due to a non-occupational disability and has ten or more years of creditable service.

**Accidental Disability Eligibility** Any member who is unable to perform his or her duties due to a job-related disability.

**Medical Premiums** The total monthly premiums by plan are shown below:

<b>Non-Medicare Plans - July 1, 2022</b>	<b>Individual</b>	<b>Family</b>
BCBS Master Medical	\$1,442.35	\$3,591.26
BCBS Network Blue HMO	\$825.14	\$2,155.68
Harvard Pilgrim Choice Net HMO	\$841.98	\$2,199.68
<b>Medicare Plans - July 1, 2022</b>		
BCBS Managed Blue for Seniors	\$559.95	
BCBS Medex3	\$610.89	
Tufts Medicare Preferred*	\$392.50	
Carve-Out A&B	\$965.10	

\*This plan's rates are effective on January 1, 2022.

**Participant Contributions** Retired employees contribute 20% or 25% of the total medical premium depending on the plan elected.

**Contributions to OPEB Trust** The City annually contributes the value of one sick day per employee to the OPEB trust.

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

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**Continuation of Coverage to Spouse After Death of Retiree** Surviving spouse may continue coverage for lifetime by paying 50% of the required medical premium rate.

**Medicare Penalty Reimbursement** The City reimburses the Medicare late-enrollment penalty, if applicable, based on information provided in the retiree data.

**Dental Coverage** Dental coverage is provided. Retirees contribute 100% of the monthly premiums.

**Life Insurance Coverage** Retirees are eligible for a \$5,000 life insurance benefit. The total monthly cost is \$7.40. Retirees contribute \$3.70 towards the monthly premiums.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

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<b>Valuation Date</b>	July 1, 2021
<b>Disclosure Date</b>	June 30, 2022
<b>GASB 75 Reporting Date</b>	June 30, 2022
<b>Long-Term Expected Rate of Return</b>	<p>6.9%, compounded annually, net of fees.</p> <p>A long-term assumption based on capital market expectations by asset class, historical returns and professional judgment. A building block approach was used that considered the target asset allocation, expected returns by asset class and risk analysis to determine a long-term expected average annual rate of return.</p>
<b>Municipal Bond Rate</b>	3.54%, based on the Bond Buyer 20-Bond GO Index published on June 30, 2022.
<b>Discount Rate (GASB)</b>	<p>3.54%, compounded annually, for the measurement as of June 30, 2022.</p> <p>2.16%, compounded annually, for the measurement as of June 30, 2021.</p> <p>The single rate that reflects the long-term expected rate of return on OPEB plan investments to the extent that the OPEB plan's assets, which are expected to be invested using a strategy to achieve that return, are sufficient to pay benefits, and a tax-exempt, high-quality municipal bond rate to the extent that the conditions for use of the long-term expected rate of return are not met.</p>
<b>Discount Rate (ADEC)</b>	2.16%, compounded annually, for development of the Actuarially Determined Contribution (ADEC) as of June 30, 2022.
<b>Amortization Method</b>	Increasing at 3.5% over 30 years on an open amortization period for partial pre-funding.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Medical Trend Rates	Year	Trend
	1	7.50%
	2	6.90%
	3	6.30%
	4	5.70%
	Ultimate	3.90%

Trend rates after year 4 grade down to the ultimate rate of 3.9 percent utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate trend rate is reached in 2075.

Health care trend assumptions begin at current levels and grade down over a period of years to a lower level equal to some real rate plus inflation. The principal components of health trend are medical inflation, deductible erosion, cost shifting, utilization, technology and catastrophic claims. The overall effect of these components are expected to decline year by year.

### Dental Trend Rates

Not applicable as retirees pay 100% of the dental premium.

### Medicare Trend Rates

6% per year.

### Inflation

2.4% per year, based on current economic data, analyses from economists and other experts, and professional judgment.

### Payroll Growth

3.5% per year.

### Participation Rates

Medical - 85% of eligible retired employees will elect to participate.

Dental - Not applicable as retirees pay 100% of dental premium

Life - 60% of eligible retirees will elect to participate.

Medicare - all retired employees are assumed to enroll in Medicare at age 65.

### Continuation of Coverage to Spouse After Death of Retiree

Male spouses are assumed to be three years older and female spouses are assumed to be three years younger than the retired employee.

60% of employees are assumed to retire with a covered spouse.

For current retirees, the actual census information is used.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Medical Per Capita Costs

The following annual per capita costs are for the fiscal year beginning July 1, 2021 and are applicable to retirees, survivors and spouses. Annual costs for current and future retirees are based on the blended curves shown below, developed using the plan coverages elected by current retirees and survivors and premium rates currently in effect. Future years' costs are based on the first year cost adjusted with trend.

Age	Medicare-Eligible		Medicare-Ineligible	
	Male	Female	Male	Female
Under 20	\$3,859	\$4,530	\$3,859	\$4,530
20-24	3,041	4,824	3,041	4,824
25-29	3,164	7,116	3,164	7,116
30-34	3,975	8,992	3,975	8,992
35-39	4,986	9,262	4,986	9,262
40-44	6,213	9,485	6,213	9,485
45-49	7,842	10,412	7,842	10,412
50-54	10,334	12,249	10,334	12,249
55-59	13,429	14,163	13,429	14,163
60-64	17,234	16,856	17,234	16,856
65-69	5,073	4,940	21,502	20,206
70-74	6,080	5,828	25,763	23,826
75-79	7,179	6,762	30,432	27,669
80-84	8,252	7,755	34,978	31,721
85-89	9,192	8,669	40,034	36,213
90-94	10,007	9,252	40,034	36,213
95+	10,636	8,947	40,034	36,213

### Retiree Contributions

Annual per capita participant contributions for the fiscal year beginning July 1, 2021 are as follows:

Plan	Contribution
Non-Medicare	\$ 2,380
Medicare	1,473

### Actuarial Cost Method

Entry Age Normal. The costs of each employee's postemployment benefits are allocated as a level basis over the earnings of the employee between the employee's date of hire and the assumed exit ages.

### Employee Data

Employee and retiree data were compiled and submitted by the City as of June 30, 2022. We made reasonable adjustments for missing or invalid data.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

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### Use of ProVal®

KMS Actuaries has used ProVal® to develop the liabilities, normal costs and projected benefit payments in this report. We have a lease agreement with WinTech, the developer of ProVal®, and have relied on their system to perform these calculations. The actuaries signing this report and the KMS staff members who were involved in preparing it have a clear understanding of ProVal® and have used it only for its intended purpose. We have reviewed the output produced by ProVal® for reasonableness and we are not aware of any material inconsistencies, limitations or known weaknesses that would affect this report.



## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### General and Public Safety Employees

#### Pre-Retirement Mortality

Pre-retirement mortality rates for General and Public Safety employees are based on the RP-2014 Blue Collar Mortality Table, base year 2014, projected with generational mortality improvement using Scale MP-2020.

#### Healthy Retiree Mortality

Healthy retiree mortality rates for General and Public Safety employees are based on the RP-2014 Blue Collar Mortality Table, projected with generational mortality improvement using scale MP-2020.

#### Disabled Retiree Mortality

Disabled retiree mortality rates for General and Public Safety employees are based on the RP-2014 Blue Collar Mortality Table set forward one year with full generational mortality improvement using Scale MP-2020.

#### Turnover Rates

Turnover rates for General and Public Safety employees are as follows:

General Employees		Public Safety	
Service	Rate	Service	Rate
0	15.00%	0	1.50%
1	12.00%	1	1.50%
2	10.00%	2	1.50%
3	9.00%	3	1.50%
4	8.00%	4	1.50%
5	7.60%	5	1.50%
10	5.40%	10	1.50%
15	3.30%	15	0.00%
20	2.00%	20	0.00%
25	1.00%	25	0.00%
30	0.00%	30	0.00%

#### Disability Rates

Disability rates for General and Public Safety employees are as follows:

General Employees		Public Safety	
Age	Rate	Age	Rate
25	0.02%	25	0.20%
30	0.03%	30	0.30%
35	0.06%	35	0.30%
40	0.10%	40	0.30%
45	0.15%	45	1.00%
50	0.19%	50	1.25%
55	0.24%	55	1.20%
60	0.28%	60	0.85%

55% of the General employee disabilities are job-related.

90% of the Public Safety employee disabilities are job-related.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### General and Public Safety Employees

#### Retirement Rates

Retirement rates for General and Public Safety employees are as follows:

General Employees			Public Safety	
Age	Male	Female	Age	All
45	0.00%	0.00%	45	1.00%
50	1.00%	1.50%	50	2.00%
55	2.00%	5.50%	55	15.00%
60	12.00%	5.00%	60	20.00%
62	30.00%	15.00%	62	25.00%
65	40.00%	15.00%	65	100.00%
69	30.00%	20.00%		
70	100.00%	100.00%		

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Teachers

**Pre-Retirement Mortality** Pre-retirement mortality rates for Teachers are based on the PUB-2010 Teachers Headcount-Weighted Employee Mortality Table, base year 2010, projected with generational mortality using Scale MP-2020.

**Healthy Retiree Mortality** Healthy retiree mortality rates for Teachers are based on the PUB-2010 Teachers Headcount-Weighted Retiree Mortality Table, base year 2010, projected with generational mortality using Scale MP-2020.

**Disabled Retiree Mortality** Disabled retiree mortality rates for Teachers are based on the PUB-2010 Teachers Headcount-Weighted Disabled Mortality Table, base year 2010, projected with generational mortality using Scale MP-2020.

**Turnover Rates** Turnover rates for Teachers are as follows:

Age	Service					
	0		5		10+	
	Male	Female	Male	Female	Male	Female
20	13.0%	10.0%	5.5%	7.0%	1.5%	5.0%
30	15.0%	15.0%	5.4%	8.8%	1.5%	4.5%
40	13.3%	10.5%	5.2%	5.0%	1.7%	2.2%
50	16.2%	9.8%	7.0%	5.0%	2.3%	2.0%

**Disability Rates** Disability rates for Teachers are as follows:

Age	Rate
20	0.004%
30	0.006%
40	0.010%
50	0.050%
60	0.070%

35% of the disabilities are job-related.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Teachers

#### Retirement Rates

Retirement rates for Teachers are as follows:

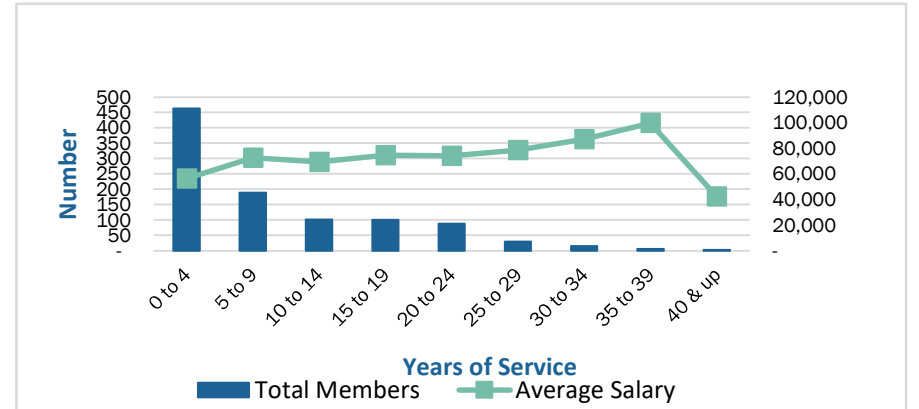
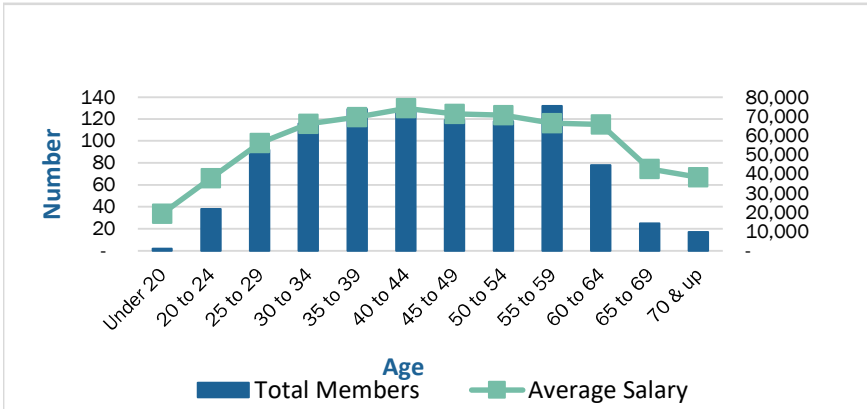
Age	Years of Service					
	Less than 20		20-29		30+	
	Male	Female	Male	Female	Male	Female
50	0.0%	0.0%	1.0%	1.0%	2.0%	1.5%
51	0.0%	0.0%	1.0%	1.0%	2.0%	1.5%
52	0.0%	0.0%	1.0%	1.0%	2.0%	1.5%
53	0.0%	0.0%	1.5%	1.0%	2.0%	1.5%
54	0.0%	0.0%	2.5%	1.0%	2.0%	2.0%
55	5.0%	3.0%	3.0%	3.0%	6.0%	5.0%
56	5.0%	3.0%	6.0%	5.0%	20.0%	15.0%
57	5.0%	4.0%	10.0%	8.0%	40.0%	35.0%
58	5.0%	8.0%	15.0%	10.0%	50.0%	35.0%
59	10.0%	8.0%	20.0%	15.0%	50.0%	35.0%
60	10.0%	10.0%	25.0%	20.0%	40.0%	35.0%
61	20.0%	12.0%	30.0%	25.0%	40.0%	35.0%
62	20.0%	12.0%	35.0%	30.0%	35.0%	35.0%
63	25.0%	15.0%	40.0%	30.0%	35.0%	35.0%
64	25.0%	20.0%	40.0%	30.0%	35.0%	35.0%
65	25.0%	25.0%	40.0%	40.0%	35.0%	35.0%
66	30.0%	25.0%	30.0%	30.0%	40.0%	35.0%
67	30.0%	30.0%	30.0%	30.0%	40.0%	30.0%
68	30.0%	30.0%	30.0%	30.0%	40.0%	30.0%
69	30.0%	30.0%	30.0%	30.0%	40.0%	30.0%
70	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

## SECTION 7 - PLAN MEMBER INFORMATION

### Exhibit 7.1 - Active Members by Age and Years of Service as of July 1, 2021

Age	Years of Service										Total	Total Salary	Average Salary
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up				
Under 20	2	-	-	-	-	-	-	-	-	-	2	38,484	19,242
20 to 24	38	-	-	-	-	-	-	-	-	-	38	1,432,198	37,689
25 to 29	85	6	1	-	-	-	-	-	-	-	92	5,155,217	56,035
30 to 34	75	40	1	-	-	-	-	-	-	-	116	7,665,920	66,086
35 to 39	67	40	19	3	-	-	-	-	-	-	129	8,975,540	69,578
40 to 44	48	30	16	28	6	-	-	-	-	-	128	9,493,935	74,171
45 to 49	47	20	18	10	21	3	-	-	-	-	119	8,468,392	71,163
50 to 54	41	15	13	15	25	8	1	-	-	-	118	8,326,167	70,561
55 to 59	35	24	12	19	19	12	8	3	-	-	132	8,771,099	66,448
60 to 64	17	9	12	18	12	4	4	2	-	-	78	5,128,703	65,753
65 to 69	7	3	5	4	4	2	-	-	-	-	25	1,064,253	42,570
70 & up	1	2	4	3	1	1	2	1	2	2	17	648,530	38,149
<b>Total</b>	<b>463</b>	<b>189</b>	<b>101</b>	<b>100</b>	<b>88</b>	<b>30</b>	<b>15</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>994</b>	<b>65,168,439</b>	<b>65,562</b>
<b>Total Salary</b>	<b>26,095,588</b>	<b>13,729,619</b>	<b>7,005,361</b>	<b>7,461,042</b>	<b>6,529,747</b>	<b>2,357,314</b>	<b>1,306,420</b>	<b>598,917</b>	<b>84,431</b>				
<b>Average Salary</b>	<b>56,362</b>	<b>72,643</b>	<b>69,360</b>	<b>74,610</b>	<b>74,202</b>	<b>78,577</b>	<b>87,095</b>	<b>99,819</b>	<b>42,216</b>				

Average Age: 45.0      Average Service: 8.9



## SECTION 7 - PLAN MEMBER INFORMATION

Exhibit 7.2 - Retired Members, Covered Spouses and Survivors as of July 1, 2021

Age	Non-Medicare Plans			Medicare Plans				Total
	BCBS Master Medical	BCBS Network Blue HMO	Harvard Pilgrim Choice Net HMO	BCBS Managed Blue for Seniors	BCBS Medex3	Tufts Medicare Preferred	Carve-Out A&B	
Under 40	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0
45 to 49	0	1	0	0	0	0	0	1
50 to 54	0	3	2	0	1	0	0	6
55 to 59	0	28	4	0	1	0	0	33
60 to 64	5	37	9	7	12	0	0	70
65 to 69	1	9	1	38	93	4	0	146
70 to 74	1	11	4	54	98	19	0	187
75 to 79	3	5	0	56	58	11	1	134
80 to 84	2	3	2	33	36	10	1	87
85 to 89	0	6	0	28	25	11	1	71
90+	2	0	0	8	12	4	3	29
<b>Total</b>	<b>14</b>	<b>103</b>	<b>22</b>	<b>224</b>	<b>336</b>	<b>59</b>	<b>6</b>	<b>764</b>
<b>Covered Spouses</b>	<b>3</b>	<b>52</b>	<b>8</b>	<b>104</b>	<b>158</b>	<b>19</b>	<b>1</b>	<b>345</b>

Average Age: 74.1

In addition, there are 41 retirees, survivors and covered spouses that are not covered under any medical plan but are covered under a life insurance policy which the City contributes to and/or receive a reimbursement from the City for a Medicare late-enrollment penalty.

## SECTION 8 - GLOSSARY OF TERMS

---

**Actuarial Assumptions** – Assumptions as to the occurrence of future events affecting OPEB costs, such as mortality, withdrawal, disability and retirement; changes in compensation and OPEB benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.

**Actuarial Cost Method (or Funding Method)** – A procedure for allocating the Actuarial Present Value of projected benefit payments to the current year (Service Cost) and the past (Total OPEB Liability).

**Actuarial Gain or Loss (or Experience Gain or Loss)** – A measure of the difference between actual experience and that expected based upon the set of Actuarial Assumptions during the period between the valuation date and the most recent immediately preceding valuation date.

**Actuarial Present Value of Projected Benefit Payments** – The dollar value on the valuation date of all benefits expected to be paid to current members based upon the Actuarial Assumptions and the terms of the Plan.

**Actuarially Determined Contribution** – A target or recommended contribution to a defined benefit OPEB plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

**Actuarial Valuation Date** – The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

**Deferred Inflow of Resources** – Acquisition of resources by a governmental entity that is applicable to future reporting periods. Under GASB 75, deferred inflows of resources are made up of experience gains, assumption changes reducing the Total OPEB Liability and investment gains that are recognized in future reporting periods.

**Deferred Outflow of Resources** – Consumption of resources by a governmental entity that is applicable to future reporting periods. Under GASB 75, deferred outflows of resources are made up of experience losses, assumption changes increasing the Total OPEB Liability and investment losses that are recognized in future reporting periods.

**Discount Rate** – Single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the sum of:

- (1) a long-term expected rate of return on OPEB plan investments *to the extent that the OPEB plan's assets are sufficient to pay benefits and OPEB plan assets are expected to be invested using a strategy to achieve that return* and
- (2) a tax-exempt, high-quality municipal bond rate *to the extent that the conditions for use of the long-term expected rate of return are not met.*

**Employer Future Period Contributions** – Contributions made by the employer, generally to an outside trust fund, to pay for future OPEB costs. These are costs in addition to the employer contributions made during the year to pay for ongoing premiums.

## SECTION 8 - GLOSSARY OF TERMS

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**Entry Age Normal Actuarial Cost Method** – A method under which the actuarial present value of the projected benefits of each individual in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age.

**Explicit Subsidy** – The difference between (a) the blended rates based on combined active and retired member experience and (b) actual cash contributions made by the employer.

**Fiduciary Net Position** – The fair market value of assets as of the measurement date.

**Funded Ratio** – The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

**GASB** – Governmental Accounting Standards Board.

**Health Cost Trend Rate** – The rate of change in per capita health claims cost over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

**Implicit Subsidy** – In an experience-rated healthcare plan that includes both active employees and retirees with blended premium rates for all plan members, the difference between (a) the age-adjusted premiums approximating claim costs for retirees in the group and (b) the blended rates based on combined active and retired member experience.

**Long-Term Expected Rate of Return** – Long-term expected rate of return on OPEB plan investments expected to be used to finance the payment of benefits, net of investment expenses.

**Measurement Date** – The date as of which the Total OPEB Liability and Fiduciary Net Position are measured.

**Municipal Bond Rate** – Yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher.

**Net OPEB Liability** – The liability of the employer for benefits provided through an OPEB plan. It is calculated as the Total OPEB Liability less the Fiduciary Net Position.

**OPEB** – Other Postemployment Benefits including medical, dental, vision, hearing and life insurance benefits.

**Pay-As-You-Go** – A method of financing an OPEB plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.

**Present Value of Future Benefits** – The actuarial present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value of money and the probabilities of payment.

**Reporting Date** – The last day of the Plan or employer's fiscal year.



## SECTION 8 - GLOSSARY OF TERMS

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**Service Cost** – The portion of the actuarial present value of projected benefit amounts that is attributed to a valuation year.

**Substantive Plan** – The terms of an OPEB plan as understood by the employer and plan members.

**Total OPEB Liability** – The portion of the actuarial present value of projected benefit amounts that is attributed to past periods of employee service.

**Unfunded Actuarial Accrued Liability** – The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.

## SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

Department	City	School	Airport	Water	Sewer	City/Sewer	Water/Sewer	City/Sewer/Water	Total
<b>Summary of Member Data Used in Valuation</b>									
Active Members	291	687	3	3	5	1	3	1	994
Average Age	45.6	44.7	43.3	58.2	53.4	56.8	43.6	32.4	45.0
Average Service	10.9	8.0	11.0	13.1	11.2	15.1	14.6	11.0	8.9
Covered Payroll	20,577,764	43,577,636	207,807	184,879	309,159	74,578	191,367	45,250	65,168,439
Retired Members and Survivors	310	456	4	0	1	0	0	34	805
Average Age	74.0	74.0	78.7	-	59.8	-	-	78.0	74.1
Covered Spouses	136	194	3	0	0	0	0	12	345
Expected Benefit Payments	3,188,642	4,805,081	39,090	2,353	19,788	398	336	383,329	8,439,017
OPEB Trust contributions	180,043	112,152	574	907	1,150	275	781	161	296,043
Total Employer Contributions	3,368,685	4,917,233	39,664	3,260	20,938	673	1,117	383,490	8,735,060
<b>Beginning Net OPEB Liability - June 30, 2021</b>									
Total OPEB Liability	143,566,681	265,119,952	1,260,125	633,523	1,192,266	337,531	1,244,018	8,454,891	421,808,987
Fiduciary Net Position	867,081	866,560	563	889	1,126	646	765	11,309	1,748,939
Net OPEB Liability	142,699,600	264,253,392	1,259,562	632,634	1,191,140	336,885	1,243,253	8,443,582	420,060,048
Total OPEB Liability, beginning of year	143,566,681	265,119,952	1,260,125	633,523	1,192,266	337,531	1,244,018	8,454,891	421,808,987
Service cost	5,879,983	11,421,781	36,989	44,401	74,631	12,943	38,645	16,788	17,526,161
Interest	3,193,611	5,921,407	27,595	14,618	27,151	7,566	27,702	178,848	9,398,498
Changes of benefit terms	289,371	200,425	2,657	1,346	1,774	630	1,007	13,476	510,686
Differences between expected and actual experience	(17,394,027)	(41,244,264)	3,897	207,429	(48,141)	(11,556)	(502,459)	(1,485,411)	(60,474,532)
Changes of assumptions	(31,717,535)	(65,515,184)	(265,222)	(221,207)	(313,797)	(87,174)	(262,892)	(1,069,910)	(99,452,921)
Benefit payments	(3,188,642)	(4,805,081)	(39,090)	(2,353)	(19,788)	(398)	(336)	(383,329)	(8,439,017)
Net change in total OPEB liability	(42,937,239)	(94,020,916)	(233,174)	44,234	(278,170)	(77,989)	(698,333)	(2,729,538)	(140,931,125)
Total OPEB Liability, end of year	100,629,442	171,099,036	1,026,951	677,757	914,096	259,542	545,685	5,725,353	280,877,862
<b>Ending Net OPEB Liability - June 30, 2022</b>									
Total OPEB Liability	100,629,442	171,099,036	1,026,951	677,757	914,096	259,542	545,685	5,725,353	280,877,862
Fiduciary Net Position	1,014,531	946,137	1,116	1,762	2,234	897	1,517	11,045	1,979,239
Net OPEB Liability	99,614,911	170,152,899	1,025,835	675,995	911,862	258,645	544,168	5,714,308	278,898,623

## SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

Department	City	School	Airport	Water	Sewer	City/Sewer	Water/Sewer	City/Sewer/Water	Total
<b>Total Deferred Outflows of Resources</b>									
Differences between Expected and Actual Experience	0	0	0	0	0	0	0	0	0
Changes in Assumptions	19,742,721	36,458,245	173,287	87,120	163,956	46,416	171,072	1,162,683	58,005,500
Differences between Expected and Actual Earnings on OPEB Plan Investments	5,541	5,538	4	6	7	4	5	72	11,177
<b>Total Deferred Outflows of Resources</b>	<b>19,748,262</b>	<b>36,463,783</b>	<b>173,291</b>	<b>87,125</b>	<b>163,963</b>	<b>46,420</b>	<b>171,077</b>	<b>1,162,755</b>	<b>58,016,677</b>
<b>Total Deferred Inflows of Resources</b>									
Differences between Expected and Actual Experience	23,790,858	43,933,810	208,819	104,983	197,574	55,933	206,150	1,401,085	69,899,212
Changes in Assumptions	29,428,756	54,345,132	258,304	129,862	244,394	69,188	255,003	1,733,110	86,463,750
Differences between Expected and Actual Earnings on OPEB Plan Investments	0	0	0	0	0	0	0	0	0
<b>Total Deferred Inflows of Resources</b>	<b>53,219,614</b>	<b>98,278,942</b>	<b>467,123</b>	<b>234,845</b>	<b>441,968</b>	<b>125,121</b>	<b>461,153</b>	<b>3,134,195</b>	<b>156,362,962</b>
<b>Total OPEB Expense (Income)</b>	<b>9,694,672</b>	<b>1,886,746</b>	<b>244,291</b>	<b>259,016</b>	<b>146,747</b>	<b>37,779</b>	<b>(270,598)</b>	<b>638,242</b>	<b>12,636,896</b>

## SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

Department	City	School	Airport	Water	Sewer	City/Sewer	Water/Sewer	City/Sewer/Water	Total
<b>Sensitivity of the Net OPEB Liability to Changes in the Discount Rate</b>									
Current Discount Rate: 3.54%	99,614,911	170,152,899	1,025,835	675,995	911,862	258,645	544,168	5,714,308	278,898,623
1% Decrease in the Discount Rate: 2.54%	117,579,619	200,698,077	1,209,170	796,990	1,075,050	304,979	641,586	6,736,417	329,041,888
1% Increase in the Discount Rate: 4.54%	85,424,666	146,025,394	881,020	580,421	782,961	222,046	467,218	4,906,948	239,290,674
<b>Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rates</b>									
Current Trend Rates	99,614,911	170,152,899	1,025,835	675,995	911,862	258,645	544,168	5,714,308	278,898,623
1% Decrease in Trend Rates	83,673,362	143,047,675	863,147	568,626	767,052	217,529	457,721	4,807,307	234,402,419
1% Increase in Trend Rates	120,330,248	205,374,938	1,237,241	815,516	1,100,036	312,074	656,501	6,892,915	336,719,469
<b>Deferred Outflows of Resources and Deferred Inflows of Resources recognized in OPEB Expense</b>									
<b>2023</b>	(4,996,787)	(9,228,108)	(43,865)	(22,052)	(41,502)	(11,749)	(43,304)	(294,307)	(14,681,674)
<b>2024</b>	(4,193,843)	(7,745,222)	(36,816)	(18,509)	(34,833)	(9,861)	(36,345)	(247,015)	(12,322,444)
<b>2025</b>	(5,197,664)	(9,599,088)	(45,628)	(22,939)	(43,171)	(12,221)	(45,045)	(306,139)	(15,271,895)
<b>2026</b>	(7,958,839)	(14,698,447)	(69,868)	(35,125)	(66,104)	(18,714)	(68,974)	(468,770)	(23,384,841)
<b>2027</b>	(8,614,727)	(15,909,747)	(75,625)	(38,019)	(71,552)	(20,256)	(74,658)	(507,402)	(25,311,986)
<b>Thereafter</b>	(2,509,492)	(4,634,549)	(22,030)	(11,075)	(20,843)	(5,901)	(21,748)	(147,807)	(7,373,445)

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

Under GASB 74 and GASB 75, a series of projections and calculations are used to determine the discount rate for the purpose of the measurement of the Total OPEB Liability. The discount rate is the single rate that reflects (1) the long-term expected rate of return on OPEB plan investments that are expected to be used to finance the payment of benefits, to the extent that the OPEB plan's fiduciary net position is projected to be sufficient to make projected benefit payments and OPEB plan assets are expected to be invested using a strategy to achieve that return, and (2) a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher, to the extent that the conditions for use of the long-term expected rate of return are not met.

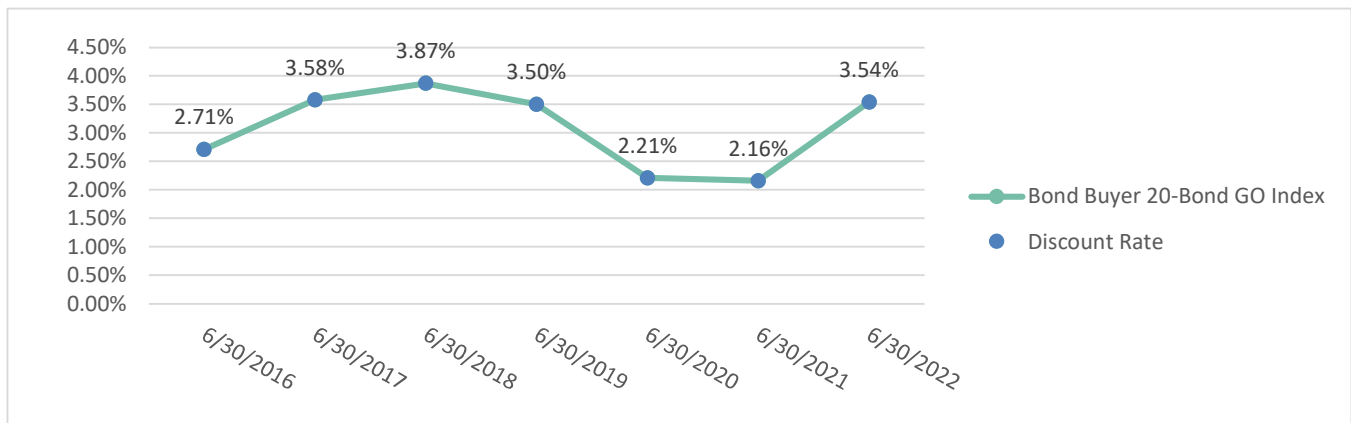
Projected cash flows into and out of the OPEB plan are assumed to be contributions to the OPEB plan, benefit payments, OPEB plan administrative expenses and OPEB plan investment earnings. These projected cash flows are used to project the OPEB plan's fiduciary net position at the beginning of each period. The OPEB plan's projected fiduciary net position at the beginning of each period is compared to the amount of benefit payments projected to occur in that period.

It is assumed that the OPEB plan's fiduciary net position is expected to always be invested using a strategy to achieve the long-term expected rate of return on OPEB plan investments.

The benefit payments that are projected to occur in a period are discounted using the long-term expected rate of return on OPEB plan investments if the amount of the OPEB plan's beginning fiduciary net position is projected to be sufficient to make the benefit payments in that period. In periods in which benefit payments are projected to be greater than the amount of the OPEB plan's fiduciary net position, they are discounted using a municipal bond rate as required by GASB 74.

For purposes of this valuation, liabilities are based on a discount rate of 3.54%, the rate that reflects a tax-exempt, high quality municipal bond rate. The municipal bond rate of 3.54% is based on the Bond Buyer 20-Bond GO Index published on June 30, 2022. The OPEB plan's fiduciary net position was projected to be insufficient to make all projected benefit payments of current plan members. Therefore, the 3.54% municipal bond rate was applied to all periods to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 3.54%.

Below are the historical Bond Buyer 20-Bond GO Indices and the City's discount rate used in disclosures since the implementation of GASB 74 and GASB 75:



## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

Year	Projected Payroll			Projected Contributions			
	Payroll for Current Plan Members (a)	Payroll for Future Plan Members (b)	Total Payroll (c) = (a) + (b)	Employer Contributions (Benefit Payments) (d)	Employer Contributions (OPEB Trust) (e)	Employer Contributions Related to Payroll of Future Employees (f) = (b) * 16.28%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2022	65,168,439	-	65,168,439	8,439,017	296,043	-	8,735,060
2023	60,928,799	6,520,535	67,449,334	9,014,212	296,043	1,061,262	8,248,993
2024	57,798,282	12,011,779	69,810,061	9,636,817	296,043	1,955,000	7,977,860
2025	54,985,879	17,267,534	72,253,413	10,243,288	296,043	2,810,410	7,728,921
2026	52,422,536	22,359,746	74,782,282	10,767,347	296,043	3,639,203	7,424,187
2027	50,237,054	27,162,608	77,399,662	11,028,080	296,043	4,420,901	6,903,222
2028	48,191,674	31,916,976	80,108,650	11,433,395	296,043	5,194,708	6,534,730
2029	46,066,057	36,846,396	82,912,453	12,004,523	296,043	5,997,005	6,303,561
2030	44,122,285	41,692,104	85,814,389	12,491,002	296,043	6,785,677	6,001,368
2031	42,244,521	46,573,372	88,817,893	12,959,220	296,043	7,580,137	5,675,126
2032	40,283,837	51,642,682	91,926,519	13,681,470	296,043	8,405,202	5,572,311
2033	38,128,570	57,015,377	95,143,947	14,308,374	296,043	9,279,645	5,324,772
2034	36,351,406	62,122,579	98,473,985	14,806,810	296,043	10,110,877	4,991,976
2035	34,644,337	67,276,237	101,920,574	15,313,385	296,043	10,949,671	4,659,757
2036	32,802,165	72,685,629	105,487,794	15,723,180	296,043	11,830,086	4,189,137
2037	31,148,199	78,031,668	109,179,867	16,142,827	296,043	12,700,191	3,738,679
2038	29,566,575	83,434,587	113,001,162	16,515,296	296,043	13,579,553	3,231,786
2039	27,777,946	89,178,257	116,956,203	16,960,894	296,043	14,514,375	2,742,562
2040	26,068,020	94,981,650	121,049,670	17,432,191	296,043	15,458,917	2,269,317
2041	24,271,011	101,015,397	125,286,408	17,803,217	296,043	16,440,951	1,658,309
2042	22,628,833	107,042,599	129,671,432	18,252,729	296,043	17,421,920	1,126,852
2043	21,010,642	113,199,290	134,209,932	18,381,760	296,043	18,423,964	253,839
2044	19,482,117	119,425,163	138,907,280	18,654,650	296,043	19,437,267	-
2045	17,976,012	125,793,023	143,769,035	18,758,766	296,043	20,473,680	-
2046	16,505,973	132,294,978	148,800,951	18,798,654	296,043	21,531,918	-
2047	15,213,742	138,795,242	154,008,984	18,781,503	296,043	22,589,881	-
2048	13,959,249	145,440,049	159,399,298	18,796,729	296,043	23,671,369	-
2049	12,506,172	152,472,101	164,978,273	18,808,574	296,043	24,815,884	-
2050	11,199,500	159,553,013	170,752,513	18,908,723	296,043	25,968,351	-
2051	9,903,195	166,825,656	176,728,851	19,066,085	296,043	27,152,024	-
2052	8,666,443	174,247,918	182,914,361	19,186,194	296,043	28,360,048	-
2053	7,466,787	181,849,577	189,316,364	19,379,156	296,043	29,597,270	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

Year	Projected Payroll			Projected Contributions			
	Payroll for Current Plan Members (a)	Payroll for Future Plan Members (b)	Total Payroll (c) = (a) + (b)	Employer Contributions (Benefit Payments) (d)	Employer Contributions (OPEB Trust) (e)	Employer Contributions Related to Payroll of Future Employees (f) = (b) * 16.28%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2054	6,302,778	189,639,659	195,942,437	19,396,811	296,043	30,865,160	-
2055	5,266,178	197,534,244	202,800,422	19,573,369	296,043	32,150,058	-
2056	4,332,093	205,566,344	209,898,437	19,675,705	296,043	33,457,337	-
2057	3,433,131	213,811,751	217,244,882	19,590,012	296,043	34,799,334	-
2058	2,698,414	222,150,039	224,848,453	19,584,608	296,043	36,156,448	-
2059	2,067,377	230,650,772	232,718,149	19,496,985	296,043	37,540,001	-
2060	1,510,602	239,352,682	240,863,284	19,313,020	296,043	38,956,296	-
2061	1,055,091	248,238,408	249,293,499	19,017,404	296,043	40,402,510	-
2062	738,232	257,280,539	258,018,771	18,915,633	296,043	41,874,179	-
2063	542,024	266,507,404	267,049,428	18,653,634	296,043	43,375,914	-
2064	358,792	276,037,366	276,396,158	18,418,617	296,043	44,926,981	-
2065	259,006	285,811,018	286,070,024	18,431,087	296,043	46,517,710	-
2066	179,724	295,902,751	296,082,475	18,282,923	296,043	48,160,209	-
2067	120,086	306,325,276	306,445,362	18,156,733	296,043	49,856,547	-
2068	78,198	317,092,752	317,170,950	18,079,031	296,043	51,609,028	-
2069	52,138	328,219,795	328,271,933	17,914,652	296,043	53,420,031	-
2070	28,578	339,732,873	339,761,451	17,729,709	296,043	55,293,863	-
2071	11,886	351,641,216	351,653,102	17,445,643	296,043	57,232,028	-
2072	8,203	363,952,758	363,960,961	17,109,214	296,043	59,235,816	-
2073	2,324	376,697,271	376,699,595	16,729,497	296,043	61,310,074	-
2074	-	389,884,081	389,884,081	16,290,951	296,043	63,456,318	-
2075	-	403,530,024	403,530,024	15,798,436	296,043	65,677,289	-
2076	-	417,653,575	417,653,575	15,241,715	296,043	67,975,994	-
2077	-	432,271,450	432,271,450	14,609,509	296,043	70,355,154	-
2078	-	447,400,951	447,400,951	13,958,916	296,043	72,817,584	-
2079	-	463,059,984	463,059,984	13,274,598	296,043	75,366,200	-
2080	-	479,267,083	479,267,083	12,551,985	296,043	78,004,017	-
2081	-	496,041,431	496,041,431	11,811,369	296,043	80,734,157	-
2082	-	513,402,881	513,402,881	11,022,209	296,043	83,559,853	-
2083	-	531,371,982	531,371,982	10,256,887	296,043	86,484,447	-
2084	-	549,970,001	549,970,001	9,482,831	296,043	89,511,403	-
2085	-	569,218,951	569,218,951	8,694,571	296,043	92,644,302	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

Year	Projected Payroll			Projected Contributions			
	Payroll for Current Plan Members (a)	Payroll for Future Plan Members (b)	Total Payroll (c) = (a) + (b)	Employer Contributions (Benefit Payments) (d)	Employer Contributions (OPEB Trust) (e)	Employer Contributions Related to Payroll of Future Employees (f) = (b) * 16.28%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2086	-	589,141,614	589,141,614	7,913,630	296,043	95,886,853	-
2087	-	609,761,570	609,761,570	7,115,898	296,043	99,242,892	-
2088	-	631,103,225	631,103,225	6,368,271	296,043	102,716,394	-
2089	-	653,191,838	653,191,838	5,638,617	296,043	106,311,468	-
2090	-	676,053,552	676,053,552	4,935,349	296,043	110,032,369	-
2091	-	699,715,426	699,715,426	4,276,272	296,043	113,883,502	-
2092	-	724,205,466	724,205,466	3,654,585	296,043	117,869,424	-
2093	-	749,552,657	749,552,657	3,087,347	296,043	121,994,854	-
2094	-	775,787,000	775,787,000	2,570,517	296,043	126,264,674	-
2095	-	802,939,545	802,939,545	2,119,157	296,043	130,683,938	-
2096	-	831,042,429	831,042,429	1,721,740	296,043	135,257,875	-
2097	-	860,128,914	860,128,914	1,380,418	296,043	139,991,901	-
2098	-	890,233,426	890,233,426	1,089,848	296,043	144,891,618	-
2099	-	921,391,596	921,391,596	847,358	296,043	149,962,824	-
2100	-	953,640,302	953,640,302	647,908	296,043	155,211,523	-
2101	-	987,017,713	987,017,713	487,164	296,043	160,643,926	-
2102	-	1,021,563,333	1,021,563,333	359,731	296,043	166,266,464	-
2103	-	1,057,318,050	1,057,318,050	260,652	296,043	172,085,790	-
2104	-	1,094,324,182	1,094,324,182	185,177	296,043	178,108,793	-
2105	-	1,132,625,528	1,132,625,528	128,901	296,043	184,342,601	-
2106	-	1,172,267,421	1,172,267,421	87,859	296,043	190,794,591	-
2107	-	1,213,296,781	1,213,296,781	58,607	296,043	197,472,402	-
2108	-	1,255,762,168	1,255,762,168	38,240	296,043	204,383,936	-
2109	-	1,299,713,844	1,299,713,844	24,394	296,043	211,537,374	-
2110	-	1,345,203,829	1,345,203,829	15,208	296,043	218,941,182	-
2111	-	1,392,285,963	1,392,285,963	9,266	296,043	226,604,124	-
2112	-	1,441,015,972	1,441,015,972	5,518	296,043	234,535,268	-
2113	-	1,491,451,531	1,491,451,531	3,210	296,043	242,744,002	-
2114	-	1,543,652,335	1,543,652,335	1,824	296,043	251,240,042	-
2115	-	1,597,680,167	1,597,680,167	1,012	296,043	260,033,444	-
2116	-	1,653,598,973	1,653,598,973	548	296,043	269,134,615	-
2117	-	1,711,474,937	1,711,474,937	289	296,043	278,554,326	-



## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

Year	Projected Payroll			Projected Contributions			
	Payroll for Current Plan Members (a)	Payroll for Future Plan Members (b)	Total Payroll (c) = (a) + (b)	Employer Contributions (Benefit Payments) (d)	Employer Contributions (OPEB Trust) (e)	Employer Contributions Related to Payroll of Future Employees (f) = (b) * 16.28%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2118	-	1,771,376,560	1,771,376,560	149	296,043	288,303,727	-
2119	-	1,833,374,740	1,833,374,740	73	296,043	298,394,358	-
2120	-	1,897,542,856	1,897,542,856	34	296,043	308,838,161	-
2121	-	1,963,956,856	1,963,956,856	16	296,043	319,647,496	-
2122	-	2,032,695,346	2,032,695,346	7	296,043	330,835,159	-
2123	-	2,103,839,683	2,103,839,683	3	296,043	342,414,389	-
2124	-	2,177,474,072	2,177,474,072	1	-	354,398,893	-
2125	-	2,253,685,665	2,253,685,665	-	296,043	366,802,854	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 2: Projection of the OPEB Plan's Fiduciary Net Position**

Year	Projected Beginning Fiduciary Net Position (a)	Employer Contributions for Current Plan Members (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) +(e)
2022	1,748,939	8,735,060	8,439,017	-	(65,743)	1,979,239
2023	1,979,239	8,248,993	9,014,212	-	110,167	1,324,187
2024	1,324,187	7,977,860	9,636,817	-	34,135	-
2025	-	7,728,921	10,243,288	-	-	-
2026	-	7,424,187	10,767,347	-	-	-
2027	-	6,903,222	11,028,080	-	-	-
2028	-	6,534,730	11,433,395	-	-	-
2029	-	6,303,561	12,004,523	-	-	-
2030	-	6,001,368	12,491,002	-	-	-
2031	-	5,675,126	12,959,220	-	-	-
2032	-	5,572,311	13,681,470	-	-	-
2033	-	5,324,772	14,308,374	-	-	-
2034	-	4,991,976	14,806,810	-	-	-
2035	-	4,659,757	15,313,385	-	-	-
2036	-	4,189,137	15,723,180	-	-	-
2037	-	3,738,679	16,142,827	-	-	-
2038	-	3,231,786	16,515,296	-	-	-
2039	-	2,742,562	16,960,894	-	-	-
2040	-	2,269,317	17,432,191	-	-	-
2041	-	1,658,309	17,803,217	-	-	-
2042	-	1,126,852	18,252,729	-	-	-
2043	-	253,839	18,381,760	-	-	-
2044	-	-	18,654,650	-	-	-
2045	-	-	18,758,766	-	-	-
2046	-	-	18,798,654	-	-	-
2047	-	-	18,781,503	-	-	-
2048	-	-	18,796,729	-	-	-
2049	-	-	18,808,574	-	-	-
2050	-	-	18,908,723	-	-	-
2051	-	-	19,066,085	-	-	-
2052	-	-	19,186,194	-	-	-
2053	-	-	19,379,156	-	-	-
2054	-	-	19,396,811	-	-	-
2055	-	-	19,573,369	-	-	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 2: Projection of the OPEB Plan's Fiduciary Net Position**

Year	Projected Beginning Fiduciary Net Position (a)	Employer Contributions for Current Plan Members (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) +(e)
2056	-	-	19,675,705	-	-	-
2057	-	-	19,590,012	-	-	-
2058	-	-	19,584,608	-	-	-
2059	-	-	19,496,985	-	-	-
2060	-	-	19,313,020	-	-	-
2061	-	-	19,017,404	-	-	-
2062	-	-	18,915,633	-	-	-
2063	-	-	18,653,634	-	-	-
2064	-	-	18,418,617	-	-	-
2065	-	-	18,431,087	-	-	-
2066	-	-	18,282,923	-	-	-
2067	-	-	18,156,733	-	-	-
2068	-	-	18,079,031	-	-	-
2069	-	-	17,914,652	-	-	-
2070	-	-	17,729,709	-	-	-
2071	-	-	17,445,643	-	-	-
2072	-	-	17,109,214	-	-	-
2073	-	-	16,729,497	-	-	-
2074	-	-	16,290,951	-	-	-
2075	-	-	15,798,436	-	-	-
2076	-	-	15,241,715	-	-	-
2077	-	-	14,609,509	-	-	-
2078	-	-	13,958,916	-	-	-
2079	-	-	13,274,598	-	-	-
2080	-	-	12,551,985	-	-	-
2081	-	-	11,811,369	-	-	-
2082	-	-	11,022,209	-	-	-
2083	-	-	10,256,887	-	-	-
2084	-	-	9,482,831	-	-	-
2085	-	-	8,694,571	-	-	-
2086	-	-	7,913,630	-	-	-
2087	-	-	7,115,898	-	-	-
2088	-	-	6,368,271	-	-	-
2089	-	-	5,638,617	-	-	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 2: Projection of the OPEB Plan's Fiduciary Net Position**

Year	Projected Beginning Fiduciary Net Position (a)	Employer Contributions for Current Plan Members (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) +(e)
2090	-	-	4,935,349	-	-	-
2091	-	-	4,276,272	-	-	-
2092	-	-	3,654,585	-	-	-
2093	-	-	3,087,347	-	-	-
2094	-	-	2,570,517	-	-	-
2095	-	-	2,119,157	-	-	-
2096	-	-	1,721,740	-	-	-
2097	-	-	1,380,418	-	-	-
2098	-	-	1,089,848	-	-	-
2099	-	-	847,358	-	-	-
2100	-	-	647,908	-	-	-
2101	-	-	487,164	-	-	-
2102	-	-	359,731	-	-	-
2103	-	-	260,652	-	-	-
2104	-	-	185,177	-	-	-
2105	-	-	128,901	-	-	-
2106	-	-	87,859	-	-	-
2107	-	-	58,607	-	-	-
2108	-	-	38,240	-	-	-
2109	-	-	24,394	-	-	-
2110	-	-	15,208	-	-	-
2111	-	-	9,266	-	-	-
2112	-	-	5,518	-	-	-
2113	-	-	3,210	-	-	-
2114	-	-	1,824	-	-	-
2115	-	-	1,012	-	-	-
2116	-	-	548	-	-	-
2117	-	-	289	-	-	-
2118	-	-	149	-	-	-
2119	-	-	73	-	-	-
2120	-	-	34	-	-	-
2121	-	-	16	-	-	-
2122	-	-	7	-	-	-
2123	-	-	3	-	-	-
2124	-	-	1	-	-	-
2125	-	-	-	-	-	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 3: Actuarial Present Value of Projected Benefit Payments - End of Measurement Period**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments (b)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments		
			"Funded" Portion of Benefit Payments (c)	"Unfunded" Portion of Benefit Payments (d)	Present Value of "Funded" Benefit Payments (e)	Present Value of "Unfunded" Benefit Payments (f)	Present Value of Benefit Payments Using the Single Discount Rate (g) = 3.54%
2023	1,979,239	9,014,212	-	9,014,212	-	8,858,775	8,858,775
2024	1,324,187	9,636,817	-	9,636,817	-	9,146,846	9,146,846
2025	-	10,243,288	-	10,243,288	-	9,390,073	9,390,073
2026	-	10,767,347	-	10,767,347	-	9,533,012	9,533,012
2027	-	11,028,080	-	11,028,080	-	9,430,032	9,430,032
2028	-	11,433,395	-	11,433,395	-	9,442,355	9,442,355
2029	-	12,004,523	-	12,004,523	-	9,575,068	9,575,068
2030	-	12,491,002	-	12,491,002	-	9,622,459	9,622,459
2031	-	12,959,220	-	12,959,220	-	9,641,831	9,641,831
2032	-	13,681,470	-	13,681,470	-	9,831,171	9,831,171
2033	-	14,308,374	-	14,308,374	-	9,930,122	9,930,122
2034	-	14,806,810	-	14,806,810	-	9,924,706	9,924,706
2035	-	15,313,385	-	15,313,385	-	9,913,322	9,913,322
2036	-	15,723,180	-	15,723,180	-	9,830,604	9,830,604
2037	-	16,142,827	-	16,142,827	-	9,747,904	9,747,904
2038	-	16,515,296	-	16,515,296	-	9,631,854	9,631,854
2039	-	16,960,894	-	16,960,894	-	9,553,535	9,553,535
2040	-	17,432,191	-	17,432,191	-	9,483,293	9,483,293
2041	-	17,803,217	-	17,803,217	-	9,354,003	9,354,003
2042	-	18,252,729	-	18,252,729	-	9,262,296	9,262,296
2043	-	18,381,760	-	18,381,760	-	9,008,859	9,008,859
2044	-	18,654,650	-	18,654,650	-	8,830,019	8,830,019
2045	-	18,758,766	-	18,758,766	-	8,575,721	8,575,721
2046	-	18,798,654	-	18,798,654	-	8,300,132	8,300,132
2047	-	18,781,503	-	18,781,503	-	8,009,039	8,009,039
2048	-	18,796,729	-	18,796,729	-	7,741,483	7,741,483
2049	-	18,808,574	-	18,808,574	-	7,481,516	7,481,516
2050	-	18,908,723	-	18,908,723	-	7,264,200	7,264,200
2051	-	19,066,085	-	19,066,085	-	7,074,226	7,074,226
2052	-	19,186,194	-	19,186,194	-	6,875,402	6,875,402
2053	-	19,379,156	-	19,379,156	-	6,707,118	6,707,118
2054	-	19,396,811	-	19,396,811	-	6,483,705	6,483,705

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 3: Actuarial Present Value of Projected Benefit Payments - End of Measurement Period**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments (b)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments		
			"Funded" Portion of Benefit Payments (c)	"Unfunded" Portion of Benefit Payments (d)	Present Value of "Funded" Benefit Payments (e)	Present Value of "Unfunded" Benefit Payments (f)	Present Value of Benefit Payments Using the Single Discount Rate (g) = 3.54%
2055	-	19,573,369	-	19,573,369	-	6,319,029	6,319,029
2056	-	19,675,705	-	19,675,705	-	6,134,892	6,134,892
2057	-	19,590,012	-	19,590,012	-	5,899,336	5,899,336
2058	-	19,584,608	-	19,584,608	-	5,696,068	5,696,068
2059	-	19,496,985	-	19,496,985	-	5,476,708	5,476,708
2060	-	19,313,020	-	19,313,020	-	5,239,552	5,239,552
2061	-	19,017,404	-	19,017,404	-	4,982,956	4,982,956
2062	-	18,915,633	-	18,915,633	-	4,786,836	4,786,836
2063	-	18,653,634	-	18,653,634	-	4,559,140	4,559,140
2064	-	18,418,617	-	18,418,617	-	4,347,788	4,347,788
2065	-	18,431,087	-	18,431,087	-	4,201,981	4,201,981
2066	-	18,282,923	-	18,282,923	-	4,025,693	4,025,693
2067	-	18,156,733	-	18,156,733	-	3,861,220	3,861,220
2068	-	18,079,031	-	18,079,031	-	3,713,247	3,713,247
2069	-	17,914,652	-	17,914,652	-	3,553,685	3,553,685
2070	-	17,729,709	-	17,729,709	-	3,396,753	3,396,753
2071	-	17,445,643	-	17,445,643	-	3,228,057	3,228,057
2072	-	17,109,214	-	17,109,214	-	3,057,568	3,057,568
2073	-	16,729,497	-	16,729,497	-	2,887,492	2,887,492
2074	-	16,290,951	-	16,290,951	-	2,715,665	2,715,665
2075	-	15,798,436	-	15,798,436	-	2,543,523	2,543,523
2076	-	15,241,715	-	15,241,715	-	2,369,994	2,369,994
2077	-	14,609,509	-	14,609,509	-	2,194,021	2,194,021
2078	-	13,958,916	-	13,958,916	-	2,024,644	2,024,644
2079	-	13,274,598	-	13,274,598	-	1,859,560	1,859,560
2080	-	12,551,985	-	12,551,985	-	1,698,217	1,698,217
2081	-	11,811,369	-	11,811,369	-	1,543,380	1,543,380
2082	-	11,022,209	-	11,022,209	-	1,391,019	1,391,019
2083	-	10,256,887	-	10,256,887	-	1,250,178	1,250,178
2084	-	9,482,831	-	9,482,831	-	1,116,313	1,116,313
2085	-	8,694,571	-	8,694,571	-	988,526	988,526
2086	-	7,913,630	-	7,913,630	-	868,976	868,976

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 3: Actuarial Present Value of Projected Benefit Payments - End of Measurement Period**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments (b)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments		
			"Funded" Portion of Benefit Payments (c)	"Unfunded" Portion of Benefit Payments (d)	Present Value of "Funded" Benefit Payments (e)	Present Value of "Unfunded" Benefit Payments (f)	Present Value of Benefit Payments Using the Single Discount Rate (g) = 3.54%
2087	-	7,115,898	-	7,115,898	-	754,664	754,664
2088	-	6,368,271	-	6,368,271	-	652,284	652,284
2089	-	5,638,617	-	5,638,617	-	557,802	557,802
2090	-	4,935,349	-	4,935,349	-	471,538	471,538
2091	-	4,276,272	-	4,276,272	-	394,599	394,599
2092	-	3,654,585	-	3,654,585	-	325,702	325,702
2093	-	3,087,347	-	3,087,347	-	265,742	265,742
2094	-	2,570,517	-	2,570,517	-	213,691	213,691
2095	-	2,119,157	-	2,119,157	-	170,146	170,146
2096	-	1,721,740	-	1,721,740	-	133,511	133,511
2097	-	1,380,418	-	1,380,418	-	103,384	103,384
2098	-	1,089,848	-	1,089,848	-	78,832	78,832
2099	-	847,358	-	847,358	-	59,196	59,196
2100	-	647,908	-	647,908	-	43,715	43,715
2101	-	487,164	-	487,164	-	31,746	31,746
2102	-	359,731	-	359,731	-	22,640	22,640
2103	-	260,652	-	260,652	-	15,844	15,844
2104	-	185,177	-	185,177	-	10,871	10,871
2105	-	128,901	-	128,901	-	7,309	7,309
2106	-	87,859	-	87,859	-	4,811	4,811
2107	-	58,607	-	58,607	-	3,100	3,100
2108	-	38,240	-	38,240	-	1,953	1,953
2109	-	24,394	-	24,394	-	1,203	1,203
2110	-	15,208	-	15,208	-	725	725
2111	-	9,266	-	9,266	-	426	426
2112	-	5,518	-	5,518	-	245	245
2113	-	3,210	-	3,210	-	138	138
2114	-	1,824	-	1,824	-	76	76
2115	-	1,012	-	1,012	-	41	41
2116	-	548	-	548	-	21	21
2117	-	289	-	289	-	11	11
2118	-	149	-	149	-	5	5

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 3: Actuarial Present Value of Projected Benefit Payments - End of Measurement Period**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments (b)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments		
			"Funded" Portion of Benefit Payments (c)	"Unfunded" Portion of Benefit Payments (d)	Present Value of "Funded" Benefit Payments (e)	Present Value of "Unfunded" Benefit Payments (f)	Present Value of Benefit Payments Using the Single Discount Rate (g) = 3.54%
2119	-	73	-	73	-	3	3
2120	-	34	-	34	-	1	1
2121	-	16	-	16	-	1	1
2122	-	7	-	7	-	-	-
2123	-	3	-	3	-	-	-
2124	-	1	-	1	-	-	-
2125	-	-	-	-	-	-	-



## APPENDIX B - SCHEDULE OF DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES

Year	Differences between Expected and Actual Experience	Recognition Period (Years)											
			2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
2018	-	6.09	-	-	-	-	-	-	-	-	-	-	-
2019	-	6.09	-	-	-	-	-	-	-	-	-	-	-
2020	(37,404,740)	6.11	(6,121,889)	(6,121,889)	(6,121,889)	(6,121,889)	(6,121,889)	(673,406)	-	-	-	-	-
2021	-	6.11	-	-	-	-	-	-	-	-	-	-	-
2022	(60,474,532)	6.29	(9,614,393)	(9,614,393)	(9,614,393)	(9,614,393)	(9,614,393)	(9,614,393)	(9,614,393)	(2,788,174)	-	-	-
Net Increase (Decrease) in OPEB Expense			(15,736,282)	(15,736,282)	(15,736,282)	(15,736,282)	(10,287,799)	(9,614,393)	(2,788,174)	-	-	-	-

Year	Changes of Assumptions	Recognition Period (Years)											
			2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
2018	(15,767,549)	6.09	(2,589,089)	(2,589,089)	(233,015)	-	-	-	-	-	-	-	-
2019	21,221,912	6.09	3,484,715	3,484,715	3,484,715	313,622	-	-	-	-	-	-	-
2020	91,305,783	6.11	14,943,663	14,943,663	14,943,663	14,943,663	1,643,805	-	-	-	-	-	-
2021	6,314,640	6.11	1,033,493	1,033,493	1,033,493	1,033,493	1,033,493	113,682	-	-	-	-	-
2022	(99,452,921)	6.29	(15,811,275)	(15,811,275)	(15,811,275)	(15,811,275)	(15,811,275)	(15,811,275)	(4,585,271)	-	-	-	-
Net Increase (Decrease) in OPEB Expense			1,061,507	1,061,507	3,417,581	479,503	(13,133,977)	(15,697,593)	(4,585,271)	-	-	-	-

## APPENDIX B - SCHEDULE OF DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES

Year	Differences between Projected and Actual Earnings on OPEB Plan Investments	Recognition Period (Years)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
2018	10,764	5	2,152	-	-	-	-	-	-	-	-	-
2019	(15,776)	5	(3,155)	(3,156)	-	-	-	-	-	-	-	-
2020	56,869	5	11,374	11,374	11,373	-	-	-	-	-	-	-
2021	(260,253)	5	(52,051)	(52,051)	(52,050)	(52,050)	-	-	-	-	-	-
2022	184,671	5	36,934	36,934	36,934	36,934	36,935	-	-	-	-	-
Net Increase (Decrease) in OPEB Expense			(4,746)	(6,899)	(3,743)	(15,116)	36,935	-	-	-	-	-