



# **TOWN OF BEDFORD, MASSACHUSETTS**

**OTHER POSTEMPLOYMENT BENEFITS PROGRAM**

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

**Disclosures as of**  
**June 30, 2020**

KMS Actuarial, LLC  
52 Hunt Road  
Kingston, NH 03848

October, 2020





October 30, 2020

Mr. Victor Garofalo  
Finance Director, Treasurer/Collector  
Town of Bedford, Massachusetts  
Town Hall, 10 Mudge Way  
Bedford, MA 01730-2144

Dear Victor:

We are pleased to present the enclosed report of the July 1, 2018 actuarial valuation of the retiree health care benefits for the Town of Bedford, Massachusetts. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2020 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 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 Town of Bedford, Massachusetts as well as health plan rates provided by the Town. 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 7.3%, the rate that reflects the long-term expected rate of return on OPEB plan assets. The long-term expected rate of return is based on the target allocations provided in the investment policy statement and long-term expected rates of return by asset class provided by the Pension Reserves Investment Management Board.

Mr. Victor Garofalo

October 30, 2020

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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 Middlesex County 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 Town of Bedford, 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.

Respectfully submitted,



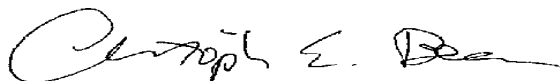
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# EXECUTIVE SUMMARY

## Purpose of Report

This report presents the results of the actuarial valuation of the Town of Bedford, Massachusetts's retiree health care benefits as of July 1, 2018. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2020 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 Town of Bedford, 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 Town of Bedford, 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

### Town of Bedford, Massachusetts Other Postemployment Benefits Program

The Town of Bedford, 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 Town provides health care benefits for retirees and their dependents. Benefits are provided through the Group Insurance Commission (GIC), and the full cost of benefits is shared between the Town and retirees.

### Summary of Principal Results

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

Disclosure Date	June 30, 2020	June 30, 2019	% Change
<b>Valuation Date</b>	<b>July 1, 2018</b>	<b>July 1, 2018</b>	
<b>Membership Data</b>			
Active Plan Members	667	646	3.3%
Inactive Plan Members (excludes covered spouses)	309	300	3.0%
Total Plan Members	976	946	3.2%
Covered Spouses	132	130	1.5%
Covered Payroll	\$50,607,109	\$47,371,039	6.8%
<b>Net OPEB Liability</b>			
Discount Rate	7.30%	7.50%	
Total OPEB Liability (TOL)	\$60,021,905	\$59,264,810	1.3%
Fiduciary Net Position (FNP)	\$10,513,054	\$9,451,680	11.2%
Net OPEB Liability	\$49,508,851	\$49,813,130	(0.6%)
FNP as % of TOL	17.5%	15.9%	10.1%
<b>OPEB Expense</b>			
OPEB Expense	\$642,126	\$5,097,395	(87.4%)
Deferred Outflows	\$6,954,616	\$5,737,264	
Deferred Inflows	\$4,420,425	\$5,170,922	
Recognition Period	7.89	7.89	

# 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, there is no experience gain or loss as the Total OPEB liability was developed from a roll forward of results of the most recent valuation.

## Changes of Assumptions

The discount rate changed from 7.5% as of June 30, 2019 to 7.3% as of June 30, 2020. In addition, the inflation rate was updated in this valuation. A summary of the impact on the Total OPEB Liability (TOL) of each assumption change is provided below:

◆ Increase due to change in Inflation Assumption	172,000
◆ Increase due to change in Discount Rate	1,659,000
Total	\$ 1,831,000

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

## Changes of Benefit Terms

The Patient Protection and Affordable Care Act (PPACA) previously applied a 40% excise tax, commonly referred to as the "Cadillac Tax," to the cost of plan benefits in excess of statutory thresholds beginning in 2022. This tax was repealed in December 2019. 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, 2020, is \$60,021,905. The Total OPEB Liability as of the prior measurement date, June 30, 2019, was \$59,264,810. During the current measurement period ending June 30, 2020, the Total OPEB Liability increased by \$757,095, or 1.3%. 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, 2020, is \$10,513,054. The Fiduciary Net Position as of the prior measurement date, June 30, 2019, was \$9,451,680. During the plan years ended 2020 and 2019, the actual rates of return were 2.01% and 5.60%, respectively. The expected long-term rate of return is 7.30%. The Fiduciary Net Position is shown in Section 1, Exhibit 1.1.

## Employer Future Period Contributions

The Town contributes a level percent of the Town's annual budget, beginning with \$593,990 for the 2018 fiscal year, increasing 3.5% annually thereafter plus an additional \$100,000 through fiscal 2023. After 2023, increasing 3.5% annually at which time the Town will revisit and possibly amend the funding policy regarding future contributions. However, for fiscal year 2021, the Town deferred its fiscal year 2021 contribution due to the COVID-19 pandemic.



## EXECUTIVE SUMMARY

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### Discount Rate

As of the June 30, 2020 measurement date, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 7.3%.

### OPEB Expense

The OPEB Expense for the current measurement period ending June 30, 2020, is \$642,126. Benefit changes are recognized immediately and experience gains and losses and assumption changes developed in this valuation are recognized over 7.89 years. Investment gains and losses are recognized over 5 years. The OPEB Expense for the prior measurement period was \$5,097,395. 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 impacts 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 assumptions on which the projections are based.

## SECTION 1 - PRINCIPAL VALUATION RESULTS

### Exhibit 1.1 - OPEB Trust Assets

The Town 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 Town and is presented below:

**Fiscal Year Ended June 30** **2020** **2019**

Trust Fund Composition at Fiscal Year-End		
Global Equity	\$4,436,509	\$4,149,287
Core Fixed Income	1,650,549	1,285,428
Value-Added Fixed Income	788,479	746,683
Private Equity	1,198,488	1,068,040
Real Estate	967,201	888,458
Timberland	388,983	368,616
Portfolio Completion Strategies and Overlay	1,082,845	945,168
<b>Total Market Value of Assets</b>	<b>\$10,513,054</b>	<b>\$9,451,680</b>
Asset Activity		
Market value, beginning of year	\$9,451,680	\$8,242,295
Employer Premiums	2,056,778	1,942,743
OPEB Trust Contributions	857,476	714,779
Benefit Payments	(2,056,778)	(1,942,743)
Administrative Expenses	-	-
Investment Return	203,898	494,606
Market value, end of year	<b>\$10,513,054</b>	<b>\$9,451,680</b>
<b>Money-Weighted Rate of Return</b>	<b>2.01%</b>	<b>5.60%</b>
(Gain) / Loss on OPEB Plan Investments		
Projected earnings	\$761,585	\$662,574
Actual earnings	203,898	494,606
(Gain) / Loss on OPEB plan investments	\$557,687	\$167,968

## 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, 2020 measurement date was developed from an actuarial valuation as of July 1, 2018 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, 2019 to the end of the measurement period, June 30, 2020 is shown below:

Measurement Date	June 30, 2020
<b>1. Total OPEB Liability, beginning of year:</b>	
a. Actives	\$30,992,573
b. Retirees, Covered Spouses and Survivors	28,272,237
c. Total OPEB Liability at 7.5% (a. + b.)	\$59,264,810
<b>2. Service Cost</b>	<b>\$1,712,486</b>
<b>3. Expected Benefit Payments</b>	
a. Current retirees	(\$1,796,975)
b. Future retirees	(259,803)
c. Total (a. + b.)	(\$2,056,778)
<b>4. Interest [7.5% x (1.c. + 2. + .5 x 3.c)]</b>	<b>\$4,496,168</b>
<b>5. Changes of benefit terms</b>	<b>(\$5,226,310)</b>
<b>6. Differences between expected and actual experience</b>	<b>\$0</b>
<b>7. Changes of assumptions or other inputs</b>	<b>\$1,831,529</b>
<b>8. Total OPEB Liability, end of year (1.c. + 2. + 3.c. + 4. + 5. + 6. + 7.)</b>	
a. Actives	\$32,787,868
b. Retirees, Covered Spouses and Survivors	27,234,037
c. Total OPEB Liability at 7.3% (a. + b.)	\$60,021,905

## SECTION 1 - PRINCIPAL VALUATION RESULTS

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

The Town contributes a level percent of the Town's annual budget, beginning with \$593,990 for the 2018 fiscal year, increasing 3.5% annually thereafter plus an additional \$100,000 through fiscal 2023. After 2023, increasing 3.5% annually at which time the Town will revisit and possibly amend the funding policy regarding future contributions. However, for fiscal year 2021, the Town deferred its fiscal year 2021 contribution due to the COVID-19 pandemic.

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, 2020	June 30, 2021
<b>Discount Rate</b>	<b>7.50%</b>	<b>7.30%</b>
1. Normal Cost	\$1,712,486	\$1,652,608
2. Unfunded Actuarial Accrued Liability		
a. Actuarial Accrued Liability	\$59,264,810	\$60,021,905
b. Actuarial Value of Plan Assets	\$9,451,680	\$10,513,054
c. Unfunded Actuarial Accrued Liability (a. - b.)	\$49,813,130	\$49,508,851
3. Amortization of Unfunded Actuarial Accrued Liability		
a. Unfunded Actuarial Accrued Liability	\$49,813,130	\$49,508,851
b. Amortization Period in years	30	30
c. Payroll Growth Rate	3.5%	3.5%
d. Amortization Factor	18.26	18.66
e. Amortization Amount (3.a. / 3.d.)	\$2,727,992	\$2,653,207
4. Interest on 1. and 3.e.	\$333,036	\$314,324
5. Actuarially Determined Employer Contribution (1. + 3.e. + 4.)	\$4,773,514	\$4,620,139
6. Actual Employer Contribution to OPEB Trust	\$857,476	TBD
7. Expected Benefit Payments	\$2,056,778	
8. Total Contribution (6. + 7.)	\$2,914,254	

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.1 - Plan Description

#### Plan Administration

The Town of Bedford, 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, 2020, OPEB plan membership consisted of the following:

Inactive plan members or beneficiaries currently receiving benefit payments <sup>1</sup>	309
Inactive plan members entitled to but not yet receiving benefit payments	0
Active plan members	667
	<u>976</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 Town provides health care benefits for retirees and their dependents. Benefits are provided through the Group Insurance Commission (GIC), and the full cost of benefits is shared between the Town and retirees.

#### Employer Future Period Contributions

The Town contributes a level percent of the Town's annual budget, beginning with \$593,990 for the 2018 fiscal year, increasing 3.5% annually thereafter plus an additional \$100,000 through fiscal 2023. After 2023, increasing 3.5% annually at which time the Town will revisit and possibly amend the funding policy regarding future contributions. However, for fiscal year 2021, the Town deferred its fiscal year 2021 contribution due to the COVID-19 pandemic.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

The components of the net OPEB liability at June 30, 2020, were as follows:

Total OPEB liability	\$ 60,021,905
Fiduciary net position	(10,513,054)
Net OPEB liability	\$ 49,508,851

Fiduciary net position as a percentage of the total OPEB liability 17.52%

#### Actuarial Assumptions

The total OPEB liability was determined by an actuarial valuation as of July 1, 2018, rolled forward to the measurement date and using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.4 percent
Discount rate	7.3 percent, net of investment expenses, including inflation
Healthcare cost trend rate	8 percent for 2018, decreasing 0.5 percent per year to 5.5 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-2000 Employees Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.
Post-Retirement Mortality - General and Public Safety employees	RP-2000 Healthy Annuitant Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.
Pre-Retirement Mortality - Teachers	RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.
Post-Retirement Mortality - Teachers	RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

#### 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, 2020 are summarized in the following table:

<b>Asset Class</b>	<b>Target Allocation</b>	<b>Long-Term Expected Real Rates of Return<sup>1</sup></b>
Global Equity	39%	4.68%
Core Fixed Income	15%	0.59%
Value-Added Fixed Income	8%	4.40%
Private Equity	13%	8.50%
Real Estate	10%	3.70%
Timberland	4%	4.30%
Portfolio Completion Strategies	11%	3.40%
<b>Total</b>	<b>100%</b>	

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

#### Discount Rate

The discount rate used to measure the total OPEB liability was 7.3%. The projection of cash flows used to determine the discount rate assumed that contributions from the Town 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 available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments 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 7.3 percent, as well as what the net OPEB liability would be if it were calculated using a discount rate 1-percentage point lower (6.3 percent) or 1-percentage point higher (8.3 percent) than the current rate:

	<b>1% Decrease (6.3%)</b>	<b>Assumed Discount Rate (7.3%)</b>	<b>1% Increase (8.3%)</b>
Total OPEB Liability	\$ 69,534,588	\$ 60,021,905	\$ 52,397,907
Fiduciary Net Position	\$ (10,513,054)	\$ (10,513,054)	\$ (10,513,054)
Net OPEB Liability	\$ 59,021,534	\$ 49,508,851	\$ 41,884,853

#### 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 (7% year 1 decreasing to 2.9%) or 1-percentage point higher (9% year 1 decreasing to 4.9%) than the current healthcare cost trend rates:

	<b>1% Decrease 7% Year 1 Decreasing to 2.9%</b>	<b>Assumed Healthcare Cost Trend Rates 8% Year 1 Decreasing to 3.9%</b>	<b>1% Increase 9% Year 1 Decreasing to 4.9%</b>
Total OPEB Liability	\$ 50,859,902	\$ 60,021,905	\$ 71,744,419
Fiduciary Net Position	\$ (10,513,054)	\$ (10,513,054)	\$ (10,513,054)
Net OPEB Liability	\$ 40,346,848	\$ 49,508,851	\$ 61,231,365



## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

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

Fiscal Year Ended June 30	2020	2019	2018	2017	2016
<b>Total OPEB Liability</b>					
Service cost	\$ 1,712,486	\$ 1,522,152	\$ 1,463,608	\$ 1,407,315	
Interest	4,496,168	4,160,120	3,910,920	3,669,438	
Changes of benefit terms	(5,226,310)	-	(152,543)	-	
Differences between expected and actual experience	-	(5,921,419)	-	-	
Changes of assumptions	1,831,529	6,529,210	-	-	
Benefit payments	(2,056,778)	(1,942,743)	(1,972,967)	(1,853,604)	
<b>Net change in total OPEB liability</b>	<b>\$ 757,095</b>	<b>\$ 4,347,320</b>	<b>\$ 3,249,018</b>	<b>\$ 3,223,149</b>	
<b>Total OPEB liability—beginning</b>	<b>\$ 59,264,810</b>	<b>\$ 54,917,490</b>	<b>\$ 51,668,472</b>	<b>\$ 48,445,323</b>	
<b>Total OPEB liability—ending (a)</b>	<b>\$ 60,021,905</b>	<b>\$ 59,264,810</b>	<b>\$ 54,917,490</b>	<b>\$ 51,668,472</b>	
<b>Plan Fiduciary Net Position</b>					
Contributions—employer	\$ 2,914,254	\$ 2,657,522	\$ 2,566,957	\$ 2,555,596	
Net investment income	203,898	494,606	707,486	764,801	
Benefit payments	(2,056,778)	(1,942,743)	(1,972,967)	(1,853,604)	
Administrative expenses	-	-	-	-	
Other	-	-	-	-	
<b>Net change in plan fiduciary net position</b>	<b>\$ 1,061,374</b>	<b>\$ 1,209,385</b>	<b>\$ 1,301,476</b>	<b>\$ 1,466,793</b>	
<b>Plan fiduciary net position—beginning</b>	<b>\$ 9,451,680</b>	<b>\$ 8,242,295</b>	<b>\$ 6,940,819</b>	<b>\$ 5,474,026</b>	
<b>Plan fiduciary net position—ending (b)</b>	<b>\$ 10,513,054</b>	<b>\$ 9,451,680</b>	<b>\$ 8,242,295</b>	<b>\$ 6,940,819</b>	
<b>Net OPEB liability—ending (a) – (b)</b>	<b>\$ 49,508,851</b>	<b>\$ 49,813,130</b>	<b>\$ 46,675,195</b>	<b>\$ 44,727,653</b>	
Plan fiduciary net position as a percentage of the total OPEB liability	17.52%	15.95%	15.01%	13.43%	
Covered payroll	\$ 50,607,109	\$ 47,371,039	\$ 44,844,537	\$ 41,957,222	
Net OPEB liability as a percentage of covered payroll	97.83%	105.16%	104.08%	106.60%	
<b>Discount Rate</b>	<b>7.30%</b>	<b>7.50%</b>	<b>7.50%</b>	<b>7.50%</b>	

#### Changes of Benefit Terms

The Patient Protection and Affordable Care Act (PPACA) previously applied a 40% excise tax, commonly referred to as the "Cadillac Tax," to the cost of plan benefits in excess of statutory thresholds beginning in 2022. This tax was repealed in December 2019.

#### Changes of Assumptions

The discount rate changed from 7.5% as of June 30, 2019 to 7.3% as of June 30, 2020. In addition, the inflation rate was updated in this valuation.

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.2 - Investment Returns

Fiscal Year Ended June 30	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Annual money-weighted rate of return, net of investment expenses	2.01%	5.60%	9.45%	12.76%						

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 4 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, 2019	\$ 9,451,680	12	1.00	\$ 9,641,407
Monthly net external cash flows:				
July	-	11	0.92	-
August	839,796	10	0.83	853,821
September	-	9	0.75	-
October	-	8	0.67	-
November	-	7	0.58	-
December	-	6	0.50	-
January	17,680	5	0.42	17,827
February	-	4	0.33	-
March	-	3	0.25	-
April	-	2	0.17	-
May	-	1	0.08	-
June	-	0	0.00	-
Ending value - June 30, 2020				\$ 10,513,054
Money-weighted rate of return:				2.01%

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.3 - Schedule of Employer Contributions

Fiscal Year Ended June 30	2020	2019	2018	2017	2016
Actuarially determined contribution	\$ 4,773,514	\$ 4,384,168	\$ 4,059,533	\$ 5,056,301	
Contributions in relation to the actuarially determined contribution	<u>2,914,254</u>	<u>2,657,522</u>	<u>2,566,957</u>	<u>2,555,596</u>	<u>                    </u>
Contribution deficiency (excess)	<u>\$ 1,859,260</u>	<u>\$ 1,726,646</u>	<u>\$ 1,492,576</u>	<u>\$ 2,500,705</u>	<u>                    </u>
Covered payroll	\$ 50,607,109	\$ 47,371,039	\$ 44,844,537	\$ 41,957,222	
Contributions as a percentage of covered payroll	5.76%	5.61%	5.72%	6.09%	
Discount rate	7.50%	7.50%	7.50%	5.50%	
Inflation	2.40%	2.60%	3.00%	3.00%	

#### 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	8 percent for 2018, decreasing 0.5 percent per year to 5.5 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, 2020	
	Experience Losses	Experience Gains	Amounts Recognized in OPEB Expense through June 30, 2020	Deferred Outflows of Resources	Deferred Inflows of Resources	
Year	(a)	(b)	(c)	(a) - (c)	(b) - (c)	
2018	\$ -	\$ -	\$ -	\$ -	\$ -	
2019	-	5,921,419	(1,500,994)	-	4,420,425	
2020	-	-	-	-	-	
Total				<u>\$ -</u>	<u>\$ 4,420,425</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, 2020	
	Increases in the Total OPEB Liability	Decreases in the Total OPEB Liability	Amounts Recognized in OPEB Expense through June 30, 2020	Deferred Outflows of Resources	Deferred Inflows of Resources	
Year	(a)	(b)	(c)	(a) - (c)	(b) - (c)	
2018	\$ -	\$ -	\$ -	\$ -	\$ -	
2019	6,529,210	-	1,655,060	4,874,150	-	
2020	1,831,529	-	232,133	1,599,396	-	
Total				<u>\$ 6,473,546</u>	<u>\$ -</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, 2020	
Year	Investment Earnings Less Than Projected  (a)	Investment Earnings Greater Than Projected  (b)	Amounts Recognized in OPEB Expense through June 30, 2020  (c)	Deferred Outflows of Resources  (a) - (c)	Deferred Inflows of Resources  (b) - (c)
2018	\$ -	\$ 164,650	\$ (98,790)	\$ -	\$ 65,860
2019	167,968	-	67,188	100,780	-
2020	557,687	-	111,537	446,150	-
Subtotal				\$ 546,930	\$ 65,860
Net				\$ 481,070	\$ -

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

Year ended June 30			
2021	\$	421,367	
2022	\$	421,366	
2023	\$	454,297	
2024	\$	420,704	
2025	\$	309,166	
Thereafter		507,291	
Deferred Outflows	\$	6,954,616	
Deferred Inflows	\$	4,420,425	

## 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, 2020 is presented below:

#### Fiscal Year Ended June 30, 2020

Measurement Date	6/30/2020
1. Service cost	\$ 1,712,486
2. Interest on the total OPEB liability	
a. Total OPEB liability, beginning of year	59,264,810
b. Service cost, beginning of year	1,712,486
c. Benefit payments	<u>(2,056,778)</u>
d. Interest on total OPEB liability = 7.5% times (a. + b. + .5 times c.)	4,496,168
3. Differences between expected and actual experience	(750,497)
4. Changes of benefit terms	(5,226,310)
5. Changes of assumptions	1,059,663
6. Projected earnings on OPEB plan investments	
a. Plan fiduciary net position, beginning of year	9,451,680
b. Contributions - Employer	2,914,254
c. Benefit payments	(2,056,778)
d. Administrative expenses and other	<u>-</u>
e. Total projected earnings	(761,585)
7. Differences between projected and actual earnings on OPEB plan investments	112,201
8. OPEB plan administrative expenses	-
9. Other changes in fiduciary net position	-
<b>10. Total OPEB Expense</b>	<b><u>\$ 642,126</u></b>

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

**Eligibility for Postemployment Benefits** Employees of the Town and their dependents are eligible for postemployment medical, dental and life insurance based on the eligibility requirements under the Middlesex County 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, 2019</b>	<b>Individual</b>	<b>Family</b>
FCHP Direct	\$600.68	\$1,514.23
FCHP Select	\$811.79	\$1,971.89
HP Independence	\$889.65	\$2,171.49
HP Primary Choice	\$645.80	\$1,646.48
Health New England	\$570.81	\$1,356.54
Allways Health Partners Complete	\$646.93	\$1,677.69
THP Navigator	\$747.76	\$1,822.08
THP Spirit	\$565.91	\$1,358.94
UniCare State Indemnity Plan/Basic with CIC	\$1,086.10	\$2,406.59
UniCare State Indemnity Plan/Basic without CIC	\$1,034.54	\$2,289.19
UniCare State Indemnity Plan/Community Choice	\$517.51	\$1,276.96
UniCare State Indemnity Plan/PLUS	\$696.10	\$1,654.60



## SECTION 5 - SUMMARY OF PLAN PROVISIONS

Medical Premiums (continued)	Medicare Plans - July 1, 2019	
	HP Medicare Enhanced	\$391.12
	Health NE Med Plus	\$391.81
	Tufts Complement	\$371.50
	Tufts Preferred*	\$322.43
	UniCare OME w/CIC	\$386.93
	UniCare OME w/o CIC	\$376.31

\* rates effective January 1, 2019

**Participant Contributions** Retired employees contribute 17% and 39% of the total medical premium rates for individual and family coverage, respectively, for all plans offered except the UniCare State Indemnity Plan Basic and all plans offered to retirees and spouses with Medicare. For these plans, retired employees contribute 50%.

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

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

**Medicare Part B Reimbursement** The Town reimburses retirees and spouses for a portion of the Medicare Part B premium. The annual maximum reimbursement for 2019 is \$804.

**Dental Coverage** Dental coverage is provided. The total monthly costs are \$30.32 and \$73.02 for individual and family plans, respectively. 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 \$8.36. Retirees contribute \$4.18 towards the monthly premiums.

**PPACA Excise Tax** The Patient Protection and Affordable Care Act (PPACA) previously applied a 40% excise tax, commonly referred to as the "Cadillac Tax," to the cost of plan benefits in excess of statutory thresholds beginning in 2022. This tax was repealed in December 2019.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

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<b>Valuation Date</b>	July 1, 2018
<b>Disclosure Date</b>	June 30, 2020
<b>GASB 75 Reporting Date</b>	June 30, 2020
<b>Long-Term Expected Rate of Return</b>	<p>7.3%, 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>	2.21%, based on the Bond Buyer 20-Bond GO Index published on June 30, 2020.
<b>Discount Rate (GASB)</b>	<p>7.3%, compounded annually, for the measurement as of June 30, 2020.</p> <p>7.5%, compounded annually, for the measurement as of June 30, 2019.</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>	7.5%, compounded annually, for development of the Actuarially Determined Contribution (ADEC) as of June 30, 2020.
<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	8.00%
2	7.50%
3	7.00%
4	6.50%
5	6.00%
6	5.50%
Ultimate	3.90%

Trend rates after year 6 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

Dental trend rates are 4% per year.

### Inflation

2.4% per year, based on the 2020 Social Security Trustees Report published April 22, 2020.

### Payroll Growth

3.5% per year.

### Participation Rates

Medical - 80% of eligible retired employees will elect to participate.

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

Life - 70% of eligible retirees will elect to participate.

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

### Dependent Status

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

50% 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, 2018 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	\$2,971	\$3,488	\$2,971	\$3,488
20-24	2,341	3,714	2,341	3,714
25-29	2,436	5,479	2,436	5,479
30-34	3,060	6,923	3,060	6,923
35-39	3,839	7,131	3,839	7,131
40-44	4,784	7,304	4,784	7,304
45-49	6,038	8,017	6,038	8,017
50-54	7,957	9,431	7,957	9,431
55-59	10,340	10,905	10,340	10,905
60-64	13,270	12,979	13,270	12,979
65-69	3,430	3,340	16,556	15,558
70-74	4,111	3,940	19,837	18,345
75-79	4,854	4,572	23,424	21,284
80-84	5,579	5,244	26,924	24,411
85-89	6,215	5,861	29,993	27,288
90-94	6,766	6,256	32,650	29,123
95+	7,191	6,050	34,703	28,164

### Retiree Contributions

Annual per capita participant contributions for the fiscal year beginning July 1, 2018 are as follows:

Plan	Contribution
Non-Medicare	\$ 2,525
Medicare	2,124

### 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 Town as of June 30, 2019. We made reasonable adjustments for missing or invalid data.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Post-Retirement Mortality

Post-retirement mortality rates for General and Public Safety employees are based on the RP-2000 Healthy Annuitant Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.

### Pre-Retirement Mortality

Pre-retirement mortality rates for General and Public Safety employees are based on the RP-2000 Employees Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.

### 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

### 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	0.00%	0.00%	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	50.00%	20.00%		
70	100.00%	100.00%		

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Post-Retirement Mortality

Post-retirement mortality rates for Teachers are based on the RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.

### Pre-Retirement Mortality

Pre-retirement mortality rates for Teachers are based on the RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.

### 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

### 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%

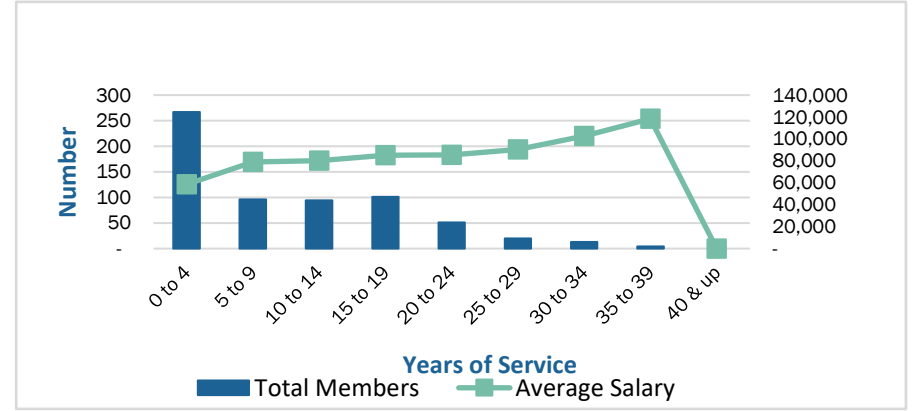
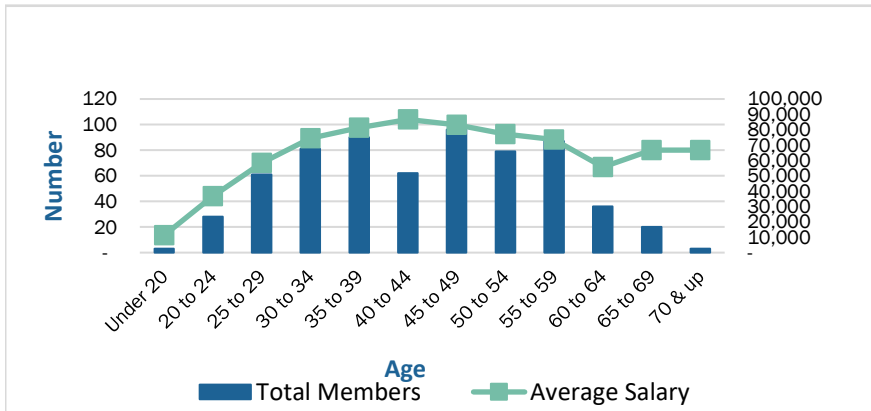


## SECTION 7 - PLAN MEMBER INFORMATION

### Exhibit 7.1 - Active Members by Age and Years of Service as of July 1, 2018

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	3	-	-	-	-	-	-	-	-	3	33,942	11,314
20 to 24	27	1	-	-	-	-	-	-	-	28	1,031,533	36,840
25 to 29	55	6	-	-	-	-	-	-	-	61	3,564,896	58,441
30 to 34	53	20	8	-	-	-	-	-	-	81	6,029,727	74,441
35 to 39	33	24	25	7	1	-	-	-	-	90	7,326,165	81,402
40 to 44	27	7	8	17	3	-	-	-	-	62	5,373,856	86,675
45 to 49	28	15	12	25	16	-	-	-	-	96	7,981,275	83,138
50 to 54	19	12	14	13	10	6	4	1	-	79	6,096,484	77,171
55 to 59	15	7	17	21	13	7	4	3	-	87	6,396,679	73,525
60 to 64	6	3	6	10	5	3	3	-	-	36	2,001,637	55,601
65 to 69	1	1	4	8	3	2	1	-	-	20	1,334,810	66,740
70 & up	-	-	-	-	-	2	1	-	-	3	200,033	66,678
<b>Total</b>	<b>267</b>	<b>96</b>	<b>94</b>	<b>101</b>	<b>51</b>	<b>20</b>	<b>13</b>	<b>4</b>	<b>-</b>	<b>646</b>	<b>47,371,039</b>	<b>73,330</b>
<b>Total Salary</b>	<b>15,677,436</b>	<b>7,576,337</b>	<b>7,541,555</b>	<b>8,597,890</b>	<b>4,360,570</b>	<b>1,810,324</b>	<b>1,333,341</b>	<b>473,587</b>	<b>-</b>			
<b>Average Salary</b>	<b>58,717</b>	<b>78,920</b>	<b>80,229</b>	<b>85,128</b>	<b>85,501</b>	<b>90,516</b>	<b>102,565</b>	<b>118,397</b>	<b>-</b>			

Average Age: 44.3      Average Service: 10.0



## SECTION 7 - PLAN MEMBER INFORMATION

Exhibit 7.2 - Retired Members, Covered Spouses and Survivors as of July 1, 2018

Non-Medicare Plans													
Age	FCHP Direct	FCHP Select	HP Independence	HP Primary Choice	Health New England	Always Health Partners Complete	THP Navigator	THP Spirit	UniCare State Indemnity Plan/Basic with CIC	UniCare State Indemnity Plan/Basic without CIC	UniCare State Indemnity Plan/Community Choice	UniCare State Indemnity Plan/PLUS	Total
Under 40	0	0	0	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	0	0	0	0	0	0	0
50 to 54	0	0	0	1	0	0	1	0	0	0	0	0	2
55 to 59	0	1	1	0	1	0	4	0	0	0	0	1	8
60 to 64	0	0	0	1	0	0	14	2	0	0	0	2	19
65 to 69	0	0	1	0	0	0	2	0	0	0	0	1	4
70 to 74	0	0	0	0	0	0	0	1	0	3	0	0	4
75 to 79	1	0	0	0	1	0	2	0	0	1	0	0	5
80 to 84	0	0	1	0	0	0	0	0	0	1	0	0	2
85 to 89	0	0	0	0	0	0	0	0	0	0	0	0	0
90+	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>23</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>4</b>	<b>44</b>
<b>Covered Spouses</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>23</b>

Average Age: 73.8

In addition, there are 29 retirees, survivors and covered spouses that are not covered under any medical plan but are covered under a life insurance policy which the Town contributes to and/or receive a reimbursement from the Town for a Medicare late-enrollment penalty.

## SECTION 7 - PLAN MEMBER INFORMATION

Medicare Plans							
Age	HP Medicare Enhanced	Health NE Med Plus	Tufts Complement	Tufts Preferred	UniCare OME w/CIC	UniCare OME w/o CIC	Total
Under 40	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	0
50 to 54	0	0	0	0	0	0	0
55 to 59	0	0	0	0	0	0	0
60 to 64	0	0	5	0	5	0	10
65 to 69	6	0	9	7	40	0	62
70 to 74	5	0	4	3	44	0	56
75 to 79	4	0	0	2	38	0	44
80 to 84	2	0	2	2	25	0	31
85 to 89	1	0	1	0	15	0	17
90+	2	0	1	0	4	0	7
<b>Total</b>	<b>20</b>	<b>0</b>	<b>22</b>	<b>14</b>	<b>171</b>	<b>0</b>	<b>227</b>
<b>Covered Spouses</b>	<b>9</b>	<b>0</b>	<b>12</b>	<b>8</b>	<b>78</b>	<b>0</b>	<b>107</b>

## SECTION 8 - GLOSSARY OF TERMS

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**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.

## 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.

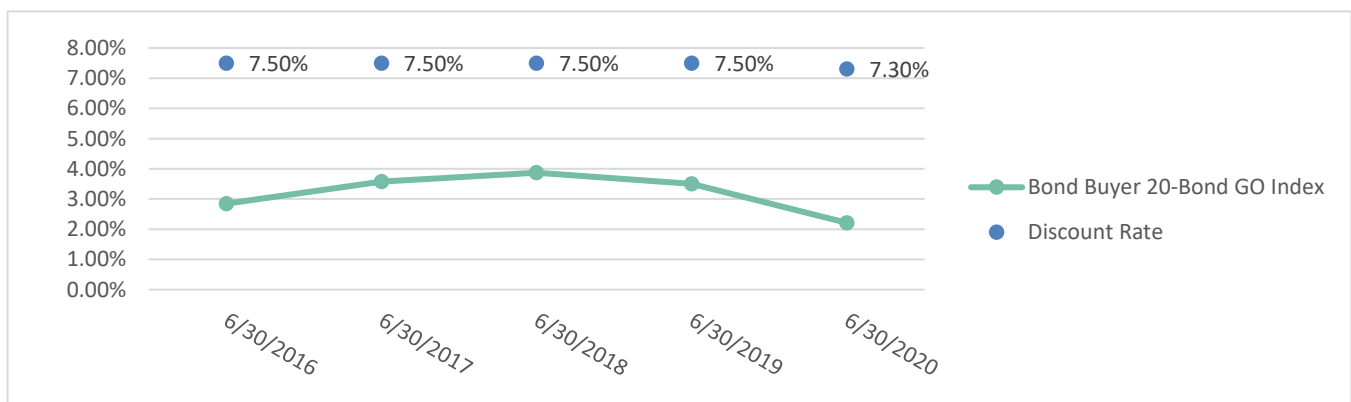
Projected cash flows into and out of the OPEB plan are assumed to be contributions to the OPEB plan, benefit payments, OPEB plan administrative expenses and OPEB plan investment earnings. These projected cash flows are used to project the OPEB plan's fiduciary net position at the beginning of each period. 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 7.3%, a long-term investment return rate of 7.3% and a municipal bond rate of 2.21%, based on the Bond Buyer 20-Bond GO Index published on June 30, 2020. The OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 7.3%.

Below are the historical Bond Buyer 20-Bond GO Indices and the Town'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) * 3.48%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2020	45,891,274	-	45,891,274	2,056,778	857,476	-	2,914,254
2021	43,946,284	3,551,185	47,497,469	2,247,210	-	123,559	2,123,651
2022	42,236,446	6,923,434	49,159,880	2,500,002	1,122,050	240,891	3,381,161
2023	40,550,863	10,329,613	50,880,476	2,719,484	1,261,322	359,405	3,621,401
2024	39,053,971	13,607,322	52,661,293	2,972,237	1,305,468	473,448	3,804,257
2025	37,560,529	16,943,909	54,504,438	3,197,659	1,351,159	589,540	3,959,278
2026	36,101,117	20,310,976	56,412,093	3,458,858	1,398,450	706,692	4,150,616
2027	34,674,747	23,711,769	58,386,516	3,622,497	1,447,396	825,018	4,244,875
2028	33,235,240	27,194,804	60,430,044	3,906,200	1,498,055	946,205	4,458,050
2029	31,658,033	30,887,063	62,545,096	4,188,502	1,550,487	1,074,672	4,664,317
2030	29,979,505	34,754,669	64,734,174	4,500,802	1,604,754	1,209,240	4,896,316
2031	28,296,951	38,702,919	66,999,870	4,885,001	1,660,920	1,346,614	5,199,307
2032	26,721,115	42,623,750	69,344,865	5,141,842	1,719,052	1,483,034	5,377,860
2033	25,191,513	46,580,422	71,771,935	5,384,029	1,779,219	1,620,701	5,542,547
2034	23,790,515	50,493,438	74,283,953	5,682,479	1,841,492	1,756,849	5,767,122
2035	22,634,074	54,249,817	76,883,891	5,789,072	1,905,944	1,887,547	5,807,469
2036	21,429,028	58,145,799	79,574,827	5,835,928	1,972,652	2,023,102	5,785,478
2037	20,224,116	62,135,830	82,359,946	6,088,141	2,041,695	2,161,930	5,967,906
2038	18,905,311	66,337,233	85,242,544	6,267,073	2,113,154	2,308,112	6,072,115
2039	17,625,616	70,600,417	88,226,033	6,544,789	2,187,114	2,456,443	6,275,460
2040	16,199,551	75,114,393	91,313,944	6,874,391	2,263,663	2,613,501	6,524,553
2041	14,911,349	79,598,583	94,509,932	7,186,872	2,342,891	2,769,522	6,760,241
2042	13,657,459	84,160,321	97,817,780	7,589,183	2,424,892	2,928,241	7,085,834
2043	12,349,131	88,892,271	101,241,402	7,837,585	2,509,763	3,092,883	7,254,465
2044	11,066,077	93,718,774	104,784,851	8,028,371	2,597,605	3,260,814	7,365,162
2045	9,823,811	98,628,510	108,452,321	8,212,953	2,688,521	3,431,642	7,469,832
2046	8,731,755	103,516,397	112,248,152	8,408,780	2,782,619	3,601,709	7,589,690
2047	7,659,058	108,517,779	116,176,837	8,444,859	2,880,011	3,775,725	7,549,145
2048	6,722,019	113,521,007	120,243,026	8,612,575	2,980,811	3,949,805	7,643,581
2049	5,921,254	118,530,278	124,451,532	8,702,076	3,085,139	4,124,096	7,663,119
2050	5,106,650	123,700,686	128,807,336	8,725,235	3,193,119	4,303,993	7,614,361
2051	4,367,607	128,947,986	133,315,593	8,703,400	3,304,878	4,486,566	7,521,712
2052	3,741,295	134,240,344	137,981,639	8,742,326	3,420,549	4,670,706	7,492,169
2053	3,152,615	139,658,381	142,810,996	8,873,525	3,540,268	4,859,219	7,554,574



## 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) * 3.48%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2054	2,597,808	145,211,573	147,809,381	8,907,411	3,664,177	5,052,435	7,519,153
2055	2,106,524	150,876,185	152,982,709	9,051,423	3,792,423	5,249,527	7,594,319
2056	1,636,478	156,700,626	158,337,104	9,150,095	3,925,158	5,452,180	7,623,073
2057	1,276,860	162,602,043	163,878,903	9,153,818	4,062,539	5,657,512	7,558,845
2058	965,436	168,649,229	169,614,665	9,201,098	4,204,728	5,867,915	7,537,911
2059	763,052	174,788,126	175,551,178	9,316,241	4,351,893	6,081,510	7,586,624
2060	587,991	181,107,478	181,695,469	9,350,459	4,504,209	6,301,383	7,553,285
2061	458,894	187,595,916	188,054,810	9,432,349	4,661,856	6,527,139	7,567,066
2062	314,264	194,322,464	194,636,728	9,543,055	4,825,021	6,761,180	7,606,896
2063	204,098	201,244,915	201,449,013	9,585,516	4,993,897	7,002,037	7,577,376
2064	153,594	208,346,134	208,499,728	9,616,741	5,168,683	7,249,114	7,536,310
2065	107,284	215,689,934	215,797,218	9,668,532	5,349,587	7,504,631	7,513,488
2066	40,270	223,309,851	223,350,121	9,667,075	5,536,823	7,769,755	7,434,143
2067	22,901	231,144,474	231,167,375	9,670,446	5,730,612	8,042,350	7,358,708
2068	12,967	239,245,266	239,258,233	9,603,542	5,931,183	8,324,206	7,210,519
2069	9,966	247,622,305	247,632,271	9,544,902	6,138,774	8,615,673	7,068,003
2070	5,832	256,293,568	256,299,400	9,457,829	6,353,631	8,917,378	6,894,082
2071	3,484	265,266,395	265,269,879	9,316,447	6,576,008	9,229,575	6,662,880
2072	2,836	274,551,489	274,554,325	9,192,076	6,806,168	9,552,637	6,445,607
2073	-	284,163,726	284,163,726	8,967,140	7,044,384	9,887,081	6,124,443
2074	-	294,109,456	294,109,456	8,738,343	7,290,937	10,233,129	5,796,151
2075	-	304,403,287	304,403,287	8,477,242	7,546,120	10,591,289	5,432,073
2076	-	315,057,402	315,057,402	8,168,366	7,810,234	10,961,984	5,016,616
2077	-	326,084,411	326,084,411	7,848,201	8,083,592	11,345,653	4,586,140
2078	-	337,497,365	337,497,365	7,470,576	8,366,518	11,742,751	4,094,343
2079	-	349,309,773	349,309,773	7,093,287	8,659,346	12,153,747	3,598,886
2080	-	361,535,615	361,535,615	6,693,007	8,962,423	12,579,128	3,076,302
2081	-	374,189,362	374,189,362	6,276,534	9,276,108	13,019,398	2,533,244
2082	-	387,285,990	387,285,990	5,857,112	9,600,772	13,475,077	1,982,807
2083	-	400,841,000	400,841,000	5,411,911	9,936,799	13,946,705	1,402,005
2084	-	414,870,435	414,870,435	4,970,010	10,284,587	14,434,839	819,758
2085	-	429,390,900	429,390,900	4,544,081	10,644,548	14,940,059	248,570
2086	-	444,419,582	444,419,582	4,114,477	11,017,107	15,462,961	-
2087	-	459,974,267	459,974,267	3,702,219	11,402,706	16,004,164	-

## 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) * 3.48%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2088	-	476,073,366	476,073,366	3,300,931	11,801,801	16,564,310	-
2089	-	492,735,934	492,735,934	2,924,314	12,214,864	17,144,061	-
2090	-	509,981,692	509,981,692	2,564,675	12,642,384	17,744,103	-
2091	-	527,831,051	527,831,051	2,237,260	13,084,867	18,365,147	-
2092	-	546,305,138	546,305,138	1,938,424	13,542,837	19,007,927	-
2093	-	565,425,818	565,425,818	1,665,332	14,016,836	19,673,204	-
2094	-	585,215,722	585,215,722	1,419,855	14,507,425	20,361,766	-
2095	-	605,698,272	605,698,272	1,199,910	15,015,185	21,074,428	-
2096	-	626,897,712	626,897,712	1,006,698	15,540,716	21,812,033	-
2097	-	648,839,132	648,839,132	837,301	16,084,641	22,575,454	-
2098	-	671,548,502	671,548,502	692,035	16,647,603	23,365,595	-
2099	-	695,052,700	695,052,700	567,695	17,230,269	24,183,391	-
2100	-	719,379,545	719,379,545	462,067	17,833,328	25,029,810	-
2101	-	744,557,829	744,557,829	373,276	18,457,494	25,905,853	-
2102	-	770,617,353	770,617,353	299,335	19,103,506	26,812,558	-
2103	-	797,588,960	797,588,960	238,214	19,772,129	27,750,998	-
2104	-	825,504,574	825,504,574	188,279	20,464,154	28,722,283	-
2105	-	854,397,234	854,397,234	147,754	21,180,399	29,727,562	-
2106	-	884,301,137	884,301,137	114,963	21,921,713	30,768,027	-
2107	-	915,251,677	915,251,677	88,809	22,688,973	31,844,908	-
2108	-	947,285,486	947,285,486	67,962	23,483,087	32,959,480	-
2109	-	980,440,478	980,440,478	51,479	24,304,995	34,113,062	-
2110	-	1,014,755,895	1,014,755,895	38,543	25,155,670	35,307,019	-
2111	-	1,050,272,351	1,050,272,351	28,484	26,036,118	36,542,765	-
2112	-	1,087,031,883	1,087,031,883	20,710	26,947,382	37,821,761	-
2113	-	1,125,077,999	1,125,077,999	14,575	27,890,540	39,145,523	-
2114	-	1,164,455,729	1,164,455,729	10,254	28,866,709	40,515,616	-
2115	-	1,205,211,680	1,205,211,680	7,130	29,877,044	41,933,663	-
2116	-	1,247,394,089	1,247,394,089	4,534	30,922,741	43,401,341	-
2117	-	1,291,052,882	1,291,052,882	3,019	32,005,037	44,920,388	-
2118	-	1,336,239,733	1,336,239,733	1,975	33,125,213	46,492,602	-
2119	-	1,383,008,124	1,383,008,124	1,257	34,284,595	48,119,843	-
2120	-	1,431,413,408	1,431,413,408	685	35,484,556	49,804,037	-
2121	-	1,481,512,877	1,481,512,877	363	36,726,515	51,547,178	-

## 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) * 3.48%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2122	-	1,533,365,828	1,533,365,828	186	38,011,943	53,351,330	-
2123	-	1,587,033,632	1,587,033,632	-	39,342,361	55,218,626	-

## 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)
2020	9,451,680	2,914,254	2,056,778	-	203,898	10,513,054
2021	10,513,054	2,123,651	2,247,210	-	762,943	11,152,438
2022	11,152,438	3,381,161	2,500,002	-	846,290	12,879,887
2023	12,879,887	3,621,401	2,719,484	-	973,152	14,754,956
2024	14,754,956	3,804,257	2,972,237	-	1,107,481	16,694,457
2025	16,694,457	3,959,278	3,197,659	-	1,246,494	18,702,570
2026	18,702,570	4,150,616	3,458,858	-	1,390,537	20,784,865
2027	20,784,865	4,244,875	3,622,497	-	1,540,012	22,947,255
2028	22,947,255	4,458,050	3,906,200	-	1,695,292	25,194,397
2029	25,194,397	4,664,317	4,188,502	-	1,856,558	27,526,770
2030	27,526,770	4,896,316	4,500,802	-	2,023,890	29,946,174
2031	29,946,174	5,199,307	4,885,001	-	2,197,543	32,458,023
2032	32,458,023	5,377,860	5,141,842	-	2,378,050	35,072,091
2033	35,072,091	5,542,547	5,384,029	-	2,566,049	37,796,658
2034	37,796,658	5,767,122	5,682,479	-	2,762,246	40,643,547
2035	40,643,547	5,807,469	5,789,072	-	2,967,650	43,629,594
2036	43,629,594	5,785,478	5,835,928	-	3,183,119	46,762,263
2037	46,762,263	5,967,906	6,088,141	-	3,409,257	50,051,285
2038	50,051,285	6,072,115	6,267,073	-	3,646,628	53,502,955
2039	53,502,955	6,275,460	6,544,789	-	3,895,885	57,129,511
2040	57,129,511	6,524,553	6,874,391	-	4,157,685	60,937,358
2041	60,937,358	6,760,241	7,186,872	-	4,432,855	64,943,582
2042	64,943,582	7,085,834	7,589,183	-	4,722,509	69,162,742
2043	69,162,742	7,254,465	7,837,585	-	5,027,596	73,607,218
2044	73,607,218	7,365,162	8,028,371	-	5,349,120	78,293,129
2045	78,293,129	7,469,832	8,212,953	-	5,688,275	83,238,283
2046	83,238,283	7,589,690	8,408,780	-	6,046,498	88,465,691
2047	88,465,691	7,549,145	8,444,859	-	6,425,302	93,995,279
2048	93,995,279	7,643,581	8,612,575	-	6,826,287	99,852,572
2049	99,852,572	7,663,119	8,702,076	-	7,251,316	106,064,931
2050	106,064,931	7,614,361	8,725,235	-	7,702,193	112,656,250
2051	112,656,250	7,521,712	8,703,400	-	8,180,775	119,655,337
2052	119,655,337	7,492,169	8,742,326	-	8,689,209	127,094,389
2053	127,094,389	7,554,574	8,873,525	-	9,229,749	135,005,187

## 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)
2054	135,005,187	7,519,153	8,907,411	-	9,804,707	143,421,636
2055	143,421,636	7,594,319	9,051,423	-	10,416,595	152,381,127
2056	152,381,127	7,623,073	9,150,095	-	11,068,086	161,922,191
2057	161,922,191	7,558,845	9,153,818	-	11,762,103	172,089,321
2058	172,089,321	7,537,911	9,201,098	-	12,501,814	182,927,948
2059	182,927,948	7,586,624	9,316,241	-	13,290,609	194,488,940
2060	194,488,940	7,553,285	9,350,459	-	14,132,096	206,823,862
2061	206,823,862	7,567,066	9,432,349	-	15,030,059	219,988,638
2062	219,988,638	7,606,896	9,543,055	-	15,988,501	234,040,980
2063	234,040,980	7,577,376	9,585,516	-	17,011,694	249,044,534
2064	249,044,534	7,536,310	9,616,741	-	18,104,315	265,068,418
2065	265,068,418	7,513,488	9,668,532	-	19,271,335	282,184,709
2066	282,184,709	7,434,143	9,667,075	-	20,517,982	300,469,759
2067	300,469,759	7,358,708	9,670,446	-	21,849,914	320,007,935
2068	320,007,935	7,210,519	9,603,542	-	23,273,234	340,888,146
2069	340,888,146	7,068,003	9,544,902	-	24,794,428	363,205,675
2070	363,205,675	6,894,082	9,457,829	-	26,420,438	387,062,366
2071	387,062,366	6,662,880	9,316,447	-	28,158,698	412,567,497
2072	412,567,497	6,445,607	9,192,076	-	30,017,181	439,838,209
2073	439,838,209	6,124,443	8,967,140	-	32,004,431	468,999,943
2074	468,999,943	5,796,151	8,738,343	-	34,129,606	500,187,357
2075	500,187,357	5,432,073	8,477,242	-	36,402,528	533,544,716
2076	533,544,716	5,016,616	8,168,366	-	38,833,725	569,226,691
2077	569,226,691	4,586,140	7,848,201	-	41,434,483	607,399,113
2078	607,399,113	4,094,343	7,470,576	-	44,216,903	648,239,783
2079	648,239,783	3,598,886	7,093,287	-	47,193,959	691,939,341
2080	691,939,341	3,076,302	6,693,007	-	50,379,562	738,702,198
2081	738,702,198	2,533,244	6,276,534	-	53,788,630	788,747,538
2082	788,747,538	1,982,807	5,857,112	-	57,437,158	842,310,391
2083	842,310,391	1,402,005	5,411,911	-	61,342,297	899,642,782
2084	899,642,782	819,758	4,970,010	-	65,522,439	961,014,969
2085	961,014,969	248,570	4,544,081	-	69,997,307	1,026,716,765
2086	1,026,716,765	-	4,114,477	-	74,800,145	1,097,402,433
2087	1,097,402,433	-	3,702,219	-	79,975,247	1,173,675,461

## 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)
2088	1,173,675,461	-	3,300,931	-	85,557,825	1,255,932,355
2089	1,255,932,355	-	2,924,314	-	91,576,324	1,344,584,365
2090	1,344,584,365	-	2,564,675	-	98,061,048	1,440,080,738
2091	1,440,080,738	-	2,237,260	-	105,044,234	1,542,887,712
2092	1,542,887,712	-	1,938,424	-	112,560,051	1,653,509,339
2093	1,653,509,339	-	1,665,332	-	120,645,397	1,772,489,404
2094	1,772,489,404	-	1,419,855	-	129,339,902	1,900,409,451
2095	1,900,409,451	-	1,199,910	-	138,686,093	2,037,895,634
2096	2,037,895,634	-	1,006,698	-	148,729,637	2,185,618,573
2097	2,185,618,573	-	837,301	-	159,519,594	2,344,300,866
2098	2,344,300,866	-	692,035	-	171,108,704	2,514,717,535
2099	2,514,717,535	-	567,695	-	183,553,659	2,697,703,499
2100	2,697,703,499	-	462,067	-	196,915,490	2,894,156,922
2101	2,894,156,922	-	373,276	-	211,259,831	3,105,043,477
2102	3,105,043,477	-	299,335	-	226,657,248	3,331,401,390
2103	3,331,401,390	-	238,214	-	243,183,607	3,574,346,783
2104	3,574,346,783	-	188,279	-	260,920,443	3,835,078,947
2105	3,835,078,947	-	147,754	-	279,955,370	4,114,886,563
2106	4,114,886,563	-	114,963	-	300,382,523	4,415,154,123
2107	4,415,154,123	-	88,809	-	322,303,009	4,737,368,323
2108	4,737,368,323	-	67,962	-	345,825,407	5,083,125,768
2109	5,083,125,768	-	51,479	-	371,066,302	5,454,140,591
2110	5,454,140,591	-	38,543	-	398,150,856	5,852,252,904
2111	5,852,252,904	-	28,484	-	427,213,422	6,279,437,842
2112	6,279,437,842	-	20,710	-	458,398,207	6,737,815,339
2113	6,737,815,339	-	14,575	-	491,859,988	7,229,660,752
2114	7,229,660,752	-	10,254	-	527,764,861	7,757,415,359
2115	7,757,415,359	-	7,130	-	566,291,061	8,323,699,290
2116	8,323,699,290	-	4,534	-	607,629,883	8,931,324,639
2117	8,931,324,639	-	3,019	-	651,986,588	9,583,308,208
2118	9,583,308,208	-	1,975	-	699,581,427	10,282,887,660
2119	10,282,887,660	-	1,257	-	750,650,753	11,033,537,156
2120	11,033,537,156	-	685	-	805,448,187	11,838,984,658
2121	11,838,984,658	-	363	-	864,245,867	12,703,230,162

## 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)
2122	12,703,230,162	-	186	-	927,335,795	13,630,565,771
2123	13,630,565,771	-	-	-	995,031,301	14,625,597,072

## 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) = 7.3%
2021	10,513,054	2,247,210	2,247,210	-	2,169,421	-	2,169,421
2022	11,152,438	2,500,002	2,500,002	-	2,249,266	-	2,249,266
2023	12,879,887	2,719,484	2,719,484	-	2,280,275	-	2,280,275
2024	14,754,956	2,972,237	2,972,237	-	2,322,653	-	2,322,653
2025	16,694,457	3,197,659	3,197,659	-	2,328,806	-	2,328,806
2026	18,702,570	3,458,858	3,458,858	-	2,347,655	-	2,347,655
2027	20,784,865	3,622,497	3,622,497	-	2,291,447	-	2,291,447
2028	22,947,255	3,906,200	3,906,200	-	2,302,802	-	2,302,802
2029	25,194,397	4,188,502	4,188,502	-	2,301,236	-	2,301,236
2030	27,526,770	4,500,802	4,500,802	-	2,304,584	-	2,304,584
2031	29,946,174	4,885,001	4,885,001	-	2,331,136	-	2,331,136
2032	32,458,023	5,141,842	5,141,842	-	2,286,767	-	2,286,767
2033	35,072,091	5,384,029	5,384,029	-	2,231,572	-	2,231,572
2034	37,796,658	5,682,479	5,682,479	-	2,195,036	-	2,195,036
2035	40,643,547	5,789,072	5,789,072	-	2,084,073	-	2,084,073
2036	43,629,594	5,835,928	5,835,928	-	1,958,007	-	1,958,007
2037	46,762,263	6,088,141	6,088,141	-	1,903,660	-	1,903,660
2038	50,051,285	6,267,073	6,267,073	-	1,826,289	-	1,826,289
2039	53,502,955	6,544,789	6,544,789	-	1,777,464	-	1,777,464
2040	57,129,511	6,874,391	6,874,391	-	1,739,962	-	1,739,962
2041	60,937,358	7,186,872	7,186,872	-	1,695,296	-	1,695,296
2042	64,943,582	7,589,183	7,589,183	-	1,668,403	-	1,668,403
2043	69,162,742	7,837,585	7,837,585	-	1,605,789	-	1,605,789
2044	73,607,218	8,028,371	8,028,371	-	1,532,971	-	1,532,971
2045	78,293,129	8,212,953	8,212,953	-	1,461,525	-	1,461,525
2046	83,238,283	8,408,780	8,408,780	-	1,394,569	-	1,394,569
2047	88,465,691	8,444,859	8,444,859	-	1,305,268	-	1,305,268
2048	93,995,279	8,612,575	8,612,575	-	1,240,625	-	1,240,625
2049	99,852,572	8,702,076	8,702,076	-	1,168,237	-	1,168,237
2050	106,064,931	8,725,235	8,725,235	-	1,091,655	-	1,091,655
2051	112,656,250	8,703,400	8,703,400	-	1,014,840	-	1,014,840
2052	119,655,337	8,742,326	8,742,326	-	950,027	-	950,027
2053	127,094,389	8,873,525	8,873,525	-	898,680	-	898,680
2054	135,005,187	8,907,411	8,907,411	-	840,738	-	840,738



## 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) = 7.3%
2055	143,421,636	9,051,423	9,051,423	-	796,208	-	796,208
2056	152,381,127	9,150,095	9,150,095	-	750,128	-	750,128
2057	161,922,191	9,153,818	9,153,818	-	699,379	-	699,379
2058	172,089,321	9,201,098	9,201,098	-	655,164	-	655,164
2059	182,927,948	9,316,241	9,316,241	-	618,232	-	618,232
2060	194,488,940	9,350,459	9,350,459	-	578,288	-	578,288
2061	206,823,862	9,432,349	9,432,349	-	543,665	-	543,665
2062	219,988,638	9,543,055	9,543,055	-	512,624	-	512,624
2063	234,040,980	9,585,516	9,585,516	-	479,874	-	479,874
2064	249,044,534	9,616,741	9,616,741	-	448,683	-	448,683
2065	265,068,418	9,668,532	9,668,532	-	420,410	-	420,410
2066	282,184,709	9,667,075	9,667,075	-	391,749	-	391,749
2067	300,469,759	9,670,446	9,670,446	-	365,224	-	365,224
2068	320,007,935	9,603,542	9,603,542	-	338,022	-	338,022
2069	340,888,146	9,544,902	9,544,902	-	313,101	-	313,101
2070	363,205,675	9,457,829	9,457,829	-	289,138	-	289,138
2071	387,062,366	9,316,447	9,316,447	-	265,439	-	265,439
2072	412,567,497	9,192,076	9,192,076	-	244,078	-	244,078
2073	439,838,209	8,967,140	8,967,140	-	221,906	-	221,906
2074	468,999,943	8,738,343	8,738,343	-	201,532	-	201,532
2075	500,187,357	8,477,242	8,477,242	-	182,209	-	182,209
2076	533,544,716	8,168,366	8,168,366	-	163,625	-	163,625
2077	569,226,691	7,848,201	7,848,201	-	146,516	-	146,516
2078	607,399,113	7,470,576	7,470,576	-	129,978	-	129,978
2079	648,239,783	7,093,287	7,093,287	-	115,017	-	115,017
2080	691,939,341	6,693,007	6,693,007	-	101,143	-	101,143
2081	738,702,198	6,276,534	6,276,534	-	88,397	-	88,397
2082	788,747,538	5,857,112	5,857,112	-	76,878	-	76,878
2083	842,310,391	5,411,911	5,411,911	-	66,202	-	66,202
2084	899,642,782	4,970,010	4,970,010	-	56,660	-	56,660
2085	961,014,969	4,544,081	4,544,081	-	48,280	-	48,280
2086	1,026,716,765	4,114,477	4,114,477	-	40,741	-	40,741
2087	1,097,402,433	3,702,219	3,702,219	-	34,165	-	34,165
2088	1,173,675,461	3,300,931	3,300,931	-	28,389	-	28,389

## 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) = 7.3%
2089	1,255,932,355	2,924,314	2,924,314	-	23,439	-	23,439
2090	1,344,584,365	2,564,675	2,564,675	-	19,158	-	19,158
2091	1,440,080,738	2,237,260	2,237,260	-	15,575	-	15,575
2092	1,542,887,712	1,938,424	1,938,424	-	12,577	-	12,577
2093	1,653,509,339	1,665,332	1,665,332	-	10,070	-	10,070
2094	1,772,489,404	1,419,855	1,419,855	-	8,001	-	8,001
2095	1,900,409,451	1,199,910	1,199,910	-	6,302	-	6,302
2096	2,037,895,634	1,006,698	1,006,698	-	4,927	-	4,927
2097	2,185,618,573	837,301	837,301	-	3,819	-	3,819
2098	2,344,300,866	692,035	692,035	-	2,942	-	2,942
2099	2,514,717,535	567,695	567,695	-	2,249	-	2,249
2100	2,697,703,499	462,067	462,067	-	1,706	-	1,706
2101	2,894,156,922	373,276	373,276	-	1,285	-	1,285
2102	3,105,043,477	299,335	299,335	-	960	-	960
2103	3,331,401,390	238,214	238,214	-	712	-	712
2104	3,574,346,783	188,279	188,279	-	524	-	524
2105	3,835,078,947	147,754	147,754	-	384	-	384
2106	4,114,886,563	114,963	114,963	-	278	-	278
2107	4,415,154,123	88,809	88,809	-	200	-	200
2108	4,737,368,323	67,962	67,962	-	143	-	143
2109	5,083,125,768	51,479	51,479	-	101	-	101
2110	5,454,140,591	38,543	38,543	-	70	-	70
2111	5,852,252,904	28,484	28,484	-	48	-	48
2112	6,279,437,842	20,710	20,710	-	33	-	33
2113	6,737,815,339	14,575	14,575	-	22	-	22
2114	7,229,660,752	10,254	10,254	-	14	-	14
2115	7,757,415,359	7,130	7,130	-	9	-	9
2116	8,323,699,290	4,534	4,534	-	5	-	5
2117	8,931,324,639	3,019	3,019	-	3	-	3
2118	9,583,308,208	1,975	1,975	-	2	-	2
2119	10,282,887,660	1,257	1,257	-	1	-	1
2120	11,033,537,156	685	685	-	1	-	1
2121	11,838,984,658	363	363	-	-	-	-
2122	12,703,230,162	186	186	-	-	-	-

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

Year	Differences between Expected and Actual Experience	Recognition Period (Years)										
			2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
2018	-		-	-	-	-	-	-	-	-	-	-
2019	(5,921,419)	7.89	(750,497)	(750,497)	(750,497)	(750,497)	(750,497)	(750,497)	(750,497)	(667,940)	-	-
2020	-	7.89	-	-	-	-	-	-	-	-	-	-
Net Increase (Decrease) in OPEB Expense			(750,497)	(750,497)	(750,497)	(750,497)	(750,497)	(750,497)	(750,497)	(667,940)	-	-

Year	Changes of Assumptions	Recognition Period (Years)										
			2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
2018	-		-	-	-	-	-	-	-	-	-	-
2019	6,529,210	7.89	827,530	827,530	827,530	827,530	827,530	827,530	827,530	736,500	-	-
2020	1,831,529	7.89	232,133	232,133	232,133	232,133	232,133	232,133	232,133	232,133	206,598	-
Net Increase (Decrease) in OPEB Expense			1,059,663	1,059,663	1,059,663	1,059,663	1,059,663	1,059,663	1,059,663	968,633	206,598	-

Year	Differences between Projected and Actual Earnings on OPEB Plan Investments	Recognition Period (Years)										
			2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
2018	(164,650)	5	(32,930)	(32,930)	(32,930)	-	-	-	-	-	-	-
2019	167,968	5	33,594	33,594	33,593	33,593	-	-	-	-	-	-
2020	557,687	5	111,537	111,537	111,537	111,538	111,538	-	-	-	-	-
Net Increase (Decrease) in OPEB Expense			112,201	112,201	112,200	145,131	111,538	-	-	-	-	-