



## **TOWN OF SOUTHBOROUGH, MASSACHUSETTS**

**OTHER POSTEMPLOYMENT BENEFITS PROGRAM**

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

**Disclosures as of  
June 30, 2021**

KMS Actuaries, LLC  
52 Hunt Road  
Kingston, NH 03848

January, 2022





January 12, 2022

Mr. Brian Ballantine  
Treasurer-Collector  
Town of Southborough  
17 Common Street  
Southborough, MA 01772

Dear Brian:

We are pleased to present the enclosed report of the July 1, 2020 actuarial valuation of the retiree health care benefits for the Town of Southborough. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2021 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 Southborough 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 5.65%, the rate that reflects a blended-rate of the long-term expected rate of return on OPEB plan assets and the municipal bond rate. The municipal bond rate of 2.16% is based on the Bond Buyer 20-Bond GO Index published on June 30, 2021. The long-term expected rate of return is 6.65%. 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 Bartholomew & Company.

Mr. Brian Ballantine

January 12, 2022

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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 Worcester Regional 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 Southborough 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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Linda L. Bournival, FSA, EA

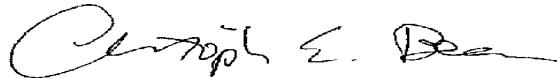
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## EXECUTIVE SUMMARY

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### Purpose of Report

This report presents the results of the actuarial valuation of the Town of Southborough's retiree health care benefits as of July 1, 2020. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2021 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 Southborough. 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 Southborough.

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 Southborough Other Postemployment Benefits Program

The Town of Southborough 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 Town, 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, 2021 | June 30, 2020 | % Change |
|--|---------------|---------------|----------|
| Valuation Date                                   | July 1, 2020  | July 1, 2018  |          |
| <b>Membership Data</b>                           |               |               |          |
| Active Plan Members                              | 349           | 359           | (2.8%)   |
| Inactive Plan Members (excludes covered spouses) | 184           | 182           | 1.1%     |
| Total Plan Members                               | 533           | 541           | (1.5%)   |
| Covered Spouses                                  | 105           | Not Provided  |          |
| Covered Payroll                                  | \$24,234,544  | \$23,409,824  | 3.5%     |
| <b>Net OPEB Liability</b>                        |               |               |          |
| Discount Rate                                    | 5.65%         | 6.50%         |          |
| Total OPEB Liability (TOL)                       | \$49,831,238  | \$33,379,220  | 49.3%    |
| Fiduciary Net Position (FNP)                     | \$2,714,632   | \$1,855,362   | 46.3%    |
| Net OPEB Liability                               | \$47,116,606  | \$31,523,858  | 49.5%    |
| FNP as % of TOL                                  | 5.4%          | 5.6%          |          |
| <b>OPEB Expense</b>                              |               |               |          |
| OPEB Expense                                     | \$3,799,912   | \$1,889,199   | 101.1%   |
| Deferred Outflows                                | \$13,722,868  | \$1,361,089   |          |
| Deferred Inflows                                 | \$6,090,130   | \$7,229,656   |          |
| Recognition Period                               | 7.38          | 6.70          |          |

## EXECUTIVE SUMMARY

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### 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 loss of approximately \$6,650,000. The loss is primarily attributable to a large increase in the number of retirees and spouses covered under Medicare supplemental plans since the prior valuation.

### Changes of Assumptions

The discount rate changed from 6.5% as of June 30, 2020 to 5.65% as of June 30, 2021. In addition, many other assumptions were updated in this valuation, including decrements, the inflation rate, healthcare and dental trend rates, mortality tables and mortality improvement rates, and percent retiring with covered spouses. A summary of the impact on the Total OPEB Liability (TOL) of each assumption change is provided below:

|  |              |
|--|--------------|
| ◆ Decrease due to change in Decrements                                       | (2,515,000)  |
| ◆ Increase due to change in Inflation Assumption                             | 226,000      |
| ◆ Increase due to change in Trend Assumption                                 | 6,279,000    |
| ◆ Decrease due to change in Mortality Tables and Mortality Improvement Rates | (1,133,000)  |
| ◆ Decrease due to change in % Retiring with a Covered Spouse                 | (593,000)    |
| ◆ Increase due to change in Discount Rate                                    | 5,882,000    |
| Total  | \$ 8,146,000 |

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

### Changes of Benefit Terms

All 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, 2021, is \$49,831,238. The Total OPEB Liability as of the prior measurement date, June 30, 2020, was \$33,379,220. During the current measurement period ending June 30, 2021, the Total OPEB Liability increased by \$16,452,018, or 49.3%. 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, 2021, is \$2,714,632. The Fiduciary Net Position as of the prior measurement date, June 30, 2020, was \$1,855,362. During the plan years ended June 30, 2021 and June 30, 2020, the actual rates of return were 29.26% and 2.00%, respectively. The expected long-term rate of return is 6.65%. The Fiduciary Net Position is shown in Section 1, Exhibit 1.1.

## EXECUTIVE SUMMARY

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### Employer Future Period Contributions

The Town is expected to contribute \$250,000 annually until their pension system is fully funded in 2035. Given the COVID-19 situation and market volatility, it was assumed the Town will reallocate the funds used to pay the pension amortization towards OPEB beginning in 2037.

### Discount Rate

As of the June 30, 2021 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 long-term expected rate of return on OPEB plan investments was applied to the first 90 periods of projected future benefit payments and the 2.16% municipal bond rate was applied to all periods thereafter to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 5.65%.

### OPEB Expense

The OPEB Expense for the current measurement period ending June 30, 2021, is \$3,799,912. Benefit changes are recognized immediately and experience gains and losses and assumption changes developed in this valuation are recognized over 7.38 years. Investment gains and losses are recognized over 5 years. The OPEB Expense for the prior measurement period was \$1,889,199. 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 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 Town has established an irrevocable trust pursuant to Section 20 of Massachusetts General Law Chapter 32B 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                        | 2021          | 2020         |
|--|---------------|--------------|
| <b>Trust Fund Composition at Fiscal Year-End</b> |               |              |
| Investments                                      | \$0           | \$1,855,362  |
| Domestic Equity                                  | 1,162,571     | -            |
| International Equity                             | 589,046       | -            |
| Domestic Bonds                                   | 492,398       | -            |
| International Bonds                              | 106,073       | -            |
| Alternatives                                     | 360,883       | -            |
| Cash   | 3,661         | -            |
| Total Market Value of Assets                     | 2,714,632     | 1,855,362    |
| <b>Asset Activity</b>                            |               |              |
| Market value, beginning of year                  | \$1,855,362   | \$1,569,371  |
| Employer Premiums                                | 1,458,469     | 1,231,651    |
| OPEB Trust Contributions                         | 250,000       | 250,000      |
| Benefit Payments                                 | (1,458,469)   | (1,231,651)  |
| Administrative Expenses                          | -             | -            |
| Investment Return                                | 609,270       | 35,991       |
| Market value, end of year                        | \$2,714,632   | \$1,855,362  |
| <b>Money-Weighted Rate of Return</b>             | <b>29.26%</b> | <b>2.00%</b> |
| <b>(Gain) / Loss on OPEB Plan Investments</b>    |               |              |
| Projected earnings                               | \$145,871     | \$125,852    |
| Actual earnings                                  | 609,270       | 35,991       |
| (Gain) / Loss on OPEB plan investments           | (\$463,399)   | \$89,861     |

## 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, 2021 measurement date was developed from an actuarial valuation as of July 1, 2020 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, 2020 to the end of the measurement period, June 30, 2021 is shown below:

| Measurement Date  | June 30, 2021 |
|---|---------------|
| 1. Total OPEB Liability, beginning of year:                                 |               |
| a. Actives  | \$21,513,202  |
| b. Retirees, Covered Spouses and Survivors                                  | 11,866,018    |
| c. Total OPEB Liability at 6.5% (a. + b.)                                   | \$33,379,220  |
| 2. Service Cost   | \$931,942     |
| 3. Expected Benefit Payments  |               |
| a. Current retirees   | (\$1,361,015) |
| b. Future retirees  | (97,454)      |
| c. Total (a. + b.)  | (\$1,458,469) |
| 4. Interest [6.5% x (1.c. + 2. + .5 x 3.c.)]                                | \$2,182,825   |
| 5. Changes of benefit terms   | \$0           |
| 6. Differences between expected and actual experience                       | \$6,649,997   |
| 7. Changes of assumptions or other inputs                                   | \$8,145,723   |
| 8. Total OPEB Liability, end of year (1.c. + 2. + 3.c. + 4. + 5. + 6. + 7.) |               |
| a. Actives  | \$29,700,940  |
| b. Retirees, Covered Spouses and Survivors                                  | 20,130,298    |
| c. Total OPEB Liability at 5.65% (a. + b.)                                  | \$49,831,238  |

## SECTION 1 - PRINCIPAL VALUATION RESULTS

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

The Town is expected to contribute \$250,000 annually until their pension system is fully funded in 2035. Given the COVID-19 situation and market volatility, it was assumed the Town will reallocate the funds used to pay the pension amortization towards OPEB beginning in 2037.

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

| Fiscal Year Ending  | June 30, 2021 | June 30, 2022 |
|---|---------------|---------------|
| <b>Discount Rate</b>  | <b>6.50%</b>  | <b>5.65%</b>  |
| 1. Normal Cost  | \$931,942     | \$1,683,692   |
| 2. Unfunded Actuarial Accrued Liability                             |               |               |
| a. Actuarial Accrued Liability                                      | \$33,379,220  | \$49,831,238  |
| b. Actuarial Value of Plan Assets                                   | \$1,855,362   | \$2,714,632   |
| c. Unfunded Actuarial Accrued Liability (a. - b.)                   | \$31,523,858  | \$47,116,606  |
| 3. Amortization of Unfunded Actuarial Accrued Liability             |               |               |
| a. Unfunded Actuarial Accrued Liability                             | \$31,523,858  | \$47,116,606  |
| b. Amortization Period in years                                     | 30            | 30            |
| c. Payroll Growth Rate  | 0.0%          | 0.0%          |
| d. Amortization Factor  | 13.91         | 15.10         |
| e. Amortization Amount (3.a. / 3.d.)                                | \$2,266,273   | \$3,120,305   |
| 4. Interest on 1. and 3.e.  | \$207,884     | \$271,426     |
| 5. Actuarially Determined Employer Contribution<br>(1. + 3.e. + 4.) | \$3,406,099   | \$5,075,423   |
| 6. Actual Employer Contribution to OPEB Trust                       | \$250,000     | TBD           |
| 7. Expected Benefit Payments  | \$1,458,469   |               |
| 8. Total Contribution (6. + 7.)                                     | \$1,708,469   |               |

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

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### Exhibit 2.1 - Plan Description

#### Plan Administration

The Town of Southborough 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, 2021, OPEB plan membership consisted of the following:

|  |       |
|--|-------|
| Inactive plan members or beneficiaries currently receiving benefit payments <sup>1</sup> | 184   |
| Inactive plan members entitled to but not yet receiving benefit payments                 | 0     |
| Active plan members  | 349   |
|  | <hr/> |
|  | 533   |
|  | <hr/> |

<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 Town, and the full cost of benefits is shared between the Town and retirees.

#### Employer Future Period Contributions

The Town is expected to contribute \$250,000 annually until their pension system is fully funded in 2035. Given the COVID-19 situation and market volatility, it was assumed the Town will reallocate the funds used to pay the pension amortization towards OPEB beginning in 2037.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

The components of the net OPEB liability at June 30, 2021, were as follows:

|                           |                      |
|---------------------------|----------------------|
| Total OPEB liability      | \$ 49,831,238        |
| Fiduciary net position    | (2,714,632)          |
| <b>Net OPEB liability</b> | <b>\$ 47,116,606</b> |

Fiduciary net position as a percentage of the total OPEB liability 5.45%

#### Actuarial Assumptions

The total OPEB liability was determined by an actuarial valuation as of July 1, 2020, rolled forward to the measurement date and using the following actuarial assumptions, applied to all periods included in the measurement:

|   |  |
|---|--|
| Inflation   | 2.2% per year, based on current economic data, analyses from economists and other experts, and professional judgement.   |
| Discount rate   | 5.65 percent, net of investment expenses, including inflation  |
| Healthcare cost trend rate                                      | 7 percent for 2020, decreasing 0.4 percent per year to 5.4 percent, then grading down to an ultimate trend rate of 4 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, projected with generational mortality improvement using scale MP-2018.  |
| Post-Retirement Mortality - General and Public Safety employees | RP-2014 Blue Collar Mortality Table, projected with generational mortality improvement using scale MP-2018.  |
| Pre-Retirement Mortality - Teachers                             | PUB-2010 Teachers Headcount-Weighted Employee Mortality Table, base year 2010, projected with generational mortality using Scale MP-2020.  |
| Post-Retirement 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

#### 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, 2021 are summarized in the following table:

| Asset Class          | Target Allocation | Long-Term Expected Real Rates of Return <sup>1</sup> |
|----------------------|-------------------|--|
| Domestic Equity      | 34%               | 5.34%  |
| International Equity | 22%               | 6.10%  |
| Domestic Bonds       | 20%               | 1.62%  |
| International Bonds  | 4%                | 1.26%  |
| Alternatives         | 20%               | 4.21%  |
| Total                | 100%              |  |

<sup>1</sup> provided by Bartholomew & Company.

#### Discount Rate

The discount rate used to measure the total OPEB liability was 5.65%. 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 insufficient to make all projected benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to the first 90 periods of projected future benefit payments and the 2.16% municipal bond rate was applied to all periods thereafter 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 5.65 percent, as well as what the net OPEB liability would be if it were calculated using a discount rate 1-percentage point lower (4.65 percent) or 1-percentage point higher (6.65 percent) than the current rate:

|                        | 1% Decrease<br>(4.65%) | Assumed<br>Discount Rate<br>(5.65%) | 1% Increase<br>(6.65%) |
|------------------------|------------------------|-------------------------------------|------------------------|
| Total OPEB Liability   | \$ 58,382,578          | \$ 49,831,238                       | \$ 43,020,888          |
| Fiduciary Net Position | (2,714,632)            | (2,714,632)                         | (2,714,632)            |
| Net OPEB Liability     | \$ 55,667,946          | \$ 47,116,606                       | \$ 40,306,256          |

#### 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% year 1 decreasing to 3%) or 1-percentage point higher (8% year 1 decreasing to 5%) than the current healthcare cost trend rates:

|                        | 1% Decrease<br>6% Year 1<br>Decreasing to<br>3% | Assumed<br>Healthcare<br>Cost Trend<br>7% Year 1<br>Decreasing to<br>4% | 1% Increase<br>8% Year 1<br>Decreasing to<br>5% |
|------------------------|---|---|---|
| Total OPEB Liability   | \$ 41,928,438                                   | \$ 49,831,238   | \$ 60,011,167                                   |
| Fiduciary Net Position | (2,714,632)                                     | (2,714,632)   | (2,714,632)                                     |
| Net OPEB Liability     | \$ 39,213,806                                   | \$ 47,116,606   | \$ 57,296,535                                   |

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

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

| Fiscal Year Ended June 30   | 2021                        | 2020                        | 2019                        | 2018                        | 2017                        |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <b>Total OPEB Liability</b>   |                             |                             |                             |                             |                             |
| Service cost  | \$ 931,942                  | \$ 889,551                  | \$ 1,102,359                | \$ 1,408,106                | \$ 1,414,513                |
| Interest  | 2,182,825                   | 2,206,645                   | 1,984,110                   | 1,894,830                   | 1,255,435                   |
| Changes of benefit terms  | -                           | -                           | -                           | -                           | -                           |
| Differences between expected and actual experience                      | 6,649,997                   | (3,592,503)                 | -                           | 2,242,713                   | 6,017,400                   |
| Changes of assumptions  | 8,145,723                   | 83,922                      | (6,007,783)                 | -                           | -                           |
| Benefit payments  | (1,458,469)                 | (1,231,651)                 | (1,255,235)                 | (1,169,027)                 | (688,801)                   |
| <b>Net change in total OPEB liability</b>                               | <b>\$ 16,452,018</b>        | <b>\$ (1,644,036)</b>       | <b>\$ (4,176,549)</b>       | <b>\$ 4,376,622</b>         | <b>\$ 7,998,547</b>         |
| <b>Total OPEB liability—beginning</b>                                   | <b>\$ 33,379,220</b>        | <b>\$ 35,023,256</b>        | <b>\$ 39,199,805</b>        | <b>\$ 34,823,183</b>        | <b>\$ 26,824,636</b>        |
| <b>Total OPEB liability—ending (a)</b>                                  | <b><u>\$ 49,831,238</u></b> | <b><u>\$ 33,379,220</u></b> | <b><u>\$ 35,023,256</u></b> | <b><u>\$ 39,199,805</u></b> | <b><u>\$ 34,823,183</u></b> |
| <b>Plan Fiduciary Net Position</b>                                      |                             |                             |                             |                             |                             |
| Contributions--employer   | \$ 1,708,469                | \$ 1,481,651                | \$ 1,505,235                | \$ 1,419,027                | \$ 938,801                  |
| Net investment income   | 609,270                     | 35,991                      | 78,416                      | 66,625                      | 67,927                      |
| Benefit payments  | (1,458,469)                 | (1,231,651)                 | (1,255,235)                 | (1,169,027)                 | (688,801)                   |
| Administrative expenses   | -                           | -                           | -                           | -                           | -                           |
| Other   | -                           | -                           | -                           | -                           | -                           |
| <b>Net change in plan fiduciary net position</b>                        | <b>\$ 859,270</b>           | <b>\$ 285,991</b>           | <b>\$ 328,416</b>           | <b>\$ 316,625</b>           | <b>\$ 317,927</b>           |
| <b>Plan fiduciary net position—beginning</b>                            | <b>\$ 1,855,362</b>         | <b>\$ 1,569,371</b>         | <b>\$ 1,240,955</b>         | <b>\$ 924,330</b>           | <b>\$ 606,403</b>           |
| <b>Plan fiduciary net position—ending (b)</b>                           | <b><u>\$ 2,714,632</u></b>  | <b><u>\$ 1,855,362</u></b>  | <b><u>\$ 1,569,371</u></b>  | <b><u>\$ 1,240,955</u></b>  | <b><u>\$ 924,330</u></b>    |
| <b>Net OPEB liability—ending (a) – (b)</b>                              | <b><u>\$ 47,116,606</u></b> | <b><u>\$ 31,523,858</u></b> | <b><u>\$ 33,453,885</u></b> | <b><u>\$ 37,958,850</u></b> | <b><u>\$ 33,898,853</u></b> |
| Plan fiduciary net position as a percentage of the total OPEB liability | 5.45%                       | 5.56%                       | 4.48%                       | 3.17%                       | 2.65%                       |
| Covered payroll   | \$ 24,234,544               | \$ 23,409,824               | \$ 22,223,655               | \$ 21,576,364               | \$ 19,326,334               |
| Net OPEB liability as a percentage of covered payroll                   | 194.42%                     | 134.66%                     | 150.53%                     | 175.93%                     | 175.40%                     |
| <b>Discount Rate</b>  | <b>5.65%</b>                | <b>6.50%</b>                | <b>6.25%</b>                | <b>5.00%</b>                | <b>4.50%</b>                |

#### Changes of Benefit Terms

All benefit terms are the same as those used in the prior measurement.

#### Changes of Assumptions

The discount rate changed from 6.5% as of June 30, 2020 to 5.65% as of June 30, 2021. In addition, many other assumptions were updated in this valuation, including decrements, the inflation rate, healthcare and dental trend rates, mortality tables and mortality improvement rates, and percent retiring with covered spouses.

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.2 - Investment Returns

| Fiscal Year Ended June 30  | 2021   | 2020  | 2019  | 2018  | 2017  | 2016 | 2015 | 2014 | 2013 | 2012 |
|--|--------|-------|-------|-------|-------|------|------|------|------|------|
| Annual money-weighted rate of return, net of investment expenses | 29.26% | 2.00% | 5.34% | 6.76% | 8.37% |      |      |      |      |      |

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 5 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/<br>Net External<br>Cash Flows<br>(a) | Periods<br>Invested<br>(b) | Period<br>Weight<br>(c)=(b)÷12 | (d)=(a) x<br>(1+r <sub>mw</sub> ) <sup>(c)</sup> |
|----------------------------------|--|----------------------------|--------------------------------|--|
| Beginning value - July 1, 2020   | \$ 1,855,362   | 12                         | 1.00                           | \$ 2,398,311                                     |
| Monthly net external cash flows: |  |                            |                                |  |
| July                             | 250,000  | 11                         | 0.92                           | 316,320  |
| 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                             | -  | 0                          | 0.00                           | -  |
| Ending value - June 30, 2021     |  |                            |                                | \$ 2,714,632                                     |
| Money-weighted rate of return:   |  |                            |                                | 29.26%   |

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.3 - Schedule of Employer Contributions

| Fiscal Year Ended June 30  | 2021          | 2020          | 2019          | 2018          | 2017          |
|--|---------------|---------------|---------------|---------------|---------------|
| Actuarially determined contribution                                  | \$ 3,406,099  | \$ 3,156,233  | \$ 3,451,305  | \$ 3,135,467  | \$ 2,954,779  |
| Contributions in relation to the actuarially determined contribution | 1,708,469     | 1,481,651     | 1,505,235     | 1,419,027     | 938,801       |
| Contribution deficiency (excess)                                     | \$ 1,697,630  | \$ 1,674,582  | \$ 1,946,070  | \$ 1,716,440  | \$ 2,015,978  |
| Covered payroll  | \$ 24,234,544 | \$ 23,409,824 | \$ 22,223,655 | \$ 21,576,364 | \$ 19,326,334 |
| Contributions as a percentage of covered payroll                     | 7.05%         | 6.33%         | 6.77%         | 6.58%         | 4.86%         |
| Discount rate  | 6.50%         | 6.25%         | 5.00%         | 4.50%         | Not available |
| Inflation  | 2.20%         | 2.50%         | Not available | Not available | Not available |

#### 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         | Level dollar amount 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 percent for 2020, decreasing 0.4 percent per year to 5.4 percent, then grading down to an ultimate trend rate of 4 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<br>June 30, 2021 |   |                     |              |                                      |                                     |
|------------------------------|---|---------------------|--------------|--------------------------------------|-------------------------------------|
|                              | Amounts Recognized in<br>OPEB Expense<br>through<br>June 30, 2021 |                     |              | Deferred<br>Outflows of<br>Resources | Deferred<br>Inflows of<br>Resources |
| Year                         | Experience<br>Losses  | Experience<br>Gains | (c)          | (a) - (c)                            | (b) + (c)                           |
| 2018                         | \$ 2,242,713  | \$ -                | \$ 1,369,596 | \$ 873,117                           | \$ -                                |
| 2019                         | -   | -                   | -            | -                                    | -                                   |
| 2020                         | -   | 3,592,503           | (1,072,388)  | -                                    | 2,520,115                           |
| 2021                         | 6,649,997   | -                   | 901,084      | 5,748,913                            | -                                   |
| <b>Total</b>                 |   |                     |              | <b>\$ 6,622,030</b>                  | <b>\$ 2,520,115</b>                 |

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<br>June 30, 2021 |  |  |   |                                      |                                     |
|------------------------------|--|--|---|--------------------------------------|-------------------------------------|
|                              | Increases in<br>the<br>Total OPEB<br>Liability | Decreases in<br>the<br>Total OPEB<br>Liability | Amounts Recognized in<br>OPEB Expense<br>through<br>June 30, 2021 | Deferred<br>Outflows of<br>Resources | Deferred<br>Inflows of<br>Resources |
| Year                         | (a)  | (b)  | (c)   | (a) - (c)                            | (b) + (c)                           |
| 2018                         | \$ -   | \$ -   | \$ -  | \$ -                                 | \$ -                                |
| 2019                         | -  | 6,007,783                                      | (2,751,654)   | -                                    | 3,256,129                           |
| 2020                         | 83,922   | -  | 25,050  | 58,872                               | -                                   |
| 2021                         | 8,145,723                                      | -  | 1,103,757   | 7,041,966                            | -                                   |
| <b>Total</b>                 |  |  |   | <b>\$ 7,100,838</b>                  | <b>\$ 3,256,129</b>                 |

## 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<br>June 30, 2021 |  |   |   |                                      |                                     |
|------------------------------|--|---|---|--------------------------------------|-------------------------------------|
|                              | Investment<br>Earnings<br>Less Than<br>Projected | Investment<br>Earnings<br>Greater Than<br>Projected | Amounts Recognized in<br>OPEB Expense<br>through<br>June 30, 2021 | Deferred<br>Outflows of<br>Resources | Deferred<br>Inflows of<br>Resources |
| Year                         | (a)  | (b)   | (c)   | (a) - (c)                            | (b) + (c)                           |
| 2018                         | \$ -   | \$ 20,881   | \$ (16,704)   | \$ -                                 | \$ 4,177                            |
| 2019                         | 17,734   | -   | 10,641  | 7,093                                | -                                   |
| 2020                         | 89,861   | -   | 35,944  | 53,917                               | -                                   |
| 2021                         | -  | 463,399   | (92,680)  | -                                    | 370,719                             |
| Subtotal                     |  |   |   | \$ 61,010                            | \$ 374,896                          |
| Net                          |  |   |   | <u>\$ -</u>                          | <u>\$ 313,886</u>                   |

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

| Year ended June 30 |               |  |
|--------------------|---------------|--|
| 2022               | \$ 831,015    |  |
| 2023               | \$ 835,191    |  |
| 2024               | \$ 677,566    |  |
| 2025               | \$ 884,018    |  |
| 2026               | \$ 1,638,274  |  |
| Thereafter         | 2,766,674     |  |
| Deferred Outflows  | \$ 13,722,868 |  |
| Deferred Inflows   | \$ 6,090,130  |  |

## 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, 2021 is presented below:

#### Fiscal Year Ended June 30, 2021

| Measurement Date  | 6/30/2021    |
|---|--------------|
| 1. Service cost   | \$ 931,942   |
| 2. Interest on the total OPEB liability                                       |              |
| a. Total OPEB liability, beginning of year                                    | 33,379,220   |
| b. Service cost, beginning of year  | 931,942      |
| c. Benefit payments   | (1,458,469)  |
| d. Interest on total OPEB liability = 6.5% times (a. + b. + .5 times c.)      | 2,182,825    |
| 3. Differences between expected and actual experience                         | 707,289      |
| 4. Changes of benefit terms   | -            |
| 5. Changes of assumptions   | 199,064      |
| 6. Projected earnings on OPEB plan investments                                |              |
| a. Plan fiduciary net position, beginning of year                             | 1,855,362    |
| b. Contributions - Employer   | 1,708,469    |
| c. Benefit payments   | (1,458,469)  |
| d. Administrative expenses and other  | -            |
| e. Total projected earnings   | (145,871)    |
| 7. Differences between projected and actual earnings on OPEB plan investments | (75,337)     |
| 8. OPEB plan administrative expenses  | -            |
| 9. Other changes in fiduciary net position                                    | -            |
| 10. Total OPEB Expense  | \$ 3,799,912 |

## 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 Worcester Regional 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:

| Non-Medicare Plans - July 1, 2021 | Individual | Family     |
|-----------------------------------|------------|------------|
| Fallon Select                     | \$903.09   | \$2,283.67 |
| Fallon Direct                     | \$812.77   | \$2,113.18 |
| Fallon PPO                        | \$1,174.48 | \$3,053.65 |
| Tufts                             | \$852.94   | \$2,217.68 |

### Medicare Plans - January 1, 2021

|                        |          |
|------------------------|----------|
| BCBS Medex 2           | \$448.67 |
| BCBS Managed Blue      | \$377.77 |
| Fallon Senior          | \$313.00 |
| Tufts Supplement Prime | \$407.00 |
| Tufts HMO Prime        | \$333.00 |

**Participant Contributions** Retired employees contribute 50% of the total medical premium for the Fallon PPO, BCBS Medex 2, and Tufts Supplement Prime plans, and 25% for all other plans.

## 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 the required medical premium.

**Dental Coverage** Dental coverage is provided. The total monthly costs are \$44.56 and \$132.70 for individual and family plans, respectively. Retirees contribute 50% of the monthly premiums.

**Life Insurance Coverage** Retirees are eligible for a \$1,000 life insurance benefit. The total monthly cost is \$0.35. Retirees contribute \$0.18 towards the monthly premiums.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

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|  |  |
|--|--|
| <b>Valuation Date</b>                    | July 1, 2020   |
| <b>Disclosure Date</b>                   | June 30, 2021  |
| <b>GASB 75 Reporting Date</b>            | June 30, 2021  |
| <b>Long-Term Expected Rate of Return</b> | 6.65%, compounded annually, net of fees.<br><br>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.   |
| <b>Municipal Bond Rate</b>               | 2.16%, based on the Bond Buyer 20-Bond GO Index published on June 30, 2021.  |
| <b>Discount Rate (GASB)</b>              | 5.65%, compounded annually, for the measurement as of June 30, 2021.<br>6.5%, compounded annually, for the measurement as of June 30, 2020.<br><br>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. |
| <b>Discount Rate (ADEC)</b>              | 6.5%, compounded annually, for development of the Actuarially Determined Contribution (ADEC) as of June 30, 2021.  |
| <b>Amortization Method</b>               | Level dollar amount over 30 years on an open amortization period for partial pre-funding.  |

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Medical Trend Rates

| Year     | Trend |
|----------|-------|
| 1        | 7.00% |
| 2        | 6.60% |
| 3        | 6.20% |
| 4        | 5.80% |
| 5        | 5.40% |
| Ultimate | 4.00% |

Trend rates after year 5 grade down to the ultimate rate of 4 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

2.2% 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 - 80% of eligible retired employees will elect to participate.

Dental - 80% of eligible retirees will elect to participate.

Life - 80% 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.

70% 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, 2020 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 | \$4,197           | \$4,927 | \$4,197             | \$4,927 |
| 20-24    | 3,307             | 5,246   | 3,307               | 5,246   |
| 25-29    | 3,441             | 7,739   | 3,441               | 7,739   |
| 30-34    | 4,323             | 9,779   | 4,323               | 9,779   |
| 35-39    | 5,422             | 10,072  | 5,422               | 10,072  |
| 40-44    | 6,757             | 10,316  | 6,757               | 10,316  |
| 45-49    | 8,528             | 11,323  | 8,528               | 11,323  |
| 50-54    | 11,239            | 13,321  | 11,239              | 13,321  |
| 55-59    | 14,605            | 15,402  | 14,605              | 15,402  |
| 60-64    | 18,743            | 18,332  | 18,743              | 18,332  |
| 65-69    | 3,547             | 3,454   | 23,385              | 21,975  |
| 70-74    | 4,251             | 4,075   | 28,018              | 25,911  |
| 75-79    | 5,019             | 4,728   | 33,096              | 30,092  |
| 80-84    | 5,770             | 5,422   | 38,040              | 34,498  |
| 85-89    | 6,427             | 6,061   | 43,538              | 39,383  |
| 90-94    | 6,997             | 6,469   | 43,538              | 39,383  |
| 95+      | 7,437             | 6,256   | 43,538              | 39,383  |

### Retiree Contributions

Annual per capita participant contributions for the fiscal year beginning July 1, 2020 are as follows:

| Plan         | Contribution |
|--------------|--------------|
| Non-Medicare | \$ 3,230     |
| Medicare     | 1,661        |

### 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, 2021. 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-2014 Blue Collar Mortality Table, projected with generational mortality improvement using scale MP-2018.

### Pre-Retirement Mortality

Pre-retirement 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-2018.

### 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                | 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

### Post-Retirement Mortality

Post-retirement 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.

### 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.

### 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, 2020

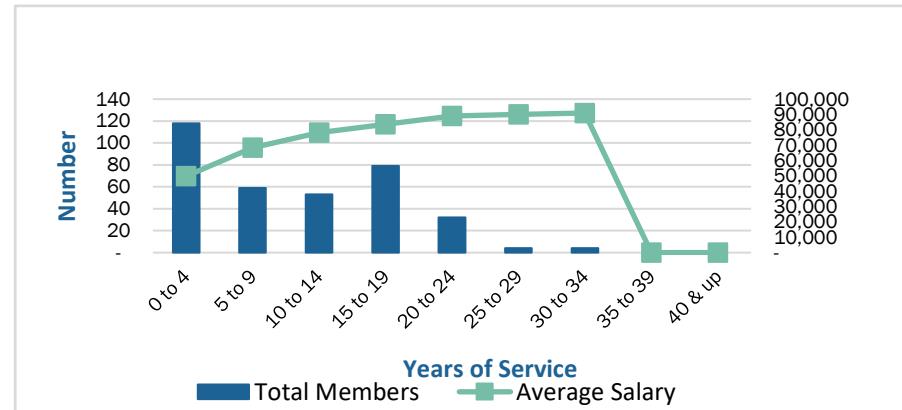
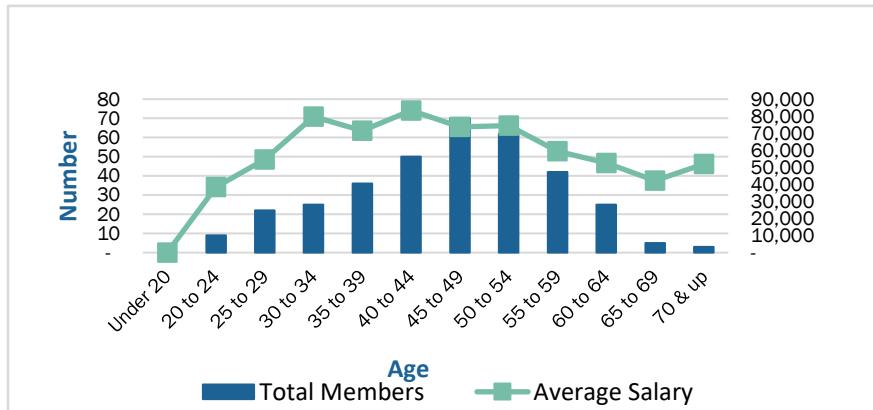
| Age                   | Years of Service |                  |                  |                  |                  |                |                |          |          |            | Total             | Total Salary  | Average Salary |
|-----------------------|------------------|------------------|------------------|------------------|------------------|----------------|----------------|----------|----------|------------|-------------------|---------------|----------------|
|                       | 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              | -                | -                | -                | -                | -                | -              | -              | -        | -        | -          | -                 | -             | -              |
| 20 to 24              | 8                | 1                | -                | -                | -                | -              | -              | -        | -        | 9          | 346,387           | 38,487        |                |
| 25 to 29              | 18               | 4                | -                | -                | -                | -              | -              | -        | -        | 22         | 1,199,266         | 54,512        |                |
| 30 to 34              | 12               | 13               | -                | -                | -                | -              | -              | -        | -        | 25         | 1,993,591         | 79,744        |                |
| 35 to 39              | 16               | 6                | 10               | 4                | -                | -              | -              | -        | -        | 36         | 2,569,923         | 71,387        |                |
| 40 to 44              | 13               | 5                | 6                | 25               | 1                | -              | -              | -        | -        | 50         | 4,166,857         | 83,337        |                |
| 45 to 49              | 20               | 8                | 12               | 17               | 11               | 2              | -              | -        | -        | 70         | 5,161,056         | 73,729        |                |
| 50 to 54              | 17               | 11               | 10               | 13               | 9                | 2              | -              | -        | -        | 62         | 4,617,474         | 74,475        |                |
| 55 to 59              | 9                | 7                | 9                | 10               | 4                | -              | 3              | -        | -        | 42         | 2,500,953         | 59,547        |                |
| 60 to 64              | 4                | 3                | 4                | 9                | 4                | -              | 1              | -        | -        | 25         | 1,312,169         | 52,487        |                |
| 65 to 69              | -                | 1                | 1                | 1                | 2                | -              | -              | -        | -        | 5          | 211,161           | 42,232        |                |
| 70 & up               | 1                | -                | 1                | -                | 1                | -              | -              | -        | -        | 3          | 155,707           | 51,902        |                |
| <b>Total</b>          | <b>118</b>       | <b>59</b>        | <b>53</b>        | <b>79</b>        | <b>32</b>        | <b>4</b>       | <b>4</b>       | <b>-</b> | <b>-</b> | <b>349</b> | <b>24,234,544</b> | <b>69,440</b> |                |
| <b>Total Salary</b>   | <b>5,883,041</b> | <b>4,035,329</b> | <b>4,138,540</b> | <b>6,604,295</b> | <b>2,849,170</b> | <b>360,415</b> | <b>363,754</b> | <b>-</b> | <b>-</b> |            |                   |               |                |
| <b>Average Salary</b> | <b>49,856</b>    | <b>68,395</b>    | <b>78,086</b>    | <b>83,599</b>    | <b>89,037</b>    | <b>90,104</b>  | <b>90,939</b>  | <b>-</b> | <b>-</b> |            |                   |               |                |

Average Age:

46.4

Average Service:

10.6



## SECTION 7 - PLAN MEMBER INFORMATION

### Exhibit 7.2 - Retired Members, Covered Spouses and Survivors as of July 1, 2020

| Age             | Non-Medicare Plans |               |            |       |              |                   |               | Medicare Plans         |                 |     | Total |
|-----------------|--------------------|---------------|------------|-------|--------------|-------------------|---------------|------------------------|-----------------|-----|-------|
|                 | Fallon Select      | Fallon Direct | Fallon PPO | Tufts | BCBS Medex 2 | BCBS Managed Blue | Fallon Senior | Tufts Supplement Prime | Tufts HMO Prime |     |       |
| Under 40        | 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     |
| 45 to 49        | 0                  | 0             | 0          | 1     | 0            | 0                 | 0             | 0                      | 0               | 0   | 1     |
| 50 to 54        | 0                  | 0             | 0          | 0     | 0            | 0                 | 0             | 0                      | 0               | 0   | 0     |
| 55 to 59        | 5                  | 1             | 1          | 3     | 0            | 0                 | 0             | 0                      | 0               | 0   | 10    |
| 60 to 64        | 1                  | 0             | 1          | 14    | 0            | 1                 | 0             | 2                      | 1               | 20  |       |
| 65 to 69        | 0                  | 0             | 0          | 1     | 4            | 10                | 2             | 10                     | 9               | 36  |       |
| 70 to 74        | 0                  | 0             | 0          | 0     | 1            | 1                 | 1             | 14                     | 9               | 26  |       |
| 75 to 79        | 0                  | 0             | 0          | 0     | 3            | 1                 | 2             | 10                     | 13              | 29  |       |
| 80 to 84        | 1                  | 0             | 1          | 0     | 2            | 1                 | 0             | 5                      | 6               | 16  |       |
| 85 to 89        | 0                  | 0             | 0          | 0     | 3            | 0                 | 0             | 3                      | 5               | 11  |       |
| 90+             | 0                  | 0             | 0          | 0     | 0            | 0                 | 0             | 0                      | 0               | 0   |       |
| Total           | 7                  | 1             | 3          | 19    | 13           | 14                | 5             | 44                     | 43              | 149 |       |
| Covered Spouses | 3                  | 1             | 0          | 16    | 5            | 8                 | 3             | 22                     | 21              | 79  |       |

Average Age: 72.2

In addition, there are 61 retirees, survivors and covered spouses that are not covered under any medical plan but are covered under a dental and/or life insurance plan which the Town contributes to.

## 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  | Town      | School     | Police    | Fire      | Water    | Total       |
|---|-----------|------------|-----------|-----------|----------|-------------|
| <b>Summary of Member Data Used in Valuation</b>     |           |            |           |           |          |             |
| Active Members                                      | 54        | 247        | 20        | 22        | 6        | 349         |
| Average Age   | 47.6      | 47.3       | 37.5      | 41.2      | 48.1     | 46.4        |
| Average Service                                     | 9.1       | 10.9       | 10.1      | 11.4      | 12.7     | 10.6        |
| Covered Payroll                                     | 3,712,923 | 15,656,971 | 2,349,769 | 2,018,475 | 496,406  | 24,234,544  |
| Retired Members and Survivors                       | 52        | 120        | 6         | 3         | 3        | 184         |
| Average Age   | 72.5      | 72.6       | 69.5      | 60.9      | 69.1     | 72.2        |
| Covered Spouses                                     | 25        | 70         | 5         | 3         | 2        | 105         |
| Expected Benefit Payments                           | 369,400   | 899,199    | 75,820    | 86,427    | 27,623   | 1,458,469   |
| OPEB Trust contributions                            | 41,284    | 170,418    | 19,188    | 19,110    | 0        | 250,000     |
| Total Employer Contributions                        | 410,684   | 1,069,617  | 95,008    | 105,537   | 27,623   | 1,708,469   |
| <b>Beginning Net OPEB Liability - June 30, 2020</b> |           |            |           |           |          |             |
| Total OPEB Liability                                | 5,446,615 | 22,482,757 | 2,531,371 | 2,521,077 | 397,400  | 33,379,220  |
| Fiduciary Net Position                              | 306,394   | 1,264,747  | 142,400   | 141,821   | 0        | 1,855,362   |
| Net OPEB Liability                                  | 5,140,221 | 21,218,010 | 2,388,971 | 2,379,256 | 397,400  | 31,523,858  |
| Total OPEB Liability, beginning of year             | 5,446,615 | 22,482,757 | 2,531,371 | 2,521,077 | 397,400  | 33,379,220  |
| Service cost  | 108,804   | 622,502    | 82,503    | 107,297   | 10,836   | 931,942     |
| Interest  | 349,097   | 1,472,617  | 167,438   | 168,035   | 25,638   | 2,182,825   |
| Changes of benefit terms                            | 0         | 0          | 0         | 0         | 0        | 0           |
| Differences between expected and actual experience  | 1,849,179 | 4,120,038  | 52,908    | 375,263   | 252,609  | 6,649,997   |
| Changes of assumptions                              | 2,174,068 | 4,789,047  | 553,115   | 397,860   | 231,633  | 8,145,723   |
| Benefit payments                                    | (369,400) | (899,199)  | (75,820)  | (86,427)  | (27,623) | (1,458,469) |
| Net change in total OPEB liability                  | 4,111,748 | 10,105,005 | 780,144   | 962,028   | 493,093  | 16,452,018  |
| Total OPEB Liability, end of year                   | 9,558,363 | 32,587,762 | 3,311,515 | 3,483,105 | 890,493  | 49,831,238  |
| <b>Ending Net OPEB Liability - June 30, 2021</b>    |           |            |           |           |          |             |
| Total OPEB Liability                                | 9,558,363 | 32,587,762 | 3,311,515 | 3,483,105 | 890,493  | 49,831,238  |
| Fiduciary Net Position                              | 448,292   | 1,850,487  | 208,350   | 207,503   | 0        | 2,714,632   |
| Net OPEB Liability                                  | 9,110,071 | 30,737,275 | 3,103,165 | 3,275,602 | 890,493  | 47,116,606  |

## SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

| Department   | Town             | School           | Police           | Fire             | Water          | Total             |
|--|------------------|------------------|------------------|------------------|----------------|-------------------|
| <b>Total Deferred Outflows of Resources</b>  |                  |                  |                  |                  |                |                   |
| Differences between Expected and Actual  |                  |                  |                  |                  |                |                   |
| Experience   | 1,080,542        | 4,460,305        | 502,193          | 500,151          | 78,839         | 6,622,030         |
| Changes in Assumptions   | 1,158,671        | 4,782,808        | 538,504          | 536,314          | 84,540         | 7,100,838         |
| Differences between Expected and Actual  |                  |                  |                  |                  |                |                   |
| Earnings on OPEB Plan Investments  | 0                | 0                | 0                | 0                | 0              | 0                 |
| <b>Total Deferred Outflows of Resources</b>  | <b>2,239,213</b> | <b>9,243,113</b> | <b>1,040,697</b> | <b>1,036,465</b> | <b>163,379</b> | <b>13,722,868</b> |
| <b>Total Deferred Inflows of Resources</b>   |                  |                  |                  |                  |                |                   |
| Differences between Expected and Actual  |                  |                  |                  |                  |                |                   |
| Experience   | 411,217          | 1,697,437        | 191,117          | 190,340          | 30,004         | 2,520,115         |
| Changes in Assumptions   | 531,315          | 2,193,184        | 246,934          | 245,930          | 38,766         | 3,256,129         |
| Differences between Expected and Actual  |                  |                  |                  |                  |                |                   |
| Earnings on OPEB Plan Investments  | 51,835           | 213,967          | 24,091           | 23,993           | 0              | 313,886           |
| <b>Total Deferred Inflows of Resources</b>   | <b>994,367</b>   | <b>4,104,588</b> | <b>462,142</b>   | <b>460,263</b>   | <b>68,770</b>  | <b>6,090,130</b>  |
| <b>Total OPEB Expense (Income)</b>   | <b>2,178,095</b> | <b>1,497,552</b> | <b>(214,409)</b> | <b>(17,562)</b>  | <b>356,236</b> | <b>3,799,912</b>  |
| <b>Sensitivity of the Net OPEB Liability to Changes in the Discount Rate</b>                       |                  |                  |                  |                  |                |                   |
| Current Discount Rate: 5.65%   | 9,110,071        | 30,737,275       | 3,103,165        | 3,275,602        | 890,493        | 47,116,606        |
| 1% Decrease in the Discount Rate: 4.65%  | 10,750,344       | 36,329,531       | 3,671,441        | 3,873,324        | 1,043,307      | 55,667,946        |
| 1% Increase in the Discount Rate: 6.65%  | 7,803,746        | 26,283,561       | 2,650,586        | 2,799,572        | 768,791        | 40,306,256        |
| <b>Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rates</b>         |                  |                  |                  |                  |                |                   |
| Current Trend Rates  | 9,110,071        | 30,737,275       | 3,103,165        | 3,275,602        | 890,493        | 47,116,606        |
| 1% Decrease in Trend Rates   | 7,594,198        | 25,569,140       | 2,577,988        | 2,723,212        | 749,269        | 39,213,806        |
| 1% Increase in Trend Rates   | 11,062,731       | 37,394,567       | 3,779,668        | 3,987,159        | 1,072,410      | 57,296,535        |
| <b>Deferred Outflows of Resources and Deferred Inflows of Resources recognized in OPEB Expense</b> |                  |                  |                  |                  |                |                   |
| 2022   | 135,534          | 559,456          | 62,990           | 62,734           | 10,301         | 831,015           |
| 2023   | 136,214          | 562,269          | 63,307           | 63,049           | 10,352         | 835,191           |
| 2024   | 110,505          | 456,153          | 51,359           | 51,150           | 8,399          | 677,566           |
| 2025   | 144,176          | 595,141          | 67,008           | 66,735           | 10,958         | 884,018           |
| 2026   | 267,192          | 1,102,920        | 124,180          | 123,675          | 20,307         | 1,638,274         |
| Thereafter   | 451,225          | 1,862,584        | 209,712          | 208,859          | 34,294         | 2,766,674         |

## 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.

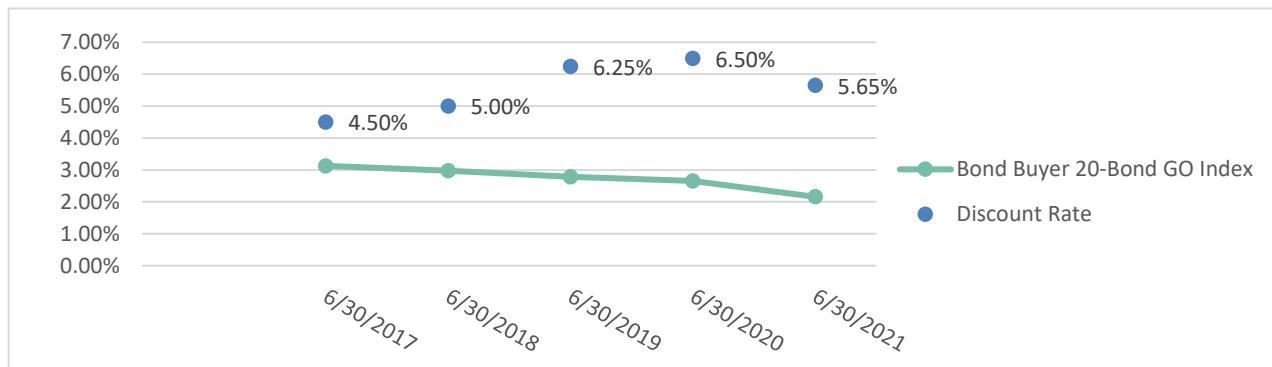
Projected cash flows into and out of the OPEB plan are assumed to be contributions to the OPEB plan, benefit payments, OPEB plan administrative expenses and OPEB plan investment earnings. These projected cash flows are used to project the OPEB plan's fiduciary net position at the beginning of each period. 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 5.65%, a long-term investment return rate of 6.65% and a municipal bond rate of 2.16%, based on the Bond Buyer 20-Bond GO Index published on June 30, 2021. The OPEB plan's fiduciary net position was projected to be insufficient to make all projected benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to the first 90 periods of projected future benefit payments and the 2.16% municipal bond rate was applied to all periods thereafter to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 5.65%.

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<sup>1</sup>:



<sup>1</sup>Bond rates prior to 2021 are based on the S&P Municipal Bond 20 Year High Grade Index.

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

| Year | Projected Payroll                       |  |                                  | Projected Contributions                          |  |  |  | Portion of Employer Contributions for Current Plan Members |
|------|---|--|----------------------------------|--|--|--|--|--|
|      | Payroll for Current Plan Members<br>(a) | Payroll for Future Plan Members<br>(b) | Total Payroll<br>(c) = (a) + (b) | Employer Contributions (Benefit Payments)<br>(d) | Employer Contributions (OPEB Trust)<br>(e) | Employer Contributions Related to Payroll of Future Employees<br>(f) = (b) * 6.81% |  |  |
| 2021 | 24,707,066                              | -                                      | 24,707,066                       | 1,458,469  | 250,000                                    | -  |  | 1,708,469  |
| 2022 | 23,790,629                              | 1,781,184                              | 25,571,813                       | 1,604,815  | 250,000                                    | 121,381  |  | 1,733,434  |
| 2023 | 23,059,213                              | 3,407,613                              | 26,466,826                       | 1,706,287  | 250,000                                    | 232,216  |  | 1,724,071  |
| 2024 | 22,397,269                              | 4,995,896                              | 27,393,165                       | 1,801,000  | 250,000                                    | 340,451  |  | 1,710,549  |
| 2025 | 21,762,997                              | 6,588,929                              | 28,351,926                       | 1,909,581  | 250,000                                    | 449,010  |  | 1,710,571  |
| 2026 | 21,139,213                              | 8,205,030                              | 29,344,243                       | 2,025,137  | 250,000                                    | 559,141  |  | 1,715,996  |
| 2027 | 20,398,999                              | 9,972,293                              | 30,371,292                       | 2,110,748  | 250,000                                    | 679,574  |  | 1,681,174  |
| 2028 | 19,725,315                              | 11,708,972                             | 31,434,287                       | 2,273,947  | 250,000                                    | 797,922  |  | 1,726,025  |
| 2029 | 18,895,688                              | 13,638,799                             | 32,534,487                       | 2,515,241  | 250,000                                    | 929,432  |  | 1,835,809  |
| 2030 | 18,013,471                              | 15,659,723                             | 33,673,194                       | 2,718,381  | 250,000                                    | 1,067,150  |  | 1,901,231  |
| 2031 | 17,055,328                              | 17,796,428                             | 34,851,756                       | 2,990,889  | 250,000                                    | 1,212,758  |  | 2,028,131  |
| 2032 | 16,023,790                              | 20,047,777                             | 36,071,567                       | 3,319,073  | 250,000                                    | 1,366,179  |  | 2,202,894  |
| 2033 | 14,924,979                              | 22,409,093                             | 37,334,072                       | 3,598,228  | 250,000                                    | 1,527,094  |  | 2,321,134  |
| 2034 | 13,872,057                              | 24,768,708                             | 38,640,765                       | 3,944,509  | 250,000                                    | 1,687,893  |  | 2,506,616  |
| 2035 | 12,772,457                              | 27,220,735                             | 39,993,192                       | 4,265,742  | 250,000                                    | 1,854,989  |  | 2,660,753  |
| 2036 | 11,445,649                              | 29,947,305                             | 41,392,954                       | 4,507,753  | 250,000                                    | 2,040,794  |  | 2,716,959  |
| 2037 | 10,205,714                              | 32,635,993                             | 42,841,707                       | 4,738,345  | 5,947,206                                  | 2,224,018  |  | 8,461,533  |
| 2038 | 9,065,085                               | 35,276,082                             | 44,341,167                       | 4,995,094  | 6,185,095                                  | 2,403,930  |  | 8,776,259  |
| 2039 | 8,126,675                               | 37,766,433                             | 45,893,108                       | 5,094,281  | 6,432,498                                  | 2,573,638  |  | 8,953,141  |
| 2040 | 7,262,502                               | 40,236,865                             | 47,499,367                       | 5,122,645  | 6,689,798                                  | 2,741,988  |  | 9,070,455  |
| 2041 | 6,500,880                               | 42,660,965                             | 49,161,845                       | 5,233,056  | 6,957,390                                  | 2,907,182  |  | 9,283,264  |
| 2042 | 5,809,365                               | 45,073,145                             | 50,882,510                       | 5,345,963  | 7,235,686                                  | 3,071,562  |  | 9,510,087  |
| 2043 | 5,316,383                               | 47,347,015                             | 52,663,398                       | 5,141,916  | 7,525,113                                  | 3,226,518  |  | 9,440,511  |
| 2044 | 4,886,410                               | 49,620,207                             | 54,506,617                       | 5,078,672  | 7,826,118                                  | 3,381,427  |  | 9,523,363  |
| 2045 | 4,496,503                               | 51,917,846                             | 56,414,349                       | 5,147,468  | 8,139,163                                  | 3,538,003  |  | 9,748,628  |
| 2046 | 4,080,900                               | 54,307,951                             | 58,388,851                       | 5,166,922  | 8,464,729                                  | 3,700,879  |  | 9,930,772  |
| 2047 | 3,665,220                               | 56,767,241                             | 60,432,461                       | 5,156,914  | 8,803,318                                  | 3,868,470  |  | 10,091,762   |
| 2048 | 3,335,165                               | 59,212,432                             | 62,547,597                       | 5,325,806  | 9,155,451                                  | 4,035,101  |  | 10,446,156   |
| 2049 | 2,993,965                               | 61,742,798                             | 64,736,763                       | 5,402,895  | 9,521,669                                  | 4,207,535  |  | 10,717,029   |
| 2050 | 2,682,950                               | 64,319,600                             | 67,002,550                       | 5,498,392  | 9,902,536                                  | 4,383,135  |  | 11,017,793   |
| 2051 | 2,355,236                               | 66,992,403                             | 69,347,639                       | 5,742,337  | 10,298,637                                 | 4,565,276  |  | 11,475,698   |
| 2052 | 2,054,717                               | 69,720,089                             | 71,774,806                       | 5,829,584  | 10,710,583                                 | 4,751,157  |  | 11,789,010   |
| 2053 | 1,718,346                               | 72,568,578                             | 74,286,924                       | 5,965,393  | 11,139,006                                 | 4,945,271  |  | 12,159,128   |
| 2054 | 1,427,541                               | 75,459,425                             | 76,886,966                       | 6,216,059  | 11,584,566                                 | 5,142,271  |  | 12,658,354   |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

| Year | Projected Payroll                       |  |                                  | Projected Contributions                          |  |  |            | Portion of Employer Contributions for Current Plan Members<br>(g) = (d) + (e) - (f) |
|------|---|--|----------------------------------|--|--|--|------------|---|
|      | Payroll for Current Plan Members<br>(a) | Payroll for Future Plan Members<br>(b) | Total Payroll<br>(c) = (a) + (b) | Employer Contributions (Benefit Payments)<br>(d) | Employer Contributions (OPEB Trust)<br>(e) | Employer Contributions Related to Payroll of Future Employees<br>(f) = (b) * 6.81% |            |   |
| 2055 | 1,167,514                               | 78,410,496                             | 79,578,010                       | 6,152,481  | 12,047,949                                 | 5,343,375  | 12,857,055 |   |
| 2056 | 867,915                                 | 81,495,325                             | 82,363,240                       | 6,231,812  | 12,529,867                                 | 5,553,595  | 13,208,084 |   |
| 2057 | 712,858                                 | 84,533,095                             | 85,245,953                       | 6,265,353  | 13,031,061                                 | 5,760,607  | 13,535,807 |   |
| 2058 | 561,618                                 | 87,667,943                             | 88,229,561                       | 6,151,134  | 13,552,304                                 | 5,974,235  | 13,729,203 |   |
| 2059 | 429,459                                 | 90,888,137                             | 91,317,596                       | 6,067,994  | 14,094,396                                 | 6,193,679  | 13,968,711 |   |
| 2060 | 306,918                                 | 94,206,794                             | 94,513,712                       | 5,955,273  | 14,658,172                                 | 6,419,833  | 14,193,612 |   |
| 2061 | 207,469                                 | 97,614,223                             | 97,821,692                       | 5,965,302  | 15,244,499                                 | 6,652,036  | 14,557,765 |   |
| 2062 | 157,533                                 | 101,087,918                            | 101,245,451                      | 5,857,742  | 15,854,279                                 | 6,888,755  | 14,823,266 |   |
| 2063 | 120,253                                 | 104,668,789                            | 104,789,042                      | 5,647,535  | 16,488,450                                 | 7,132,777  | 15,003,208 |   |
| 2064 | 79,180                                  | 108,377,478                            | 108,456,658                      | 5,602,550  | 17,147,988                                 | 7,385,510  | 15,365,028 |   |
| 2065 | 48,340                                  | 112,204,301                            | 112,252,641                      | 5,553,379  | 17,833,907                                 | 7,646,294  | 15,740,992 |   |
| 2066 | 37,837                                  | 116,143,646                            | 116,181,483                      | 5,372,367  | 18,547,264                                 | 7,914,745  | 16,004,886 |   |
| 2067 | 28,907                                  | 120,218,928                            | 120,247,835                      | 5,275,428  | 19,289,154                                 | 8,192,460  | 16,372,122 |   |
| 2068 | 18,170                                  | 124,438,339                            | 124,456,509                      | 5,182,039  | 20,060,720                                 | 8,479,997  | 16,762,762 |   |
| 2069 | 3,198                                   | 128,809,289                            | 128,812,487                      | 5,027,595  | 20,863,149                                 | 8,777,860  | 17,112,884 |   |
| 2070 | -                                       | 133,320,924                            | 133,320,924                      | 4,887,898  | 21,697,675                                 | 9,085,311  | 17,500,262 |   |
| 2071 | -                                       | 137,987,156                            | 137,987,156                      | 4,688,775  | 22,565,582                                 | 9,403,297  | 17,851,060 |   |
| 2072 | -                                       | 142,816,706                            | 142,816,706                      | 4,496,804  | 23,468,206                                 | 9,732,412  | 18,232,598 |   |
| 2073 | -                                       | 147,815,291                            | 147,815,291                      | 4,311,746  | 24,406,934                                 | 10,073,046   | 18,645,634 |   |
| 2074 | -                                       | 152,988,826                            | 152,988,826                      | 4,087,113  | 25,383,211                                 | 10,425,603   | 19,044,721 |   |
| 2075 | -                                       | 158,343,435                            | 158,343,435                      | 3,901,399  | 26,398,540                                 | 10,790,499   | 19,509,440 |   |
| 2076 | -                                       | 163,885,455                            | 163,885,455                      | 3,662,754  | 27,454,481                                 | 11,168,167   | 19,949,068 |   |
| 2077 | -                                       | 169,621,446                            | 169,621,446                      | 3,443,719  | 28,552,660                                 | 11,559,052   | 20,437,327 |   |
| 2078 | -                                       | 175,558,197                            | 175,558,197                      | 3,255,986  | 29,694,767                                 | 11,963,619   | 20,987,134 |   |
| 2079 | -                                       | 181,702,734                            | 181,702,734                      | 3,042,664  | 30,882,557                                 | 12,382,346   | 21,542,875 |   |
| 2080 | -                                       | 188,062,330                            | 188,062,330                      | 2,863,707  | 32,117,860                                 | 12,815,728   | 22,165,839 |   |
| 2081 | -                                       | 194,644,512                            | 194,644,512                      | 2,663,902  | 33,402,574                                 | 13,264,279   | 22,802,197 |   |
| 2082 | -                                       | 201,457,070                            | 201,457,070                      | 2,478,378  | 34,738,677                                 | 13,728,528   | 23,488,527 |   |
| 2083 | -                                       | 208,508,067                            | 208,508,067                      | 2,316,050  | 36,128,224                                 | 14,209,027   | 24,235,247 |   |
| 2084 | -                                       | 215,805,849                            | 215,805,849                      | 2,140,118  | 37,573,353                                 | 14,706,343   | 25,007,128 |   |
| 2085 | -                                       | 223,359,054                            | 223,359,054                      | 1,978,800  | 39,076,287                                 | 15,221,065   | 25,834,022 |   |
| 2086 | -                                       | 231,176,621                            | 231,176,621                      | 1,812,532  | 40,639,339                                 | 15,753,802   | 26,698,069 |   |
| 2087 | -                                       | 239,267,803                            | 239,267,803                      | 1,655,827  | 42,264,912                                 | 16,305,185   | 27,615,554 |   |
| 2088 | -                                       | 247,642,176                            | 247,642,176                      | 1,504,936  | 43,955,509                                 | 16,875,867   | 28,584,578 |   |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

| Year | Projected Payroll                       |  |                                  | Projected Contributions                          |  |  |   |
|------|---|--|----------------------------------|--|--|--|---|
|      | Payroll for Current Plan Members<br>(a) | Payroll for Future Plan Members<br>(b) | Total Payroll<br>(c) = (a) + (b) | Employer Contributions (Benefit Payments)<br>(d) | Employer Contributions (OPEB Trust)<br>(e) | Employer Contributions Related to Payroll of Future Employees<br>(f) = (b) * 6.81% | Portion of Employer Contributions for Current Plan Members<br>(g) = (d) + (e) - (f) |
| 2089 | -                                       | 256,309,652                            | 256,309,652                      | 1,354,199  | 45,713,729                                 | 17,466,522   | 29,601,406  |
| 2090 | -                                       | 265,280,490                            | 265,280,490                      | 1,212,721  | 47,542,278                                 | 18,077,850   | 30,677,149  |
| 2091 | -                                       | 274,565,307                            | 274,565,307                      | 1,078,687  | 49,443,970                                 | 18,710,575   | 31,812,082  |
| 2092 | -                                       | 284,175,093                            | 284,175,093                      | 946,924  | 51,421,728                                 | 19,365,445   | 33,003,207  |
| 2093 | -                                       | 294,121,221                            | 294,121,221                      | 825,729  | 53,478,597                                 | 20,043,236   | 34,261,090  |
| 2094 | -                                       | 304,415,464                            | 304,415,464                      | 713,268  | 55,617,741                                 | 20,744,749   | 35,586,260  |
| 2095 | -                                       | 315,070,005                            | 315,070,005                      | 609,873  | 57,842,451                                 | 21,470,815   | 36,981,509  |
| 2096 | -                                       | 326,097,455                            | 326,097,455                      | 514,284  | 60,156,149                                 | 22,222,294   | 38,448,139  |
| 2097 | -                                       | 337,510,866                            | 337,510,866                      | 429,866  | 62,562,395                                 | 23,000,074   | 39,992,187  |
| 2098 | -                                       | 349,323,746                            | 349,323,746                      | 354,660  | 65,064,891                                 | 23,805,077   | 41,614,474  |
| 2099 | -                                       | 361,550,077                            | 361,550,077                      | 288,587  | 67,667,486                                 | 24,638,254   | 43,317,819  |
| 2100 | -                                       | 374,204,330                            | 374,204,330                      | 231,233  | 70,374,186                                 | 25,500,593   | 45,104,826  |
| 2101 | -                                       | 387,301,482                            | 387,301,482                      | 182,201  | 73,189,153                                 | 26,393,114   | 46,978,240  |
| 2102 | -                                       | 400,857,034                            | 400,857,034                      | 141,067  | 76,116,719                                 | 27,316,873   | 48,940,913  |
| 2103 | -                                       | 414,887,030                            | 414,887,030                      | 107,201  | 79,161,388                                 | 28,272,963   | 50,995,626  |
| 2104 | -                                       | 429,408,076                            | 429,408,076                      | 79,793   | 82,327,844                                 | 29,262,517   | 53,145,120  |
| 2105 | -                                       | 444,437,359                            | 444,437,359                      | 58,077   | 85,620,957                                 | 30,286,705   | 55,392,329  |
| 2106 | -                                       | 459,992,667                            | 459,992,667                      | 41,296   | 89,045,796                                 | 31,346,740   | 57,740,352  |
| 2107 | -                                       | 476,092,410                            | 476,092,410                      | 28,660   | 92,607,628                                 | 32,443,876   | 60,192,412  |
| 2108 | -                                       | 492,755,644                            | 492,755,644                      | 19,349   | 96,311,933                                 | 33,579,411   | 62,751,871  |
| 2109 | -                                       | 510,002,092                            | 510,002,092                      | 12,682   | 100,164,410                                | 34,754,691   | 65,422,401  |
| 2110 | -                                       | 527,852,165                            | 527,852,165                      | 8,070  | 104,170,986                                | 35,971,105   | 68,207,951  |
| 2111 | -                                       | 546,326,991                            | 546,326,991                      | 4,973  | 108,337,826                                | 37,230,094   | 71,112,705  |
| 2112 | -                                       | 565,448,436                            | 565,448,436                      | 2,965  | 112,671,339                                | 38,533,147   | 74,141,157  |
| 2113 | -                                       | 585,239,131                            | 585,239,131                      | 1,708  | 117,178,192                                | 39,881,807   | 77,298,093  |
| 2114 | -                                       | 605,722,501                            | 605,722,501                      | 944  | 121,865,320                                | 41,277,670   | 80,588,594  |
| 2115 | -                                       | 626,922,789                            | 626,922,789                      | 508  | 126,739,933                                | 42,722,389   | 84,018,052  |
| 2116 | -                                       | 648,865,087                            | 648,865,087                      | 264  | 131,809,530                                | 44,217,673   | 87,592,121  |
| 2117 | -                                       | 671,575,365                            | 671,575,365                      | 136  | 137,081,911                                | 45,765,291   | 91,316,756  |
| 2118 | -                                       | 695,080,503                            | 695,080,503                      | 65   | 142,565,188                                | 47,367,076   | 95,198,177  |
| 2119 | -                                       | 719,408,321                            | 719,408,321                      | 26   | 148,267,795                                | 49,024,924   | 99,242,897  |
| 2120 | -                                       | 744,587,612                            | 744,587,612                      | 13   | 154,198,507                                | 50,740,796   | 103,457,724   |
| 2121 | -                                       | 770,648,178                            | 770,648,178                      | 6  | 160,366,448                                | 52,516,724   | 107,849,730   |
| 2122 | -                                       | 797,620,864                            | 797,620,864                      | -  | 166,781,105                                | 54,354,810   | 112,426,295   |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

| Year | Projected Beginning Fiduciary Net Position<br>(a) | Employer Contributions for Current Plan Members<br>(b) | Projected Benefit Payments<br>(c) | Projected Administrative Expenses<br>(d) | Projected Investment Earnings<br>(e) | Projected Ending Fiduciary Net Position<br>(f) = (a) + (b) - (c) - (d) + (e) |
|------|---|--|-----------------------------------|--|--------------------------------------|--|
| 2021 | 1,855,362   | 1,708,469  | 1,458,469                         | -  | 609,270                              | 2,714,632  |
| 2022 | 2,714,632   | 1,733,434  | 1,604,815                         | -  | 184,800                              | 3,028,051  |
| 2023 | 3,028,051   | 1,724,071  | 1,706,287                         | -  | 201,957                              | 3,247,792  |
| 2024 | 3,247,792   | 1,710,549  | 1,801,000                         | -  | 212,971                              | 3,370,312  |
| 2025 | 3,370,312   | 1,710,571  | 1,909,581                         | -  | 217,509                              | 3,388,811  |
| 2026 | 3,388,811   | 1,715,996  | 2,025,137                         | -  | 215,077                              | 3,294,747  |
| 2027 | 3,294,747   | 1,681,174  | 2,110,748                         | -  | 204,817                              | 3,069,990  |
| 2028 | 3,069,990   | 1,726,025  | 2,273,947                         | -  | 185,936                              | 2,708,004  |
| 2029 | 2,708,004   | 1,835,809  | 2,515,241                         | -  | 157,491                              | 2,186,063  |
| 2030 | 2,186,063   | 1,901,231  | 2,718,381                         | -  | 118,203                              | 1,487,116  |
| 2031 | 1,487,116   | 2,028,131  | 2,990,889                         | -  | 66,882                               | 591,240  |
| 2032 | 591,240   | 2,202,894  | 3,319,073                         | -  | 2,205                                | -  |
| 2033 | -   | 2,321,134  | 3,598,228                         | -  | -                                    | -  |
| 2034 | -   | 2,506,616  | 3,944,509                         | -  | -                                    | -  |
| 2035 | -   | 2,660,753  | 4,265,742                         | -  | -                                    | -  |
| 2036 | -   | 2,716,959  | 4,507,753                         | -  | -                                    | -  |
| 2037 | -   | 8,461,533  | 4,738,345                         | -  | 123,796                              | 3,846,984  |
| 2038 | 3,846,984   | 8,776,259  | 4,995,094                         | -  | 381,548                              | 8,009,697  |
| 2039 | 8,009,697   | 8,953,141  | 5,094,281                         | -  | 660,952                              | 12,529,509   |
| 2040 | 12,529,509  | 9,070,455  | 5,122,645                         | -  | 964,477                              | 17,441,797   |
| 2041 | 17,441,797  | 9,283,264  | 5,233,056                         | -  | 1,294,549                            | 22,786,554   |
| 2042 | 22,786,554  | 9,510,087  | 5,345,963                         | -  | 1,653,763                            | 28,604,441   |
| 2043 | 28,604,441  | 9,440,511  | 5,141,916                         | -  | 2,045,124                            | 34,948,160   |
| 2044 | 34,948,160  | 9,523,363  | 5,078,672                         | -  | 2,471,839                            | 41,864,690   |
| 2045 | 41,864,690  | 9,748,628  | 5,147,468                         | -  | 2,936,990                            | 49,402,840   |
| 2046 | 49,402,840  | 9,930,772  | 5,166,922                         | -  | 3,443,687                            | 57,610,377   |
| 2047 | 57,610,377  | 10,091,762   | 5,156,914                         | -  | 3,995,174                            | 66,540,399   |
| 2048 | 66,540,399  | 10,446,156   | 5,325,806                         | -  | 4,595,188                            | 76,255,937   |
| 2049 | 76,255,937  | 10,717,029   | 5,402,895                         | -  | 5,247,715                            | 86,817,786   |
| 2050 | 86,817,786  | 11,017,793   | 5,498,392                         | -  | 5,956,903                            | 98,294,089   |
| 2051 | 98,294,089  | 11,475,698   | 5,742,337                         | -  | 6,727,191                            | 110,754,642  |
| 2052 | 110,754,642                                       | 11,789,010   | 5,829,584                         | -  | 7,563,335                            | 124,277,402  |
| 2053 | 124,277,402                                       | 12,159,128   | 5,965,393                         | -  | 8,470,389                            | 138,941,526  |
| 2054 | 138,941,526                                       | 12,658,354   | 6,216,059                         | -  | 9,453,818                            | 154,837,639  |
| 2055 | 154,837,639                                       | 12,857,055   | 6,152,481                         | -  | 10,519,630                           | 172,061,843  |
| 2056 | 172,061,843                                       | 13,208,084   | 6,231,812                         | -  | 11,674,074                           | 190,712,189  |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

| Year | Projected Beginning Fiduciary Net Position<br>(a) | Employer Contributions for Current Plan Members<br>(b) | Projected Benefit Payments<br>(c) | Projected Administrative Expenses<br>(d) | Projected Investment Earnings<br>(e) | Projected Ending Fiduciary Net Position<br>(f) = (a) + (b) - (c) - (d) + (e) |
|------|---|--|-----------------------------------|--|--------------------------------------|--|
| 2057 | 190,712,189                                       | 13,535,807   | 6,265,353                         | -  | 12,924,103                           | 210,906,747  |
| 2058 | 210,906,747                                       | 13,729,203   | 6,151,134                         | -  | 14,277,269                           | 232,762,085  |
| 2059 | 232,762,085                                       | 13,968,711   | 6,067,994                         | -  | 15,741,377                           | 256,404,179  |
| 2060 | 256,404,179                                       | 14,193,612   | 5,955,273                         | -  | 17,324,803                           | 281,967,321  |
| 2061 | 281,967,321                                       | 14,557,765   | 5,965,302                         | -  | 19,036,526                           | 309,596,309  |
| 2062 | 309,596,309                                       | 14,823,266   | 5,857,742                         | -  | 20,886,258                           | 339,448,091  |
| 2063 | 339,448,091                                       | 15,003,208   | 5,647,535                         | -  | 22,884,374                           | 371,688,138  |
| 2064 | 371,688,138                                       | 15,365,028   | 5,602,550                         | -  | 25,041,864                           | 406,492,480  |
| 2065 | 406,492,480                                       | 15,740,992   | 5,553,379                         | -  | 27,370,488                           | 444,050,581  |
| 2066 | 444,050,581                                       | 16,004,886   | 5,372,367                         | -  | 29,882,895                           | 484,565,995  |
| 2067 | 484,565,995                                       | 16,372,122   | 5,275,428                         | -  | 32,592,604                           | 528,255,293  |
| 2068 | 528,255,293                                       | 16,762,762   | 5,182,039                         | -  | 35,514,036                           | 575,350,053  |
| 2069 | 575,350,053                                       | 17,112,884   | 5,027,595                         | -  | 38,662,614                           | 626,097,956  |
| 2070 | 626,097,956                                       | 17,500,262   | 4,887,898                         | -  | 42,054,875                           | 680,765,195  |
| 2071 | 680,765,195                                       | 17,851,060   | 4,688,775                         | -  | 45,708,531                           | 739,636,012  |
| 2072 | 739,636,012                                       | 18,232,598   | 4,496,804                         | -  | 49,642,510                           | 803,014,315  |
| 2073 | 803,014,315                                       | 18,645,634   | 4,311,746                         | -  | 53,877,054                           | 871,225,257  |
| 2074 | 871,225,257                                       | 19,044,721   | 4,087,113                         | -  | 58,433,820                           | 944,616,685  |
| 2075 | 944,616,685                                       | 19,509,440   | 3,901,399                         | -  | 63,335,977                           | 1,023,560,703  |
| 2076 | 1,023,560,703                                     | 19,949,068   | 3,662,754                         | -  | 68,608,307                           | 1,108,455,324  |
| 2077 | 1,108,455,324                                     | 20,437,327   | 3,443,719                         | -  | 74,277,317                           | 1,199,726,249  |
| 2078 | 1,199,726,249                                     | 20,987,134   | 3,255,986                         | -  | 80,371,356                           | 1,297,828,753  |
| 2079 | 1,297,828,753                                     | 21,542,875   | 3,042,664                         | -  | 86,920,744                           | 1,403,249,708  |
| 2080 | 1,403,249,708                                     | 22,165,839   | 2,863,707                         | -  | 93,957,901                           | 1,516,509,741  |
| 2081 | 1,516,509,741                                     | 22,802,197   | 2,663,902                         | -  | 101,517,496                          | 1,638,165,532  |
| 2082 | 1,638,165,532                                     | 23,488,527   | 2,478,378                         | -  | 109,636,595                          | 1,768,812,276  |
| 2083 | 1,768,812,276                                     | 24,235,247   | 2,316,050                         | -  | 118,354,830                          | 1,909,086,304  |
| 2084 | 1,909,086,304                                     | 25,007,128   | 2,140,118                         | -  | 127,714,567                          | 2,059,667,881  |
| 2085 | 2,059,667,881                                     | 25,834,022   | 1,978,800                         | -  | 137,761,100                          | 2,221,284,203  |
| 2086 | 2,221,284,203                                     | 26,698,069   | 1,812,532                         | -  | 148,542,844                          | 2,394,712,584  |
| 2087 | 2,394,712,584                                     | 27,615,554   | 1,655,827                         | -  | 160,111,548                          | 2,580,783,859  |
| 2088 | 2,580,783,859                                     | 28,584,578   | 1,504,936                         | -  | 172,522,525                          | 2,780,386,026  |
| 2089 | 2,780,386,026                                     | 29,601,406   | 1,354,199                         | -  | 185,834,890                          | 2,994,468,123  |
| 2090 | 2,994,468,123                                     | 30,677,149   | 1,212,721                         | -  | 200,111,822                          | 3,224,044,374  |
| 2091 | 3,224,044,374                                     | 31,812,082   | 1,078,687                         | -  | 215,420,836                          | 3,470,198,604  |
| 2092 | 3,470,198,604                                     | 33,003,207   | 946,924                           | -  | 231,834,079                          | 3,734,088,967  |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

| Year | Projected Beginning Fiduciary Net Position<br>(a) | Employer Contributions for Current Plan Members<br>(b) | Projected Benefit Payments<br>(c) | Projected Administrative Expenses<br>(d) | Projected Investment Earnings<br>(e) | Projected Ending Fiduciary Net Position<br>(f) = (a) + (b) - (c) - (d) + (e) |
|------|---|--|-----------------------------------|--|--------------------------------------|--|
| 2093 | 3,734,088,967                                     | 34,261,090   | 825,729                           | -  | 249,428,642                          | 4,016,952,970  |
| 2094 | 4,016,952,970                                     | 35,586,260   | 713,268                           | -  | 268,286,899                          | 4,320,112,861  |
| 2095 | 4,320,112,861                                     | 36,981,509   | 609,873                           | -  | 288,496,862                          | 4,644,981,359  |
| 2096 | 4,644,981,359                                     | 38,448,139   | 514,284                           | -  | 310,152,561                          | 4,993,067,775  |
| 2097 | 4,993,067,775                                     | 39,992,187   | 429,866                           | -  | 333,354,454                          | 5,365,984,550  |
| 2098 | 5,365,984,550                                     | 41,614,474   | 354,660                           | -  | 358,209,861                          | 5,765,454,225  |
| 2099 | 5,765,454,225                                     | 43,317,819   | 288,587                           | -  | 384,833,428                          | 6,193,316,885  |
| 2100 | 6,193,316,885                                     | 45,104,826   | 231,233                           | -  | 413,347,620                          | 6,651,538,098  |
| 2101 | 6,651,538,098                                     | 46,978,240   | 182,201                           | -  | 443,883,252                          | 7,142,217,389  |
| 2102 | 7,142,217,389                                     | 48,940,913   | 141,067                           | -  | 476,580,051                          | 7,667,597,287  |
| 2103 | 7,667,597,287                                     | 50,995,626   | 107,201                           | -  | 511,587,260                          | 8,230,072,972  |
| 2104 | 8,230,072,972                                     | 53,145,120   | 79,793                            | -  | 549,064,275                          | 8,832,202,574  |
| 2105 | 8,832,202,574                                     | 55,392,329   | 58,077                            | -  | 589,181,335                          | 9,476,718,161  |
| 2106 | 9,476,718,161                                     | 57,740,352   | 41,296                            | -  | 632,120,251                          | 10,166,537,468   |
| 2107 | 10,166,537,468                                    | 60,192,412   | 28,660                            | -  | 678,075,186                          | 10,904,776,406   |
| 2108 | 10,904,776,406                                    | 62,751,871   | 19,349                            | -  | 727,253,487                          | 11,694,762,414   |
| 2109 | 11,694,762,414                                    | 65,422,401   | 12,682                            | -  | 779,876,574                          | 12,540,048,707   |
| 2110 | 12,540,048,707                                    | 68,207,951   | 8,070                             | -  | 836,180,885                          | 13,444,429,474   |
| 2111 | 13,444,429,474                                    | 71,112,705   | 4,973                             | -  | 896,418,892                          | 14,411,956,098   |
| 2112 | 14,411,956,098                                    | 74,141,157   | 2,965                             | -  | 960,860,175                          | 15,446,954,465   |
| 2113 | 15,446,954,465                                    | 77,298,093   | 1,708                             | -  | 1,029,792,577                        | 16,554,043,427   |
| 2114 | 16,554,043,427                                    | 80,588,594   | 944                               | -  | 1,103,523,427                        | 17,738,154,504   |
| 2115 | 17,738,154,504                                    | 84,018,052   | 508                               | -  | 1,182,380,858                        | 19,004,552,906   |
| 2116 | 19,004,552,906                                    | 87,592,121   | 264                               | -  | 1,266,715,198                        | 20,358,859,961   |
| 2117 | 20,358,859,961                                    | 91,316,756   | 136                               | -  | 1,356,900,465                        | 21,807,077,047   |
| 2118 | 21,807,077,047                                    | 95,198,177   | 65                                | -  | 1,453,335,961                        | 23,355,611,120   |
| 2119 | 23,355,611,120                                    | 99,242,897   | 26                                | -  | 1,556,447,965                        | 25,011,301,956   |
| 2120 | 25,011,301,956                                    | 103,457,724  | 13                                | -  | 1,666,691,549                        | 26,781,451,217   |
| 2121 | 26,781,451,217                                    | 107,849,730  | 6                                 | -  | 1,784,552,509                        | 28,673,853,449   |
| 2122 | 28,673,853,449                                    | 112,426,295  | -                                 | -  | 1,910,549,429                        | 30,696,829,174   |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

| Year | Projected Benefit Payments                     |                                |  |  | Actuarial Present Value of Projected Benefit Payments |  |           | Present Value of Benefit Payments Using the Single Discount Rate (g) = 5.65% |
|------|--|--------------------------------|--|--|---|--|-----------|--|
|      | Projected Beginning Fiduciary Net Position (a) | Projected Benefit Payments (b) | "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) |           |  |
| 2022 | 2,714,632                                      | 1,604,815                      | 1,604,815                                | -  | 1,553,977   | -  | 1,561,343 |  |
| 2023 | 3,028,051                                      | 1,706,287                      | 1,706,287                                | -  | 1,549,212   | -  | 1,571,347 |  |
| 2024 | 3,247,792                                      | 1,801,000                      | 1,801,000                                | -  | 1,533,245   | -  | 1,569,930 |  |
| 2025 | 3,370,312                                      | 1,909,581                      | 1,909,581                                | -  | 1,524,316   | -  | 1,575,619 |  |
| 2026 | 3,388,811                                      | 2,025,137                      | 2,025,137                                | -  | 1,515,760   | -  | 1,581,664 |  |
| 2027 | 3,294,747                                      | 2,110,748                      | 2,110,748                                | -  | 1,481,329   | -  | 1,560,424 |  |
| 2028 | 3,069,990                                      | 2,273,947                      | 2,273,947                                | -  | 1,496,355   | -  | 1,591,231 |  |
| 2029 | 2,708,004                                      | 2,515,241                      | 2,515,241                                | -  | 1,551,934   | -  | 1,666,016 |  |
| 2030 | 2,186,063                                      | 2,718,381                      | -  | 2,718,381                                  | -   | 2,266,850  | 1,704,341 |  |
| 2031 | 1,487,116                                      | 2,990,889                      | -  | 2,990,889                                  | -   | 2,441,360  | 1,774,978 |  |
| 2032 | 591,240  | 3,319,073                      | -  | 3,319,073                                  | -   | 2,651,963  | 1,864,473 |  |
| 2033 | -  | 3,598,228                      | -  | 3,598,228                                  | -   | 2,814,223  | 1,913,263 |  |
| 2034 | -  | 3,944,509                      | -  | 3,944,509                                  | -   | 3,019,826  | 1,985,297 |  |
| 2035 | -  | 4,265,742                      | -  | 4,265,742                                  | -   | 3,196,706  | 2,032,234 |  |
| 2036 | -  | 4,507,753                      | -  | 4,507,753                                  | -   | 3,306,643  | 2,032,759 |  |
| 2037 | -  | 4,738,345                      | -  | 4,738,345                                  | -   | 3,402,303  | 2,022,549 |  |
| 2038 | 3,846,984                                      | 4,995,094                      | -  | 4,995,094                                  | -   | 3,510,824  | 2,018,193 |  |
| 2039 | 8,009,697                                      | 5,094,281                      | 5,094,281                                | -  | 1,651,079   | -  | 1,948,267 |  |
| 2040 | 12,529,509                                     | 5,122,645                      | 5,122,645                                | -  | 1,556,748   | -  | 1,854,413 |  |
| 2041 | 17,441,797                                     | 5,233,056                      | 5,233,056                                | -  | 1,491,141   | -  | 1,793,140 |  |
| 2042 | 22,786,554                                     | 5,345,963                      | 5,345,963                                | -  | 1,428,329   | -  | 1,733,929 |  |
| 2043 | 28,604,441                                     | 5,141,916                      | 5,141,916                                | -  | 1,288,150   | -  | 1,578,618 |  |
| 2044 | 34,948,160                                     | 5,078,672                      | 5,078,672                                | -  | 1,192,974   | -  | 1,475,872 |  |
| 2045 | 41,864,690                                     | 5,147,468                      | 5,147,468                                | -  | 1,133,740   | -  | 1,415,920 |  |
| 2046 | 49,402,840                                     | 5,166,922                      | 5,166,922                                | -  | 1,067,065   | -  | 1,345,314 |  |
| 2047 | 57,610,377                                     | 5,156,914                      | 5,156,914                                | -  | 998,592   | -  | 1,270,949 |  |
| 2048 | 66,540,399                                     | 5,325,806                      | 5,325,806                                | -  | 966,991   | -  | 1,242,425 |  |
| 2049 | 76,255,937                                     | 5,402,895                      | 5,402,895                                | -  | 919,820   | -  | 1,193,049 |  |
| 2050 | 86,817,786                                     | 5,498,392                      | 5,498,392                                | -  | 877,710   | -  | 1,149,248 |  |
| 2051 | 98,294,089                                     | 5,742,337                      | 5,742,337                                | -  | 859,495   | -  | 1,136,092 |  |
| 2052 | 110,754,642                                    | 5,829,584                      | 5,829,584                                | -  | 818,147   | -  | 1,091,714 |  |
| 2053 | 124,277,402                                    | 5,965,393                      | 5,965,393                                | -  | 785,004   | -  | 1,057,443 |  |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

| Year | Projected Benefit Payments                     |                                |  |  | Actuarial Present Value of Projected Benefit Payments |  |           | Present Value of Benefit Payments Using the Single Discount Rate (g) = 5.65% |
|------|--|--------------------------------|--|--|---|--|-----------|--|
|      | Projected Beginning Fiduciary Net Position (a) | Projected Benefit Payments (b) | "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) |           |  |
| 2054 | 138,941,526                                    | 6,216,059                      | 6,216,059                                | -  | 766,986   | -  | 1,042,989 |  |
| 2055 | 154,837,639                                    | 6,152,481                      | 6,152,481                                | -  | 711,806   | -  | 977,151   |  |
| 2056 | 172,061,843                                    | 6,231,812                      | 6,231,812                                | -  | 676,028   | -  | 936,855   |  |
| 2057 | 190,712,189                                    | 6,265,353                      | 6,265,353                                | -  | 637,287   | -  | 891,559   |  |
| 2058 | 210,906,747                                    | 6,151,134                      | 6,151,134                                | -  | 586,656   | -  | 828,526   |  |
| 2059 | 232,762,085                                    | 6,067,994                      | 6,067,994                                | -  | 542,641   | -  | 773,647   |  |
| 2060 | 256,404,179                                    | 5,955,273                      | 5,955,273                                | -  | 499,354   | -  | 718,697   |  |
| 2061 | 281,967,321                                    | 5,965,302                      | 5,965,302                                | -  | 469,006   | -  | 681,433   |  |
| 2062 | 309,596,309                                    | 5,857,742                      | 5,857,742                                | -  | 431,833   | -  | 633,385   |  |
| 2063 | 339,448,091                                    | 5,647,535                      | 5,647,535                                | -  | 390,376   | -  | 578,020   |  |
| 2064 | 371,688,138                                    | 5,602,550                      | 5,602,550                                | -  | 363,119   | -  | 542,771   |  |
| 2065 | 406,492,480                                    | 5,553,379                      | 5,553,379                                | -  | 337,489   | -  | 509,254   |  |
| 2066 | 444,050,581                                    | 5,372,367                      | 5,372,367                                | -  | 306,131   | -  | 466,326   |  |
| 2067 | 484,565,995                                    | 5,275,428                      | 5,275,428                                | -  | 281,863   | -  | 433,439   |  |
| 2068 | 528,255,293                                    | 5,182,039                      | 5,182,039                                | -  | 259,610   | -  | 403,012   |  |
| 2069 | 575,350,053                                    | 5,027,595                      | 5,027,595                                | -  | 236,167   | -  | 370,104   |  |
| 2070 | 626,097,956                                    | 4,887,898                      | 4,887,898                                | -  | 215,288   | -  | 340,590   |  |
| 2071 | 680,765,195                                    | 4,688,775                      | 4,688,775                                | -  | 193,641   | -  | 309,255   |  |
| 2072 | 739,636,012                                    | 4,496,804                      | 4,496,804                                | -  | 174,133   | -  | 280,742   |  |
| 2073 | 803,014,315                                    | 4,311,746                      | 4,311,746                                | -  | 156,556   | -  | 254,802   |  |
| 2074 | 871,225,257                                    | 4,087,113                      | 4,087,113                                | -  | 139,146   | -  | 228,620   |  |
| 2075 | 944,616,685                                    | 3,901,399                      | 3,901,399                                | -  | 124,542   | -  | 206,568   |  |
| 2076 | 1,023,560,703                                  | 3,662,754                      | 3,662,754                                | -  | 109,633   | -  | 183,568   |  |
| 2077 | 1,108,455,324                                  | 3,443,719                      | 3,443,719                                | -  | 96,650  | -  | 163,367   |  |
| 2078 | 1,199,726,249                                  | 3,255,986                      | 3,255,986                                | -  | 85,683  | -  | 146,206   |  |
| 2079 | 1,297,828,753                                  | 3,042,664                      | 3,042,664                                | -  | 75,077  | -  | 129,325   |  |
| 2080 | 1,403,249,708                                  | 2,863,707                      | 2,863,707                                | -  | 66,255  | -  | 115,214   |  |
| 2081 | 1,516,509,741                                  | 2,663,902                      | 2,663,902                                | -  | 57,789  | -  | 101,447   |  |
| 2082 | 1,638,165,532                                  | 2,478,378                      | 2,478,378                                | -  | 50,412  | -  | 89,338    |  |
| 2083 | 1,768,812,276                                  | 2,316,050                      | 2,316,050                                | -  | 44,173  | -  | 79,025    |  |
| 2084 | 1,909,086,304                                  | 2,140,118                      | 2,140,118                                | -  | 38,272  | -  | 69,119    |  |
| 2085 | 2,059,667,881                                  | 1,978,800                      | 1,978,800                                | -  | 33,181  | -  | 60,494    |  |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

| Year | Projected Benefit Payments                     |                                |  |  | Actuarial Present Value of Projected Benefit Payments |  |        | Present Value of Benefit Payments Using the Single Discount Rate (g) = 5.65% |
|------|--|--------------------------------|--|--|---|--|--------|--|
|      | Projected Beginning Fiduciary Net Position (a) | Projected Benefit Payments (b) | "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) |        |  |
| 2086 | 2,221,284,203                                  | 1,812,532                      | 1,812,532                                | -  | 28,498  | -  | 52,450 |  |
| 2087 | 2,394,712,584                                  | 1,655,827                      | 1,655,827                                | -  | 24,411  | -  | 45,354 |  |
| 2088 | 2,580,783,859                                  | 1,504,936                      | 1,504,936                                | -  | 20,803  | -  | 39,018 |  |
| 2089 | 2,780,386,026                                  | 1,354,199                      | 1,354,199                                | -  | 17,552  | -  | 33,234 |  |
| 2090 | 2,994,468,123                                  | 1,212,721                      | 1,212,721                                | -  | 14,738  | -  | 28,171 |  |
| 2091 | 3,224,044,374                                  | 1,078,687                      | 1,078,687                                | -  | 12,292  | -  | 23,718 |  |
| 2092 | 3,470,198,604                                  | 946,924                        | 946,924                                  | -  | 10,118  | -  | 19,708 |  |
| 2093 | 3,734,088,967                                  | 825,729                        | 825,729                                  | -  | 8,272   | -  | 16,267 |  |
| 2094 | 4,016,952,970                                  | 713,268                        | 713,268                                  | -  | 6,700   | -  | 13,301 |  |
| 2095 | 4,320,112,861                                  | 609,873                        | 609,873                                  | -  | 5,372   | -  | 10,765 |  |
| 2096 | 4,644,981,359                                  | 514,284                        | 514,284                                  | -  | 4,247   | -  | 8,593  |  |
| 2097 | 4,993,067,775                                  | 429,866                        | 429,866                                  | -  | 3,329   | -  | 6,798  |  |
| 2098 | 5,365,984,550                                  | 354,660                        | 354,660                                  | -  | 2,575   | -  | 5,309  |  |
| 2099 | 5,765,454,225                                  | 288,587                        | 288,587                                  | -  | 1,965   | -  | 4,089  |  |
| 2100 | 6,193,316,885                                  | 231,233                        | 231,233                                  | -  | 1,476   | -  | 3,101  |  |
| 2101 | 6,651,538,098                                  | 182,201                        | 182,201                                  | -  | 1,091   | -  | 2,313  |  |
| 2102 | 7,142,217,389                                  | 141,067                        | 141,067                                  | -  | 792   | -  | 1,695  |  |
| 2103 | 7,667,597,287                                  | 107,201                        | 107,201                                  | -  | 564   | -  | 1,219  |  |
| 2104 | 8,230,072,972                                  | 79,793                         | 79,793                                   | -  | 394   | -  | 859    |  |
| 2105 | 8,832,202,574                                  | 58,077                         | 58,077                                   | -  | 269   | -  | 592    |  |
| 2106 | 9,476,718,161                                  | 41,296                         | 41,296                                   | -  | 179   | -  | 398    |  |
| 2107 | 10,166,537,468                                 | 28,660                         | 28,660                                   | -  | 117   | -  | 262    |  |
| 2108 | 10,904,776,406                                 | 19,349                         | 19,349                                   | -  | 74  | -  | 167    |  |
| 2109 | 11,694,762,414                                 | 12,682                         | 12,682                                   | -  | 45  | -  | 104    |  |
| 2110 | 12,540,048,707                                 | 8,070                          | 8,070                                    | -  | 27  | -  | 62     |  |
| 2111 | 13,444,429,474                                 | 4,973                          | 4,973                                    | -  | 16  | -  | 36     |  |
| 2112 | 14,411,956,098                                 | 2,965                          | 2,965                                    | -  | 9   | -  | 21     |  |
| 2113 | 15,446,954,465                                 | 1,708                          | 1,708                                    | -  | 5   | -  | 11     |  |
| 2114 | 16,554,043,427                                 | 944                            | 944                                      | -  | 2   | -  | 6      |  |
| 2115 | 17,738,154,504                                 | 508                            | 508                                      | -  | 1   | -  | 3      |  |
| 2116 | 19,004,552,906                                 | 264                            | 264                                      | -  | 1   | -  | 1      |  |
| 2117 | 20,358,859,961                                 | 136                            | 136                                      | -  | -   | -  | 1      |  |

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

| Year | Projected Benefit Payments                        |                                   |   |   | Actuarial Present Value of Projected Benefit Payments |   |   |
|------|---|-----------------------------------|---|---|---|---|---|
|      | Projected Beginning Fiduciary Net Position<br>(a) | Projected Benefit Payments<br>(b) | "Funded" Portion of Benefit Payments<br>(c) | "Unfunded" Portion of Benefit Payments<br>(d) | Present Value of "Funded" Benefit Payments<br>(e)     | Present Value of "Unfunded" Benefit Payments<br>(f) | Present Value of Benefit Payments Using the Single Discount Rate<br>(g) = 5.65% |
| 2118 | 21,807,077,047                                    | 65                                | 65  | -   | -   | -   | -   |
| 2119 | 23,355,611,120                                    | 26                                | 26  | -   | -   | -   | -   |
| 2120 | 25,011,301,956                                    | 13                                | 13  | -   | -   | -   | -   |
| 2121 | 26,781,451,217                                    | 6                                 | 6   | -   | -   | -   | -   |
| 2122 | 28,673,853,449                                    | -                                 | -   | -   | -   | -   | -   |

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

| Year                                    | Differences<br>between<br>Expected and Actual<br>Experience                            |      | Recognition<br>Period<br>(Years) |           |           |           |           |           |           |         |      |   |   |
|---|--|------|----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|------|---|---|
|   | 2021   | 2022 |                                  | 2023      | 2024      | 2025      | 2026      | 2027      | 2028      | 2029    | 2030 |   |   |
| 2018                                    | 2,242,713  | 6.55 | 342,399                          | 342,399   | 342,399   | 188,319   | -         | -         | -         | -       | -    | - | - |
| 2019                                    | -  | 6.55 | -                                | -         | -         | -         | -         | -         | -         | -       | -    | - | - |
| 2020                                    | (3,592,503)  | 6.70 | (536,194)                        | (536,194) | (536,194) | (536,194) | (536,194) | (375,339) | -         | -       | -    | - | - |
| 2021                                    | 6,649,997  | 7.38 | 901,084                          | 901,084   | 901,084   | 901,084   | 901,084   | 901,084   | 342,409   | -       | -    | - | - |
| Net Increase (Decrease) in OPEB Expense |  |      | 707,289                          | 707,289   | 707,289   | 553,209   | 364,890   | 525,745   | 901,084   | 342,409 | -    | - | - |
| Year                                    | Changes of<br>Assumptions  |      | Recognition<br>Period<br>(Years) |           |           |           |           |           |           |         |      |   |   |
|   | 2021   | 2022 |                                  | 2023      | 2024      | 2025      | 2026      | 2027      | 2028      | 2029    | 2030 |   |   |
| 2018                                    | -  | 6.55 | -                                | -         | -         | -         | -         | -         | -         | -       | -    | - | - |
| 2019                                    | (6,007,783)  | 6.55 | (917,218)                        | (917,218) | (917,218) | (917,218) | (504,475) | -         | -         | -       | -    | - | - |
| 2020                                    | 83,922   | 6.70 | 12,525                           | 12,525    | 12,525    | 12,525    | 12,525    | 8,772     | -         | -       | -    | - | - |
| 2021                                    | 8,145,723  | 7.38 | 1,103,757                        | 1,103,757 | 1,103,757 | 1,103,757 | 1,103,757 | 1,103,757 | 419,424   | -       | -    | - | - |
| Net Increase (Decrease) in OPEB Expense |  |      | 199,064                          | 199,064   | 199,064   | 199,064   | 611,807   | 1,112,529 | 1,103,757 | 419,424 | -    | - | - |
| Year                                    | Differences<br>between<br>Projected and Actual<br>Earnings on OPEB Plan<br>Investments |      | Recognition<br>Period<br>(Years) |           |           |           |           |           |           |         |      |   |   |
|   | 2021   | 2022 |                                  | 2023      | 2024      | 2025      | 2026      | 2027      | 2028      | 2029    | 2030 |   |   |
| 2018                                    | (20,881)   | 5    | (4,176)                          | (4,177)   | -         | -         | -         | -         | -         | -       | -    | - | - |
| 2019                                    | 17,734   | 5    | 3,547                            | 3,547     | 3,546     | -         | -         | -         | -         | -       | -    | - | - |
| 2020                                    | 89,861   | 5    | 17,972                           | 17,972    | 17,972    | 17,973    | -         | -         | -         | -       | -    | - | - |
| 2021                                    | (463,399)  | 5    | (92,680)                         | (92,680)  | (92,680)  | (92,680)  | (92,679)  | -         | -         | -       | -    | - | - |
| Net Increase (Decrease) in OPEB Expense |  |      | (75,337)                         | (75,338)  | (71,162)  | (74,707)  | (92,679)  | -         | -         | -       | -    | - | - |