



# **TOWN OF OXFORD, MASSACHUSETTS**

## **OTHER POSTEMPLOYMENT BENEFITS PROGRAM**

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

**Disclosures as of  
June 30, 2019**

KMS Actuarial, LLC  
52 Hunt Road  
Kingston, NH 03848

October, 2019



October 18, 2019

Ms. Claire Wilson  
Treasurer/Collector  
Town of Oxford  
325 Main Street  
Oxford, MA 01540

Dear Claire:

We are pleased to present the enclosed report of the July 1, 2018 actuarial valuation of the retiree health care benefits for the Town of Oxford, Massachusetts. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2019 under the following Government 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 Oxford, Massachusetts as well as health plan rates provided by the Town. Although we did not audit the data used in the valuation and disclosure calculations, we believe that the information is complete and reliable.

Liabilities presented in this report are based on a discount rate of 3.57%, a long-term investment return rate of 7.5% and a municipal bond rate of 3.5%. The long-term investment return rate is based on expected long-term investment return rates provided by the Trust's investment consultant, Bartholomew & Company.

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K M S A C T U A R I E S

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

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

Respectfully submitted,



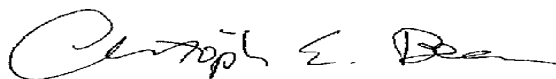
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## EXECUTIVE SUMMARY

This report presents the results of the actuarial valuation of the Town of Oxford, Massachusetts's retiree health care benefits as of July 1, 2018. The valuation was prepared in accordance with and for the purpose of financial reporting and disclosures as of June 30, 2019 under the following Government 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.

### New 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. Effective for plans with fiscal years beginning after June 15, 2016, GASB Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, replaced the requirements of Statement No. 43 and effective for employers with fiscal years beginning after June 15, 2017, GASB Statement No. 75 (GASB 75), *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, replaced the requirements of Statement No. 45.

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 Oxford, Massachusetts Other Postemployment Benefits Program

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

### Summary of Results

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

Measurement Date	<u>June 30, 2019</u>	<u>June 30, 2018</u>	<u>Increase/ (Decrease)</u>
<b>Valuation Date</b>	July 1, 2018	July 1, 2016	
<b>Membership Data</b>			
Active Plan Members	339	334	1.5%
Inactive Plan Members	184	185	(0.5%)
Total Plan Members	523	519	0.8%
 Covered Payroll	 20,730,793	 22,414,238	 (7.5%)
<b>Valuation Results (GASB 74)</b>			
Discount rate	3.57%	3.93%	
Total OPEB Liability	\$55,248,790	\$50,022,034	10.4%
Fiduciary Net Position	\$4,240,910	\$3,944,995	7.5%
Net OPEB Liability	\$51,007,880	\$46,077,039	10.7%
Funded Ratio	7.7%	7.9%	(2.5%)
<b>Valuation Results (GASB 75)</b>			
OPEB Expense	\$3,722,131	\$3,310,641	12.4%
Deferred Outflows	\$8,549,323	\$78,238	
Deferred Inflows	\$8,140,037	\$2,169,138	

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## EXECUTIVE SUMMARY

### Experience Gain and Loss

In developing the Total OPEB Liability, various assumptions are made regarding future premium rates, mortality, retirement, disability and turnover rates. A comparison of the results of the current and prior measurements is made to determine how closely actual experience relates to expected. For the current measurement period, the difference between expected and actual experience resulted in an actuarial gain of approximately \$7,382,000, primarily attributable to lower than expected medical premium rates.

### Changes of Assumptions

The discount rate changed from 3.93% as of June 30, 2018 to 3.57% as of June 30, 2019. Additionally, the health cost trend rates, inflation assumption, and the teacher mortality table and improvement scale have been updated since the prior measurement. The loss due to assumption changes is primarily attributable to the change in health cost trend rates. The Actuarial Assumptions and Methods used in the valuation are summarized in Section 6.

### Changes of Benefit Terms

All benefit terms are the same as those used in the prior valuation. 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, 2019, is \$55,248,790. The Total OPEB Liability as of the prior measurement date, June 30, 2018, was \$50,022,034. The development of the Total OPEB Liability for the current measurement date 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, 2019, is \$4,240,910. The Fiduciary Net Position as of the prior measurement date, June 30, 2018, was \$3,944,995. During the plan years ended 2019 and 2018, the actual rates of return were 6.19% and 4.91%, respectively. The expected long-term rate of return is 7.50%. The Fiduciary Net Position is shown in Section 1, Exhibit 1.1.

### Employer Future Period Contributions

Future contributions for fiscal years 2020 through 2050 are assumed to be made according to the funding schedule provided by the Town.

### Discount Rate

As of the June 30, 2019 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 7 periods of projected future benefit payments and, the 3.5% 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 3.57%.

### OPEB Expense

The OPEB Expense as of the current measurement date, June 30, 2019, is \$3,722,131. Benefit changes are recognized immediately and experience and assumption changes developed in this valuation are recognized over 7.13 years. Investment gains and losses are recognized over 5 years. The OPEB Expense for the prior measurement period was \$3,310,641. The development of the OPEB expense for the current measurement date is shown in Section 4, Exhibit 4.2.

Town of Oxford, Massachusetts Postemployment Benefits Other Than Pensions  
Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2019

## SECTION 1 - PRINCIPAL VALUATION RESULTS

### Exhibit 1.1 - OPEB Trust Assets

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

Fiscal Year Ended June 30	2019	2018
<b>Trust Fund Composition at Fiscal Year-End</b>		
Domestic Equities	\$1,541,046	\$1,092,875
Domestic Bonds	691,000	887,494
Alternatives	838,023	621,366
International Equities	962,423	687,993
International Bonds	194,543	220,100
Cash and Equivalents	13,875	435,167
Total Market Value of Assets	<u>\$4,240,910</u>	<u>\$3,944,995</u>
<b>Asset Activity</b>		
Market value, beginning of year	\$3,944,995	\$3,698,005
Employer Premiums	1,241,476	1,309,320
OPEB Trust Contributions	50,000	65,000
Benefit Payments	(1,241,476)	(1,309,320)
Administrative Expenses	-	-
Investment Return	245,915	181,990
Market value, end of year	<u>\$4,240,910</u>	<u>\$3,944,995</u>
<b>Money-Weighted Rate of Return</b>	6.19%	4.91%
<b>(Gain) / Loss on OPEB Plan Investments</b>		
Projected earnings	\$298,029	\$279,788
Actual earnings	245,915	181,990
(Gain) / Loss on OPEB plan investments	\$52,114	\$97,798



## 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, 2019 measurement date was developed from an actuarial valuation as of July 1, 2018 and rolled forward to the OPEB plan's fiscal year-end.

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

Actuarial gains and losses arise from the difference between estimates 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, 2018 to the end of the measurement period, June 30, 2019 is shown below:

<u>Measurement Date</u>	<u>June 30, 2019</u>
1. Total OPEB Liability, beginning of year:	
a. Actives	\$27,584,758
b. Retirees, Covered Spouses and Survivors	22,437,276
c. Total OPEB Liability at 3.93% (a. + b.)	\$50,022,034
2. Service Cost	\$2,002,998
3. Expected Benefit Payments	
a. Current retirees	(\$1,132,304)
b. Future retirees	(109,172)
c. Total (a. + b.)	(\$1,241,476)
4. Interest [3.93% x (1.c. + 2. + .5 x 3.c)]	\$2,020,189
5. Changes of benefit terms	\$0
6. Differences between expected and actual experience	(\$7,382,205)
7. Changes of assumptions or other inputs	\$9,827,250
8. Total OPEB Liability, end of year (1.c. + 2. + 3.c. + 4. + 5. + 6. + 7.)	
a. Actives	\$28,925,833
b. Retirees, Covered Spouses and Survivors	26,322,957
c. Total OPEB Liability at 3.57% (a. + b.)	\$55,248,790

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## SECTION 1 - PRINCIPAL VALUATION RESULTS

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

Future contributions for fiscal years 2020 through 2050 are assumed to be made according to the funding schedule provided by the Town.

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, 2019
<b>Discount Rate</b>	<b>3.93%</b>
1. Normal Cost	\$2,002,998
2. Unfunded Actuarial Accrued Liability	
a. Actuarial Accrued Liability	\$50,022,034
b. Actuarial Value of Plan Assets	\$3,944,995
c. Unfunded Actuarial Accrued Liability	\$46,077,039
3. Amortization of Unfunded Actuarial Accrued Liability	
a. Unfunded Actuarial Accrued Liability	\$46,077,039
b. Amortization Period in years	30
c. Payroll Growth Rate	0.0%
d. Amortization Factor	18.13
e. Amortization Amount (3.a. / 3.d.)	\$2,541,480
4. Interest on 1. and 3.e.	\$178,598
5. Actuarially Determined Employer Contribution (1. + 3.e. + 4.)	\$4,723,076
6. Actual Employer Contribution to OPEB Trust	\$50,000
7. Expected Benefit Payments	\$1,241,476
8. Total Contribution (6. + 7.)	\$1,291,476

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## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.1 - Plan Description

*Plan administration:*

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

*Plan membership:*

At June 30, 2019, 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	339
	<u>523</u>

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

*Benefits provided:*

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

*Contributions:*

Future contributions for fiscal years 2020 through 2050 are assumed to be made according to the funding schedule provided by the Town.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

The components of the net OPEB liability at June 30, 2019, were as follows:

Total OPEB liability	\$ 55,248,790
Fiduciary net position	(4,240,910)
Discount rate	<u>\$ 51,007,880</u>

Fiduciary net position as a percentage of the total OPEB liability	7.68%
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*Actuarial assumptions:*

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

Inflation	2.6 percent
Discount rate	3.57%, net of investment expenses, including inflation
Healthcare cost trend rate	8 percent for 2018, decreasing 0.5 percent per year to 5.5 percent, then grading down to an ultimate trend rate of 3.9 percent, utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate medical inflation rate is reached in 2075.
Pre-Retirement Mortality - General and Public Safety employees:	RP-2000 Employees Mortality Table, base year 2009, projected with generational mortality improvement using scale BB.
Post-Retirement Mortality - General and Public Safety employees:	RP-2000 Healthy Annuitant Mortality Table, base year 2009, projected with generational mortality improvement using scale BB.
Pre-Retirement Mortality - Teachers:	RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.
Post-Retirement Mortality - Teachers:	RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.

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## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

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 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, 2019 are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation<sup>1</sup></u>	<u>Long-Term Expected Real Rates of Return<sup>1</sup></u>
Domestic Equities	34%	5.92%
Domestic Bonds	20%	3.69%
Alternatives	20%	5.60%
International Equities	22%	2.73%
International Bonds	4%	3.80%
Cash and Equivalents	0%	0.00%
Total	100%	

<sup>1</sup> provided by the Trust's investment consultant, Bartholomew & Company.

#### *Discount rate:*

The discount rate used to measure the total OPEB liability was 3.57%. 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 7 periods of projected future benefit payments and, the 3.5% 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 3.57 percent, as well as what the net OPEB liability would be if it were calculated using a discount rate 1-percentage point lower (2.57 percent) or 1-percentage point higher (4.57 percent) than the current rate:

	<b>1% Decrease (2.57%)</b>	<b>Discount Rate (3.57%)</b>	<b>1% Increase (4.57%)</b>
Net OPEB Liability	\$ 61,960,557	\$ 51,007,880	\$ 42,482,452

*Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates:*

The following presents the net OPEB liability calculated using the current healthcare cost trend rates as well as what the net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage point lower (7% year 1 decreasing to 2.9%) or 1-percentage point higher (9% year 1 decreasing to 4.9%) than the current healthcare cost trend rates:

	<b>1% Decrease 7% Year 1 Decreasing to 2.9%</b>	<b>Healthcare Cost Trend Rates 8% Year 1 Decreasing to 3.9%</b>	<b>1% Increase 9% Year 1 Decreasing to 4.9%</b>
Net OPEB Liability	\$ 40,762,543	\$ 51,007,880	\$ 65,385,044

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

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

Fiscal Year Ended June 30	2019	2018	2017
<b>Total OPEB Liability</b>			
Service cost	\$ 2,002,998	\$ 2,102,507	\$ 2,506,859
Interest	2,020,189	1,865,002	1,615,467
Changes of benefit terms	-	(20,706)	-
Differences between expected and actual experience	(7,382,205)	-	-
Changes of assumptions	9,827,250	(2,545,072)	(6,602,086)
Benefit payments	(1,241,476)	(1,309,320)	(1,196,195)
<b>Net change in total OPEB liability</b>	<b>\$ 5,226,756</b>	<b>\$ 92,411</b>	<b>\$ (3,675,955)</b>
<b>Total OPEB liability—beginning</b>	<b>\$ 50,022,034</b>	<b>\$ 49,929,623</b>	<b>\$ 53,605,578</b>
<b>Total OPEB liability—ending (a)</b>	<b>\$ 55,248,790</b>	<b>\$ 50,022,034</b>	<b>\$ 49,929,623</b>
<b>Plan fiduciary net position</b>			
Contributions—employer	\$ 1,291,476	\$ 1,374,320	\$ 1,248,695
Net investment income	245,915	181,990	194,711
Benefit payments	(1,241,476)	(1,309,320)	(1,196,195)
Administrative expenses	-	-	-
Other	-	-	-
<b>Net change in plan fiduciary net position</b>	<b>\$ 295,915</b>	<b>\$ 246,990</b>	<b>\$ 247,211</b>
<b>Plan fiduciary net position—beginning</b>	<b>\$ 3,944,995</b>	<b>\$ 3,698,005</b>	<b>\$ 3,450,794</b>
<b>Plan fiduciary net position—ending (b)</b>	<b>\$ 4,240,910</b>	<b>\$ 3,944,995</b>	<b>\$ 3,698,005</b>
<b>Net OPEB liability—ending (a) – (b)</b>	<b>\$ 51,007,880</b>	<b>\$ 46,077,039</b>	<b>\$ 46,231,618</b>
Plan fiduciary net position as a percentage of the total OPEB liability	7.68%	7.89%	7.41%
Covered payroll	\$ 20,730,793	\$ 22,414,238	\$ 22,036,578
Net OPEB liability as a percentage of covered payroll	246.05%	205.57%	209.79%
Discount rate:	3.57%	3.93%	3.63%

Changes of benefit terms:  
None.

Changes of assumptions:

The discount rate changed from 3.93% as of June 30, 2018 to 3.57% as of June 30, 2019. Additionally, the health cost trend rates, inflation assumption, and the teacher mortality table and improvement scale have been updated since the prior measurement. The loss due to assumption changes is primarily attributable to the change in health cost trend rates.

Town of Oxford, Massachusetts Postemployment Benefits Other Than Pensions  
Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2019

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## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.2 - Investment Returns

Fiscal Year Ended June 30	<u>2019</u>	<u>2018</u>	<u>2017</u>
Annual money-weighted rate of return, net of investment expenses	6.19%	4.91%	5.63%

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.



## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.2 - Investment Returns

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

	Plan Investments/ Net External Cash Flows (a)	Periods Invested (b)	Period Weight (c)=(b)÷12	(d)=(a) x (1+r <sub>mw</sub> ) <sup>(c)</sup>
Beginning value - July 1, 2018	\$ 3,944,995	12	1.00	\$ 4,189,127
Monthly net external cash flows:				
July	-	11	0.92	-
August	-	10	0.83	-
September	-	9	0.75	-
October	-	8	0.67	-
November	50,000	7	0.58	51,782
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, 2019				\$ 4,240,910
Money-weighted rate of return:				6.19%

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.3 - Schedule of Employer Contributions

Fiscal Year Ended June 30	<u>2019</u>	<u>2018</u>	<u>2017</u>
Actuarially determined contribution	\$ 4,723,076	\$ 4,734,018	\$ 4,269,222
Contributions in relation to the actuarially determined contribution	<u>1,291,476</u>	<u>1,374,320</u>	<u>1,248,695</u>
Contribution deficiency (excess)	<u>\$ 3,431,600</u>	<u>\$ 3,359,698</u>	<u>\$ 3,020,527</u>
Covered payroll	\$ 20,730,793	\$ 22,414,238	\$ 22,036,578
Contributions as a percentage of covered payroll	6.23%	6.13%	5.67%
Discount rate	3.93%	3.63%	4.00%
Inflation	2.60%	2.60%	2.60%

#### 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 used in calculations of actuarially determined contributions:*

Actuarial cost method	Entry Age Normal
Amortization method	Level dollar amount over 30 years on an open amortization period
Amortization period	30 years
Asset valuation method	Market value
Healthcare cost trend rates	8 percent for 2018, decreasing 0.5 percent per year to 5.5 percent, then grading down to an ultimate trend rate of 3.9 percent, utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate medical inflation rate is reached in 2075.

## SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

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

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

Year	Experience Losses (a)	Experience Gains (b)	Amounts Recognized in OPEB Expense through June 30, 2019 (c)	Balances at June 30, 2019	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2018	\$ -	\$ -	\$ -	\$ -	\$ -
2019	\$ -	\$ 7,382,205	\$ (1,035,372)	\$ -	\$ 6,346,833
Total				<u>\$ -</u>	<u>\$ 6,346,833</u>

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

Year	Increases in the Total OPEB Liability (a)	Decreases in the Total OPEB Liability (b)	Amounts Recognized in OPEB Expense through June 30, 2019 (c)	Balances at June 30, 2019	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2018	\$ -	\$ 2,545,072	\$ (751,868)	\$ -	\$ 1,793,204
2019	\$ 9,827,250	\$ -	\$ 1,378,296	\$ 8,448,954	\$ -
Total				<u>\$ 8,448,954</u>	<u>\$ 1,793,204</u>

## SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

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

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

Year	Investment Earnings Less Than Projected (a)	Investment Earnings Greater Than Projected (b)	Amounts Recognized in OPEB Expense through June 30, 2019 (c)	Balances at June 30, 2019	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2018	\$ 97,798	\$ -	\$ 39,120	\$ 58,678	\$ -
2019	\$ 52,114	\$ -	\$ 10,423	\$ 41,691	\$ -
Total				<u>\$ 100,369</u>	<u>\$ -</u>
Net				\$ 100,369	\$ -

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

Year ended June 30		
2020	\$	(3,027)
2021	\$	(3,028)
2022	\$	(3,028)
2023	\$	(22,588)
2024	\$	53,456
Thereafter		387,501

## 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, 2019 is presented below:

Fiscal Year Ended June 30		2019
Measurement date		6/30/2019
1. Service cost		\$ 2,002,998
2. Interest on the total OPEB liability		
a. Total OPEB liability, beginning of year	50,022,034	
b. Service cost, beginning of year	2,002,998	
c. Benefit payments	<u>(1,241,476)</u>	
d. Interest on total OPEB liability = 3.93% times (a. + b. + .5 times c.)		2,020,189
3. Differences between expected and actual experience		(1,035,372)
4. Changes of benefit terms		-
5. Changes of assumptions		1,002,362
6. Projected earnings on OPEB plan investments		
a. Plan fiduciary net position, beginning of year	3,944,995	
b. Contributions - Employer	1,291,476	
c. Benefit payments	<u>(1,241,476)</u>	
d. Administrative expenses and other	<u>-</u>	
e. Total projected earnings		(298,029)
7. Differences between projected and actual earnings on OPEB plan investments		29,983
8. OPEB plan administrative expenses		-
9. Other changes in fiduciary net position		-
10. Total OPEB Expense		<u><u>\$ 3,722,131</u></u>

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## SECTION 5 - SUMMARY OF PLAN PROVISIONS

**Eligibility for Postemployment Benefits:** Employees of the Town and their dependents are eligible for postemployment medical 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:

<u>Non-Medicare Plans - July 1, 2019</u>	<u>Individual</u>	<u>Family</u>
Fallon Direct	\$611.77	\$1,590.55
Fallon Select	\$679.75	\$1,767.25
Fallon PPO	\$1,143.56	\$2,973.27
Tufts HMO	\$1,701.26	\$4,392.48

<u>Medicare Plans - January 1, 2019</u>	
Medex2	\$330.06
Managed Blue	\$310.27
Fallon Senior Care	\$399.00
Tufts Medicare Preferred	\$310.00
Tufts Medicare Complement	\$599.00

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## SECTION 5 - SUMMARY OF PLAN PROVISIONS

<b>Participant Contributions:</b>	Retired employees contribute 50% of the total medical premium.
<b>Continuation of Coverage to Spouse After Death of Retiree:</b>	Surviving spouse may continue coverage for lifetime by paying the required medical premium.
<b>Dental Coverage:</b>	Dental coverage is not offered to retirees.
<b>Life Insurance Coverage:</b>	Retirees are eligible for a \$1,000 life insurance benefit. The total monthly cost is \$.60. Retirees contribute \$.30 towards the monthly premiums.
<b>PPACA Excise Tax:</b>	The Patient Protection and Affordable Care Act (PPACA) applies a 40% excise tax, commonly referred to as the "Cadillac Tax", to the cost of plan benefits in excess of statutory thresholds beginning in 2022. The 2018 thresholds are assumed to be \$10,200 for individual and \$27,500 for family coverage, increasing by chained CPI plus one percentage point in 2019 and by chained CPI thereafter. The annual limits are increased by \$1,650 for individual and \$3,450 for family coverage for retirees not eligible for Medicare benefits.

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## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

<b>Valuation Date:</b>	July 1, 2018
<b>Disclosure Date:</b>	June 30, 2019
<b>GASB 75 Reporting Date:</b>	June 30, 2019
<b>Long-Term Expected Rate of Return:</b>	<p>7.5%, compounded annually, net of fees.</p> <p>A long-term assumption based on capital market expectations by asset class, historical returns and professional judgment. A building block approach was used that considered the target asset allocation, expected returns by asset class and risk analysis to determine a long-term expected average annual rate of return.</p>
<b>Municipal Bond Rate:</b>	3.5%, based on the Bond Buyer 20-Bond GO Index published on June 27, 2019.
<b>Discount Rate (GASB):</b>	<p>3.57%, compounded annually, for the measurement as of June 30, 2019.</p> <p>3.93%, compounded annually, for the measurement as of June 30, 2018.</p> <p>The single rate that reflects the long-term expected rate of return on OPEB plan investments to the extent that the OPEB plan's assets, which are expected to be invested using a strategy to achieve that return, are sufficient to pay benefits, and a tax-exempt, high-quality municipal bond rate to the extent that the conditions for use of the long-term expected rate of return are not met.</p>
<b>Discount Rate (ADEC):</b>	3.93%, compounded annually, for development of the Actuarially Determined Contribution (ADEC) as of June 30, 2019.
<b>Amortization Method:</b>	Level dollar amount over 30 years on an open amortization period for partial pre-funding.



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## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Medical Trend Rates:

Year	Trend
1	8.00%
2	7.50%
3	7.00%
4	6.50%
5	6.00%
6	5.50%
Ultimate	3.90%

Trend rates after year 6 grade down to the ultimate rate utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate trend rate is reached in 2075.

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

**Dental Trend Rates:** Not applicable (no dental coverage).

**Inflation:** 2.6% per year, based on the 2019 Social Security Trustees Report.

**Chained Consumer Price Index:** 2.35% per year, based on assumed CPI of 2.6% and historical data trends of chained CPI approximately 0.25% lower than standard CPI.

**Payroll Growth:** 3.5% per year.

**Participation Rates:** Medical - 75% of eligible retired employees will elect to participate.  
Dental - Not offered to retired employees.  
Life - 75% 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.

65% of employees are assumed to retire with a covered spouse.

For current retirees, the actual census information is used.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

**Medical Per Capita Costs:** The following annual per capita costs are for the fiscal year beginning July 1, 2018 and are applicable to retirees, survivors and spouses. Annual costs for current and future retirees are based on the blended curve 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.

<u>Age</u>	<u>Medicare-Eligible</u>		<u>Medicare-Ineligible</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Under 20	\$3,489	\$4,097	\$3,489	\$4,097
20-24	2,750	4,362	2,750	4,362
25-29	2,861	6,435	2,861	6,435
30-34	3,594	8,131	3,594	8,131
35-39	4,508	8,375	4,508	8,375
40-44	5,618	8,577	5,618	8,577
45-49	7,091	9,415	7,091	9,415
50-54	9,345	11,076	9,345	11,076
55-59	12,143	12,806	12,143	12,806
60-64	15,584	15,242	15,584	15,242
65-69	3,297	3,211	19,443	18,271
70-74	3,951	3,788	23,296	21,544
75-79	4,666	4,394	27,508	24,996
80-84	5,363	5,040	31,619	28,668
85-89	5,974	5,634	35,223	32,047
90-94	6,503	6,013	38,344	34,201
95+	6,912	5,815	40,755	33,075

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

<u>Plan</u>	<u>Contribution</u>
Non-Medicare	\$ 5,396
Medicare	1,974

**PPACA Excise Tax:** For purposes of estimating the Patient Protection and Affordable Care Act (PPACA) excise tax, per capita plan costs are developed for individual and family coverage for both Medicare and non-Medicare members. These plan costs are compared to the thresholds stipulated in the PPACA. Beginning in 2022, a 40% excise tax is applied on the excess of the plan costs over the thresholds. The thresholds increase annually by chained CPI.

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## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

<b>Actuarial Cost Method:</b>	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.
<b>Employee Data:</b>	Employee and retiree data were submitted by the Town. We made reasonable adjustments for missing or invalid data.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

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

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

**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.

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## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Retirement Rates:

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

<u>Age</u>	<u>General Employees</u>		<u>Public Safety</u>
	Male	Female	All
45	0.00%	0.00%	1.00%
50	1.00%	1.50%	2.00%
55	2.00%	5.50%	15.00%
60	12.00%	5.00%	20.00%
62	30.00%	15.00%	25.00%
65	40.00%	15.00%	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 RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.

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

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

	<u>Service</u>					
	0		5		10+	
<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
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:

<u>Age</u>	<u>Rate</u>
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:

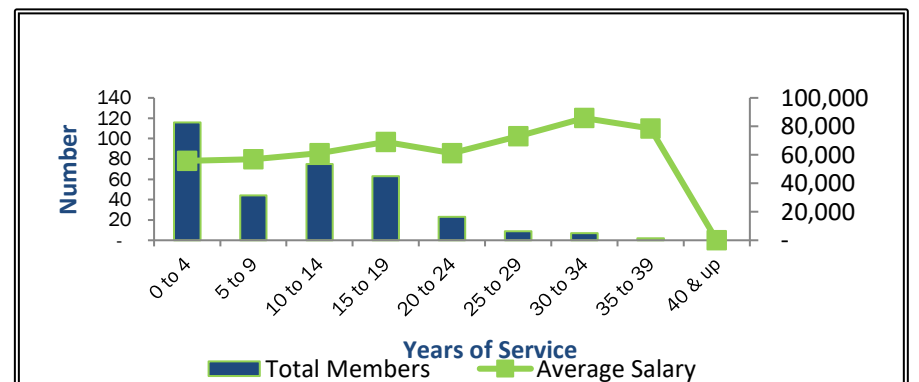
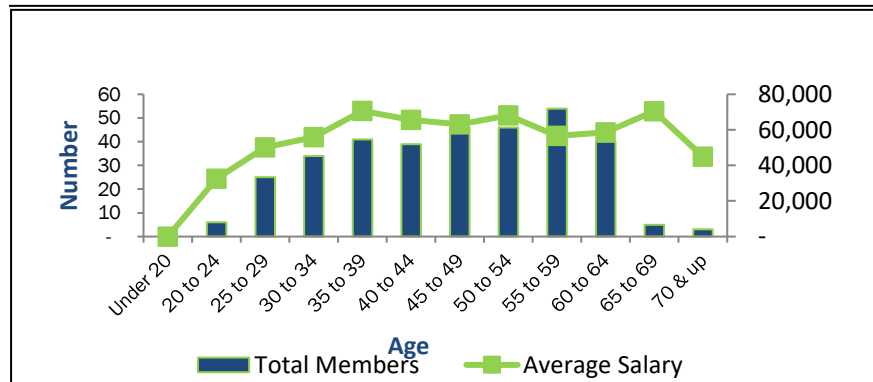
Retirement rates for Teachers are as follows:

<u>Age</u>	<u>Years of Service</u>					
	<u>Less than 20</u>		<u>20-29</u>		<u>30+</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
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

TABLE 7.1 - ACTIVE MEMBERS BY AGE and YEARS OF SERVICE AS OF JULY 1, 2018

Age	Years of Service										Total	Total Salary	Average Salary
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up				
Under 20	-	-	-	-	-	-	-	-	-	-	-	-	-
20 to 24	5	1	-	-	-	-	-	-	-	6	194,627	32,438	
25 to 29	20	5	-	-	-	-	-	-	-	25	1,254,032	50,161	
30 to 34	19	11	3	1	-	-	-	-	-	34	1,901,516	55,927	
35 to 39	20	4	10	7	-	-	-	-	-	41	2,896,814	70,654	
40 to 44	10	6	9	13	1	-	-	-	-	39	2,559,743	65,634	
45 to 49	15	5	16	8	1	1	-	-	-	46	2,902,578	63,100	
50 to 54	11	4	12	13	2	4	-	-	-	46	3,134,246	68,136	
55 to 59	9	5	12	15	8	1	3	1	-	54	3,057,025	56,612	
60 to 64	6	2	10	6	9	3	3	1	-	40	2,342,856	58,571	
65 to 69	-	1	2	-	1	-	1	-	-	5	352,748	70,550	
70 & up	1	-	1	-	1	-	-	-	-	3	134,608	44,869	
Total	116	44	75	63	23	9	7	2	-	339	20,730,793	61,153	
Total Salary	6,460,449	2,508,452	4,594,974	4,344,976	1,405,426	658,732	600,728	157,056	-				
Average Salary	55,694	57,010	61,266	68,968	61,105	73,192	85,818	78,528	-				
Average Age:										46.9	Average Service:		10.8





## SECTION 7 - PLAN MEMBER INFORMATION

**TABLE 7.2 - RETIRED MEMBERS, COVERED SPOUSES and SURVIVORS AS OF JULY 1, 2018**

Age	Non-Medicare Plans				Medicare Plans					Total
	Fallon Direct	Fallon Select	Fallon PPO	Tufts HMO	Medex2	Managed Blue	Fallon Senior Care	Tufts Medicare Preferred	Tufts Medicare Complement	
Under 40	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	0	0	0	0
50 to 54	0	0	0	0	0	0	0	0	0	0
55 to 59	0	5	0	1	0	0	0	0	0	6
60 to 64	1	19	0	2	3	0	0	0	0	25
65 to 69	0	2	0	1	34	0	2	2	2	43
70 to 74	1	6	0	5	34	4	3	4	4	61
75 to 79	0	2	0	0	22	1	1	0	0	26
80 to 84	0	1	0	0	8	4	0	1	0	14
85 to 89	0	0	0	0	4	0	0	0	0	4
90+	0	0	0	1	2	2	0	0	0	5
Total	2	35	0	10	107	11	6	7	6	184
Covered Spouses	0	9	1	1	48	5	1	5	3	73
Average Age:					71.9					

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## 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.*

**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.

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## SECTION 8 - GLOSSARY OF TERMS

**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.

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

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## SECTION 8 - GLOSSARY OF TERMS

**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	Total
<b>Summary of Member Data Used in Valuation</b>			
Active Members	113	226	339
Average Age	46.2	47.3	46.9
Average Service	10.2	11.0	10.7
Retired Members and Survivors	59	125	184
Average Age	70.1	72.7	71.9
Covered Spouses	20	53	73
Expected Benefit Payments	413,782	827,694	1,241,476
OPEB Trust contributions	30,892	19,108	50,000
Total Employer Contributions	444,674	846,802	1,291,476
<b>Beginning Net OPEB Liability - June 30, 2018</b>			
Total OPEB Liability	11,132,606	38,889,428	50,022,034
Fiduciary Net Position	839,101	3,105,894	3,944,995
Net OPEB Liability	10,293,505	35,783,534	46,077,039
<b>Ending Net OPEB Liability - June 30, 2019</b>			
Total OPEB Liability	14,832,196	40,416,594	55,248,790
Fiduciary Net Position	902,042	3,338,868	4,240,910
Net OPEB Liability	13,930,154	37,077,726	51,007,880
<b>Total Deferred Outflows of Resources</b>			
Differences between Expected and Actual Experience	0	0	0
Changes in Assumptions	1,880,349	6,568,605	8,448,954
Differences between Expected and Actual Earnings on OPEB Plan Investments	21,349	79,020	100,369
<b>Total Deferred Outflows of Resources</b>	<b>1,901,697</b>	<b>6,647,626</b>	<b>8,549,323</b>
<b>Total Deferred Inflows of Resources</b>			
Differences between Expected and Actual Experience	1,412,513	4,934,320	6,346,833
Changes in Assumptions	399,085	1,394,119	1,793,204
Differences between Expected and Actual Earnings on OPEB Plan Investments	0	0	0
<b>Total Deferred Inflows of Resources</b>	<b>1,811,598</b>	<b>6,328,439</b>	<b>8,140,037</b>
<b>Total OPEB Expense</b>	<b>3,533,530</b>	<b>188,601</b>	<b>3,722,131</b>

## SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

Department	Town	School	Total
<b>Sensitivity of the Net OPEB Liability to Changes in the Discount Rate</b>			
Current Discount Rate: 3.57%	13,930,154	37,077,726	51,007,880
1% Decrease in the Discount Rate: 2.57%	16,921,309	45,039,248	61,960,557
1% Increase in the Discount Rate: 4.57%	11,601,876	30,880,576	42,482,452
<b>Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rates</b>			
Current Trend Rates	13,930,154	37,077,726	51,007,880
1% Decrease in Trend Rates	11,132,172	29,630,371	40,762,543
1% Increase in Trend Rates	17,856,530	47,528,514	65,385,044
<b>Deferred Outflows of Resources and Deferred Inflows of Resources recognized in OPEB Expense</b>			
2018	(666)	(2,361)	(3,027)
2019	(667)	(2,361)	(3,028)
2020	(667)	(2,361)	(3,028)
2021	(4,972)	(17,616)	(22,588)
2022	11,768	41,688	53,456
Thereafter	85,304	302,197	387,501
<b>Ending Total OPEB Liability - June 30, 2019</b>			
Total OPEB Liability, beginning of year	11,132,606	38,889,428	50,022,034
Service cost	814,545	1,188,453	2,002,998
Interest	461,392	1,558,797	2,020,189
Changes of benefit terms	0	0	0
Differences between expected and actual experience	570,415	(7,952,620)	(7,382,205)
Changes of assumptions	2,267,020	7,560,230	9,827,250
Benefit payments	(413,782)	(827,694)	(1,241,476)
Net change in total OPEB liability	3,699,590	1,527,166	5,226,756
Total OPEB Liability, end of year	14,832,196	40,416,594	55,248,790

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## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

Under GASB 74, 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, the long-term expected rate of return on OPEB plan investments is 7.5%; the municipal bond rate is 3.5%, based on the Bond Buyer 20-Bond GO Index published on June 27, 2019. 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 7 periods of projected future benefit payments and, the 3.5% 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 3.57%.

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

Year	Projected Payroll			Projected Contributions			
	Payroll for Current Plan Members (a)	Payroll for Future Plan Members (b)	Total Payroll (c) = (a) + (b)	Employer Contributions (Benefit Payments) (d)	Employer Contributions (OPEB Trust) (e)	Employer Contributions Related to Payroll of Future Employees (f) = (b) * 10.73%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2019	20,730,793	-	20,730,793	1,241,476	50,000	-	1,291,476
2020	19,473,809	1,982,562	21,456,371	1,323,440	50,000	212,722	1,160,718
2021	18,410,790	3,796,554	22,207,344	1,428,423	55,000	407,358	1,076,065
2022	17,499,291	5,485,310	22,984,601	1,568,621	60,000	588,555	1,040,066
2023	16,743,287	7,045,775	23,789,062	1,709,584	65,000	755,988	1,018,596
2024	15,912,550	8,709,129	24,621,679	1,832,955	70,000	934,461	968,494
2025	15,312,355	10,171,083	25,483,438	1,967,902	75,000	1,091,323	951,579
2026	14,698,370	11,676,988	26,375,358	2,087,935	80,000	1,252,902	915,033
2027	14,098,096	13,200,400	27,298,496	2,136,047	85,000	1,416,359	804,688
2028	13,483,399	14,770,544	28,253,943	2,280,328	90,000	1,584,830	785,498
2029	12,866,088	16,376,743	29,242,831	2,397,405	95,000	1,757,170	735,235
2030	12,175,208	18,091,122	30,266,330	2,567,464	100,000	1,941,117	726,347
2031	11,495,445	19,830,207	31,325,652	2,737,331	105,000	2,127,715	714,616
2032	10,896,391	21,525,659	32,422,050	2,949,585	110,000	2,309,631	749,954
2033	10,242,547	23,314,275	33,556,822	3,097,162	115,000	2,501,544	710,618
2034	9,639,454	25,091,857	34,731,311	3,276,971	120,000	2,692,273	704,698
2035	9,003,436	26,943,471	35,946,907	3,403,157	125,000	2,890,945	637,212
2036	8,311,442	28,893,607	37,205,049	3,549,485	130,000	3,100,188	579,297
2037	7,630,351	30,876,875	38,507,226	3,709,535	135,000	3,312,986	531,549
2038	6,957,196	32,897,783	39,854,979	3,798,979	140,000	3,529,822	409,157
2039	6,368,807	34,881,096	41,249,903	3,898,205	145,000	3,742,625	300,580
2040	5,853,204	36,840,446	42,693,650	4,026,089	150,000	3,952,857	223,232
2041	5,353,807	38,834,121	44,187,928	4,035,055	155,000	4,166,772	23,283
2042	4,901,576	40,832,929	45,734,505	4,048,255	160,000	4,381,237	-
2043	4,493,880	42,841,333	47,335,213	4,151,482	165,000	4,596,732	-
2044	4,075,175	44,916,770	48,991,945	4,158,010	170,000	4,819,420	-
2045	3,681,284	47,025,379	50,706,663	4,162,679	175,000	5,045,666	-
2046	3,326,094	49,155,302	52,481,396	4,134,108	180,000	5,274,200	-
2047	2,918,561	51,399,684	54,318,245	4,171,115	185,000	5,515,015	-
2048	2,621,411	53,597,973	56,219,384	4,210,855	190,000	5,750,884	-
2049	2,331,915	55,855,147	58,187,062	4,081,656	195,000	5,993,071	-
2050	2,039,722	58,183,887	60,223,609	4,085,379	200,000	6,242,937	-
2051	1,776,042	60,555,393	62,331,435	4,121,045	-	6,497,392	-
2052	1,496,349	63,016,686	64,513,035	4,122,991	-	6,761,480	-

Town of Oxford, Massachusetts Postemployment Benefits Other Than Pensions  
Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2019



## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

**Table 1: Projection of Contributions**

Year	Projected Payroll			Projected Contributions			
	Payroll for Current Plan Members (a)	Payroll for Future Plan Members (b)	Total Payroll (c) = (a) + (b)	Employer Contributions (Benefit Payments) (d)	Employer Contributions (OPEB Trust) (e)	Employer Contributions Related to Payroll of Future Employees (f) = (b) * 10.73%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2053	1,248,897	65,522,094	66,770,991	4,090,294	-	7,030,302	-
2054	1,040,649	68,067,327	69,107,976	4,178,791	-	7,303,397	-
2055	801,951	70,724,804	71,526,755	4,224,720	-	7,588,536	-
2056	618,478	73,411,713	74,030,191	4,217,058	-	7,876,832	-
2057	456,592	76,164,656	76,621,248	4,130,922	-	8,172,214	-
2058	308,907	78,994,085	79,302,992	4,085,621	-	8,475,802	-
2059	209,030	81,869,567	82,078,597	4,089,560	-	8,784,332	-
2060	138,665	84,812,683	84,951,348	3,997,502	-	9,100,118	-
2061	82,470	87,842,175	87,924,645	3,987,138	-	9,425,173	-
2062	49,684	90,952,324	91,002,008	4,019,336	-	9,758,881	-
2063	29,892	94,157,186	94,187,078	3,957,054	-	10,102,752	-
2064	13,341	97,470,285	97,483,626	3,989,826	-	10,458,237	-
2065	9,782	100,885,771	100,895,553	3,982,958	-	10,824,707	-
2066	2,099	104,424,798	104,426,897	3,962,213	-	11,204,433	-
2067	1,492	108,080,346	108,081,838	3,962,832	-	11,596,661	-
2068	-	111,864,702	111,864,702	3,943,111	-	12,002,710	-
2069	-	115,779,967	115,779,967	3,914,979	-	12,422,805	-
2070	-	119,832,266	119,832,266	3,863,647	-	12,857,603	-
2071	-	124,026,395	124,026,395	3,808,703	-	13,307,619	-
2072	-	128,367,319	128,367,319	3,731,643	-	13,773,386	-
2073	-	132,860,175	132,860,175	3,642,327	-	14,255,454	-
2074	-	137,510,281	137,510,281	3,523,762	-	14,754,395	-
2075	-	142,323,141	142,323,141	3,400,580	-	15,270,799	-
2076	-	147,304,451	147,304,451	3,275,023	-	15,805,277	-
2077	-	152,460,107	152,460,107	3,130,275	-	16,358,461	-
2078	-	157,796,211	157,796,211	2,985,113	-	16,931,008	-
2079	-	163,319,078	163,319,078	2,806,618	-	17,523,593	-
2080	-	169,035,246	169,035,246	2,641,567	-	18,136,919	-
2081	-	174,951,480	174,951,480	2,469,269	-	18,771,711	-
2082	-	181,074,782	181,074,782	2,288,604	-	19,428,721	-
2083	-	187,412,399	187,412,399	2,118,337	-	20,108,726	-
2084	-	193,971,833	193,971,833	1,934,299	-	20,812,531	-
2085	-	200,760,847	200,760,847	1,764,942	-	21,540,970	-
2086	-	207,787,477	207,787,477	1,593,938	-	22,294,904	-

Town of Oxford, Massachusetts Postemployment Benefits Other Than Pensions  
Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2019

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

Year	Projected Beginning Fiduciary Net Position (a)	Employer Contributions for Current Plan Members (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2019	3,944,995	1,291,476	1,241,476	-	245,915	4,240,910
2020	4,240,910	1,160,718	1,323,440	-	311,966	4,390,154
2021	4,390,154	1,076,065	1,428,423	-	316,048	4,353,844
2022	4,353,844	1,040,066	1,568,621	-	306,717	4,132,006
2023	4,132,006	1,018,596	1,709,584	-	283,988	3,725,006
2024	3,725,006	968,494	1,832,955	-	246,958	3,107,503
2025	3,107,503	951,579	1,967,902	-	194,951	2,286,131
2026	2,286,131	915,033	2,087,935	-	127,476	1,240,705
2027	1,240,705	804,688	2,136,047	-	43,127	-
2028	-	785,498	2,280,328	-	-	-
2029	-	735,235	2,397,405	-	-	-
2030	-	726,347	2,567,464	-	-	-
2031	-	714,616	2,737,331	-	-	-
2032	-	749,954	2,949,585	-	-	-
2033	-	710,618	3,097,162	-	-	-
2034	-	704,698	3,276,971	-	-	-
2035	-	637,212	3,403,157	-	-	-
2036	-	579,297	3,549,485	-	-	-
2037	-	531,549	3,709,535	-	-	-
2038	-	409,157	3,798,979	-	-	-
2039	-	300,580	3,898,205	-	-	-
2040	-	223,232	4,026,089	-	-	-
2041	-	23,283	4,035,055	-	-	-
2042	-	-	4,048,255	-	-	-
2043	-	-	4,151,482	-	-	-
2044	-	-	4,158,010	-	-	-
2045	-	-	4,162,679	-	-	-
2046	-	-	4,134,108	-	-	-
2047	-	-	4,171,115	-	-	-
2048	-	-	4,210,855	-	-	-
2049	-	-	4,081,656	-	-	-
2050	-	-	4,085,379	-	-	-
2051	-	-	4,121,045	-	-	-
2052	-	-	4,122,991	-	-	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

Year	Projected Beginning Fiduciary Net Position (a)	Employer Contributions for Current Plan Members (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) +(e)
2053	-	-	4,090,294	-	-	-
2054	-	-	4,178,791	-	-	-
2055	-	-	4,224,720	-	-	-
2056	-	-	4,217,058	-	-	-
2057	-	-	4,130,922	-	-	-
2058	-	-	4,085,621	-	-	-
2059	-	-	4,089,560	-	-	-
2060	-	-	3,997,502	-	-	-
2061	-	-	3,987,138	-	-	-
2062	-	-	4,019,336	-	-	-
2063	-	-	3,957,054	-	-	-
2064	-	-	3,989,826	-	-	-
2065	-	-	3,982,958	-	-	-
2066	-	-	3,962,213	-	-	-
2067	-	-	3,962,832	-	-	-
2068	-	-	3,943,111	-	-	-
2069	-	-	3,914,979	-	-	-
2070	-	-	3,863,647	-	-	-
2071	-	-	3,808,703	-	-	-
2072	-	-	3,731,643	-	-	-
2073	-	-	3,642,327	-	-	-
2074	-	-	3,523,762	-	-	-
2075	-	-	3,400,580	-	-	-
2076	-	-	3,275,023	-	-	-
2077	-	-	3,130,275	-	-	-
2078	-	-	2,985,113	-	-	-
2079	-	-	2,806,618	-	-	-
2080	-	-	2,641,567	-	-	-
2081	-	-	2,469,269	-	-	-
2082	-	-	2,288,604	-	-	-
2083	-	-	2,118,337	-	-	-
2084	-	-	1,934,299	-	-	-
2085	-	-	1,764,942	-	-	-
2086	-	-	1,593,938	-	-	-

## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

Year	Projected Beginning Fiduciary Net Position (a)	Employer Contributions for Current Plan Members (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) +(e)
2087	-	-	1,425,066	-	-	-
2088	-	-	1,266,340	-	-	-
2089	-	-	1,104,244	-	-	-
2090	-	-	955,526	-	-	-
2091	-	-	817,209	-	-	-
2092	-	-	692,194	-	-	-
2093	-	-	579,138	-	-	-
2094	-	-	477,988	-	-	-
2095	-	-	388,823	-	-	-
2096	-	-	311,551	-	-	-
2097	-	-	247,335	-	-	-
2098	-	-	193,386	-	-	-
2099	-	-	149,201	-	-	-
2100	-	-	113,304	-	-	-
2101	-	-	84,801	-	-	-
2102	-	-	62,374	-	-	-
2103	-	-	45,353	-	-	-
2104	-	-	32,437	-	-	-
2105	-	-	22,841	-	-	-
2106	-	-	15,881	-	-	-
2107	-	-	10,799	-	-	-
2108	-	-	7,242	-	-	-
2109	-	-	4,796	-	-	-
2110	-	-	3,138	-	-	-
2111	-	-	2,028	-	-	-
2112	-	-	1,289	-	-	-
2113	-	-	807	-	-	-
2114	-	-	499	-	-	-
2115	-	-	303	-	-	-
2116	-	-	173	-	-	-
2117	-	-	96	-	-	-
2118	-	-	59	-	-	-
2119	-	-	30	-	-	-
2120	-	-	18	-	-	-
2121	-	-	9	-	-	-

Town of Oxford, Massachusetts Postemployment Benefits Other Than Pensions  
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## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments			
		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)	Present Value of Benefit Payments Using the Single Discount Rate (g)
2020	4,240,910	1,323,440	1,323,440	-	1,276,439	-	1,300,446
2021	4,390,154	1,428,423	1,428,423	-	1,281,575	-	1,355,254
2022	4,353,844	1,568,621	1,568,621	-	1,309,172	-	1,437,003
2023	4,132,006	1,709,584	1,709,584	-	1,327,275	-	1,512,188
2024	3,725,006	1,832,955	1,832,955	-	1,323,774	-	1,565,464
2025	3,107,503	1,967,902	1,967,902	-	1,322,077	-	1,622,821
2026	2,286,131	2,087,935	2,087,935	-	1,304,854	-	1,662,493
2027	1,240,705	2,136,047	-	2,136,047	-	1,650,282	1,642,213
2028	-	2,280,328	-	2,280,328	-	1,702,176	1,692,746
2029	-	2,397,405	-	2,397,405	-	1,729,052	1,718,350
2030	-	2,567,464	-	2,567,464	-	1,789,084	1,776,849
2031	-	2,737,331	-	2,737,331	-	1,842,949	1,829,150
2032	-	2,949,585	-	2,949,585	-	1,918,698	1,903,087
2033	-	3,097,162	-	3,097,162	-	1,946,566	1,929,468
2034	-	3,276,971	-	3,276,971	-	1,989,929	1,971,161
2035	-	3,403,157	-	3,403,157	-	1,996,671	1,976,547
2036	-	3,549,485	-	3,549,485	-	2,012,100	1,990,519
2037	-	3,709,535	-	3,709,535	-	2,031,718	2,008,613
2038	-	3,798,979	-	3,798,979	-	2,010,344	1,986,185
2039	-	3,898,205	-	3,898,205	-	1,993,094	1,967,856
2040	-	4,026,089	-	4,026,089	-	1,988,869	1,962,401
2041	-	4,035,055	-	4,035,055	-	1,925,892	1,899,021
2042	-	4,048,255	-	4,048,255	-	1,866,852	1,839,602
2043	-	4,151,482	-	4,151,482	-	1,849,716	1,821,524
2044	-	4,158,010	-	4,158,010	-	1,789,975	1,761,543
2045	-	4,162,679	-	4,162,679	-	1,731,386	1,702,772
2046	-	4,134,108	-	4,134,108	-	1,661,355	1,632,831
2047	-	4,171,115	-	4,171,115	-	1,619,543	1,590,696
2048	-	4,210,855	-	4,210,855	-	1,579,684	1,550,534
2049	-	4,081,656	-	4,081,656	-	1,479,436	1,451,186
2050	-	4,085,379	-	4,085,379	-	1,430,710	1,402,474
2051	-	4,121,045	-	4,121,045	-	1,394,397	1,365,985
2052	-	4,122,991	-	4,122,991	-	1,347,879	1,319,552
2053	-	4,090,294	-	4,090,294	-	1,291,971	1,263,993

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## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments			
		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)	Present Value of Benefit Payments Using the Single Discount Rate (g)
2054	-	4,178,791	-	4,178,791	-	1,275,289	1,246,857
2055	-	4,224,720	-	4,224,720	-	1,245,706	1,217,138
2056	-	4,217,058	-	4,217,058	-	1,201,398	1,173,079
2057	-	4,130,922	-	4,130,922	-	1,137,061	1,109,533
2058	-	4,085,621	-	4,085,621	-	1,086,562	1,059,564
2059	-	4,089,560	-	4,089,560	-	1,050,831	1,024,051
2060	-	3,997,502	-	3,997,502	-	992,441	966,517
2061	-	3,987,138	-	3,987,138	-	956,394	930,803
2062	-	4,019,336	-	4,019,336	-	931,514	905,997
2063	-	3,957,054	-	3,957,054	-	886,067	861,232
2064	-	3,989,826	-	3,989,826	-	863,194	838,452
2065	-	3,982,958	-	3,982,958	-	832,568	808,175
2066	-	3,962,213	-	3,962,213	-	800,224	776,271
2067	-	3,962,832	-	3,962,832	-	773,284	749,648
2068	-	3,943,111	-	3,943,111	-	743,416	720,222
2069	-	3,914,979	-	3,914,979	-	713,152	690,451
2070	-	3,863,647	-	3,863,647	-	680,001	657,925
2071	-	3,808,703	-	3,808,703	-	647,663	626,227
2072	-	3,731,643	-	3,731,643	-	613,101	592,421
2073	-	3,642,327	-	3,642,327	-	578,190	558,323
2074	-	3,523,762	-	3,523,762	-	540,452	521,542
2075	-	3,400,580	-	3,400,580	-	503,922	485,972
2076	-	3,275,023	-	3,275,023	-	468,905	451,906
2077	-	3,130,275	-	3,130,275	-	433,024	417,054
2078	-	2,985,113	-	2,985,113	-	398,979	384,013
2079	-	2,806,618	-	2,806,618	-	362,437	348,614
2080	-	2,641,567	-	2,641,567	-	329,587	316,810
2081	-	2,469,269	-	2,469,269	-	297,671	285,944
2082	-	2,288,604	-	2,288,604	-	266,562	255,894
2083	-	2,118,337	-	2,118,337	-	238,387	228,697
2084	-	1,934,299	-	1,934,299	-	210,315	201,634
2085	-	1,764,942	-	1,764,942	-	185,412	177,642
2086	-	1,593,938	-	1,593,938	-	161,785	154,904
2087	-	1,425,066	-	1,425,066	-	139,753	133,722

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## APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments			
		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)	Present Value of Benefit Payments Using the Single Discount Rate (g)
2088	-	1,266,340	-	1,266,340	-	119,988	114,735
2089	-	1,104,244	-	1,104,244	-	101,091	96,602
2090	-	955,526	-	955,526	-	84,518	80,712
2091	-	817,209	-	817,209	-	69,839	66,651
2092	-	692,194	-	692,194	-	57,155	54,510
2093	-	579,138	-	579,138	-	46,203	44,036
2094	-	477,988	-	477,988	-	36,844	35,093
2095	-	388,823	-	388,823	-	28,957	27,563
2096	-	311,551	-	311,551	-	22,418	21,325
2097	-	247,335	-	247,335	-	17,195	16,346
2098	-	193,386	-	193,386	-	12,990	12,340
2099	-	149,201	-	149,201	-	9,683	9,193
2100	-	113,304	-	113,304	-	7,105	6,741
2101	-	84,801	-	84,801	-	5,138	4,871
2102	-	62,374	-	62,374	-	3,651	3,459
2103	-	45,353	-	45,353	-	2,565	2,429
2104	-	32,437	-	32,437	-	1,772	1,677
2105	-	22,841	-	22,841	-	1,206	1,140
2106	-	15,881	-	15,881	-	810	766
2107	-	10,799	-	10,799	-	532	503
2108	-	7,242	-	7,242	-	345	325
2109	-	4,796	-	4,796	-	221	208
2110	-	3,138	-	3,138	-	139	131
2111	-	2,028	-	2,028	-	87	82
2112	-	1,289	-	1,289	-	53	50
2113	-	807	-	807	-	32	30
2114	-	499	-	499	-	19	18
2115	-	303	-	303	-	11	11
2116	-	173	-	173	-	6	6
2117	-	96	-	96	-	3	3
2118	-	59	-	59	-	2	2
2119	-	30	-	30	-	1	1
2120	-	18	-	18	-	1	1
2121	-	9	-	9	-	-	-

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

Year	Differences between Expected and Actual Experience	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2018	\$ -	6.77	-	-	-	-	-	-	-	-	-	-
2019	\$ (7,382,205)	7.13	-	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(134,601)	-
Net Increase (Decrease) in OPEB Expense			-	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(1,035,372)	(134,601)	-

Year	Changes of Assumptions	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2018	\$ (2,545,072)	6.77	(375,934)	(375,934)	(375,934)	(375,934)	(375,934)	(375,934)	(289,468)	-	-	-
2019	\$ 9,827,250	7.13	-	1,378,296	1,378,296	1,378,296	1,378,296	1,378,296	1,378,296	1,378,296	179,178	-
Net Increase (Decrease) in OPEB Expense			(375,934)	1,002,362	1,002,362	1,002,362	1,002,362	1,002,362	1,088,828	1,378,296	179,178	-

Year	Differences between Projected and Actual Earnings on OPEB Plan Investments	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2018	\$ 97,798	5	19,560	19,560	19,560	19,559	19,559	-	-	-	-	-
2019	\$ 52,114	5	-	10,423	10,423	10,423	10,423	10,422	-	-	-	-
Net Increase (Decrease) in OPEB Expense			19,560	29,983	29,983	29,982	29,982	10,422	-	-	-	-

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