



## **TOWN OF PLYMOUTH, MASSACHUSETTS**

### **OTHER POSTEMPLOYMENT BENEFITS PROGRAM**

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

**Disclosures as of  
June 30, 2019**

KMS Actuaries, LLC  
52 Hunt Road  
Kingston, NH 03848

March, 2020



March 10, 2020

Ms. Lynne A. Barrett  
Director of Finance  
Town of Plymouth, Massachusetts  
11 Lincoln Street  
Plymouth, MA 02360

Dear Lynne:

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 Plymouth, 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 Plymouth, Massachusetts as well as health plan rates provided by the Town as of July 1, 2019. 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 3.5%, a long-term investment return rate of 6.25% and a municipal bond rate of 3.5%. The long-term investment return rate is developed using target allocations and expected long-term investment return rates by asset class as shown in Exhibit 2.2.

Ms. Lynne A. Barrett

March 10, 2020

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This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions other than those explicitly applicable to the postemployment benefit plans are consistent with those used by the Plymouth 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 Plymouth, 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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Linda L. Bournival, FSA, EA

Member, American Academy of Actuaries

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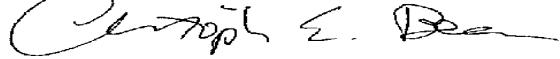


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## EXECUTIVE SUMMARY

This report presents the results of the actuarial valuation of the Town of Plymouth, 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 Plymouth, 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 Plymouth, 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 Plymouth, Massachusetts.

### Summary of Results

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

Measurement Date	June 30, 2019	June 30, 2018	Increase/ (Decrease)
Valuation Date	July 1, 2018	July 1, 2016	
<b>Membership Data</b>			
Active Plan Members	1,591	1,605	(0.9%)
Inactive Plan Members	1,276	1,180	8.1%
Total Plan Members	2,867	2,785	2.9%
Covered Payroll	\$108,493,908	\$104,133,239	4.2%
<b>Valuation Results (GASB 74 and GASB 75)</b>			
Discount rate	3.50%	3.87%	
Total OPEB Liability	\$773,370,737	\$600,666,881	28.8%
Fiduciary Net Position	\$5,163,522	\$3,822,056	35.1%
Net OPEB Liability	\$768,207,215	\$596,844,825	28.7%
Funded Ratio	0.7%	0.6%	16.7%
<b>Valuation Results (GASB 75)</b>			
OPEB Expense	\$61,319,638	\$39,440,103	55.5%
Deferred Outflows	\$123,714,234	\$0	
Deferred Inflows	\$20,399,696	\$25,881,502	

## 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 loss of approximately \$15,850,000. The loss is primarily attributable to an increase in the number of covered inactive lives from the prior valuation.

### Changes of Assumptions

The discount rate changed from 3.87% as of June 30, 2018 to 3.5% as of June 30, 2019. Additionally, the mortality tables, mortality improvement scales, and health cost trend rates were updated since the prior measurement. 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 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, 2019, is \$773,370,737. The Total OPEB Liability as of the prior measurement date, June 30, 2018, was \$600,666,881. 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 \$5,163,522. The Fiduciary Net Position as of the prior measurement date, June 30, 2018, was \$3,822,056. During the plan years ended 2019 and 2018, the actual rates of return were 7.88% and 6.50%, respectively. The expected long-term rate of return is 6.25%. The Fiduciary Net Position is shown in Section 1, Exhibit 1.1.

### Employer Future Period Contributions

The Town's funding policy is contribute an amount equal to at least 1% of covered payroll each year.

### 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 3.5% municipal bond rate was applied to all periods to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 3.5%.

### OPEB Expense

The OPEB Expense as of the current measurement date, June 30, 2019, is \$61,319,638. Benefit changes are recognized immediately and experience and assumption changes developed in this valuation are recognized over 6.75 years. Investment gains and losses are recognized over 5 years. The OPEB Expense for the prior measurement period was \$39,440,103. The development of the OPEB expense for the current measurement date is shown in Section 4, Exhibit 4.2.

## SECTION 1 - PRINCIPAL VALUATION RESULTS

### Exhibit 1.1 - OPEB Trust Assets

The Town has established an irrevocable trust pursuant to special legislation enacted under Chapter 113 of the Acts of 2012 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	\$2,128,089	\$1,632,694
International Equities	962,906	764,006
Fixed Income	2,072,527	1,425,356
Total Market Value of Assets	\$5,163,522	\$3,822,056
<b>Asset Activity</b>		
Market value, beginning of year	\$3,822,056	\$2,649,474
Employer Premiums	18,182,695	17,036,667
OPEB Trust Contributions	970,593	944,313
Benefit Payments	(18,182,695)	(17,036,667)
Administrative Expenses	-	-
Investment Return	370,873	228,269
Market value, end of year	\$5,163,522	\$3,822,056
<b>Money-Weighted Rate of Return</b>		
	7.88%	6.50%
<b>(Gain) / Loss on OPEB Plan Investments</b>		
Projected earnings	\$294,344	\$195,102
Actual earnings	370,873	228,269
(Gain) / Loss on OPEB plan investments	(\$76,529)	(\$33,167)

## 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	\$283,573,645
b. Retirees, Covered Spouses and Survivors	317,093,236
c. Total OPEB Liability at 3.87% (a. + b.)	\$600,666,881
2. Service Cost	\$21,914,725
3. Expected Benefit Payments	
a. Current retirees	(\$17,467,140)
b. Future retirees	(715,555)
c. Total (a. + b.)	(\$18,182,695)
4. Interest [3.87% x (1.c. + 2. + .5 x 3.c)]	\$23,742,073
5. Changes of benefit terms	\$0
6. Differences between expected and actual experience	\$15,849,776
7. Changes of assumptions or other inputs	\$129,379,977
8. Total OPEB Liability, end of year (1.c. + 2. + 3.c. + 4. + 5. + 6. + 7.)	
a. Actives	\$349,222,730
b. Retirees, Covered Spouses and Survivors	424,148,007
c. Total OPEB Liability at 3.5% (a. + b.)	\$773,370,737

## SECTION 1 - PRINCIPAL VALUATION RESULTS

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

The Town's funding policy is contribute an amount equal to at least 1% of covered payroll each year.

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

Fiscal Year Ending	June 30, 2019
<b>Discount Rate</b>	<b>3.87%</b>
1. Normal Cost	\$21,914,725
2. Unfunded Actuarial Accrued Liability	
a. Actuarial Accrued Liability	\$600,666,881
b. Actuarial Value of Plan Assets	\$3,822,056
c. Unfunded Actuarial Accrued Liability	\$596,844,825
3. Amortization of Unfunded Actuarial Accrued Liability	
a. Unfunded Actuarial Accrued Liability	\$596,844,825
b. Amortization Period in years	30
c. Payroll Growth Rate	3.5%
d. Amortization Factor	28.50
e. Amortization Amount (3.a. / 3.d.)	\$20,941,924
4. Interest on 1. and 3.e.	\$1,658,552
5. Actuarially Determined Employer Contribution (1. + 3.e. + 4.)	\$44,515,201
6. Actual Employer Contribution to OPEB Trust	\$970,593
7. Expected Benefit Payments	\$18,182,695
8. Total Contribution (6. + 7.)	\$19,153,288

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## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.1 - Plan Description

*Plan administration:*

The Town of Plymouth, 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>	1,276
Inactive plan members entitled to but not yet receiving benefit payments	0
Active plan members	1,591
	<hr/> <hr/> <hr/> <hr/>
	2,867

<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:*

The Town's funding policy is contribute an amount equal to at least 1% of covered payroll each year.

## 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	\$ 773,370,737
Fiduciary net position	(5,163,522)
Net OPEB liability	<u>\$ 768,207,215</u>

Fiduciary net position as a percentage of the total OPEB liability 0.67%

#### *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	3.5%, 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-2014 Blue Collar Employees Table projected generationally with Scale MP-2018.
Post-Retirement Mortality - General and Public Safety employees:	RP-2014 Blue Collar Healthy Annuitant Table projected generationally with Scale MP-2018.
Pre-Retirement Mortality - Teachers:	RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.
Post-Retirement Mortality - Teachers:	RP-2014 White Collar Mortality Table, base year 2014, projected with generational mortality improvement using scale MP-2016.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

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:

Asset Class	Target Allocation <sup>1</sup>	Long-Term Expected Real Rates of Return <sup>1</sup>
Domestic Equities	40%	4.90%
International Equities	20%	5.40%
Fixed Income	40%	1.75%
Total	100%	

<sup>1</sup> Target asset allocation provided by Fiduciary Investment Advisors in the investment policy statement and long-term expected real rates of return are based on those provided in the Horizon Actuarial Services, LLC "Survey of Capital Market Expectations, 2019 Edition."

#### *Discount rate:*

The discount rate used to measure the total OPEB liability was 3.5%. 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 3.5% municipal bond rate was applied to all periods to determine the total OPEB liability.

## SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

### Exhibit 2.2 - Net OPEB Liability

*Sensitivity of the net OPEB liability to changes in the discount rate:*

The following presents the net OPEB liability calculated using the current discount rate of 3.5 percent, as well as what the net OPEB liability would be if it were calculated using a discount rate 1-percentage point lower (2.5 percent) or 1-percentage point higher (4.5 percent) than the current rate:

	1% Decrease (2.5%)	Discount Rate (3.5%)	1% Increase (4.5%)
Net OPEB Liability	\$ 929,129,511	\$ 768,207,215	\$ 644,336,643

*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:

	Healthcare Cost Trend		
	1% Decrease 7% Year 1 Decreasing to 2.9%	Rates 8% Year 1 Decreasing to 3.9%	1% Increase 9% Year 1 Decreasing to 4.9%
Net OPEB Liability	\$ 629,905,602	\$ 768,207,215	\$ 952,467,653

## 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	\$ 21,914,725	\$ 23,038,206	\$ 27,863,367
Interest	23,742,073	22,140,028	19,356,363
Changes of benefit terms	-	-	-
Differences between expected and actual experience	15,849,776	-	-
Changes of assumptions	129,379,977	(31,391,364)	(86,284,600)
Benefit payments	(18,182,695)	(17,036,667)	(16,651,413)
<b>Net change in total OPEB liability</b>	<b>\$ 172,703,856</b>	<b>\$ (3,249,797)</b>	<b>\$ (55,716,283)</b>
<b>Total OPEB liability—beginning</b>	<b>\$ 600,666,881</b>	<b>\$ 603,916,678</b>	<b>\$ 659,632,961</b>
<b>Total OPEB liability—ending (a)</b>	<b><u>\$ 773,370,737</u></b>	<b><u>\$ 600,666,881</u></b>	<b><u>\$ 603,916,678</u></b>
<b>Plan fiduciary net position</b>			
Contributions—employer	\$ 19,153,288	\$ 17,980,980	\$ 17,363,363
Net investment income	370,873	228,269	171,891
Benefit payments	(18,182,695)	(17,036,667)	(16,651,413)
Administrative expenses	-	-	-
Other	-	-	-
<b>Net change in plan fiduciary net position</b>	<b>\$ 1,341,466</b>	<b>\$ 1,172,582</b>	<b>\$ 883,841</b>
<b>Plan fiduciary net position—beginning</b>	<b>\$ 3,822,056</b>	<b>\$ 2,649,474</b>	<b>\$ 1,765,633</b>
<b>Plan fiduciary net position—ending (b)</b>	<b><u>\$ 5,163,522</u></b>	<b><u>\$ 3,822,056</u></b>	<b><u>\$ 2,649,474</u></b>
<b>Net OPEB liability—ending (a) – (b)</b>	<b><u>\$ 768,207,215</u></b>	<b><u>\$ 596,844,825</u></b>	<b><u>\$ 601,267,204</u></b>
Plan fiduciary net position as a percentage of the total OPEB liability	0.67%	0.64%	0.44%
Covered payroll	\$ 108,493,908	\$ 104,133,239	\$ 92,397,157
Net OPEB liability as a percentage of covered payroll	708.06%	573.15%	650.74%
<i>Discount rate:</i>	3.50%	3.87%	3.58%

*Changes of benefit terms:*

None.

*Changes of assumptions:*

The discount rate changed from 3.87% as of June 30, 2018 to 3.5% as of June 30, 2019. Additionally, the mortality tables, mortality improvement scales, and health cost trend rates were updated since the prior measurement.

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## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.2 - Investment Returns

Fiscal Year Ended June 30	2019	2018	2017
Annual money-weighted rate of return, net of investment expenses	7.88%	6.50%	7.11%

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	\$ 3,822,056	12	1.00	\$ 4,123,080
Monthly net external cash flows:				
July	970,593	11	0.92	1,040,443
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, 2019				\$ 5,163,522
			Money-weighted rate of return:	7.88%

## SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

### Exhibit 3.3 - Schedule of Employer Contributions

Fiscal Year Ended June 30	2019	2018	2017
Actuarially determined contribution	\$ 44,515,201	\$ 44,853,623	\$ 39,477,033
Contributions in relation to the actuarially determined contribution	<u>19,153,288</u>	<u>17,980,980</u>	<u>17,363,363</u>
Contribution deficiency (excess)	<u>\$ 25,361,913</u>	<u>\$ 26,872,643</u>	<u>\$ 22,113,670</u>
Covered payroll	\$ 108,493,908	\$104,133,239	\$ 92,397,157
Contributions as a percentage of covered payroll	17.65%	17.27%	18.79%
Discount rate	3.87%	3.58%	4.00%
Inflation	2.60%	2.25%	2.25%

#### 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	Increasing at 3.5% 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	Balances at June 30, 2019				
	Amounts Recognized in OPEB Expense			Deferred Outflows of Resources	Deferred Inflows of Resources
	Experience Losses	Experience Gains	through June 30, 2019		
Year	(a)	(b)	(c)	(a) - (c)	(b) - (c)
2018	\$ -	\$ -	\$ -	\$ -	\$ -
2019	\$ 15,849,776	\$ -	\$ 2,348,115	\$ 13,501,661	\$ -
Total				<u>\$ 13,501,661</u>	<u>\$ -</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	Balances at June 30, 2019				
	Decreases in the Total OPEB Liability			Amounts Recognized in OPEB Expense	Deferred Outflows of Resources
	Total OPEB Liability	Decreases in the Total OPEB Liability	through June 30, 2019		
Year	(a)	(b)	(c)	(a) - (c)	(b) - (c)
2018	\$ -	\$ 31,391,364	\$ (11,072,792)	\$ -	\$ 20,318,572
2019	\$ 129,379,977	\$ -	\$ 19,167,404	\$ 110,212,573	\$ -
Total				<u>\$ 110,212,573</u>	<u>\$ 20,318,572</u>

## SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

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

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

		Balances at June 30, 2019			
Year	Investment Earnings Less Than Projected	Investment Earnings Greater Than Projected	Amounts Recognized in OPEB Expense through June 30, 2019	Deferred Outflows of Resources	Deferred Inflows of Resources
	(a)	(b)	(c)	(a) - (c)	(b) - (c)
2018	\$ -	\$ 33,167	\$ (13,266)	\$ -	\$ 19,901
2019	\$ -	\$ 76,529	\$ (15,306)	\$ -	\$ 61,223
Total				\$ -	\$ 81,124
Net				\$ -	\$ 81,124

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	\$	15,957,184
2021	\$	15,957,183
2022	\$	15,957,183
2023	\$	17,790,830
2024	\$	21,515,519
Thereafter		16,136,639

## 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
<b>Measurement date</b>	<b>6/30/2019</b>
1. Service cost	\$ 21,914,725
2. Interest on the total OPEB liability	
a. Total OPEB liability, beginning of year	600,666,881
b. Service cost, beginning of year	21,914,725
c. Benefit payments	<u>(18,182,695)</u>
d. Interest on total OPEB liability = 3.87% times (a. + b. + .5 times c.)	23,742,073
3. Differences between expected and actual experience	2,348,115
4. Changes of benefit terms	-
5. Changes of assumptions	13,631,008
6. Projected earnings on OPEB plan investments	
a. Plan fiduciary net position, beginning of year	3,822,056
b. Contributions - Employer	19,153,288
c. Benefit payments	(18,182,695)
d. Administrative expenses and other	<u>-</u>
e. Total projected earnings	(294,344)
7. Differences between projected and actual earnings on OPEB plan investments	(21,939)
8. OPEB plan administrative expenses	-
9. Other changes in fiduciary net position	-
<b>10. Total OPEB Expense</b>	<b><u>\$ 61,319,638</u></b>

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

**Eligibility for Postemployment Benefits:** Employees of the Town and their dependents are eligible for postemployment medical, dental and life insurance based on the eligibility requirements under the Plymouth 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>
Blue Choice	\$880.02	\$2,085.15
Blue Care Elect	\$957.10	\$2,204.26

<u>Medicare Plans - July 1, 2019</u>	
Medex w/OBRA	\$525.74
Managed Blue	\$405.33

## SECTION 5 - SUMMARY OF PLAN PROVISIONS

<b>Participant Contributions:</b>	Retired employees contribute a percentage of the total medical and dental premium, depending on the retirees' date of retirement or hire date, as follows: Retired prior to July 1, 1994 - 1% Retired after July 1, 1994 and hired before July 1, 2003 - 10% Hired on or after July 1, 2003 and before July 1, 2016 - 20% Hired on or after July 1, 2016 and before June 30, 2018 - 22.5% Hired on or after July 1, 2018 - 25%
<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>Medicare Penalty Reimbursement:</b>	The Town reimburses the Medicare late-enrollment penalty, if applicable, based on information provided in the retiree data.
<b>Medicare Part B Reimbursement:</b>	The Town reimburses \$87.50 per month for retirees and spouses who were Medicare-eligible as of March 31, 2016 and retirees who become Medicare-eligible on or after April 1, 2016. Spouses who become Medicare-eligible on or after April 1, 2016 are not eligible for the reimbursement.
<b>Dental Coverage:</b>	Dental coverage is provided. The total monthly costs are \$36.58 and \$73.16 for individual and two-person plans, respectively. Retirees contribute the percentage of the monthly premiums shown under Participant Contributions.
<b>Life Insurance Coverage:</b>	Retirees are eligible for a \$2,000 life insurance benefit. The total monthly cost is \$1.38. Retired Town employees contribute 1% of the total life insurance premium rates and retired School employees contribute 10% of the total life insurance premium rates.
<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.

## 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>	6.25%, compounded annually, net of fees.  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>	3.5%, based on the Bond Buyer 20-Bond GO Index published on June 27, 2019.
<b>Discount Rate (GASB):</b>	3.5%, compounded annually, for the measurement as of June 30, 2019. 3.87%, compounded annually, for the measurement as of June 30, 2018.  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>	3.87%, compounded annually, for development of the Actuarially Determined Contribution (ADEC) as of June 30, 2019.
<b>Amortization Method:</b>	Increasing at 3.5% over 30 years on an open amortization period for partial pre-funding.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

### Medical Trend Rates:

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

Trend rates after year 6 grade down to the ultimate rate 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:** 2.6% 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 - 95% of eligible retired employees will elect to participate.  
Dental - 75% of eligible retirees will elect to participate.  
Life - 95% 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.

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

For current retirees, the actual census information is used.

**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	\$3,798	\$4,459	\$3,798	\$4,459
20-24	2,993	4,747	2,993	4,747
25-29	3,114	7,003	3,114	7,003
30-34	3,912	8,849	3,912	8,849
35-39	4,907	9,115	4,907	9,115
40-44	6,115	9,335	6,115	9,335
45-49	7,717	10,247	7,717	10,247
50-54	10,171	12,054	10,171	12,054
55-59	13,217	13,938	13,217	13,938
60-64	16,961	16,589	16,961	16,589
65-69	4,525	4,407	21,162	19,886
70-74	5,423	5,199	25,355	23,448
75-79	6,404	6,032	29,942	27,208
80-84	7,361	6,918	34,416	31,203
85-89	8,200	7,733	38,336	34,880
90-94	8,926	8,253	41,731	37,227
95+	9,488	7,981	44,359	35,996

**Retiree Contributions:**

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

<u>Plan</u>	<u>Contribution</u>					
	<u>1%</u>	<u>10%</u>	<u>20%</u>	<u>22.5%</u>	<u>25%</u>	
Non-Medicare	\$ 107	\$ 1,069	\$ 2,138	\$ 2,405	\$ 2,672	
Medicare	\$ 53	\$ 532	\$ 1,064	\$ 1,197	\$ 1,330	

## SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

**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.

**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 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-2014 Blue Collar Healthy Annuitant Table projected generationally with Scale MP-2018.

**Pre-Retirement Mortality:** Pre-retirement mortality rates for General and Public Safety employees are based on the RP-2014 Blue Collar Employees Table projected generationally with Scale MP-2018.

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

<b>General Employees</b>		<b>Public Safety</b>	
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:

<b>General Employees</b>		<b>Public Safety</b>	
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:

<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>Age</u>	0		5		10+	
	<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:

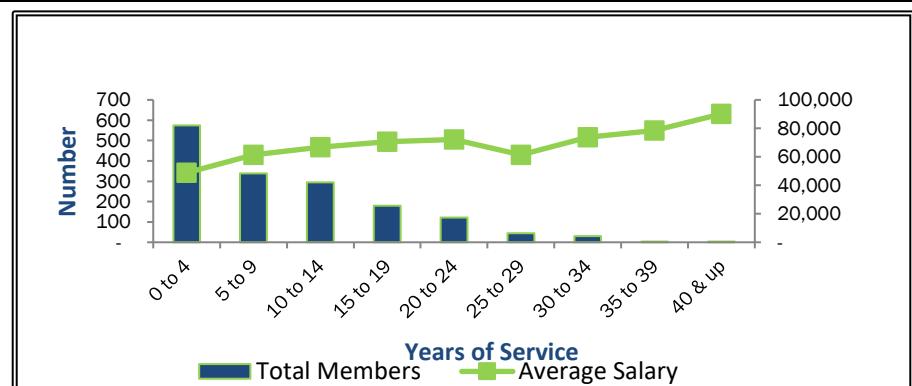
Retirement rates for Teachers are as follows:

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

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

Age	Years of Service											Total	Total Salary	Average Salary
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total				
Under 20	1	-	-	-	-	-	-	-	-	1	42,893	42,893		
20 to 24	57	1	-	-	-	-	-	-	-	58	2,316,859	39,946		
25 to 29	124	21	-	-	-	-	-	-	-	145	6,838,187	47,160		
30 to 34	105	73	14	1	-	-	-	-	-	193	11,182,562	57,941		
35 to 39	73	51	52	9	-	-	-	-	-	185	11,842,121	64,011		
40 to 44	60	52	52	33	5	-	-	-	-	202	13,183,293	65,264		
45 to 49	59	62	59	41	33	2	-	-	-	256	16,742,733	65,401		
50 to 54	40	46	46	38	29	18	9	-	-	226	14,161,523	62,662		
55 to 59	39	22	50	30	34	12	12	1	-	200	11,596,415	57,982		
60 to 64	11	10	15	23	19	7	8	1	2	96	6,266,681	65,278		
65 to 69	4	1	4	2	2	4	1	1	1	20	976,025	48,801		
70 & up	2	-	2	2	-	1	1	-	1	9	400,043	44,449		
Total	575	339	294	179	122	44	31	3	4	1,591	95,549,335	60,056		
Total Salary	28,049,196	20,845,540	19,626,872	12,630,495	8,810,475	2,701,479	2,289,102	235,727	360,449					
Average Salary	48,781	61,491	66,758	70,561	72,217	61,397	73,842	78,576	90,112					
											Average Age:	44.4	Average Service:	9.9



## SECTION 7 - PLAN MEMBER INFORMATION

### EXHIBIT 7.2 - RETIRED MEMBERS, COVERED SPOUSES and SURVIVORS AS OF JULY 1, 2018

Age	Non-Medicare Plans		Medicare Plans		Total
	Blue Choice	Blue Care Elect	Medex w/OBRA	Managed Blue	
Under 40	5	1	0	1	7
40 to 44	4	0	0	0	4
45 to 49	7	0	1	0	8
50 to 54	21	4	1	0	26
55 to 59	33	12	2	2	49
60 to 64	102	15	24	70	211
65 to 69	28	9	123	192	352
70 to 74	4	6	182	70	262
75 to 79	3	4	138	16	161
80 to 84	1	2	83	6	92
85 to 89	1	1	41	1	44
90+	0	0	22	0	22
Total	209	54	617	358	1,238
Covered Spouses	167	41	297	227	732
Average Age: 70.1					

In addition, there are 39 retirees, survivors and covered spouses that are not covered under any medical plan but are covered under either a life insurance policy and/or a dental plan which the Town contributes to and/or receive a reimbursement from the Town for a Medicare late-enrollment penalty.

## SECTION 8 - GLOSSARY OF TERMS

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

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

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

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

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

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

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

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

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

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

**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.

## 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	Sewer	Water	Solid Waste	Airport	Total
<b>Summary of Member Data Used in Valuation</b>							
Active Members	471	1,085	4	19	4	8	1,591
Average Age	43.5	44.6	48.2	48.9	53.9	55.0	44.4
Average Service	10.8	9.5	11.9	10.4	9.4	13.6	9.9
Retired Members and Survivors	415	821	6	25	5	4	1,276
Average Age	68.4	70.9	78.7	70.1	72.2	73.9	70.1
Covered Spouses	257	461	1	11	2	1	733
Expected Benefit Payments	6,202,453	11,479,189	67,785	320,908	58,056	54,304	18,182,695
OPEB Trust contributions	315,065	627,774	4,034	17,027	3,489	3,204	970,593
Total Employer Contributions	6,517,518	12,106,963	71,819	337,935	61,545	57,508	19,153,288
<b>Beginning Net OPEB Liability - June 30, 2018</b>							
Total OPEB Liability	207,116,321	379,266,305	1,436,167	9,055,898	1,700,253	2,091,937	600,666,881
Fiduciary Net Position	1,317,886	2,413,279	9,138	57,623	10,819	13,311	3,822,056
Net OPEB Liability	205,798,435	376,853,026	1,427,029	8,998,275	1,689,434	2,078,626	596,844,825
<b>Ending Net OPEB Liability - June 30, 2019</b>							
Total OPEB Liability	266,525,450	490,278,564	1,365,598	11,411,457	1,644,958	2,144,710	773,370,737
Fiduciary Net Position	1,684,938	3,371,308	9,911	69,881	11,979	15,505	5,163,522
Net OPEB Liability	264,840,512	486,907,256	1,355,687	11,341,576	1,632,979	2,129,205	768,207,215

## SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

Department	Town	School	Sewer	Water	Solid Waste	Airport	Total
<b>Total Deferred Outflows of Resources</b>							
Differences between Expected and Actual							
Experience	4,655,516	8,525,066	32,282	203,557	38,218	47,022	13,501,661
Changes in Assumptions	38,002,466	69,589,179	263,513	1,661,610	311,969	383,836	110,212,573
Differences between Expected and Actual							
Earnings on OPEB Plan Investments	0	0	0	0	0	0	0
<b>Total Deferred Outflows of Resources</b>	<b>42,657,982</b>	<b>78,114,246</b>	<b>295,795</b>	<b>1,865,166</b>	<b>350,187</b>	<b>430,858</b>	<b>123,714,234</b>
<b>Total Deferred Inflows of Resources</b>							
Differences between Expected and Actual							
Experience	0	0	0	0	0	0	0
Changes in Assumptions	7,006,059	12,829,323	48,581	306,331	57,514	70,763	20,318,572
Differences between Expected and Actual							
Earnings on OPEB Plan Investments	27,972	51,222	194	1,223	230	283	81,124
<b>Total Deferred Inflows of Resources</b>	<b>7,034,032</b>	<b>12,880,546</b>	<b>48,775</b>	<b>307,554</b>	<b>57,744</b>	<b>71,046</b>	<b>20,399,696</b>
<b>Total OPEB Expense (Income)</b>	<b>20,991,661</b>	<b>40,611,547</b>	<b>(310,245)</b>	<b>728,888</b>	<b>(361,032)</b>	<b>(341,181)</b>	<b>61,319,638</b>

## SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

Department	Town	School	Sewer	Water	Solid Waste	Airport	Total
<b>Sensitivity of the Net OPEB Liability to Changes in the Discount Rate</b>							
Current Discount Rate: 3.5%							
264,840,512	486,907,256	1,355,687	11,341,576	1,632,979	2,129,205	768,207,215	
1% Decrease in the Discount Rate: 2.5%	320,318,699	588,903,478	1,639,673	13,717,383	1,975,052	2,575,226	929,129,511
1% Increase in the Discount Rate: 4.5%	222,135,959	408,395,262	1,137,087	9,512,789	1,369,667	1,785,879	644,336,643
<b>Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rates</b>							
Current Trend Rates							
264,840,512	486,907,256	1,355,687	11,341,576	1,632,979	2,129,205	768,207,215	
1% Decrease in Trend Rates	217,160,837	399,248,539	1,111,620	9,299,733	1,338,991	1,745,881	629,905,602
1% Increase in Trend Rates	328,364,556	603,695,725	1,680,859	14,061,941	2,024,662	2,639,911	952,467,653
<b>Deferred Outflows of Resources and Deferred Inflows of Resources recognized in OPEB Expense</b>							
2020	5,502,207	10,075,504	38,153	240,577	45,169	55,574	15,957,184
2021	5,502,206	10,075,504	38,153	240,577	45,169	55,574	15,957,183
2022	5,502,206	10,075,504	38,153	240,577	45,169	55,574	15,957,183
2023	6,134,467	11,233,285	42,537	268,222	50,359	61,960	17,790,830
2024	7,418,779	13,585,086	51,443	324,377	60,902	74,932	21,515,519
Thereafter	5,564,085	10,188,813	38,582	243,283	45,677	56,199	16,136,639
<b>Ending Total OPEB Liability - June 30, 2019</b>							
Total OPEB Liability, beginning of year	207,116,321	379,266,305	1,436,167	9,055,898	1,700,253	2,091,937	600,666,881
Service cost	7,706,462	13,814,046	42,631	230,875	34,998	85,713	21,914,725
Interest	8,193,624	14,990,087	55,918	353,189	66,031	83,224	23,742,073
Changes of benefit terms	0	0	0	0	0	0	0
Differences between expected and actual	6,187,703	10,498,973	(285,258)	174,625	(324,804)	(401,463)	15,849,776
Changes of assumptions	43,523,793	83,188,342	183,925	1,917,778	226,536	339,603	129,379,977
Benefit payments	(6,202,453)	(11,479,189)	(67,785)	(320,908)	(58,056)	(54,304)	(18,182,695)
Net change in total OPEB liability	59,409,129	111,012,259	(70,569)	2,355,559	(55,295)	52,773	172,703,856
Total OPEB Liability, end of year	266,525,450	490,278,564	1,365,598	11,411,457	1,644,958	2,144,710	773,370,737

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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 6.25%; 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 3.5% municipal bond rate was applied to all periods to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 3.5%.

## 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		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2018	\$	-	-	-	-	-	-	-	-	-	-	-	-
2019	\$	15,849,776	6.75	-	2,348,115	2,348,115	2,348,115	2,348,115	2,348,115	2,348,115	1,761,086	-	-
Net Increase (Decrease) in OPEB Expense				-	2,348,115	2,348,115	2,348,115	2,348,115	2,348,115	2,348,115	1,761,086	-	-
Year	Changes of Assumptions		Recognition Period (Years)										
	2018	2019		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2018	\$	(31,391,364)	5.67	(5,536,396)	(5,536,396)	(5,536,396)	(5,536,396)	(5,536,396)	(3,709,384)	-	-	-	-
2019	\$	129,379,977	6.75	-	19,167,404	19,167,404	19,167,404	19,167,404	19,167,404	19,167,404	14,375,553	-	-
Net Increase (Decrease) in OPEB Expense				(5,536,396)	13,631,008	13,631,008	13,631,008	13,631,008	15,458,020	19,167,404	14,375,553	-	-
Year	Differences between Projected and Actual Earnings on OPEB Plan		Recognition Period (Years)										
	2018	2019		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2018	\$	(33,167)	5	(6,633)	(6,633)	(6,633)	(6,634)	(6,634)	-	-	-	-	-
2019	\$	(76,529)	5	-	(15,306)	(15,306)	(15,306)	(15,306)	(15,305)	-	-	-	-
Net Increase (Decrease) in OPEB Expense				(6,633)	(21,939)	(21,939)	(21,940)	(21,940)	(15,305)	-	-	-	-

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