



**TOWN OF CHARLTON,
MASSACHUSETTS**

OTHER POSTEMPLOYMENT BENEFITS PROGRAM

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

Disclosures as of
June 30, 2018

KMS Actuarial, LLC
814 Elm Street, Suite 204
Manchester, NH 03101

January, 2019



January 21, 2019

Ms. Donna Foglio
Finance Director
Town of Charlton
37 Main Street
Charlton, MA 01507

Dear Donna:

We are pleased to present the enclosed report of the July 1, 2016 actuarial valuation of the retiree health care benefits for the Town of Charlton, Massachusetts. The valuation was prepared in accordance with, and for the purpose of financial reporting and disclosures as of June 30, 2018, 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 Charlton, Massachusetts as well as health plan rates provided by the Town of Charlton as of July 1, 2017. 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 3.9%, a long-term investment return rate of 7.5% and a municipal bond rate of 3.87%. The long-term investment return rate is based on expected long-term investment return rates provided by the Trust's investment consultant, Bartholomew & Company.

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 Retirement System's 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 Charlton, 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.

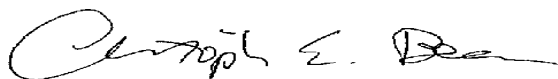
Respectfully submitted,



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EXECUTIVE SUMMARY

This report presents the results of the actuarial valuation of the Town of Charlton, Massachusetts's retiree health care benefits as of July 1, 2016. The valuation was prepared in accordance with, and for the purpose of financial reporting and disclosures as of June 30, 2018, 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 Charlton, 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 Charlton, 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 Charlton, Massachusetts.

Summary of Results

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

Measurement Date	<u>June 30, 2018</u>	<u>June 30, 2017</u>	<u>Increase/ (Decrease)</u>
Valuation Date	July 1, 2016	July 1, 2016	
Membership Data			
Active Plan Members	98	93	5.4%
Inactive Plan Members	43	42	2.4%
Total Plan Members	141	135	4.4%
 Covered Payroll	 \$5,810,726	 \$5,512,169	 5.4%
Valuation Results (GASB 74 and GASB 75)			
Discount rate	3.90%	3.60%	
Total OPEB Liability	\$11,888,236	\$11,822,964	0.6%
Fiduciary Net Position	\$724,569	\$559,068	29.6%
Net OPEB Liability	\$11,163,667	\$11,263,896	(0.9%)
Funded Ratio	6.1%	4.7%	29.8%
Valuation Results (GASB 75)			
OPEB Expense	\$894,400	N/A	
Deferred Outflows	\$11,800	N/A	
Deferred Inflows	\$590,330	N/A	
Valuation Results (GASB 45)			
Actuarial Accrued Liability	N/A	\$10,326,007	
Market Value of Assets	N/A	\$559,068	
Unfunded Actuarial Accrued Liability	N/A	\$9,766,939	
Funded Ratio	N/A	5.4%	
 Annual Required Contribution	 N/A	 \$1,082,402	
Net OPEB Obligation	N/A	\$4,639,202	

Town of Charlton, Massachusetts Postemployment Benefits Other Than Pensions
Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2018

EXECUTIVE SUMMARY

Experience Gain and Loss

In developing the Total OPEB Liability, various assumptions are made regarding future premium rates, mortality, retirement, disability and turnover rates. A comparison of the results of the current and prior measurements is made to determine how closely actual experience relates to expected. For the current measurement period, there is no experience gain or loss as the Total OPEB liability was developed from a roll forward of results of the most recent valuation.

Changes of Assumptions

The discount rate changed from 3.6% as of June 30, 2017 to 3.9% as of June 30, 2018. All other assumptions were the same as those used in the previous 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, 2018, is \$11,888,236. The Total OPEB Liability as of the prior measurement date, June 30, 2017, was \$11,822,964. 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, 2018, is \$724,569. The Fiduciary Net Position as of the prior measurement date, June 30, 2017, was \$559,068. The Fiduciary Net Position is shown in Section 1, Exhibit 1.1.

Employer Future Period Contributions

No formal funding policy has been adopted by the Town. Future contributions will be made by the Town as funds are available.

Discount Rate

As of the June 30, 2018 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 5 periods of projected future benefit payments and, the 3.87% municipal bond rate was applied to all periods thereafter to determine the total OPEB liability.

OPEB Expense

The OPEB Expense as of the current measurement date, June 30, 2018, is \$894,400. 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 of Charlton OPEB Trust has established an irrevocable trust pursuant to Section 20 of M.G.L. Chapter 32B for the purpose of accumulating assets to prefund the OPEB liabilities. Plan assets segregated and restricted in an OPEB trust must be dedicated to providing plan benefits to retirees and beneficiaries in accordance with the terms of the plan and must be legally protected from creditors of the employer. Further, employer contributions to the trust must be irrevocable. Asset information for the current and prior fiscal years was provided by the the Town and is presented below:

Fiscal Year Ended June 30	2018	2017
Trust Fund Composition at Fiscal Year-End		
Domestic Equity	\$206,932	\$194,921
Domestic Bond	139,075	120,234
International Equity	129,918	107,999
Alternative	111,941	105,004
International Bond	34,268	29,937
Cash and Equivalents	102,435	973
Total Market Value of Assets	\$724,569	\$559,068
Asset Activity		
Market value, beginning of year	\$559,068	\$517,302
Employer Premiums	282,778	256,817
OPEB Trust Contributions	133,321	-
Benefit Payments	(282,778)	(256,817)
Administrative Expenses	-	-
Investment Return	32,180	41,766
Market value, end of year	\$724,569	\$559,068
Money-Weighted Rate of Return	5.65%	8.07%
(Gain) / Loss on OPEB Plan Investments		
Projected earnings	\$46,930	\$38,798
Actual earnings	32,180	41,766
(Gain) / Loss on OPEB plan investments	\$14,750	(\$2,968)

SECTION 1 - PRINCIPAL VALUATION RESULTS

Exhibit 1.2 - Total OPEB Liability

The Total OPEB Liability, developed using the Entry Age Normal funding method, is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service. The total OPEB liability as of the June 30, 2018 measurement date was developed from an actuarial valuation as of July 1, 2016 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, 2017 to the end of the measurement period, June 30, 2018 is shown below:

<u>Measurement Date</u>		<u>June 30, 2018</u>
1. Total OPEB Liability, beginning of year:		
a. Actives	\$6,523,153	
b. Retirees, Covered Spouses and Survivors	5,299,811	
c. Total OPEB Liability at 3.6% (a. + b.)		\$11,822,964
2. Service Cost		\$576,851
3. Expected Benefit Payments		
a. Current retirees	(\$247,269)	
b. Future retirees	(35,509)	
c. Total (a. + b.)		(\$282,778)
4. Interest [3.6% x (1.c. + 2. + .5 x 3.c)]		\$441,303
5. Changes of benefit terms		\$0
6. Differences between expected and actual experience		\$0
7. Changes of assumptions or other inputs		(\$670,104)
8. Total OPEB Liability, end of year (1.c. + 2. + 3.c. + 4. + 5. + 6. + 7.)		
a. Actives	\$6,877,603	
b. Retirees, Covered Spouses and Survivors	5,010,633	
c. Total OPEB Liability at 3.9% (a. + b.)		\$11,888,236

SECTION 1 - PRINCIPAL VALUATION RESULTS

Exhibit 1.3 - Development of Actuarially Determined Employer Contributions

No formal funding policy has been adopted by the Town. Future contributions will be made by the Town as funds are available.

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, 2018
Discount Rate	3.60%
1. Normal Cost	\$576,851
2. Unfunded Actuarial Accrued Liability	
a. Actuarial Accrued Liability	\$11,822,964
b. Actuarial Value of Plan Assets	\$559,068
c. Unfunded Actuarial Accrued Liability	\$11,263,896
3. Amortization of Unfunded Actuarial Accrued Liability	
a. Unfunded Actuarial Accrued Liability	\$11,263,896
b. Amortization Period in years	30
c. Payroll Growth Rate	0.0%
d. Amortization Factor	18.82
e. Amortization Amount (3.a. / 3.d.)	\$598,507
4. Interest on 1. and 3.e.	\$42,313
5. Actuarially Determined Employer Contribution (1. + 3.e. + 4.)	\$1,217,671
6. Actual Employer Contribution to OPEB Trust	\$133,321
7. Expected Benefit Payments	\$282,778
8. Total Contribution (6. + 7.)	\$416,099

SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

Exhibit 2.1 - Plan Description

Plan administration:

The Town of Charlton, 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, 2018, OPEB plan membership consisted of the following:

Inactive plan members or beneficiaries currently receiving benefit payments ¹	43
Inactive plan members entitled to but not yet receiving benefit payments	0
Active plan members	98
	<u>141</u>

¹Per 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:

No formal funding policy has been adopted by the Town. Future contributions will be made by the Town as funds are available.

SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

Exhibit 2.2 - Net OPEB Liability

The components of the net OPEB liability at June 30, 2018, were as follows:

Total OPEB liability	\$ 11,888,236
Fiduciary net position	(724,569)
Net OPEB liability	<u>\$ 11,163,667</u>

Fiduciary net position as a percentage of the total OPEB liability 6.09%

Actuarial assumptions:

The total OPEB liability was determined by an actuarial valuation as of July 1, 2016, 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	3.9%, net of investment expenses, including inflation
Healthcare cost trend rate	8 percent for 2016, decreasing 0.5 percent per year to an ultimate rate of 5 percent.
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.

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, 2018 are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation¹</u>	<u>Long-Term Expected Real Rates of Return¹</u>
Domestic Equity	33%	6.11%
Domestic Bond	23%	3.82%
International Equity	17%	2.78%
Alternative	20%	3.67%
International Bond	7%	3.94%
Cash and Equivalents	0%	0.00%
Total	100%	

¹ provided by the Trust's investment consultant, Bartholomew & Company.

Discount rate:

The discount rate used to measure the total OPEB liability was 3.9%. 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 5 periods of projected future benefit payments and, the 3.87% 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 3.9 percent, as well as what the net OPEB liability would be if it were calculated using a discount rate 1-percentage point lower (2.9 percent) or 1-percentage point higher (4.9 percent) than the current rate:

	1% Decrease (2.9%)	Discount Rate (3.9%)	1% Increase (4.9%)
Net OPEB Liability	\$ 13,626,059	\$ 11,163,667	\$ 9,274,038

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 4%) or 1-percentage point higher (9% year 1 decreasing to 6%) than the current healthcare cost trend rates:

	1% Decrease 7% Year 1 Decreasing to 4%	Healthcare Cost Trend Rates 8% Year 1 Decreasing to 5%	1% Increase 9% Year 1 Decreasing to 6%
Net OPEB Liability	\$ 8,816,079	\$ 11,163,667	\$ 14,560,323

SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

Exhibit 3.1 - Changes in Net OPEB Liability and Related Ratios

Fiscal Year Ended June 30	2018	2017
Total OPEB Liability		
Service cost	\$ 576,851	\$ 695,524
Interest	441,303	382,780
Changes of benefit terms	-	-
Differences between expected and actual experience	-	-
Changes of assumptions	(670,104)	(1,768,693)
Benefit payments	(282,778)	(256,817)
Net change in total OPEB liability	\$ 65,272	\$ (947,206)
Total OPEB liability—beginning	\$ 11,822,964	\$ 12,770,170
Total OPEB liability—ending (a)	\$ 11,888,236	\$ 11,822,964
Plan fiduciary net position		
Contributions—employer	\$ 416,099	\$ 256,817
Net investment income	32,180	41,766
Benefit payments	(282,778)	(256,817)
Administrative expenses	-	-
Other	-	-
Net change in plan fiduciary net position	\$ 165,501	\$ 41,766
Plan fiduciary net position—beginning	\$ 559,068	\$ 517,302
Plan fiduciary net position—ending (b)	\$ 724,569	\$ 559,068
Net OPEB liability—ending (a) – (b)	\$ 11,163,667	\$ 11,263,896
Plan fiduciary net position as a percentage of the total OPEB liability	6.09%	4.73%
Covered payroll	\$ 5,810,726	\$ 5,512,169
Net OPEB liability as a percentage of covered payroll	192.12%	204.35%

SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

Exhibit 3.2 - Investment Returns

Fiscal Year Ended June 30	<u>2018</u>	<u>2017</u>
Annual money-weighted rate of return, net of investment expenses	5.65%	8.07%

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 _{mw}) ^(c)
Beginning value - July 1, 2017	\$ 559,068	12	1.00	\$ 590,633
Monthly net external cash flows:				
July	-	11	0.92	-
August	-	10	0.83	-
September	-	9	0.75	-
October	-	8	0.67	-
November	-	7	0.58	-
December	-	6	0.50	-
January	-	5	0.42	-
February	33,321	4	0.33	33,937
March	-	3	0.25	-
April	-	2	0.17	-
May	-	1	0.08	-
June	100,000	0	0.00	100,000
Ending value - June 30, 2018				\$ 724,569
			Money-weighted rate of return:	5.65%

SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

Exhibit 3.3 - Schedule of Employer Contributions

Fiscal Year Ended June 30	2018	2017
Actuarially determined contribution	\$ 1,217,671	\$ 1,082,402
Contributions in relation to the actuarially determined contribution	416,099	256,817
Contribution deficiency (excess)	\$ 801,572	\$ 825,585
Covered payroll	\$ 5,810,726	\$ 5,512,169
Contributions as a percentage of covered payroll	7.16%	4.66%
Discount rate	3.60%	4.00%

Notes to Schedule

Valuation date:

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

Methods and assumptions 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
Inflation	2.6 percent
Healthcare cost trend rates	8 percent for 2016, decreasing 0.5 percent per year to an ultimate rate of 5 percent.

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, 2018 (c)	Balances at June 30, 2018	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2018	\$ -	\$ -	\$ -	\$ -	\$ -
Total				<u>\$ -</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	Increases in the Total OPEB Liability (a)	Decreases in the Total OPEB Liability (b)	Amounts Recognized in OPEB Expense through June 30, 2018 (c)	Balances at June 30, 2018	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2018	\$ -	\$ 670,104	\$ (79,774)	\$ -	\$ 590,330
Total				<u>\$ -</u>	<u>\$ 590,330</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	Investment Earnings Greater Than Projected	Amounts Recognized in OPEB Expense through June 30, 2018	Balances at June 30, 2018	
	(a)	(b)	(c)	Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2018	\$ 14,750	\$ -	\$ 2,950	\$ 11,800	\$ -
Total				\$ 11,800	\$ -
Net				\$ 11,800	\$ -

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

Year ended June 30		
2019	\$	(76,824)
2020	\$	(76,824)
2021	\$	(76,824)
2022	\$	(76,824)
2023	\$	(79,774)
Thereafter		(191,460)

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, 2018 is presented below:

Fiscal Year Ended June 30	<u>2018</u>
Measurement date	6/30/2018
1. Service cost	\$ 576,851
2. Interest on the total OPEB liability	
a. Total OPEB liability, beginning of year	11,822,964
b. Service cost, beginning of year	576,851
c. Benefit payments	<u>(282,778)</u>
d. Interest on total OPEB liability = 3.6% times (a. + b. + .5 times c.)	441,303
3. Differences between expected and actual experience	-
4. Changes of benefit terms	-
5. Changes of assumptions	(79,774)
6. Projected earnings on OPEB plan investments	
a. Plan fiduciary net position, beginning of year	559,068
b. Contributions - Employer	416,099
c. Benefit payments	<u>(282,778)</u>
d. Administrative expenses and other	-
e. Total projected earnings = 7.5% times (a. + .5 times (b. + c. + d.))	(46,930)
7. Differences between projected and actual earnings on OPEB plan investments	2,950
8. OPEB plan administrative expenses	-
9. Other changes in fiduciary net position	-
10. Total OPEB Expense	<u>\$ 894,400</u>

Town of Charlton, Massachusetts Postemployment Benefits Other Than Pensions
 Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2018

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 Retirement System.																								
Retirement Eligibility:	<p>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</p> <p>General employees hired after April 1, 2012: retire after attaining age 60 with 10 or more years of service</p> <p>Public Safety employees hired before April 2, 2012: retire after attaining age 55 or any age with 20 or more years of service</p> <p>Public Safety employees hired after April 1, 2012: retire after attaining age 55</p>																								
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:	<p>The total monthly premiums by plan are shown below:</p> <table border="0" style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;"><u>Non-Medicare Plans - July 1, 2017</u></th> <th style="text-align: right;"><u>Individual</u></th> <th style="text-align: right;"><u>Individual +1</u></th> <th style="text-align: right;"><u>Family</u></th> </tr> </thead> <tbody> <tr> <td>HMO Network Blue</td> <td style="text-align: right;">\$604.84</td> <td style="text-align: right;">\$1,408.50</td> <td style="text-align: right;">\$1,746.28</td> </tr> <tr> <td>PPO Blue Care Elect Preferred</td> <td style="text-align: right;">\$706.52</td> <td style="text-align: right;">N/A</td> <td style="text-align: right;">\$1,935.20</td> </tr> <tr> <td colspan="4"> </td> </tr> <tr> <th style="text-align: left;"><u>Medicare Plans - January 1, 2018</u></th> <td></td> <td></td> <td></td> </tr> <tr> <td>Medex II</td> <td style="text-align: right;">\$346.00</td> <td></td> <td></td> </tr> </tbody> </table>	<u>Non-Medicare Plans - July 1, 2017</u>	<u>Individual</u>	<u>Individual +1</u>	<u>Family</u>	HMO Network Blue	\$604.84	\$1,408.50	\$1,746.28	PPO Blue Care Elect Preferred	\$706.52	N/A	\$1,935.20	 				<u>Medicare Plans - January 1, 2018</u>				Medex II	\$346.00		
<u>Non-Medicare Plans - July 1, 2017</u>	<u>Individual</u>	<u>Individual +1</u>	<u>Family</u>																						
HMO Network Blue	\$604.84	\$1,408.50	\$1,746.28																						
PPO Blue Care Elect Preferred	\$706.52	N/A	\$1,935.20																						
<u>Medicare Plans - January 1, 2018</u>																									
Medex II	\$346.00																								
Participant Contributions:	Retired employees contribute 50% of the total medical premium.																								
Continuation of Coverage to Spouse After Death of Retiree:	Surviving spouse may continue coverage for lifetime by paying the required medical premium.																								
Medicare Penalty Reimbursement:	The Town reimburses the Medicare late-enrollment penalty, if applicable, based on information provided in the retiree data.																								
Dental Coverage:	Dental coverage is not offered to retirees.																								
Life Insurance Coverage:	Retirees are eligible for a \$5,000 life insurance benefit. The total monthly cost is \$2.70. Retirees contribute \$1.35 towards the monthly premiums.																								

SECTION 5 - SUMMARY OF PLAN PROVISIONS

PPACA Excise Tax:

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

Valuation Date:	July 1, 2016
Disclosure Date:	June 30, 2018
GASB 75 Reporting Date:	June 30, 2018
Long-Term Expected Rate of Return:	7.5%, 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.
Municipal Bond Rate:	3.87%, based on the Bond Buyer 20-Bond GO Index published on June 28, 2018.
Discount Rate (GASB):	3.9%, compounded annually, for the measurement as of June 30, 2018. 3.6%, compounded annually, for the measurement as of June 30, 2017. 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.
Discount Rate (ADEC):	3.6%, compounded annually, for development of the Actuarially Determined Contribution (ADEC) as of June 30, 2018.
Amortization Method:	Level dollar amount over 30 years on an open amortization period for partial pre-funding.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Medical Trend Rates:

<u>Year</u>	<u>Trend</u>
1	8.00%
2	7.50%
3	7.00%
4	6.50%
5	6.00%
6	5.50%
Ultimate	5.00%

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 2017 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 - 80% of eligible retirees will elect to participate.
Medicare - all retired employees are assumed to enroll in Medicare at age 65.

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

50% of employees are assumed to retire with a covered spouse.

For current retirees, the actual census information is used.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Medical Per Capita Costs: The following annual per capita costs are for the fiscal year beginning July 1, 2016 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>Male</u>	<u>Female</u>
Under 20	\$2,888	\$3,390
20-24	2,275	3,610
25-29	2,368	5,325
30-34	2,974	6,728
35-39	3,731	6,930
40-44	4,649	7,098
45-49	5,868	7,791
50-54	7,733	9,165
55-59	10,049	10,598
60-64	12,896	12,613
65-69	3,123	3,041
70-74	3,742	3,588
75-79	4,419	4,162
80-84	5,080	4,774
85-89	5,658	5,336
90-94	6,160	5,695
95+	6,547	5,508

Retiree Contributions: Annual per capita participant contributions for the fiscal year beginning July 1, 2016 are as follows:

<u>Plan</u>	<u>Contribution</u>
Non-Medicare	\$ 3,836
Medicare	1,854

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.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

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-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.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Retirement Rates:

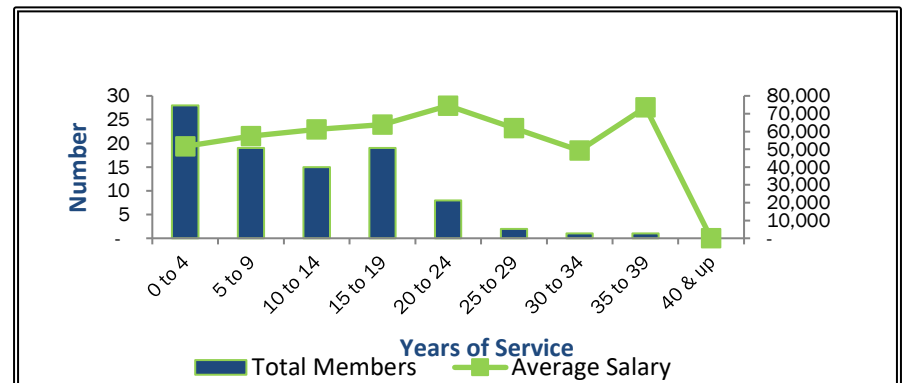
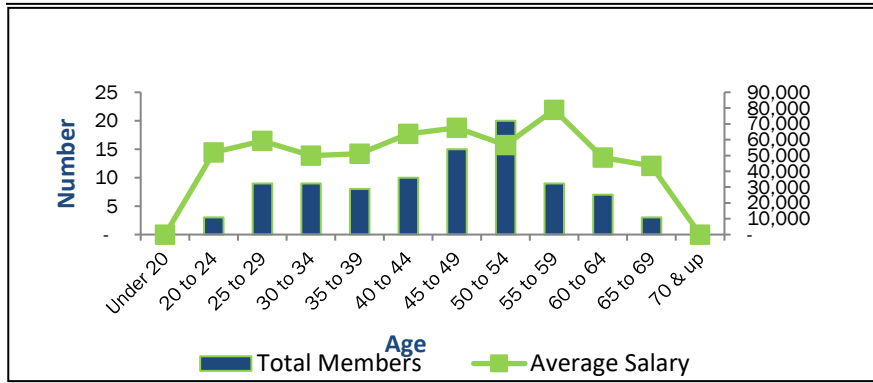
Retirement rates for General and Public Safety employees are as follows:

<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 7 - PLAN MEMBER INFORMATION

TABLE 7.1 - ACTIVE MEMBERS BY AGE and YEARS OF SERVICE AS OF JULY 1, 2016

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	3	-	-	-	-	-	-	-	-	-	3	155,878	51,959
25 to 29	7	1	1	-	-	-	-	-	-	-	9	533,989	59,332
30 to 34	5	2	1	1	-	-	-	-	-	-	9	448,895	49,877
35 to 39	3	2	1	2	-	-	-	-	-	-	8	409,833	51,229
40 to 44	3	2	4	1	-	-	-	-	-	-	10	635,964	63,596
45 to 49	3	4	2	4	2	-	-	-	-	-	15	1,013,741	67,583
50 to 54	2	5	4	8	-	1	-	-	-	-	20	1,130,902	56,545
55 to 59	1	2	-	-	4	-	1	-	-	-	9	710,694	78,966
60 to 64	1	-	2	2	2	-	-	-	-	-	7	341,657	48,808
65 to 69	-	1	-	1	-	1	-	-	-	-	3	130,615	43,538
70 & up	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	28	19	15	19	8	2	1	1	-	-	93	5,512,169	59,271
Total Salary	1,448,023	1,090,937	917,000	1,213,813	595,876	123,735	49,298	73,488	-	-			
Average Salary	51,715	57,418	61,133	63,885	74,484	61,867	49,298	73,488	-	-			
Average Age: 45.8										Average Service: 10.8			



SECTION 7 - PLAN MEMBER INFORMATION

TABLE 7.2 - RETIRED MEMBERS, COVERED SPOUSES and SURVIVORS AS OF JULY 1, 2016

Age	Non-Medicare Plans		Medicare Plans	Total
	<i>HMO Network Blue</i>	<i>PPO Blue Care Elect Preferred</i>	<i>Medex II</i>	
Under 40	1	0	0	1
40 to 44	0	0	0	0
45 to 49	0	0	0	0
50 to 54	2	1	0	4
55 to 59	4	0	0	4
60 to 64	8	0	1	12
65 to 69	0	0	9	9
70 to 74	0	0	3	3
75 to 79	0	0	5	5
80 to 84	0	0	4	4
85 to 89	0	0	1	1
90+	0	0	0	0
Total	15	1	23	39
Covered Spouses	7	0	13	20
Average Age:				67.6

In addition, there are 3 retirees, survivors and covered spouses that are not covered under any medical plan but are covered under a life insurance policy which the Town contributes to and/or receive a reimbursement from the Town for a Medicare late-enrollment penalty.

SECTION 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.

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

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

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

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

SECTION 8 - GLOSSARY OF TERMS

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.

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

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.

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	Water	Sewer	Total
Summary of Member Data Used in Valuation				
Active Members	90	1	2	93
Average Age	45.5	41.8	57.1	45.7
Average Service	10.9	14.2	4.0	10.8
Retired Members and Survivors	42	0	0	42
Average Age	67.6	0.0	0.0	67.6
Covered Spouses	20	0	0	20
Expected Benefit Payments	282,763	5	10	282,778
OPEB Trust contributions	125,000	0	8,321	133,321
Total Employer Contributions	407,763	5	8,331	416,099
Beginning Net OPEB Liability - June 30, 2017				
Total OPEB Liability	11,657,003	102,311	63,650	11,822,964
Fiduciary Net Position	559,068	0	0	559,068
Net OPEB Liability	11,097,935	102,311	63,650	11,263,896
Ending Net OPEB Liability - June 30, 2018				
Total OPEB Liability	11,714,689	101,676	71,871	11,888,236
Fiduciary Net Position	716,093	0	8,476	724,569
Net OPEB Liability	10,998,596	101,676	63,395	11,163,667
Total Deferred Outflows of Resources				
Differences between Expected and Actual Experience	0	0	0	0
Changes in Assumptions	0	0	0	0
Differences between Expected and Actual Earnings on OPEB Plan Investments	11,800	0	0	11,800
Total Deferred Outflows of Resources	11,800	0	0	11,800
Total Deferred Inflows of Resources				
Differences between Expected and Actual Experience	0	0	0	0
Changes in Assumptions	582,043	5,108	3,178	590,330
Differences between Expected and Actual Earnings on OPEB Plan Investments	0	0	0	0
Total Deferred Inflows of Resources	582,043	5,108	3,178	590,330
Total OPEB Expense	878,668	4,478	11,254	894,400

SECTION 9 - BREAKOUT OF RESULTS BY DEPARTMENT

Department	Town	Water	Sewer	Total	
Sensitivity of the Net OPEB Liability to Changes in the Discount Rate					
Current Discount Rate: 3.9%	10,998,596	101,676	63,395	11,163,667	
1% Decrease in the Discount Rate: 2.9%	13,424,578	124,103	77,378	13,626,059	
1% Increase in the Discount Rate: 4.9%	9,136,908	84,466	52,664	9,274,038	
Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rates					
Current Trend Rates	10,998,596	101,676	63,395	11,163,667	
1% Decrease in Trend Rates	8,685,720	80,295	50,064	8,816,079	
1% Increase in Trend Rates	14,345,028	132,612	82,684	14,560,323	
Deferred Outflows of Resources and Deferred Inflows of Resources recognized in OPEB Expense					
	2018	(75,724)	(678)	(422)	(76,824)
	2019	(75,724)	(678)	(422)	(76,824)
	2020	(75,724)	(678)	(422)	(76,824)
	2021	(75,724)	(678)	(422)	(76,824)
	2022	(78,631)	(705)	(438)	(79,774)
	Thereafter	(188,716)	(1,692)	(1,052)	(191,460)

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 3.87%, based on the Bond Buyer 20-Bond GO Index published on June 28, 2018. 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 5 periods of projected future benefit payments and, the 3.87% municipal bond rate was applied to all periods thereafter to determine the total OPEB liability.

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) * 9.93%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2018	5,810,726	-	5,810,726	282,778	133,321	-	416,099
2019	5,643,123	370,978	6,014,101	321,852	-	36,828	285,024
2020	5,376,040	848,555	6,224,595	334,562	-	84,239	250,323
2021	5,191,694	1,250,762	6,442,456	350,047	-	124,167	225,880
2022	5,028,122	1,639,820	6,667,942	358,837	-	162,791	196,046
2023	4,851,872	2,049,448	6,901,320	390,258	-	203,456	186,802
2024	4,657,693	2,485,173	7,142,866	401,287	-	246,712	154,575
2025	4,454,600	2,938,266	7,392,866	448,431	-	291,692	156,739
2026	4,242,953	3,408,663	7,651,616	466,415	-	338,390	128,025
2027	4,049,615	3,869,808	7,919,423	513,215	-	384,169	129,046
2028	3,789,046	4,407,557	8,196,603	555,930	-	437,554	118,376
2029	3,565,409	4,918,075	8,483,484	583,710	-	488,234	95,476
2030	3,358,061	5,422,345	8,780,406	598,870	-	538,295	60,575
2031	3,162,775	5,924,945	9,087,720	638,366	-	588,190	50,176
2032	2,956,778	6,449,012	9,405,790	644,432	-	640,216	4,216
2033	2,765,405	6,969,588	9,734,993	663,922	-	691,895	-
2034	2,624,077	7,451,641	10,075,718	685,314	-	739,750	-
2035	2,476,732	7,951,636	10,428,368	692,048	-	789,387	-
2036	2,333,692	8,459,669	10,793,361	716,392	-	839,821	-
2037	2,220,489	8,950,640	11,171,129	759,317	-	888,561	-
2038	2,101,596	9,460,523	11,562,119	784,820	-	939,179	-
2039	1,995,906	9,970,887	11,966,793	857,205	-	989,845	-
2040	1,894,373	10,491,258	12,385,631	856,992	-	1,041,504	-
2041	1,776,310	11,042,818	12,819,128	909,048	-	1,096,259	-
2042	1,691,309	11,576,488	13,267,797	908,589	-	1,149,238	-
2043	1,585,319	12,146,851	13,732,170	945,901	-	1,205,860	-
2044	1,483,202	12,729,594	14,212,796	948,101	-	1,263,711	-
2045	1,388,622	13,321,622	14,710,244	975,605	-	1,322,484	-
2046	1,284,227	13,940,876	15,225,103	1,014,759	-	1,383,959	-
2047	1,165,581	14,592,401	15,757,982	1,076,229	-	1,448,638	-
2048	1,044,776	15,264,735	16,309,511	1,124,574	-	1,515,383	-
2049	889,102	15,991,242	16,880,344	1,160,190	-	1,587,506	-
2050	755,136	16,716,020	17,471,156	1,218,457	-	1,659,458	-
2051	630,537	17,452,109	18,082,646	1,281,647	-	1,732,532	-

Town of Charlton, Massachusetts Postemployment Benefits Other Than Pensions
 Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2018

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) * 9.93%	Portion of Employer Contributions for Current Plan Members (g) = (d) + (e) - (f)
2052	515,645	18,199,894	18,715,539	1,325,326	-	1,806,767	-
2053	404,005	18,966,578	19,370,583	1,307,645	-	1,882,878	-
2054	283,321	19,765,232	20,048,553	1,305,980	-	1,962,163	-
2055	199,099	20,551,153	20,750,252	1,331,071	-	2,040,185	-
2056	137,602	21,338,909	21,476,511	1,226,790	-	2,118,388	-
2057	73,326	22,154,863	22,228,189	1,224,972	-	2,199,390	-
2058	53,609	22,952,567	23,006,176	1,171,067	-	2,278,581	-
2059	21,612	23,789,780	23,811,392	1,128,262	-	2,361,694	-
2060	15,233	24,629,558	24,644,791	1,111,524	-	2,445,062	-
2061	-	25,507,359	25,507,359	1,077,292	-	2,532,204	-
2062	-	26,400,117	26,400,117	1,081,793	-	2,620,832	-
2063	-	27,324,121	27,324,121	1,073,246	-	2,712,561	-
2064	-	28,280,465	28,280,465	1,078,635	-	2,807,500	-
2065	-	29,270,281	29,270,281	1,082,521	-	2,905,763	-
2066	-	30,294,741	30,294,741	1,087,696	-	3,007,464	-
2067	-	31,355,057	31,355,057	1,082,492	-	3,112,726	-
2068	-	32,452,484	32,452,484	1,091,927	-	3,221,671	-
2069	-	33,588,321	33,588,321	1,093,076	-	3,334,430	-
2070	-	34,763,912	34,763,912	1,087,966	-	3,451,135	-
2071	-	35,980,649	35,980,649	1,093,307	-	3,571,924	-
2072	-	37,239,972	37,239,972	1,078,556	-	3,696,942	-
2073	-	38,543,371	38,543,371	1,079,467	-	3,826,335	-
2074	-	39,892,389	39,892,389	1,067,505	-	3,960,256	-
2075	-	41,288,623	41,288,623	1,047,552	-	4,098,865	-
2076	-	42,733,725	42,733,725	1,042,461	-	4,242,326	-
2077	-	44,229,405	44,229,405	1,010,638	-	4,390,807	-
2078	-	45,777,434	45,777,434	996,707	-	4,544,485	-
2079	-	47,379,644	47,379,644	968,382	-	4,703,542	-
2080	-	49,037,932	49,037,932	932,202	-	4,868,166	-
2081	-	50,754,260	50,754,260	904,183	-	5,038,552	-
2082	-	52,530,659	52,530,659	854,097	-	5,214,901	-
2083	-	54,369,232	54,369,232	814,998	-	5,397,423	-
2084	-	56,272,155	56,272,155	762,276	-	5,586,333	-
2085	-	58,241,680	58,241,680	704,016	-	5,781,854	-

Town of Charlton, Massachusetts Postemployment Benefits Other Than Pensions
 Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2018

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)
2018	559,068	416,099	282,778	-	32,180	724,569
2019	724,569	285,024	321,852	-	52,962	740,703
2020	740,703	250,323	334,562	-	52,394	708,858
2021	708,858	225,880	350,047	-	48,508	633,199
2022	633,199	196,046	358,837	-	41,385	511,793
2023	511,793	186,802	390,258	-	30,755	339,092
2024	339,092	154,575	401,287	-	16,180	108,560
2025	108,560	156,739	448,431	-	-	-
2026	-	128,025	466,415	-	-	-
2027	-	129,046	513,215	-	-	-
2028	-	118,376	555,930	-	-	-
2029	-	95,476	583,710	-	-	-
2030	-	60,575	598,870	-	-	-
2031	-	50,176	638,366	-	-	-
2032	-	4,216	644,432	-	-	-
2033	-	-	663,922	-	-	-
2034	-	-	685,314	-	-	-
2035	-	-	692,048	-	-	-
2036	-	-	716,392	-	-	-
2037	-	-	759,317	-	-	-
2038	-	-	784,820	-	-	-
2039	-	-	857,205	-	-	-
2040	-	-	856,992	-	-	-
2041	-	-	909,048	-	-	-
2042	-	-	908,589	-	-	-
2043	-	-	945,901	-	-	-
2044	-	-	948,101	-	-	-
2045	-	-	975,605	-	-	-
2046	-	-	1,014,759	-	-	-
2047	-	-	1,076,229	-	-	-
2048	-	-	1,124,574	-	-	-
2049	-	-	1,160,190	-	-	-
2050	-	-	1,218,457	-	-	-
2051	-	-	1,281,647	-	-	-

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)
2052	-	-	1,325,326	-	-	-
2053	-	-	1,307,645	-	-	-
2054	-	-	1,305,980	-	-	-
2055	-	-	1,331,071	-	-	-
2056	-	-	1,226,790	-	-	-
2057	-	-	1,224,972	-	-	-
2058	-	-	1,171,067	-	-	-
2059	-	-	1,128,262	-	-	-
2060	-	-	1,111,524	-	-	-
2061	-	-	1,077,292	-	-	-
2062	-	-	1,081,793	-	-	-
2063	-	-	1,073,246	-	-	-
2064	-	-	1,078,635	-	-	-
2065	-	-	1,082,521	-	-	-
2066	-	-	1,087,696	-	-	-
2067	-	-	1,082,492	-	-	-
2068	-	-	1,091,927	-	-	-
2069	-	-	1,093,076	-	-	-
2070	-	-	1,087,966	-	-	-
2071	-	-	1,093,307	-	-	-
2072	-	-	1,078,556	-	-	-
2073	-	-	1,079,467	-	-	-
2074	-	-	1,067,505	-	-	-
2075	-	-	1,047,552	-	-	-
2076	-	-	1,042,461	-	-	-
2077	-	-	1,010,638	-	-	-
2078	-	-	996,707	-	-	-
2079	-	-	968,382	-	-	-
2080	-	-	932,202	-	-	-
2081	-	-	904,183	-	-	-
2082	-	-	854,097	-	-	-
2083	-	-	814,998	-	-	-
2084	-	-	762,276	-	-	-
2085	-	-	704,016	-	-	-

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)
2086	-	-	645,712	-	-	-
2087	-	-	577,168	-	-	-
2088	-	-	516,781	-	-	-
2089	-	-	449,067	-	-	-
2090	-	-	390,124	-	-	-
2091	-	-	329,941	-	-	-
2092	-	-	277,380	-	-	-
2093	-	-	228,663	-	-	-
2094	-	-	187,246	-	-	-
2095	-	-	151,115	-	-	-
2096	-	-	120,488	-	-	-
2097	-	-	94,768	-	-	-
2098	-	-	73,367	-	-	-
2099	-	-	56,181	-	-	-
2100	-	-	42,109	-	-	-
2101	-	-	31,249	-	-	-
2102	-	-	22,629	-	-	-
2103	-	-	16,190	-	-	-
2104	-	-	11,306	-	-	-
2105	-	-	7,773	-	-	-
2106	-	-	5,260	-	-	-
2107	-	-	3,504	-	-	-
2108	-	-	2,299	-	-	-
2109	-	-	1,486	-	-	-
2110	-	-	950	-	-	-
2111	-	-	600	-	-	-
2112	-	-	364	-	-	-
2113	-	-	221	-	-	-
2114	-	-	132	-	-	-
2115	-	-	69	-	-	-
2116	-	-	42	-	-	-
2117	-	-	16	-	-	-
2118	-	-	10	-	-	-
2119	-	-	-	-	-	-
2120	-	-	-	-	-	-

APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

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

Year	Projected Beginning Fiduciary Net Position (a)	Projected Benefit Payments (b)	Projected Benefit Payments		Actuarial Present Value of Projected Benefit Payments		
			"Funded" Portion of Benefit Payments (c)	"Unfunded" Portion of Benefit Payments (d)	Present Value of "Funded" Benefit Payments (e)	Present Value of "Unfunded" Benefit Payments (f)	Present Value of Benefit Payments Using the Single Discount Rate (g)
2019	724,569	321,852	321,852	-	310,422	-	315,758
2020	740,703	334,562	334,562	-	300,168	-	315,915
2021	708,858	350,047	350,047	-	292,150	-	318,138
2022	633,199	358,837	358,837	-	278,591	-	313,894
2023	511,793	390,258	390,258	-	281,847	-	328,574
2024	339,092	401,287	-	401,287	-	325,656	325,186
2025	108,560	448,431	-	448,431	-	350,356	349,759
2026	-	466,415	-	466,415	-	350,830	350,140
2027	-	513,215	-	513,215	-	371,649	370,821
2028	-	555,930	-	555,930	-	387,582	386,617
2029	-	583,710	-	583,710	-	391,788	390,709
2030	-	598,870	-	598,870	-	386,987	385,820
2031	-	638,366	-	638,366	-	397,140	395,838
2032	-	644,432	-	644,432	-	385,976	384,610
2033	-	663,922	-	663,922	-	382,834	381,379
2034	-	685,314	-	685,314	-	380,446	378,900
2035	-	692,048	-	692,048	-	369,870	368,271
2036	-	716,392	-	716,392	-	368,615	366,925
2037	-	759,317	-	759,317	-	376,145	374,322
2038	-	784,820	-	784,820	-	374,294	372,382
2039	-	857,205	-	857,205	-	393,584	391,471
2040	-	856,992	-	856,992	-	378,825	376,692
2041	-	909,048	-	909,048	-	386,864	384,585
2042	-	908,589	-	908,589	-	372,263	369,972
2043	-	945,901	-	945,901	-	373,110	370,718
2044	-	948,101	-	948,101	-	360,045	357,642
2045	-	975,605	-	975,605	-	356,686	354,212
2046	-	1,014,759	-	1,014,759	-	357,178	354,608
2047	-	1,076,229	-	1,076,229	-	364,700	361,981
2048	-	1,124,574	-	1,124,574	-	366,884	364,053
2049	-	1,160,190	-	1,160,190	-	364,401	361,494
2050	-	1,218,457	-	1,218,457	-	368,444	365,408
2051	-	1,281,647	-	1,281,647	-	373,112	369,941
2052	-	1,325,326	-	1,325,326	-	371,453	368,199

Town of Charlton, Massachusetts Postemployment Benefits Other Than Pensions
 Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2018

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			Present Value of Benefit Payments Using the Single Discount Rate (g)
		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)	
2053	-	1,307,645	-	1,307,645	-	352,842	349,660
2054	-	1,305,980	-	1,305,980	-	339,263	336,115
2055	-	1,331,071	-	1,331,071	-	332,898	329,723
2056	-	1,226,790	-	1,226,790	-	295,386	292,492
2057	-	1,224,972	-	1,224,972	-	283,959	281,103
2058	-	1,171,067	-	1,171,067	-	261,349	258,653
2059	-	1,128,262	-	1,128,262	-	242,415	239,851
2060	-	1,111,524	-	1,111,524	-	229,921	227,429
2061	-	1,077,292	-	1,077,292	-	214,537	212,156
2062	-	1,081,793	-	1,081,793	-	207,407	205,051
2063	-	1,073,246	-	1,073,246	-	198,102	195,800
2064	-	1,078,635	-	1,078,635	-	191,679	189,402
2065	-	1,082,521	-	1,082,521	-	185,202	182,954
2066	-	1,087,696	-	1,087,696	-	179,154	176,933
2067	-	1,082,492	-	1,082,492	-	171,654	169,481
2068	-	1,091,927	-	1,091,927	-	166,699	164,546
2069	-	1,093,076	-	1,093,076	-	160,657	158,540
2070	-	1,087,966	-	1,087,966	-	153,948	151,880
2071	-	1,093,307	-	1,093,307	-	148,940	146,900
2072	-	1,078,556	-	1,078,556	-	141,456	139,482
2073	-	1,079,467	-	1,079,467	-	136,300	134,364
2074	-	1,067,505	-	1,067,505	-	129,768	127,890
2075	-	1,047,552	-	1,047,552	-	122,598	120,792
2076	-	1,042,461	-	1,042,461	-	117,457	115,696
2077	-	1,010,638	-	1,010,638	-	109,628	107,957
2078	-	996,707	-	996,707	-	104,089	102,475
2079	-	968,382	-	968,382	-	97,363	95,828
2080	-	932,202	-	932,202	-	90,233	88,788
2081	-	904,183	-	904,183	-	84,260	82,889
2082	-	854,097	-	854,097	-	76,627	75,360
2083	-	814,998	-	814,998	-	70,395	69,213
2084	-	762,276	-	762,276	-	63,388	62,307
2085	-	704,016	-	704,016	-	56,362	55,387
2086	-	645,712	-	645,712	-	49,769	48,894

Town of Charlton, Massachusetts Postemployment Benefits Other Than Pensions
 Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of June 30, 2018

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)
2087	-	577,168	-	577,168	-	42,828	42,065
2088	-	516,781	-	516,781	-	36,918	36,251
2089	-	449,067	-	449,067	-	30,886	30,319
2090	-	390,124	-	390,124	-	25,832	25,352
2091	-	329,941	-	329,941	-	21,033	20,636
2092	-	277,380	-	277,380	-	17,024	16,698
2093	-	228,663	-	228,663	-	13,511	13,249
2094	-	187,246	-	187,246	-	10,651	10,442
2095	-	151,115	-	151,115	-	8,276	8,111
2096	-	120,488	-	120,488	-	6,353	6,225
2097	-	94,768	-	94,768	-	4,810	4,712
2098	-	73,367	-	73,367	-	3,585	3,511
2099	-	56,181	-	56,181	-	2,643	2,588
2100	-	42,109	-	42,109	-	1,907	1,867
2101	-	31,249	-	31,249	-	1,363	1,333
2102	-	22,629	-	22,629	-	950	929
2103	-	16,190	-	16,190	-	654	640
2104	-	11,306	-	11,306	-	440	430
2105	-	7,773	-	7,773	-	291	285
2106	-	5,260	-	5,260	-	190	185
2107	-	3,504	-	3,504	-	122	119
2108	-	2,299	-	2,299	-	77	75
2109	-	1,486	-	1,486	-	48	47
2110	-	950	-	950	-	29	29
2111	-	600	-	600	-	18	17
2112	-	364	-	364	-	10	10
2113	-	221	-	221	-	6	6
2114	-	132	-	132	-	4	3
2115	-	69	-	69	-	2	2
2116	-	42	-	42	-	1	1
2117	-	16	-	16	-	-	-
2118	-	10	-	10	-	-	-
2119	-	-	-	-	-	-	-
2120	-	-	-	-	-	-	-

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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	\$ -		-	-	-	-	-	-	-	-	-	-
Net Increase (Decrease) in OPEB Expense			-	-	-	-	-	-	-	-	-	-

Year	Changes of Assumptions	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
2018	\$ (670,104)	8.4	(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(31,912)	-
Net Increase (Decrease) in OPEB Expense			(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(79,774)	(31,912)	-

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	\$ 14,750	5	2,950	2,950	2,950	2,950	2,950	-	-	-	-	-
Net Increase (Decrease) in OPEB Expense			2,950	2,950	2,950	2,950	2,950	-	-	-	-	-

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