Segal Consulting

Town of Yarmouth

Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) as of June 30, 2018 and Governmental Accounting Standards Board (GASB) Statements No. 74 and 75 Accounting Valuation Report for Reporting Date June 30, 2019

This report has been prepared at the request of the Town of Yarmouth to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Town of Yarmouth and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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Segal Consulting

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September 30, 2019

Ms. Susan Ripley
Collector/Treasurer
Town of Yarmouth
1146 Route 28
South Yarmouth, MA 02664

Dear Ms. Ripley:

We are pleased to submit this report on our actuarial valuation of postemployment welfare benefits as of June 30, 2018. The purpose of this report is to calculate an Actuarially Determined Contribution for the Town of Yarmouth Other Postemployment Benefit (OPEB) Plan for the fiscal year ending June 30, 2019. It summarizes the actuarial data used in the valuation and changes in assumptions since the prior valuation. This report also contains the actuarial information that will need to be disclosed in order to comply with Governmental Accounting Standards Board (GASB) Statements No. 74 and 75 as of June 30, 2019.

This report is based on information received from the Town of Yarmouth and vendors employed by the Town of Yarmouth. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security at termination of the plan, or determining short-term cash flow requirements.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience or rates of return on assets differing from that anticipated by the assumptions; changes in assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

The actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and collectively meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Town of Yarmouth are reasonably related to the experience of and the expectations for the Plan.

We look forward to discussing this with you at your convenience.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:

Kathleen A. Riley, FSA, MAAA, EA
Senior Vice President and Actuary

Daniel J. Rhodes, FSA, MAAA
Vice President and Consulting Actuary

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Section 1: Executive Summary and Valuation Results

Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to defining future uncertain obligations of a postretirement health plan. As such, it will never forecast the precise future stream of benefit payments. It is an estimated forecast – the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal Consulting ("Segal") relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. For example, a plan may provide health benefits to post-65 retirees that coordinates with Medicare. If so, changes in the Medicare law or administration may change the plan's costs without any change in the terms of the plan itself. It is important for the Town of Yarmouth to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the plan. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is not necessary to have perfect data for an actuarial valuation: the valuation is an estimated forecast, not a prediction. The uncertainties in other factors are such that even perfect data does not produce a "perfect" result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	Part of the cost of a plan will be paid from existing assets – the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the Town of Yarmouth. Some plans include assets, such as private equity holdings, real estate, or hedge funds that are not subject to valuation by reference to transactions in the marketplace. A snapshot as of a single date may not be an appropriate value for determining a single year's contribution requirement, especially in volatile markets. Plan sponsors often use an "actuarial value of assets" that differs from market value to reflect gradually year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. To determine the future costs of benefits, Segal collects claims, premiums, and enrollment data in order to establish a baseline cost for the valuation measurement, and then develops short- and long-term health care cost trend rates to project increases in costs in future years. This forecast also requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year, as well as forecasts of the plan's benefits for each of those events. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model necessarily uses approximations and estimates that may lead to significant changes in our results but will have no impact on the actual cost of the plan. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

Given the above, the user of Segal's actuarial valuation (or other actuarial calculations) needs to keep the following in mind:

- The actuarial valuation is prepared for use by the Town of Yarmouth. It includes information for compliance with accounting standards and for the plan's auditor. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- If the Town of Yarmouth is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Sections of this report include actuarial results that are not rounded, but that does not imply precision.
- Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, health care trend, and investment losses, not just the current valuation results.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Town of Yarmouth should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the Town of Yarmouth upon delivery and review. The Town of Yarmouth should notify Segal immediately of any questions or concerns about the final content.

As Segal Consulting has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Purpose

This report presents the results of our actuarial valuation of the postemployment welfare benefit program for certain towns, school districts and other member units in Barnstable County as of June 30, 2018. The purpose of this report is to calculate a recommended Actuarially Determined Contribution for the OPEB plan for the fiscal year ending June 30, 2019 and to calculate liabilities to be used for accounting requirements.

This report also presents certain disclosure information for the Town of Yarmouth (the "Employer") Other Postemployment Benefits (OPEB) plan and the Town of Yarmouth OPEB Trust (the "Plan") as of June 30, 2019, required by Governmental Accounting Standards Board (GASB) Statements No. 74 and 75. The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here.

Valuation Approach

We completed an actuarial valuation of the postemployment welfare benefit program for certain towns, school districts and other member units in Barnstable County as of June 30, 2018. With the exception of the Town of Bourne and retired teachers who received retiree health benefits through the Group Insurance Commission, per capita claims costs were based on the insured premium rates charged by the Cape Cod Municipal Health Group (CCMHG). Per capita claims costs for the Town of Bourne were based on actual paid claim experience furnished by the Town and its carrier. Per capita claims costs for retired teachers participating in the Group Insurance Commission's (GIC) Retired Municipal Teachers plans were taken from the Commonwealth of Massachusetts Postemployment Benefits Other than Pensions Actuarial Valuation as of June 30, 2018, dated January 2, 2019, completed by Aon Hewitt. Trend assumptions were established separately for the retirees in the CCMHG, retirees of the Town of Bourne, and retired teachers in the GIC. Detailed information on the development of the per capita claims costs, the trend, and assumptions related to elections and enrollment are included in Section 4.

The demographic assumptions used in the valuation are the same as used in the Barnstable County Retirement System Actuarial Valuation as of January 1, 2018, dated July 24, 2018, and the Massachusetts Teachers' Retirement System Actuarial Valuation Report as of January 1, 2018, dated October 10, 2018, completed by PERAC and are summarized in Section 4.

The discount rate used to determine the Actuarially Determined Contribution (ADC) for fiscal 2019 is equal to the expected return on assets of 7.25% for entities with an OPEB Trust invested with the State Retiree Benefits Trust Fund and 7.00% for all other entities. The amortization payment on the unfunded actuarial accrued liability (UAAL) included in the ADC is based on a 28-year amortization period, with payments increasing 3.25% per year.

GASB 74 and 75 specify that the discount rate to be used is a blend of the long-term expected rate of return on OPEB Trust assets and a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher. The blending is based on the sufficiency of projected assets to make projected benefit payments. The applicable municipal bond index was 3.87% as of June 30, 2018 and 3.50% as of June 30, 2019. We reviewed the Trust assets, the funding policy for each participating unit, and the projected benefits from this valuation to determine the appropriate discount rate to use for accounting purposes.

Employer decisions regarding plan design, cost sharing between the Employer and its retirees, actuarial cost method, amortization techniques, and integration with Medicare are just some of the decisions that affect the magnitude of OPEB obligations. We are available to assist you with any investigation of such options you may wish to undertake.

This valuation does not include the potential impact of any future changes due to the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 other than the excise tax on high cost health plans beginning in 2022 (reflected in this valuation) and those previously adopted as of the valuation date.

Page 9 shows the liabilities that are used to determine the fiscal 2017 and fiscal 2019 ADC.

Page 10 is a summary of the participant data used in the current valuation.

Section 2 includes the information required under GASB 75, Section 3 includes the information required under GASB 74 and Section 4 includes the Supplemental Information. Exhibit III in Section 4 summarizes the OPEB Trust information and funding policies, if any, provided to us by each member unit and the discount rates determined with the current valuation.

Summary of Valuation Results

Town of Yarmouth

		7.00% Discount Rate June 30, 2018	7.00% Discount Rate June 30, 2016
Actuarial Accrued Liability by Participant Category			
1	Current retirees, beneficiaries and dependents	$13,119,290	$10,326,360
2	Current active members	11,100,856	8,917,301
3	Total as of June 30: **(1) + (2)**	$24,220,146	$19,243,661
4	Actuarial value of assets as of June 30	2,882,129	823,508
5	Unfunded actuarial accrued liability (UAAL) as of June 30: **(3) - (4)**	$21,338,017	$18,420,153
Actuarially Determined Contribution for Fiscal Year Ending June 30		**2019**	**2017**
6	Normal cost, adjusted for timing	$717,205	$552,024
7	Amortization payment, adjusted for timing	1,224,525	987,297
8	Total Actuarially Determined Contribution (ADC): **(6) + (7)**	$1,941,730	$1,539,321
9	Projected benefit payments	$1,024,334	$893,901
Actuarially Determined Contribution for Fiscal Year Ending June 30		**2020**	**2018**
10	Normal cost, adjusted for timing	$740,514	N/A
11	Amortization payment, adjusted for timing	1,264,322	N/A
12	Total Actuarially Determined Contribution (ADC): **(10) + (11)**	$2,004,836	$1,593,197

Notes: Adjustment for timing assumes payment in the middle of the year.
Amortization payment for fiscal 2017 is a 30-year payment increasing 3.5% per year.
Amortization payments for fiscal 2019 and fiscal 2020 are 28-year and 27-year payments, respectively, increasing 3.25% per year.

Summary of Participant Data

Town of Yarmouth

	June 30, 2018	June 30, 2016
Active employees covered for medical benefits		
Number of employees		
• Male	137	129
• Female	49	41
• Total	186	170
Average age	49.3	48.9
Average service	12.9	13.3
Retired employees, spouses and beneficiaries covered for medical benefits		
Number of individuals	204	194
Average age	70.0	69.7

Note: The counts reflect retired employees, spouses and beneficiaries covered for medical benefits as of June 30, 2018 and June 30, 2016 and does not include retirees, if any, eligible for life insurance benefits only.

Section 2: GASB 75

Exhibit 1 – General Information

At June 30, 2018, the Town of Yarmouth plan membership consisted of the following:

	June 30, 2018	June 30, 2016
Retired members and beneficiaries currently receiving benefits	204	194
Active members	186	170
Total	390	364

We have assumed other general information about the Plan will be provided by the Town of Yarmouth's auditors.

Exhibit 2 – Net OPEB Liability

The components of the net OPEB liability of the Town of Yarmouth are as follows:

	June 30, 2018	June 30, 2017
Total OPEB Liability	$24,220,148	$20,214,867
Plan Fiduciary Net Position	2,882,129	2,603,626
Net OPEB Liability	$21,338,019	$17,611,241
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability*	11.90%	12.88%

* These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

Actuarial assumptions. The total OPEB liability as of June 30, 2018 was measured by an actuarial valuation as of June 30, 2018 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Actuarial Assumptions:

Wage inflation:	3.25%
Salary increases:	Service-related increases for Group 1 (excluding Teachers) and Group 2 employees: 6.0% decreasing over 11 years to an ultimate level of 4.0% Service-related increases for Group 4 employees: 7.0% decreasing over 8 years to an ultimate level of 4.5% Service-related increases for Teachers: 7.5% decreasing over 20 years to an ultimate level of 4.0%
Discount rate:	7.00% as of June 30, 2018 and 7.00% as of June 30, 2017
Investment rate of return:	7.00%
Health care trend rates:	• CCMHG – Non-Medicare*: 0% for 1 year, then 7.0% decreasing by 0.25% each year to an ultimate level of 4.5% per year – Medicare: 7.25% decreasing by 0.25% each year to an ultimate level of 4.5% per year • GIC Medical/Prescription Drug: 8.0% decreasing by 0.5% for 5 years, then by 0.25% for 2 years to an ultimate level of 5.0% per year • GIC EGWP: 5.0% • Dental: N/A • Part B: N/A • Contributions: Retiree contributions are expected to increase with respective trend shown above. *First year trends reflect known increases

Mortality rates:	• Preretirement mortality rates: – Healthy Non-Teachers: RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017 – Healthy Teachers: RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016 • Postretirement mortality rates: – Healthy Non-Teachers: RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017 – Healthy Teachers: RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016 – Disabled Non-Teachers: RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally with Scale MP-2017 – Disabled Teachers: RP-2014 Healthy Annuitant Mortality Table set forward four years and projected generationally with Scale BB2D from 2014

Exhibit 3 – Determination of Discount Rate and Investment Rate of Return

Development of Long-Term Rate

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 rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These returns 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 and subtracting expected investment expenses and a risk margin. The target allocation as of June 30, 2018 and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized below:

Asset Class	Long-Term Expected Real Rate of Return
Domestic equity	6.15%
International developed markets equity	7.11%
International emerging markets equity	9.41%
Core fixed income	1.68%
High Yield Fixed Income	4.13%
Real Estate	4.90%
Commodities	4.71%
Hedge fund, GTAA, Risk parity	3.94%
Private equity	10.28%

Note: Some asset classes in the target allocation have been combined.

Nature of Assets: The assets are in an irrevocable OPEB Trust and are invested with Rockland Trust.

Exhibit 4 – Schedule of Changes in the Net OPEB Liability

	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a)-(b)
Balance at June 30, 2017	$20,214,867	$2,603,626	$17,611,241
Changes for the year:			
• Service cost	$530,858	$0	$530,858
• Interest	1,420,203	0	1,420,203
• Differences between expected and actual experience	688,548	0	688,548
• Changes in assumptions	2,295,637	0	2,295,637
• Contributions - employer	0	1,754,317	-1,754,317
• Net investment income	0	-545,849	545,849
• Benefit payments	-929,965	-929,965	0
• Administrative expenses	0	0	0
Net changes	$4,005,281	$278,503	$3,726,778
Balance at June 30, 2018	$24,220,148	$2,882,129	$21,338,019

Notes to Schedule:

Changes in Assumptions:

Based on past experience and future expectations, the following assumptions were changed:

- The per capita health costs for CCMHG and Town of Bourne retirees were updated.
- The medical/prescription drug and dental trend assumptions for CCMHG and Town of Bourne retirees were revised.
- Per capita health costs and trends for GIC retirees were updated based on the Commonwealth of Massachusetts Postemployment Benefits Other Than Pension Actuarial Valuation as of June 30, 2018, dated January 2, 2019, completed by Aon Hewitt.
- The mortality assumptions were updated.
- The salary scale assumptions were updated.

Changes in Plan Provisions: None.

Exhibit 5 – Sensitivity

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

The following presents the net OPEB liability well as what the net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate.

	1% Decrease	Current Discount Rate	1% Increase
Net OPEB liability as of June 30, 2018	$24,470,439	$21,338,019	$18,737,954

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

The following presents the net OPEB liability 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 or 1-percentage point higher than the current rates.

	1% Decrease	Current Trend Rates	1% Increase
Net OPEB liability as of June 30, 2018	$18,530,587	$21,338,019	$24,785,956

Exhibit 6 – Schedule of Contributions

	Year End June 30,	
	2018	2017
Actuarially determined contribution	$1,593,197	$1,539,321
Contributions in relation to the actuarially determined contribution	1,754,317	2,674,019
Contribution deficiency (excess)	-$161,120	-$1,134,698
Covered-employee payroll	N/A	$23,407,908
Contributions as a percentage of covered-employee payroll	N/A	11.42%

Note: Please enter covered payroll for the missing years shown.

Notes to Schedule:

Methods and assumptions used to establish "actuarially determined contribution":

Valuation date:	Actuarially determined contributions for fiscal years ending June 30, 2017 and June 30, 2018 were determined with the June 30, 2016 actuarial valuation.
Actuarial cost method:	Entry Age Normal - Level Percentage of Payroll
Amortization method:	Level percentage of payroll
Remaining amortization period:	30 years from July 1, 2016
Asset valuation method:	Market value
Investment rate of return:	7.00%
Wage inflation:	3.5%

Health care trend rates*:	• CCMHG – Non-Medicare: 10.5% for 1 year, then 7.0% decreasing by 0.5% each year to an ultimate level of 4.5% per year – Medicare: 1.9% for 1 year, then 7.0% decreasing by 0.5% each year to an ultimate level of 4.5% per year • GIC – Non-Medicare: 6.8% for 1 year, then 8.5% decreasing by 0.5% each year to an ultimate level of 5.0% per year – Medicare: 1.6% for 1 year, then 8.5% decreasing by 0.5% each year to an ultimate level of 5.0% per year • Dental: N/A • Part B: N/A • Contributions: Retiree contributions are expected to increase with respective trend shown above. *Trends reflect known increases
Mortality rates:	• Preretirement mortality rates: – Healthy Non-Teachers: RP-2000 Employee Mortality Table projected generationally with Scale BB2D from 2009 – Healthy Teachers: RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016 • Postretirement mortality rates: – Healthy Non-Teachers: RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2009 – Healthy Teachers: RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016 – Disabled Non-Teachers: RP-2000 Healthy Annuitant Mortality Table set forward one year projected generationally with Scale BB2D from 2015 – Disabled Teachers: RP-2014 Healthy Annuitant Mortality Table set forward four years and projected generationally with Scale BB2D from 2014

Exhibit 7 – OPEB Expense and Deferred Outflows/Inflows of Resources Related to OPEB

Reporting Date for Employer under GASB 75	June 30, 2019	June 30, 2018
Measurement Date for Employer under GASB 75	June 30, 2018	June 30, 2017
OPEB expense		
• Service cost	$530,858	$512,906
• Interest	1,420,203	1,352,202
• Projected earnings on OPEB Trust investments	-211,106	-119,950
• Recognized portion of current-period difference between expected and actual experience	114,758	0
• Recognized portion of current-period difference between projected and actual earnings on OPEB plan investments	151,391	23,990
• Administrative expenses	0	0
• Recognition of current year period plan change	0	0
• Recognized portion of current year period assumption change	382,606	0
• Recognition of deferred outflows of resources	0	0
• Recognition of deferred inflows of resources	23,990	0
• Total OPEB expense	$2,412,700	$1,769,148

Deferred Outflows of Resources and Deferred Inflows of Resources

Reporting Date for Employer under GASB 75		June 30, 2019	June 30, 2018
Measurement Date for Employer under GASB 75		June 30, 2018	June 30, 2017
Deferred Outflows of Resources			
Differences between expected and actual experience		$573,790	$0
Changes of assumptions		1,913,031	0
Net difference between projected and actual earnings on OPEB Trust investments		677,534	95,960
Total		$3,164,355	$95,960
Deferred Inflows of Resources			
Differences between expected and actual experience		$0	$0
Changes of assumptions		0	0
Net difference between projected and actual earnings on OPEB Trust investments		0	0
Total		$0	$0
Projected Recognition of Deferred Outflows/(Inflows) Year Ended June 30:			
	2019	N/A	$23,990
	2020	$672,745	23,990
	2021	672,745	23,990
	2022	672,745	23,990
	2023	648,755	0
	2024	497,365	0
	Thereafter	0	0

Note: Average expected remaining service lives as of June 30, 2018 is 6 years.

Section 3: Valuation Results – GASB 74

Exhibit 1 – General Information

At June 30, 2018, the Town of Yarmouth plan membership consisted of the following:

	June 30, 2018	June 30, 2016
Retired members of beneficiaries currently receiving benefits	204	194
Active members	186	170
Total	390	364

We have assumed other general information about the Plan will be provided by the Town of Yarmouth's auditors.

Exhibit 2 – Net OPEB Liability

The components of the net OPEB liability of the Town of Yarmouth are as follows:

	June 30, 2019	June 30, 2018
Total OPEB Liability	$25,597,859	$21,235,963
Plan Fiduciary Net Position	3,592,010	2,882,129
Net OPEB Liability	$22,005,849	$18,353,834
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability*	14.03%	13.57%

* These funded percentages are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.

Actuarial assumptions. The total OPEB liability as of June 30, 2019 was measured by an actuarial valuation as of June 30, 2018 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Actuarial Assumptions:

Wage inflation:	3.25%
Salary increases:	Service-related increases for Group 1 (excluding Teachers) and Group 2 employees: 6.0% decreasing over 11 years to an ultimate level of 4.0% Service-related increases for Group 4 employees: 7.0% decreasing over 8 years to an ultimate level of 4.5% Service-related increases for Teachers: 7.5% decreasing over 20 years to an ultimate level of 4.0%
Discount rate:	7.00% as of June 30, 2019 and 7.00% as of June 30, 2018
Investment rate of return:	7.00%
Health care trend rates:*	• CCMHG – Non-Medicare*: 0% for 1 year, then 7.0% decreasing by 0.25% each year to an ultimate level of 4.5% per year – Medicare: 7.25% decreasing by 0.25% each year to an ultimate level of 4.5% per year • GIC Medical/Prescription Drug: 8.0% decreasing by 0.5% for 5 years, then by 0.25% for 2 years to an ultimate level of 5.0% per year • GIC EGWP: 5.0% • Dental: N/A • Part B: N/A • Contributions: Retiree contributions are expected to increase with respective trend shown above. *First year trends reflect known increases

Mortality rates:	• Preretirement mortality rates: – Healthy Non-Teachers: RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017 – Healthy Teachers: RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016 • Postretirement mortality rates: – Healthy Non-Teachers: RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017 – Healthy Teachers: RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016 – Disabled Non-Teachers: RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally with Scale MP-2017 – Disabled Teachers: RP-2014 Healthy Annuitant Table set forward four years and projected generationally with Scale BB2D from 2014

Exhibit 3 – Determination of Discount Rate and Investment Rate of Return

Development of Long-Term Rate

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 rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These returns 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 and subtracting expected investment expenses and a risk margin. The target allocation as of June 30, 2019 and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized below:

Asset Class	Long-Term Expected Real Rate of Return
Domestic equity	6.16%
International developed markets equity	6.69%
International emerging markets equity	9.47%
Core fixed income	1.89%
High Yield Fixed Income	4.00%
Real Estate	4.58%
Commodities	4.77%
Hedge fund, GTAA, Risk parity	3.68%
Private equity	10.00%

Note: Some asset classes in the target allocation have been combined.

Nature of Assets: The assets are in an irrevocable OPEB Trust and are invested with Rockland Trust.

Exhibit 4 – Schedule of Changes in the Net OPEB Liability

	Fiscal Year End June 30,	
	2019	2018
Total OPEB liability		
Service cost	$571,672	$530,858
Interest	1,490,288	1,420,203
Differences between expected and actual experience	808,465	0
Changes in assumptions	2,544,890	0
Plan amendments	0	0
Benefit payments, including refunds of member contributions	-1,053,419	-929,965
Net change in Total OPEB Liability	$4,361,896	$1,021,096
Total OPEB Liability – beginning	21,235,963	20,214,867
Total OPEB Liability - ending (a)	$25,597,859	$21,235,963
Plan Fiduciary Net Position		
Contributions- employer	$1,506,661	$1,754,317
Contributions- employee	0	0
Net investment income	256,639	-545,849
Benefit payments, including refunds of member contributions	-1,053,419	-929,965
Administrative expenses	0	0
Net change in Fiduciary Net Position	$709,881	$278,503
Plan Fiduciary Net Position – beginning	2,882,129	2,603,626
Plan Fiduciary Net Position - ending (b)	$3,592,010	$2,882,129
Net OPEB liability – ending: (a) - (b)	$22,005,849	$18,353,834
Plan's fiduciary net position as a percentage of the total OPEB liability	14.03%	13.57%
Covered-employee payroll	N/A	N/A
Net OPEB liability as a percentage of covered-employee payroll	N/A	N/A

Note: Please enter covered payroll for the missing years shown.

Notes to Schedule:

Changes in Assumptions:	Based on past experience and future expectations, the following assumptions were changed: • The per capita health costs for CCMHG and Town of Bourne retirees were updated. • The medical/prescription drug and dental trend assumptions for CCMHG and Town of Bourne retirees were revised. • Per capita health costs and trends for GIC retirees were updated based on the Commonwealth of Massachusetts Postemployment Benefits Other Than Pension Actuarial Valuation as of June 30, 2018, dated January 2, 2019, completed by Aon Hewitt. • The mortality assumptions were updated. • The salary scale assumptions were updated.
Changes in Plan Provisions:	None.

Exhibit 5 – Sensitivity

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

The following presents the net OPEB liability well as what the net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate.

	1% Decrease	Current Discount Rate	1% Increase
Net OPEB liability as of June 30, 2019	$25,265,222	$22,005,849	$19,297,883

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

The following presents the net OPEB liability 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 or 1-percentage point higher than the current rates.

	1% Decrease	Current Trend Rates	1% Increase
Net OPEB liability as of June 30, 2019	$18,881,814	$22,005,849	$25,852,720

Exhibit 6 – Schedule of Contributions

	Year End June 30,	
	2019	2018
Actuarially determined contribution	$1,941,730	$1,593,197
Contributions in relation to the actuarially determined contribution	1,506,661	1,754,317
Contribution deficiency (excess)	$435,069	-$161,120
Covered-employee payroll	N/A	N/A
Contributions as a percentage of covered-employee payroll	N/A	N/A

Note: Please enter covered payroll for the missing years shown.

Notes to Schedule:

Methods and assumptions used to establish "actuarially determined contribution":

Valuation date:	Actuarially determined contribution for fiscal year ending June 30, 2019 was determined with the June 30, 2018 actuarial valuation.
Actuarial cost method:	Entry Age Normal - Level Percentage of Payroll
Amortization method:	Level percentage of payroll
Remaining amortization period:	28 years from July 1, 2018
Asset valuation method:	Market value
Investment rate of return:	7.00%
Wage inflation:	3.25%

Health care trend rates:*	• CCMHG – Non-Medicare*: 0% for 1 year, then 7.0% decreasing by 0.25% each year to an ultimate level of 4.5% per year – Medicare: 7.25% decreasing by 0.25% each year to an ultimate level of 4.5% per year • GIC Medical/Prescription Drug: 8.0% decreasing by 0.5% for 5 years, then by 0.25% for 2 years to an ultimate level of 5.0% per year • GIC EGWP: 5.0% • Dental: N/A • Part B: N/A • Contributions: Retiree contributions are expected to increase with respective trend shown above. *First year trends reflect known increases
Mortality rates:	• Preretirement mortality rates: – Healthy Non-Teachers: RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017 – Healthy Teachers: RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016 • Postretirement mortality rates: – Healthy Non-Teachers: RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017 – Healthy Teachers: RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016 – Disabled Non-Teachers: RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally with Scale MP-2017 – Disabled Teachers: RP-2014 Healthy Annuitant Table set forward four years and projected generationally with Scale BB2D from 2014

Section 4: Supplemental Information

EXHIBIT I – ACTUARIAL ASSUMPTIONS AND ACTUARIAL COST METHOD

Data:	Detailed census data, claims experience, premium rates, and summary plan descriptions for postemployment welfare benefits were provided by the employers.
Actuarial Cost Method:	Entry Age Normal – Level percentage of payroll
Per Capita Cost Development: **CCMHG Retirees**	Medical and Prescription Drug: Per capita claims costs were based on the insured premium rates (for fully insured plans) charged by the Cape Cod Municipal Health Group to the member units for the period July 1, 2018 through June 30, 2019. (The Medicare plans renew on January 1, so the costs for these plans were based on the calendar year 2019 premium rates.) Premiums were combined by taking a weighted average based on the number of participants in each plan, and were then trended to the midpoint of the valuation year at assumed trend rates. Actuarial factors were applied to the premium to estimate individual retiree and spouse costs by age and by gender. Dental: Per capita claims costs were based on the Delta Dental funding rates charged by the CCMHG to the member units for the period July 1, 2018 through June 30, 2019.

Retired GIC Teachers from the Towns of Barnstable, Bourne, Eastham and Upper Cape Cod RTS	Medical and Prescription Drug Per capita claims costs for retired teachers participating in the Group Insurance Commission's (GIC) Retired Municipal Teachers plans were taken from the Commonwealth of Massachusetts Postemployment Benefits Other than Pensions Actuarial Valuation as of June 30, 2018, dated January 2, 2019, completed by Aon Hewitt. The costs shown in the valuation report were trended to the midpoint of the valuation year at assumed trend rates.
Valuation Date:	June 30, 2018
Roll-Forward Technique:	The liabilities as of June 30, 2018 were adjusted forward using standard actuarial techniques to determine the Total OPEB Liability as of the June 30, 2019 measurement date.
Expected Return on Assets:	7.25% for entities with assets invested in the State Retiree Benefits Trust Fund, 7.0% for all other entities. The long-term expected rate of return on OPEB investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce a 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.

Discount Rate:

Entity	Discount Rate as of June 30* 2018	2019
Barnstable County	3.87%	3.50%
Barnstable Fire District	3.87%	3.50%
Bourne Water District	7.00%	7.00%
Buzzards Bay Water District	3.87%	3.50%
Cape Cod Regional Technical School	5.13%	4.90%
Cape Cod Regional Transit Authority	3.87%	3.50%
Cape Light Compact	3.87%	3.50%
Centerville, Osterville, Marstons Mills Fire District	7.00%	7.00%
Cotuit Fire District	7.00%	7.00%
Dennis Water District	7.00%	7.00%
Dennis-Yarmouth Regional School District	3.87%	3.50%
Hyannis Fire District	3.87%	3.50%
Mashpee Water District	3.87%	3.50%
Monomoy Regional School District	3.87%	3.50%
Nauset Regional School District	3.87%	3.50%
North Sagamore Water District	3.87%	3.50%
Sandwich Water District	3.87%	3.50%
Town of Barnstable	3.87%	3.50%
Town of Bourne	TBD	TBD
Town of Brewster	7.25%	7.25%
Town of Chatham	7.00%	7.00%
Town of Dennis	3.87%	3.50%
Town of Eastham	3.87%	3.50%
Town of Falmouth	3.87%	3.50%
Town of Harwich	5.99%	5.85%
Town of Mashpee	3.87%	3.50%
Town of Orleans	7.25%	7.25%
Town of Provincetown	7.25%	7.25%
Town of Sandwich	3.87%	3.50%

Town of Truro	7.00%	7.00%
Town of Wellfleet	7.00%	7.00%
Town of Yarmouth	7.00%	7.00%
Upper Cape Cod Regional Technical School	3.87%	3.50%
West Barnstable Fire District	7.00%	7.00%

* This rate will be used for GASB 74 reporting as of June 30, 2019, if applicable, and for GASB 75 reporting as of June 30, 2020.

The discount rate is a blend of the long-term expected rate of return on OPEB Trust assets and a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (3.50% as of June 30, 2019 and 3.87% as of June 30, 2018). The blending is based on the sufficiency of projected assets to make projected benefit payments.

Salary Increases:

Years of Service	Groups 1 and 2	Group 4	Teachers
0	6.00%	7.00%	7.50%
1	5.50%	6.50%	7.10%
2	5.50%	6.00%	7.00%
3	5.25%	5.75%	6.90%
4	5.25%	5.25%	6.80%
5	4.75%	5.25%	6.70%
6	4.75%	4.75%	6.60%
7	4.50%	4.75%	6.50%
8	4.50%	4.50%	6.30%
9	4.25%	4.50%	6.10%
10	4.25%	4.50%	5.90%
11	4.00%	4.50%	5.70%
12	4.00%	4.50%	5.20%
13	4.00%	4.50%	4.70%
14	4.00%	4.50%	4.35%
15-16	4.00%	4.50%	4.20%
17-19	4.00%	4.50%	4.10%
20 and later	4.00%	4.50%	4.00%

Includes an allowance for inflation of 3.25% (previously, 3.5%).

(Previously, 4.25% for Group 1 employees with 9 or more years of service, 4.50% for Group 2 employees with 7 or more years of service, and 4.75% for Group 4 employees with more than 6 years of service.)

Pre-Retirement Mortality Rates:

Healthy Non-Teachers: RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017 (previously, RP-2000 Employee Mortality Table projected generationally with Scale BB2D from 2009)

Healthy Teachers: RP-2014 White Collar Employee Mortality Table projected generationally with Scale MP-2016

Postretirement Mortality Rates:

Healthy (Non-Teachers): RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017 (previously, RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2009)

Healthy Annuitant (Teachers): RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016

Disabled Annuitant (Non-Teachers): RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year and projected generationally with Scale MP-2017 (previously, RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2015, and previously, for Falmouth RP-2000 Healthy Annuitant Mortality Table projected generationally with Scale BB2D from 2012)

Disabled Annuitant (Teachers): RP-2014 White Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2016 (previously, RP-2014 Healthy Annuitant Mortality Table set forward four years projected generationally with Scale BB2D from 2014)

The underlying tables with generational projection to the ages of participants as of the measurement date reasonably reflect the mortality experience of the plan as of the measurement date. The mortality tables were then adjusted to future years using generational projection to reflect future mortality improvement between the measurement date and those years.

Non-Teacher Annuitant Mortality Rates:

	Rate per year (%)							
	Healthy				Disability			
	Current		Previous		Current		Previous	
Age	Male	Female	Male	Female	Male	Female	Male	Female
60	0.85	0.57	0.82	0.62	0.91	0.62	0.82	0.62
70	1.97	1.40	2.22	1.67	2.16	1.54	2.22	1.67
80	5.19	3.82	6.44	4.59	5.74	4.24	6.44	4.59
90	14.64	11.19	18.34	13.17	16.18	12.43	18.34	13.17

Note: Mortality rates do not reflect generational projection.

Teacher Annuitant Mortality Rates:

	Rate per year (%)					
			Disabled			
	Healthy		Current		Previous	
Age	Male	Female	Male	Female	Male	Female
60	0.52	0.39	0.52	0.39	1.02	0.74
70	1.24	1.06	1.24	1.06	2.43	1.90
80	3.73	3.04	3.73	3.04	6.93	5.40
90	12.62	10.02	12.62	10.02	20.11	16.30

Note: Mortality rates do not reflect generational projection.

Termination Rates Before Retirement:

	Groups 1 and 2 (excluding Teachers) - Rate per year (%)				
	Mortality				
	Current		Previous		
Age	Male	Female	Male	Female	Disability
20	0.05	0.02	0.03	0.02	0.01
25	0.06	0.02	0.04	0.02	0.02
30	0.06	0.02	0.04	0.03	0.03
35	0.07	0.03	0.08	0.05	0.06
40	0.08	0.04	0.11	0.07	0.10
45	0.13	0.07	0.15	0.11	0.15
50	0.22	0.12	0.21	0.17	0.19
55	0.36	0.19	0.30	0.25	0.24
60	0.61	0.27	0.49	0.39	0.28

Notes: Mortality rates do not reflect generational projection.
55% of the rates shown represent accidental disability and death.

	Group 4 - Rate (%)				
	Mortality				
	Current		Previous		
Age	Male	Female	Male	Female	Disability
20	0.05	0.02	0.03	0.02	0.10
25	0.06	0.02	0.04	0.02	0.20
30	0.06	0.02	0.04	0.03	0.30
35	0.07	0.03	0.08	0.05	0.30
40	0.08	0.04	0.11	0.07	0.30
45	0.13	0.07	0.15	0.11	1.00
50	0.22	0.12	0.21	0.17	1.25
55	0.36	0.19	0.30	0.25	1.20
60	0.61	0.27	0.49	0.39	0.85

Notes: Mortality rates do not reflect generational projection.
90% of the rates shown represent accidental disability and death.

Age	Teachers – Rate per year (%)		
	Mortality		Disability
	Male	Female	
20	0.03	0.01	0.00
25	0.03	0.01	0.01
30	0.03	0.02	0.01
35	0.04	0.02	0.01
40	0.04	0.03	0.01
45	0.07	0.06	0.03
50	0.12	0.09	0.05
55	0.20	0.14	0.07
60	0.33	0.21	0.07

Notes: 35% of the death rates shown represent accidental death.
75% of the disability rates shown represent accidental disability.
Rates shown are before generational projection.

Withdrawal Rates:

Rate per year (%)			
Years of Service	Groups 1 and 2	Years of Service	Group 4
0	15.0	0 – 10	1.5
1	12.0	11+	0.0
2	10.0		
3	9.0		
4	8.0		
5	7.6		
6	7.5		
7	6.7		
8	6.3		
9	5.9		
10	5.4		
11	5.0		
12	4.6		
13	4.1		
14	3.7		
15	3.3		
16 – 20	2.0		
21 – 29	1.0		
30+	0.0		

Teachers - Rate per year (%)						
	0 – 4 Years of Service		5 – 9 Years of Service		10+ Years of Service	
Age	Male	Female	Male	Female	Male	Female
20	13.0	10.0	5.5	7.0	1.5	5.0
30	15.0	15.0	5.4	8.8	1.5	4.5
40	13.3	10.5	5.2	5.0	1.7	2.2
50	16.2	9.8	7.0	5.0	2.3	2.0

Retirement Rates:

Age	Rate per year (%)		
	Groups 1 and 2		
	Male	Female	Group 4
45 – 49	- -	- -	1.0
50 – 51	1.0	1.5	2.0
52	1.0	2.0	2.0
53	1.0	2.5	5.0
54	2.0	2.5	7.5
55	2.0	5.5	15.0
56 – 57	2.5	6.5	10.0
58	5.0	6.5	10.0
59	6.5	6.5	15.0
60	12.0	5.0	20.0
61	20.0	13.0	20.0
62	30.0	15.0	25.0
63	25.0	12.5	25.0
64	22.0	18.0	30.0
65	40.0	15.0	100.0
66 – 67	25.0	20.0	- -
68	30.0	25.0	- -
69	30.0	20.0	- -
70	100.0	100.0	- -

	Teachers - Rate per year (%)					
	Years of Service					
	Less than 20		20 – 29		30 or more	
Age	Male	Female	Male	Female	Male	Female
50 - 52	- -	- -	1.0	1.0	2.0	1.5
53	- -	- -	1.5	1.0	2.0	1.5
54	- -	- -	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

Dependents:	Demographic data was available for spouses of current retirees. For future retirees, husbands were assumed to be three years older than their wives. For future retirees who elect to continue their health coverage at retirement, 65% were assumed to have an eligible spouse who also opts for health coverage at that time.

Per Capita Health Costs:

Fiscal year 2018 – 2019 medical and prescription drug claims costs are shown in the table below for retirees and for spouses at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.

	CCMHG							
	Non-Medicare Plans				Medicare Plans			
	Retiree		Spouse		Retiree		Spouse	
Age	Male	Female	Male	Female	Male	Female	Male	Female
45	$9,990	$12,532	$6,196	$9,354	N/A	N/A	N/A	N/A
50	11,856	13,505	8,282	10,844	N/A	N/A	N/A	N/A
55	14,081	14,538	11,082	12,552	N/A	N/A	N/A	N/A
60	16,722	15,670	14,835	14,557	N/A	N/A	N/A	N/A
65	19,860	16,881	19,860	16,881	$4,087	$3,474	$4,087	$3,474
70	23,018	18,192	23,018	18,192	4,737	3,744	4,737	3,744
75	24,805	19,582	24,805	19,582	5,105	4,030	5,105	4,030
80	26,712	21,111	26,712	21,111	5,497	4,344	5,497	4,344

	GIC Plans							
	Retired on or before June 1, 1990				Retired after June 1, 1990			
	Non-Medicare Eligible		Medicare Eligible		Non-Medicare Eligible		Medicare Eligible	
Age	Retiree	Spouse	Retiree	Spouse	Retiree	Spouse	Retiree	Spouse
45	$6,502	$6,263	N/A	N/A	$6,155	$5,843	N/A	N/A
50	7,837	7,548	N/A	N/A	7,418	7,041	N/A	N/A
55	9,672	9,316	N/A	N/A	9,156	8,690	N/A	N/A
60	11,996	11,554	N/A	N/A	11,355	10,778	N/A	N/A
65	14,470	13,941	$3,129	$3,129	13,703	13,013	$2,952	$2,952
70	16,882	16,271	3,645	3,645	15,998	15,202	3,439	3,439
75	18,753	18,078	4,044	4,044	17,778	16,899	3,816	3,816
80	20,105	19,383	4,334	4,334	19,061	18,118	4,089	4,089

Note: Costs for GIC plans are net of contributions.

Age	EGWP (GIC Plans)
65	$910
70	1,060
75	1,175
80	1,260

Annual Dental Cost:	• CCMHG: $585
Weighted Average Annual Retiree Contribution Amount:	

	CCMHG
Non-Medicare Plans	$13,790
Medicare Plans	$4,347

Health Care Cost Trend Rates:

Health care trend measures the anticipated overall rate at which health plan costs are expected to increase in future years. The rates shown below are "net" and are applied to the net per capita costs shown above. The trend shown for a particular plan year is the rate that is applied to that year's cost to yield the next year's projected cost.

Year Ending June 30	Medical/Prescription Drug					
	CCMHG					
	Non-Medicare	Medicare	Dental	GIC Plans	GIC EGWP	Part B
2019	0.00%	7.25%	0.00%	8.00%	5.00%	4.50%
2020	7.00%	7.00%	3.00%	7.50%	5.00%	4.50%
2021	6.75%	6.75%	3.00%	7.00%	5.00%	4.50%
2022	6.50%	6.50%	3.00%	6.50%	5.00%	4.50%
2023	6.25%	6.25%	3.00%	6.00%	5.00%	4.50%
2024	6.00%	6.00%	3.00%	5.50%	5.00%	4.50%
2025	5.75%	5.75%	3.00%	5.25%	5.00%	4.50%
2026	5.50%	5.50%	3.00%	5.00%	5.00%	4.50%
2027	5.25%	5.25%	3.00%	5.00%	5.00%	4.50%
2028	5.00%	5.00%	3.00%	5.00%	5.00%	4.50%
2029	4.75%	4.75%	3.00%	5.00%	5.00%	4.50%
2030 & later	4.50%	4.50%	3.00%	5.00%	5.00%	4.50%

The first year valuation trend reflects a known increase in costs from fiscal 2019 to fiscal 2020, otherwise the trend rate assumptions for CCMHG and Town of Bourne were developed using Segal's internal guidelines, which are established each year using data sources such as the 2019 Segal Health Trend Survey, internal client results, trends from other published surveys prepared by the S&P Dow Jones Indices, consulting firms and brokers, and CPI statistics published by the Bureau of Labor Statistics. The medical/prescription drug trend assumption for GIC is the same as used in the Commonwealth of Massachusetts Postemployment Benefit Other than Pensions Actuarial Valuation as of June 30, 2018, dated January 2, 2019, completed by Aon Hewitt.

Retiree Contribution Increase Rate:

Retiree contributions for medical and prescription drug coverage are expected to increase with medical trend.

Participation and Coverage Election:

100% of active employees with coverage are assumed to elect retiree coverage.

100% of retirees over age 65 are assumed to remain in their current medical plan for life and continue dental and life insurance coverage, if elected.

50% of future retirees with medical coverage are assumed to have life insurance coverage, and 90% are assumed to have dental benefits if the retirees are eligible for those benefits according to unit.

The following is the assumed plan enrollment for current retirees under age 65 and future retirees hired prior to 1986 upon reaching age 65:

	Percent Enrolled in Medicare Plan (%)	Percent Enrolled in Non-Medicare Plan (%)
Barnstable County	100	--
Barnstable Fire District	100	--
Bourne Water District	100	--
Buzzards Bay Water District	100	--
Cape Cod Regional Technical School	100	--
Cape Cod Regional Transit Authority	100	--
Cape Light Compact	100	--
Centerville, Osterville, Marstons Mills Fire District	100	--
Cotuit Fire Department	90	10
Dennis Water District	100	--
Dennis-Yarmouth Regional School District	95	5
Hyannis Fire District	100	--
Mashpee Water District	100	--
Monomoy Regional School District	100	--
Nauset Regional School District	100	--
North Sagamore Water District	100	--
Sandwich Water District	100	--
Town of Barnstable	100	--
Town of Bourne	100	--
Town of Brewster	100	--

	Town of Chatham	90	10
	Town of Dennis	95	5
	Town of Eastham	95	5
	Town of Falmouth	90	10
	Town of Harwich	95	5
	Town of Mashpee	95	5
	Town of Orleans	95	5
	Town of Provincetown	95	5
	Town of Sandwich	95	5
	Town of Truro	100	--
	Town of Wellfleet	90	10%
	Town of Yarmouth	100	--
	Upper Cape Cod Regional Technical School	100	--
	West Barnstable Fire District	100	--
Towns of Barnstable, Bourne, and Eastham and Upper Cape Cod RTS (retired teachers):	All future and current retired teachers under 65 are assumed to elect a GIC indemnity plan upon retirement. For future retirees hired prior to 1986 and current retirees under the age of 65 (excluding Upper Cape Cod RTS), 90% are assumed to be eligible for Medicare and 10% are assumed to be ineligible and remain in a non-Medicare GIC indemnity plan upon reaching age 65. For future retirees hired in 1986 or later (excluding Upper Cape Cod RTS), 100% are assumed to be eligible for Medicare and enroll in a GIC indemnity plan on reaching age 65. For all future and current retirees for Upper Cape Cod RTS, 100% are assumed to be eligible for Medicare and enroll in a GIC indemnity plan on reaching age 65.		
Plan Design:	Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit II.		
Administrative Expenses:	Administrative expenses for insured plans were assumed to be included in the fully insured premium rates.		
Life Insurance:	100% of future retirees are assumed to elect life insurance coverage.		
Missing Participant Data:	A missing census item for a given participant was assumed to equal the average value of that item over all other participants of the same status for whom the item is known.		

Health Care Reform Assumption:

This valuation does not include the potential impact of any future changes due to the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 other than the excise tax on high cost health plans beginning in 2022 (reflected with this valuation) and those previously adopted as of the valuation date. The excise tax in this valuation was explicitly calculated except for the employers participating in the GIC where the addition of the excise tax assumption in this valuation increased the Total OPEB Liability as shown below:

	Current	
	TOL	Service Cost
GIC*	0.85%	2.64%

* The GIC assumption comes from the June 30, 2018 OPEB Actuarial Valuation for the Commonwealth of Massachusetts, prepared by Aon Hewitt and dated January 2, 2019.

Demographic and Salary Increase Assumptions:

Many of the demographic assumptions for non-teachers used in this valuation (including mortality, disability, turnover and retirement) and the salary increase assumption are the same as used in the Barnstable County Retirement System Actuarial Valuation as of January 1, 2018, dated July 24, 2018, completed by Segal Consulting and the Massachusetts Teachers' Retirement System Actuarial Valuation Report as of January 1, 2018, dated October 10, 2018, completed by PERAC. A review of the demographic assumptions is beyond the scope of this assignment, however, we have no reason to doubt the reasonableness of the assumptions.

The remaining demographic assumptions, such as percent married and enrollment elections, were based on the experience of the Plan and the experience of similar plans.

Justification for Assumption Changes Since Prior Valuation:

Based on past experience and future expectations, the following actuarial assumptions were changed:

- The per capita health costs for CCMHG and Town of Bourne retirees were updated to reflect current experience.
- The medical/prescription drug and dental trend assumptions for CCMHG and Town of Bourne retirees were revised to reflect current experience and future expectations.
- Per capita health costs and trends for GIC retirees were updated based on the Commonwealth of Massachusetts Postemployment Benefits Other than Pensions Actuarial Valuation as of June 30, 2018, dated January 2, 2019, completed by Aon Hewitt.
- The excise tax on high cost health plans beginning in 2022 was recalculated with this valuation.
- The mortality assumptions were updated to match the assumptions used in the Barnstable County Retirement System Actuarial Valuation as of January 1, 2018, dated July 24, 2018, completed by Segal Consulting and the Massachusetts Teachers' Retirement System Actuarial Valuation Report as of January 1, 2018, dated October 10, 2018, completed by PERAC.

EXHIBIT II – SUMMARY OF PLAN

This exhibit summarizes the major benefit provisions as included in the valuation. To the best of our knowledge, the summary represents the substantive plans as of the measurement date. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Eligibility:	Retired and receiving a pension from the Barnstable County Contributory Retirement System, the Falmouth Retirement System, or the Massachusetts Teachers' Retirement System. • Members hired before April 2, 2012 – Groups 1 and Group 2 (including Teachers): » Retirees with at least 10 years of creditable service are eligible at age 55; » Retirees with at least 20 years of creditable service are eligible at any age. – Group 4 » Retirees are eligible at age 55; » Retirees with at least 20 years of creditable service are eligible at any age. • Members hired on or after April 2, 2012 – Group 1 (including Teachers): » Retirees with at least 10 years of creditable service are eligible at age 60. – Group 2 » Retirees with at least 10 years of creditable service are eligible at age 55. – Group 4 » Retirees are eligible at age 55; » Retirees with at least 10 years of creditable service are eligible at age 50.
Disability:	Accidental (job-related) Disability has no age or service requirement. Ordinary (non-job related) Disability has no age requirement but requires 10 years of creditable service.
Pre-Retirement Death:	Surviving spouses of members who die in active service on Accidental (job-related) Death are eligible at any age. Surviving spouses of members who die in active service on Ordinary (non-job related) Death are eligible after two years of service.
Post-Retirement Death:	Surviving spouse is eligible.

Employer Percentage Contribution:

Unit	Employer Contribution Percentage						Retiree Life Insurance Benefit
	Medical						
	Retirees and Spouses		Surviving Spouses				
	Under Age 65	Age 65 and Over	Under Age 65	Age 65 and Over	Dental	Life Insurance	
Barnstable County	75%	75%	75%	75%	75%	75%	$10,000
Barnstable Fire District	80%	80%	80%	80%	80%	80%	$10,000
Bourne Water District	75%	75%	50%	50%	75%	75%	$5,000
Buzzards Bay Water District	75%	75%	75%	75%	75%	75%	$5,000
Cape Cod Regional Technical School	65%	65%	65%	65%	65%	99%	$10,000
Cape Cod Regional Transit Authority	75%	75%	75%	75%	75%	None	None
C.O.M.M. Fire District	70-90%	80%	70-90%	80%	80%	80%	$1,000
Cape Light Compact	75%	75%	75%	75%	75%	75%	$10,000
Cotuit Fire District	75%	0%	0%	0%	75%	75%	$2,000
Dennis Water District	75%	75%	50%	50%	75%	75%	$5,000
Dennis-Yarmouth Regional School District	60%	60%	0%	0%	60%	60%	$1,000
Hyannis Fire District	95%	95%	95%	95%	95%	95%	$5,000
Mashpee Water District	75%	75%	75%	75%	75%	50%	$5,000
Monomoy Regional School District	70%	70%	70%	70%	70%	70%	$5,000
Nauset Regional School District	50%	50%	50%	50%	0%	50%	$2,000
North Sagamore Water District	75%	75%	50%	50%	75%	75%	$5,000
Sandwich Water District	90%	90%	90%	90%	90%	90%	$2,000
Town of Barnstable	50%	50%	0%	0%	None	50%	$2,000
Town of Bourne	75%	75%	0%	0%	75%	50%	$5,000
Town of Brewster	50%	50%	50%	50%	0%	50%	$1,000
Town of Chatham	50%	50%	50%	50%	50%	50%	$5,000
Town of Dennis	60%	60%	50%	50%	60%	60%	$2,000
Town of Eastham	65%	65%	65%	65%	65%	50%	$5,000
Town of Falmouth	65-75%	50%	65-75%	50%	0%	50%	$1,000
Town of Harwich	75%	75%	50%	50%	0%	75%	$2,000
Town of Mashpee	75%	75%	75%	75%	0%	75%	$4,000
Town of Orleans	65-75%	65-75%	0%	100%	0%	75%	$2,000
Town of Provincetown	70-80%	70-80%	0%	0%	None	50%	$1,000
Town of Sandwich	75%	75%	50%	50%	75%	75%	$2,000
Town of Truro	65%	65%	0%	0%	0%	65%	$1,000
Town of Wellfleet	50%	50%	50%	50%	0%	50%	$5,000
Town of Yarmouth	50%	50%	50%	50%	0%	50%	$5,000
Upper Cape Cod Regional Technical School	70%	70%	70%	70%	None	50%	$10,000
West Barnstable Fire District	75%	75%	75%	75%	75%	75%	$2,000

Cape Cod Municipal Health Group	
Benefit Types:	Medical and prescription drug benefits are provided to all eligible retirees through a variety of plans offered through the Cape Cod Municipal Health Group (CCMHG) provided by Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim Health Plan and Tufts Health Plan. The CCMHG also provides contributory and voluntary dental coverage through Delta Dental.
Duration of Coverage:	Lifetime.
Dependent Benefits:	Medical, prescription drug, and dental.
Dependent Coverage:	Benefits are payable to a spouse for their lifetime, regardless of when the retiree dies.
Contribution Rates:	CCMHG current premium rates are summarized below:

Non-Medicare Plans	Monthly Cost (Effective July 1, 2018)	Medicare Plans	Monthly Cost (Effective January 1, 2019)
BCBS Master Health Plus		**Tufts Medicare Supplement with PDP Plus**	$393
• Individual	$1,640	**BCBS Medex (EGWP)**	$368
• Double	$3,285	**HPHC Medicare Enhanced (EGWP)**	$370
• Family	$4,099	**Managed Blue for Seniors**	$365
BCBS Blue Care Elect Pref. PPO		**Medicare HMO Blue**	$393
• Individual	$1,121	**Tufts Medicare Preferred HMO**	$317
• Double	$2,249		
• Family	$2,808		
BCBS Network Blue HMO			
• Individual	$858		
• Double	$1,731		
• Family	$2,303		
Harvard Pilgrim HMO (EPO)			
• Individual	$852		
• Double	$1,704		
• Family	$2,279		

	Harvard Pilgrim PPO	
	• Individual	$935
	• Double	$1,870
	• Family	$2,474
	Blue Care Elect Preferred PPO (HD)	
	• Individual	$935
	• Double	$1,878
	• Family	$2,345
	Network Blue NE HMO	
	• Individual	$718
	• Double	$1,450
	• Family	$1,927
	HP HSAQ PPO	
	• Individual	$740
	• Double	$1,499
	• Family	$1,991
	HP HSAQ HMO	
	• Individual	$672
	• Double	$1,363
	• Family	$1,810
	Delta Dental Premier	
	• Individual	$40
	• Double	$79
	• Family	$103

Town of Bourne	
Benefit Types:	Medical, prescription drug and dental benefits are provided to all eligible retirees through a variety of plans provided by Blue Cross Blue Shield of Massachusetts.
Duration of Coverage:	Lifetime.
Dependent Benefits:	Medical, prescription drug, and dental.
Dependent Coverage:	Benefits are payable to a spouse for their lifetime, regardless of when the retiree dies.
Contribution Rates:	Current premium rates are summarized below:

Non-Medicare Plans	Monthly Cost Effective July 1, 2018
BCBS Blue Care Elect Preferred PPO	
• Individual	$989.18
• Family	$2,375.26
BCBS Network Blue HMO	
• Individual	$843.93
• Family	$2,022.16
Medicare Plans	**Effective January 1, 2019**
BCBS Medex2 + Blue Medicare Rx	$347.21
Dental Blue	**Effective July 1, 2018**
• Individual	$38.37
• Family	$102.86

Employers Participating in the Group Insurance Commission (GIC) for Retired Teachers	
Benefit Types:	Medical and prescription drug benefits are provided to all eligible retirees through a variety of plans provided through the Commonwealth of Massachusetts GIC.
Duration of Coverage:	Lifetime.
Dependent Benefits:	Medical and prescription drug.
Dependent Coverage:	Benefits are payable to a spouse for their lifetime, regardless of when the retiree dies.
Contribution Rates:	Current premium rates are summarized below:

Non-Medicare Plans	Monthly Premium as of July 1, 2018	Teachers retired on or before July 1, 1990 (10% of premium)	Teachers retired after July 1, 1990 (15% of premium)
Neighborhood Health Plan			
• Individual	$580.43	$57.84	$86.76
• Family	1,496.10	149.09	223.63
Unicare/Comm Indemnity/CIC			
• Individual	$1,058.39	$148.17	$197.98
• Family	2,343.45	331.01	442.25
Medicare Plans			
Tufts Health Plan Medicare Complement	$361.73	$36.05	$54.07
Tufts Health Plan Medicare Preferred	$332.01	$33.09	$49.63
Unicare/COMM Indemnity OME/CIC	$1,058.39	$43.95	$61.78

Plan Changes Since the Prior Valuation:	None.

EXHIBIT III – MEMBER UNIT FUNDING POLICIES

Entity	OPEB Trust Balance as of June 30		Fiscal 2019 Contribution and Funding Policy	Discount Rate as of June 30*	
	2018	2019		2018	2019
Barnstable County	None	$869,974	$850,000 in fiscal 2019 and $50,000 per year thereafter	3.87%	3.50%
Barnstable Fire District*	None	None	N/A	3.87%	3.50%
Bourne Water District	$170,036	$190,313	$10,000 per year	7.00%	7.00%
Buzzards Bay Water District	None	None	N/A	3.87%	3.50%
Cape Cod Regional Tech School	$660,931	$1,119,668	$398,979 in fiscal 2019 and then $100,000 per year thereafter	5.13%	4.90%
Cape Cod Regional Transit Authority	None	None	N/A	3.87%	3.50%
Cape Light Compact	None	None	N/A	3.87%	3.50%
Centerville, Osterville, Marstons Mills Fire District	$1,745,656	$2,180,975	$325,000 per year	7.00%	7.00%
Cotuit Fire District	$611,951	$1,026,437	$375,000 in fiscal 2019 and $63,000 per year thereafter	7.00%	7.00%
Dennis Water District	None	$213,500	$68,000 per year	7.00%	7.00%
Dennis-Yarmouth Regional School District	$225,303	$237,425	$0 in fiscal 2019 and 2020, $500,000 in fiscal 2021 and $50,000 in fiscal 2022	3.87%	3.50%
Hyannis Fire District	None	None	N/A	3.87%	3.50%
Mashpee Water District	None	None	N/A	3.87%	3.50%
Monomoy Regional School District	$380,988	$515,046	$109,868 in fiscal 2019 and $100,000 per year thereafter	3.87%	3.50%
Nauset Regional School District	$89,123	$148,685	$46,342 in fiscal 2019 and $450,000 per year thereafter	3.87%	3.50%
North Sagamore Water District	None	None	N/A	3.87%	3.50%
Sandwich Water District	None	None	N/A	3.87%	3.50%
Town of Barnstable	$3,889,288	$4,781,778	$521,500 in fiscal 2019, $578,000 in fiscal 2020 and increasing by $50,000 each year thereafter	3.87%	3.50%
Town of Bourne	$1,873,843	$2,655,532	$541,601 in fiscal 2019, $535,199 in fiscal 2020, $595,398 in fiscal 2021, $655.597 in fiscal 2022 and $715,796 in fiscal 2023	TBD	TBD
Town of Brewster	$1,754,544	$1,961,324	$100,000 in fiscal 2019, $200,000 in fiscal 2020 increasing $50,000 per year thereafter	7.25%	7.25%

Entity	OPEB Trust Balance as of June 30		Fiscal 2019 Contribution and Funding Policy	Discount Rate as of June 30*	
	2018	2019		2018	2019
Town of Chatham	$822,123	$1,023,009	$150,000 in fiscal 2019, $300,000 in fiscal 2020 and $500,000 per year thereafter	7.00%	7.00%
Town of Dennis	$783,578	$1,242,074	$400,000 in fiscal 2019 and $200,000 per year thereafter	3.87%	3.50%
Town of Eastham	$147,158	$209,709	$50,000 in fiscal 2019 increasing $50,000 per year thereafter	3.87%	3.50%
Town of Falmouth	$559,948	$749,854	$100,000 in fiscal 2019 and $500,000 per year thereafter	3.87%	3.50%
Town of Harwich	$903,684	$2,440,721	$1,396,925 in fiscal 2019. $550,000 in fiscal 2020, $200,000 in fiscal 2021, $250,000 in fiscal 2022, $300,000 in fiscal 2023 and $200,000 per year thereafter	5.99%	5.85%
Town of Mashpee	$404,826	$653,240	$200,000 in fiscal 2019, $250,000 in fiscal 2020 and $500,000 per year thereafter	3.87%	3.50%
Town of Orleans	$1,113,823	$1,644,705	$450,000 per year	7.25%	7.25%
Town of Provincetown	$3,182,643	$4,167,619	$777,582 in fiscal 2019, $565,704 in fiscal 2020, $579,847 in fiscal 2021, $594,343 in fiscal 2022, $609,201 in fiscal 2023 increasing 2.5% per year thereafter	7.25%	7.25%
Town of Sandwich	$342,262	$455,681	$100,000 in fiscal 2019, $465,000 in fiscal 2020, $300,000 in fiscal 2021, and $150,000 per year thereafter	3.87%	3.50%
Town of Truro	$1,762,334	$2,174,726	$400,000 per year	7.00%	7.00%
Town of Wellfleet	$1,475,735	$1,870,706	$250,000 in fiscal 2019 and $200,000 per year thereafter	7.00%	7.00%
Town of Yarmouth	$2,882,129	$3,592,010	$453,292 for fiscal 2019 then fully funding the ARC annually	7.00%	7.00%
Upper Cape Cod Regional Technical School	$365,147	$468,934	$50,000 per year	3.87%	3.50%
West Barnstable Fire District	$119,806	$126,253	$0 in fiscal 2019, $35,000 in fiscal 2020, $43,000 in fiscal 2021, $52,000 in fiscal 2022, $65,000 in fiscal 2023	7.00%	7.00%

*This rate will be used for GASB 74 reporting as of June 30, 2019, if applicable, and for GASB 75 reporting as of June 30, 2020

EXHIBIT IV – DEFINITION OF TERMS

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial Assumptions:	The estimates on which the cost of the Plan is calculated including: (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future; (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates; (c) Retirement rates — the rate or probability of retirement at a given age; (d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.
Actuarial Accrued Liability (AAL):	Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.
Unfunded Actuarial Accrued Liability (UAAL):	The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There are many approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.
Normal Cost:	The amount of contributions required to fund the benefit allocated to the current year of service.
Actuarially Determined Contribution:	A target or recommended contribution to an OPEB plan for the reporting period based on the most recent measurement available.
Valuation Date:	The date at which the actuarial valuation is performed
Covered Employee Payroll:	The payroll of the employees that are provided OPEB benefits
Entry Age Actuarial Cost Method:	An actuarial cost method where the present value of the projected benefits for an individual is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age
Healthcare Cost Trend Rates:	The rate of change in per capita health costs over time
Discount Rate:	The interest rate used to determine the actuarial present value of projected benefit payments.
Expected Return on Assets:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Real Rate of Return:	The rate of return on an investment after removing inflation

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