



TOWN OF EAST HARTFORD OTHER POST-EMPLOYMENT BENEFITS PLAN

Actuarial Valuation as of July 1, 2019

Prepared by

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Certification

We have performed an actuarial valuation of the Town of East Hartford Other Post-Employment Benefits Program as of July 1, 2019. The results of this valuation, along with supporting data, are set forth in the following report. These valuation results will form the basis for GASB 75 reporting for fiscal years ending June 30, 2020 and June 30, 2021.

The ultimate cost of an Other Post-Employment Benefits (OPEB) plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. OPEB costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial determination of plan liabilities. In addition, this report provides:

- Review of plan experience since the previous valuation to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.
- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.
- Comments on any other matters which may be of assistance in the funding and operation of the plan.

This report may not be used for purposes other than those listed above without Milliman's prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section.

Milliman's work is prepared solely for the internal business use of the Town of East Hartford ("Town"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the Town may provide a copy of Milliman's work, in its entirety, to the Town's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Town; and (b) the Town may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by the Town. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

The calculations reported herein have been made on a basis consistent with our understanding of the plan provisions. Additional determinations may be needed for purposes other than determining funding amounts, such as judging benefit security at plan termination or meeting employer accounting requirements. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices.


The valuation results were developed using models employing standard actuarial techniques. In addition to the models described previously, Milliman has developed certain models to estimate expected return on assets and the claim costs and trend used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOP). The models, including all input, calculations, and output may not be appropriate for any other purpose.

We further certify that, in our opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic 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 or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of such future measurement.

Figures for periods prior to July 1, 2019 have been obtained from actuarial valuation reports prepared by Hooker & Holcombe and from the Town's Comprehensive Annual Financial Reports.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.



Jennifer M. Castelhana, FSA
Consulting Actuary

Section I - Executive Summary

Changes Since the Prior Valuation

Demographic Changes and Plan Experience

From July 1, 2017 to July 1, 2019, the overall membership decreased from 2,388 to 2,339. The number of active members decreased from 1,185 to 1,102, and the total number of members and spouses/dependents receiving benefits increased from 1,203 to 1,237.

The average age of active members decreased slightly from 46.0 to 45.7, and the average age of members receiving benefits decreased slightly from 73.4 to 73.0.

Changes in Actuarial Methods and Assumptions

For all groups other than BOE Certified, we updated the mortality assumption to the Pub-2010 table with generational projection per the Ultimate MP 2019 Scale. The Public Safety variant was used for Police and Fire. We also updated the termination, disability, and retirement rates, as well as the salary scale, to reflect what was used in the Town's pension valuation as of July 1, 2019.

For BOE Certified, we changed the mortality assumption to reflect the assumptions used in the June 30, 2018 Actuarial Valuation Report for the Connecticut State Teachers' Retirement System. We continued to use the termination, disability and retirement rates from the aforementioned report as well.

We updated the healthcare cost trend rates to an initial rate of 6.50% scaling down to 4.10% over 54 years for those under age 65 and to an initial rate of 4.50% scaling down to 4.10% over 54 years for those age 65 or older. We are also no longer valuing the future implementation of the excise tax on medical benefits, as it has been officially repealed as of December 20, 2019.

There is substantial uncertainty regarding the impact of the COVID-19 pandemic on projected plan costs. Therefore, for purposes of this valuation, we have chosen not to make any adjustments to these costs. However, please be aware that the COVID-19 pandemic could have a material cost impact in future valuations.

The above assumption changes in combination increased the Accrued Liability by approximately \$4.7 million.

We updated the discount rate to 3.50% since this is the municipal bond rate as of June 30, 2019 for purposes of GASB 75. This change increased the Accrued Liability by approximately \$34.1 million.

Other Significant Changes

None.

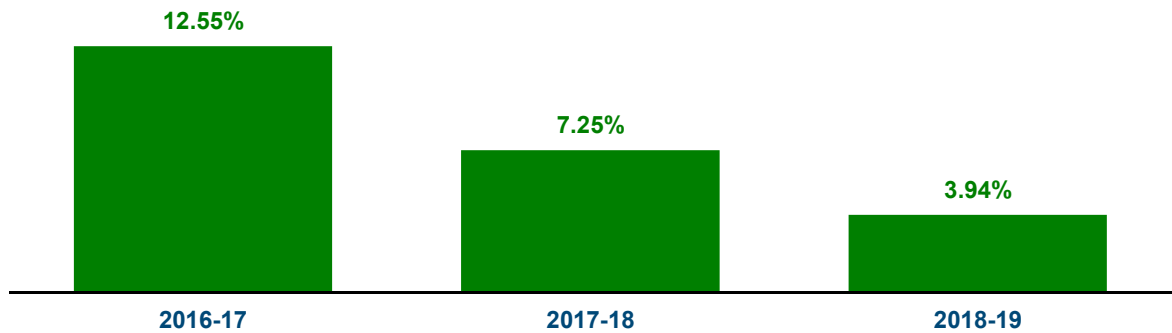
Section I - Executive Summary

Assets

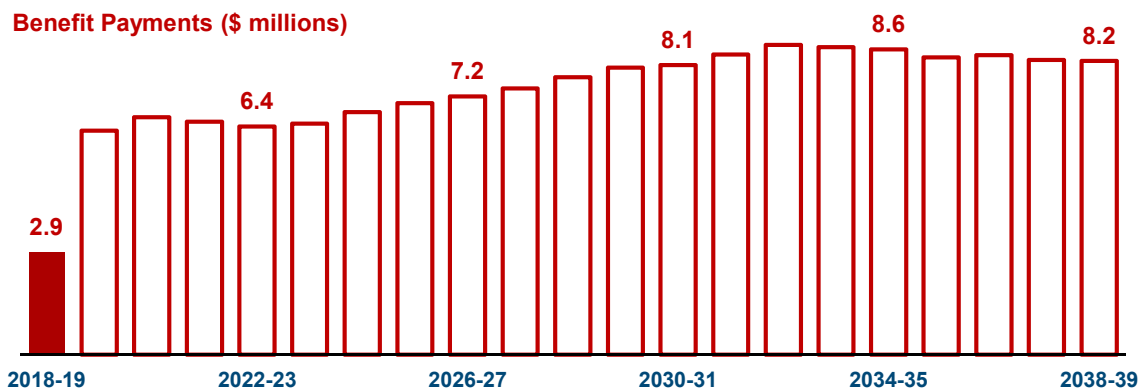
The Market Value is a snapshot of the plan's investments as of the valuation date.

Market Value as of July 1, 2017	\$8,429,423
Town Contributions	6,600,842
Member Contributions	363,376
TRB Subsidy Contributions	277,792
Net Investment Income	1,033,881
Benefit Payments	(5,609,541)
Administrative Expenses	(38,500)
Market Value as of July 1, 2019	11,057,273

For fiscal year 2017-18, the plan's assets earned 7.25% on a Market Value basis. The actuarial assumption for this period was 6.50%; the result is an asset gain of about \$0.1 million. For fiscal year 2018-19, the plan's assets earned 3.94% on a Market Value basis. The actuarial assumption for this period was 6.50%; the result is an asset loss of about \$0.3 million. Historical rates of return are shown in the graph below.

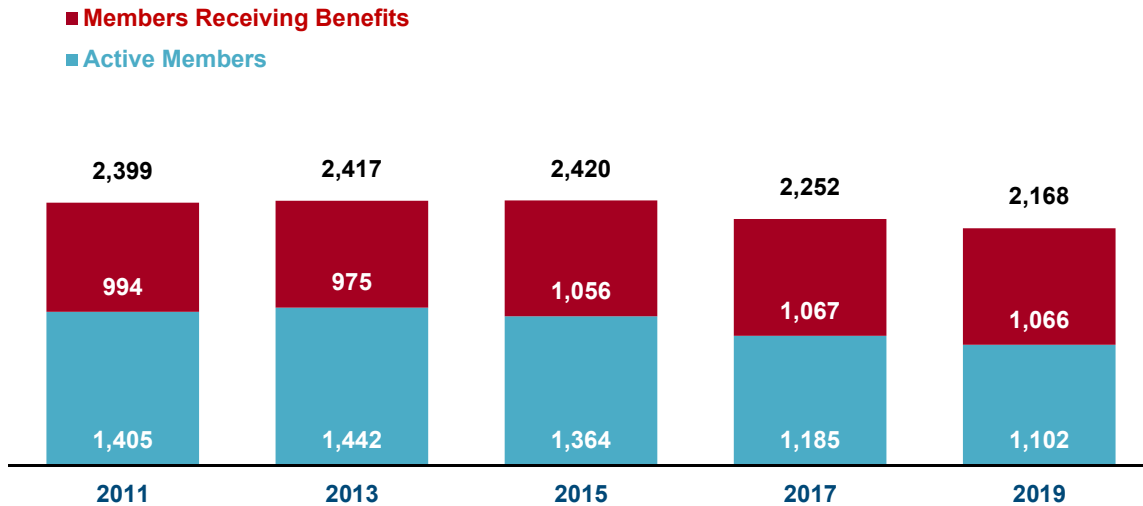


In 2018-19, the plan paid out \$2.9 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of \$153 million in benefits to members.



Section I - Executive Summary Membership

There are two basic categories of plan members included in the valuation: (1) members who are receiving benefits and (2) active employees who have met the eligibility requirements for membership.

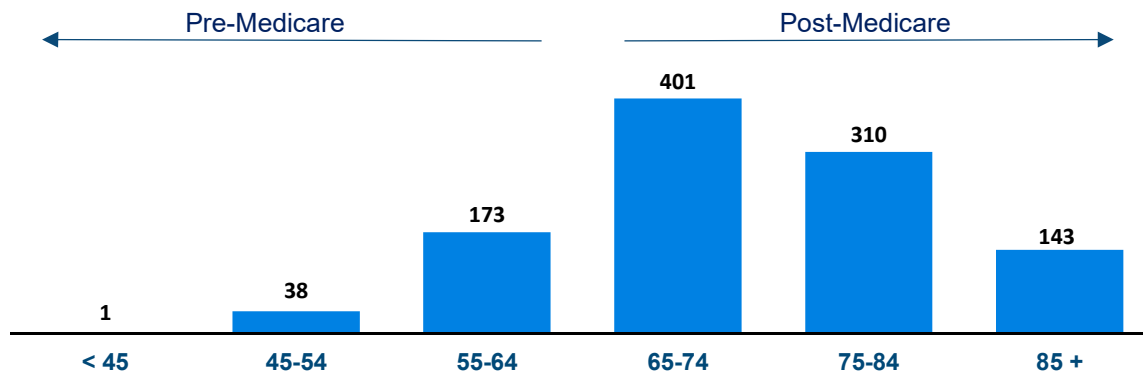


Members Receiving Benefits on July 1, 2019

BOE Certified	514	Average Age	73.0
BOE Non-Certified	146		
Town	181		
Police & Fire	<u>225</u>		
Total	1,066		

There were also 171 spouses / dependents receiving benefits.

The members receiving benefits fall across a wide distribution of ages:



Section I - Executive Summary

Membership (continued)

Active Members on July 1, 2019

BOE Certified	627	Average Age	45.7
BOE Non-Certified	170	Average Service	14.1
Town	85	Payroll	\$83,169,973
Police & Fire	<u>220</u>	Average Payroll	75,472
Total	1,102		

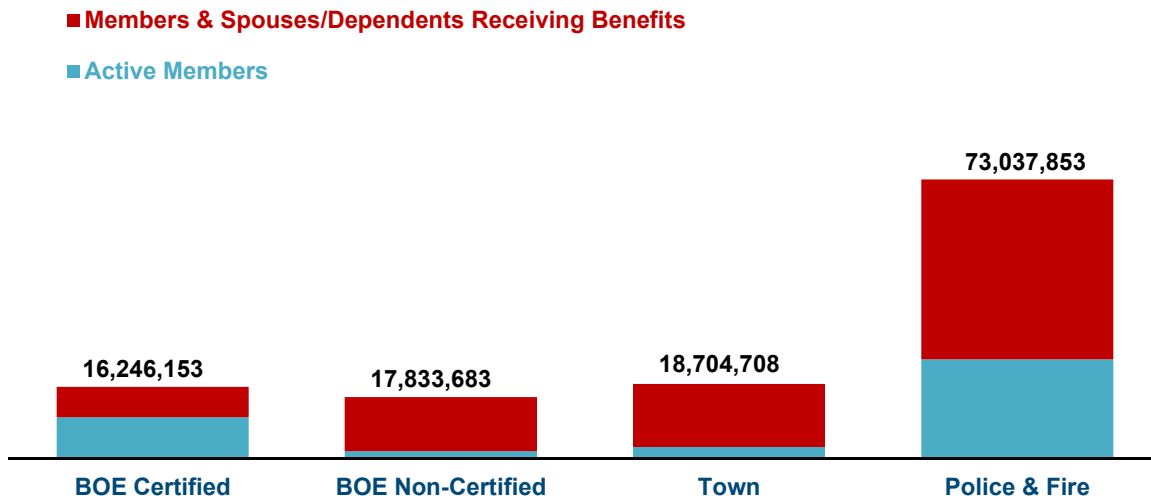
The table below illustrates the age and years of service of the active membership:

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	11							11
25-29	62	12						74
30-34	60	63	6					129
35-39	33	36	47	11	1			128
40-44	25	24	42	62	12			165
45-49	16	11	19	59	55	11		171
50-54	8	16	15	42	47	33	3	164
55-59	3	8	20	35	24	25	7	122
60-64	2	1	23	24	26	8	13	97
65+	1	1	5	12	11	3	8	41
Total	221	172	177	245	176	80	31	1,102

Section I - Executive Summary

Accrued Liability

The Accrued Liability as of July 1, 2019 is \$125,822,397, which consists of the following pieces:



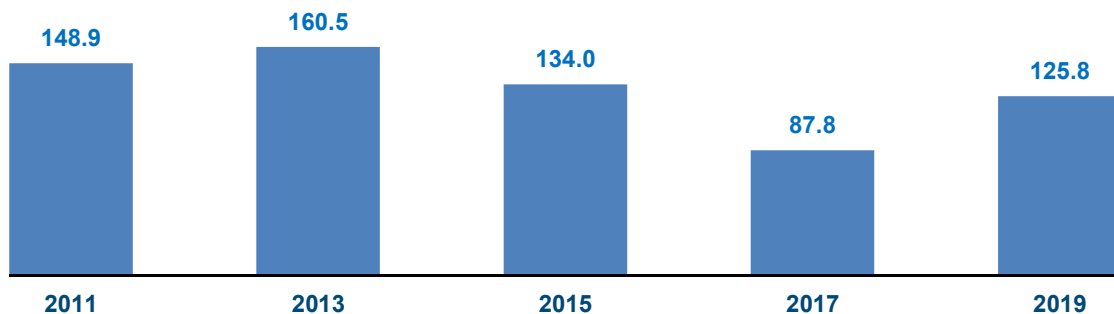
Section I - Executive Summary

Funded Status

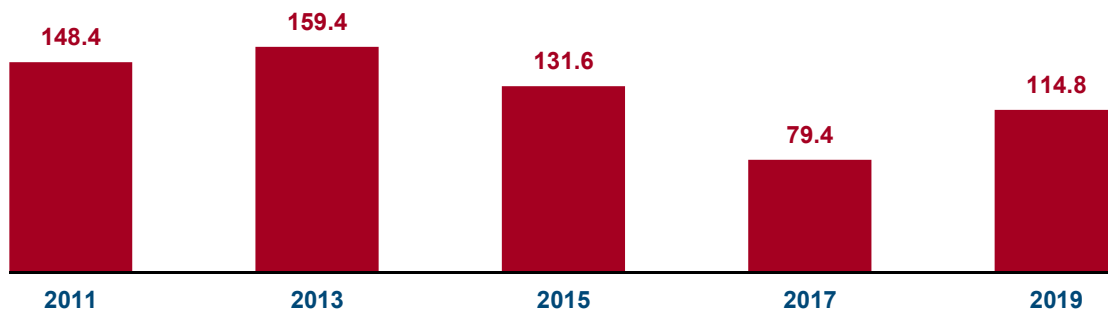
The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets.

The significant changes in the Accrued Liability seen below are largely attributable to changes in the discount rate. For the 2015 valuation, a discount rate of 4.00% was used to calculate the Accrued Liability, reflecting that the plan was not then being prefunded on an actuarial basis. The actuaries who prepared the 2017 valuation increased the discount rate to 6.50% on the basis of the existence of OPEB trust assets. In our professional opinion, the Town is essentially operating the plan on a "pay-as-you-go" basis. For GASB 75 purposes, the liability must be determined using a 20-year municipal bond index. This report therefore reflects a discount rate of 3.50%, based on the 20-year municipal bond index as of June 30, 2019.

Accrued Liability (\$ millions)



Unfunded Accrued Liability (\$ millions)



Section II - Plan Assets

A. Summary of Fund Transactions

Market Value as of July 1, 2017	\$8,429,423
Town Contributions	3,036,130
Member Contributions	173,823
TRB Subsidy Contributions	164,113
Net Investment Income	633,610
Benefit Payments	(2,744,816)
Administrative Expenses	(13,500)
 Market Value as of June 30, 2018	 9,678,783
Expected Return on Market Value of Assets, 2017-18	568,064
Market Value (Gain)/Loss, 2017-18	(65,546)
Approximate Rate of Return, 2017-18*	7.25%
 Market Value as of July 1, 2018	 \$9,678,783
Town Contributions	3,564,712
Member Contributions	189,553
TRB Subsidy Contributions	113,679
Net Investment Income	400,271
Benefit Payments	(2,864,725)
Administrative Expenses	(25,000)
 Market Value as of June 30, 2019	 11,057,273
Expected Return on Market Value of Assets, 2018-19	660,346
Market Value (Gain)/Loss, 2018-19	260,075
Approximate Rate of Return, 2018-19*	3.94%

* The rates shown here are not the dollar or time weighted investment yield rate which measures investment performance. They are an approximate net return assuming all activity occurred on average midway through the fiscal year.

The figures on this page are taken from the Town's Comprehensive Annual Financial Report and Milliman has not validated any of the numbers therein.

Section III - Development of Liability and Funded Status

A. Summary of Liabilities

We have calculated the Accrued Liability separately for 4 groups, who are eligible for different OPEB benefits. We have broken the accrued liability into several pieces: benefits that are expected to be paid prior to age 65 (i.e. prior to Medicare) and after age 65 (i.e. after Medicare) to current active members and their covered dependents after retirement, and the same figures for members who have already retired and are currently receiving benefits. In all cases, the Accrued Liability only reflects benefits that are paid for by the Town, taking into account any implicit rate subsidies.

	BOE Certified	BOE Non- Certified	Town	Police & Fire	Total
Current active members					
Members Under Age 65	\$7,926,243	\$1,429,379	\$2,195,473	\$19,096,172	\$30,647,267
Members Over Age 65	896,796	5,436,730	2,329,338	9,022,509	17,685,373
Spouses/Dependents Under Age 65	1,268,089	374,282	947,058	5,975,978	8,565,407
Spouses/Dependents Over Age 65	<u>266,403</u>	<u>211,669</u>	<u>1,065,106</u>	<u>4,310,627</u>	<u>5,853,805</u>
Total	10,357,531	7,452,060	6,536,975	38,405,286	62,751,852
Current members receiving benefits					
Members Under Age 65	226,272	1,523,217	6,446,178	21,017,266	29,212,933
Members Over Age 65	5,567,904	8,750,670	4,803,148	10,099,445	29,221,167
Spouses/Dependents Under Age 65	44,595	22,732	349,784	1,803,224	2,220,335
Spouses/Dependents Over Age 65	<u>49,851</u>	<u>85,004</u>	<u>568,623</u>	<u>1,712,632</u>	<u>2,416,110</u>
Total	5,888,622	10,381,623	12,167,733	34,632,567	63,070,545
Total Accrued Liability	16,246,153	17,833,683	18,704,708	73,037,853	125,822,397

Accrued Liability Sensitivity

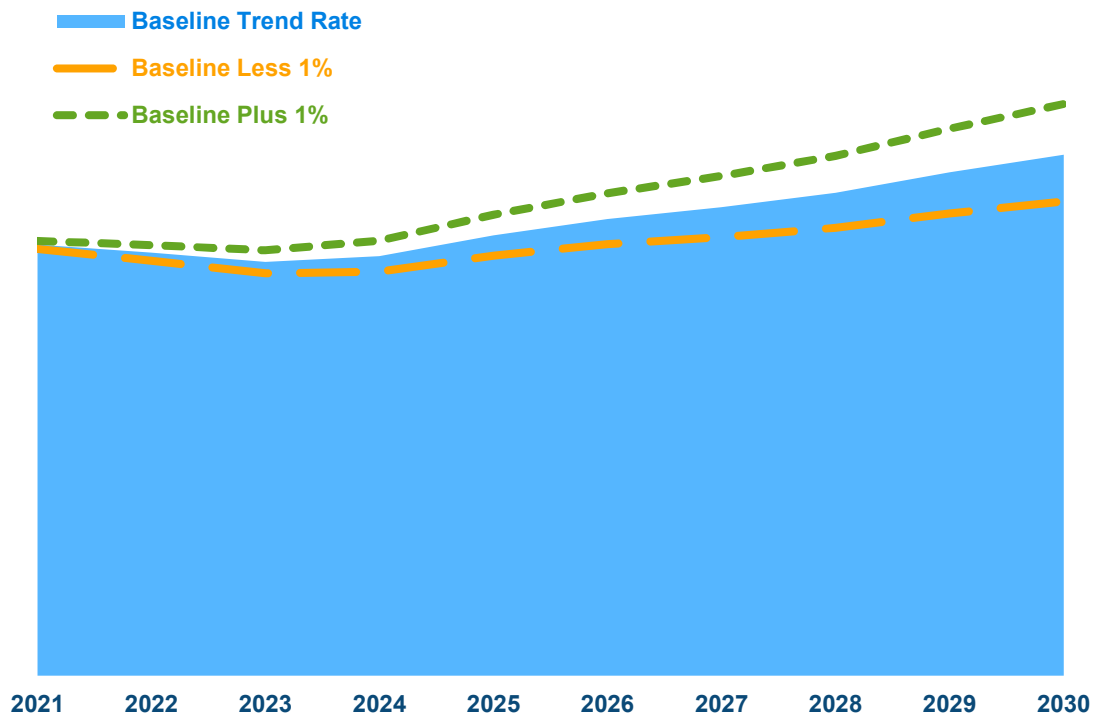
	1% Decrease	Baseline	1% Increase
Discount Rate	142,075,619	125,822,397	112,414,183
Trend Rate	111,017,153	125,822,397	144,232,309

Section III - Development of Liability and Funded Status

B. Projected Payouts

The table and graph below show the expected annual payments for OPEB benefits for the next 10 years, based on a closed group projection.

Fiscal Year Ending June 30	Baseline Less 1%	Baseline Trend Rate	Baseline Plus 1%
2021	\$6,599,264	\$6,660,972	\$6,722,681
2022	6,416,188	6,536,961	6,658,881
2023	6,219,793	6,396,355	6,576,295
2024	6,244,617	6,482,338	6,726,922
2025	6,492,669	6,803,435	7,126,231
2026	6,670,609	7,055,878	7,459,893
2027	6,780,224	7,239,456	7,725,647
2028	6,924,915	7,463,714	8,039,607
2029	7,149,144	7,778,298	8,457,213
2030	7,331,845	8,052,502	8,837,613



Section III - Development of Liability and Funded Status

C. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
July 1, 2011	\$525,000	\$148,883,000	\$148,358,000	0.4%
July 1, 2013	1,037,000	160,455,833	159,418,833	0.6%
July 1, 2015	2,448,000	134,043,000	131,595,000	1.8%
July 1, 2017	8,429,423	87,787,000	79,357,577	9.6%
July 1, 2019	11,057,273	125,822,397	114,765,124	8.8%

Section IV - Membership Data

A. Statistics of Active Membership

		As of July 1, 2017	As of July 1, 2019
Number of Active Members	BOE Certified	636	627
	BOE Non-Certified	197	170
	Town	112	85
	Police & Fire	<u>240</u>	<u>220</u>
	Total	1,185	1,102
Average Age	BOE Certified	42.5	42.3
	BOE Non-Certified	55.7	57.2
	Town	52.6	52.7
	Police & Fire	44.0	43.9
	Total	46.0	45.7
Average Service	BOE Certified	11.4	11.7
	BOE Non-Certified	17.0	18.7
	Town	18.6	18.9
	Police & Fire	16.3	15.6
	Total	14.0	14.1
Payroll	BOE Certified	\$49,441,000	\$53,010,806
	BOE Non-Certified	7,718,000	6,910,938
	Town	7,246,000	5,724,795
	Police & Fire	<u>18,218,000</u>	<u>17,523,434</u>
	Total	82,623,000	83,169,973

Section IV - Membership Data

B. Distribution of Active Members as of July 1, 2019

BOE Certified

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	8							8
25-29	42	10						52
30-34	52	43	6					101
35-39	25	29	41	3				98
40-44	22	21	31	39	6			119
45-49	13	9	12	35	23	3		95
50-54	6	12	7	15	21	14	1	76
55-59	3	5	8	7	6	8	3	40
60-64	2	1	11	1	1	4	10	30
65+	1	1	2	1	3			8
Total	174	131	118	101	60	29	14	627

BOE Non-Certified

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25								0
25-29								0
30-34	1	1						2
35-39		3	2	2				7
40-44			3	5				8
45-49		1	2	2	1	2		8
50-54		2	8	13	5	1		29
55-59		3	9	18	5	5	1	41
60-64			7	19	18	3	3	50
65+			3	8	4	3	7	25
Total	1	10	34	67	33	14	11	170

Town

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	1							1
25-29	2							2
30-34	1	1						2
35-39	2			2				4
40-44				5	1			6
45-49		1	2	6	6	1		16
50-54				5	2	3	2	12
55-59			3	7	5	3	1	19
60-64			5	4	5	1		15
65+				3	4		1	8
Total	6	2	10	32	23	8	4	85

Section IV - Membership Data

B. Distribution of Active Members as of July 1, 2019

Police & Fire

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	2							2
25-29	18	2						20
30-34	6	18						24
35-39	6	4	4	4	1			19
40-44	3	3	8	13	5			32
45-49	3		3	16	25	5		52
50-54	2	2		9	19	15		47
55-59				3	8	9	2	22
60-64					2			2
65+								0
Total	40	29	15	45	60	29	2	220

Section IV - Membership Data

C. Information on Members Receiving Benefits

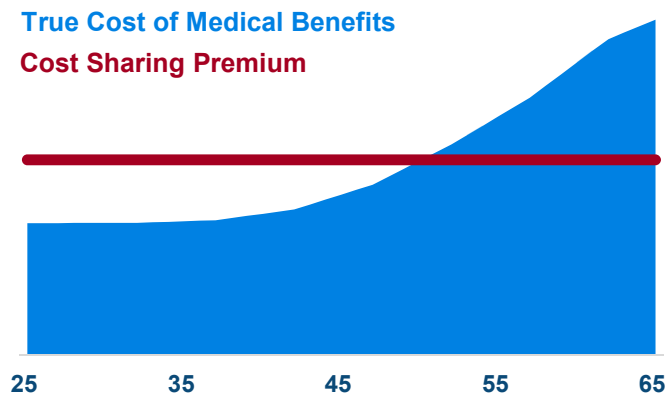
	As of July 1, 2017	As of July 1, 2019
Members Receiving Benefits		
Number		
BOE Certified	501	514
BOE Non-Certified	177	146
Town	192	181
Police & Fire	<u>197</u>	<u>225</u>
Total	1,067	1,066
Average Age		
BOE Certified	75.1	75.9
BOE Non-Certified	75.6	74.9
Town	72.1	71.8
Police & Fire	68.5	66.2
Total	73.4	73.0
Spouses/Dependents Receiving Benefits		
Number		
BOE Certified	6	35
BOE Non-Certified	17	34
Town	47	31
Police & Fire	<u>66</u>	<u>71</u>
Total	136	171
Average Age		
BOE Certified	72.9	74.3
BOE Non-Certified	74.1	74.9
Town	71.8	71.8
Police & Fire	68.3	66.2
Total	70.4	73.0

Section V - Healthcare Information

A. Introduction

In many cases, the cost sharing premium is lower than the true cost of providing the medical benefits, for two reasons:

- The cost sharing premium is usually a fixed amount such as a COBRA premium that does not take into account the age of the retiree and his/her dependents. Since medical costs generally increase with age, the cost sharing premium is often lower than the true cost of the medical benefits:



- The cost sharing premium is usually a blended rate that takes into account the cost of medical benefits for active employees as well as retirees. Medical costs are generally higher for retirees than for active employees of the same age. This means that, again, the cost sharing premium is often lower than the true cost of the medical benefits.

Because of these two factors, a retiree who is paying 100% of the cost sharing premium is most likely not paying 100% of the true cost of the medical benefits. This situation is known as an "implicit rate subsidy." GASB 74 and 75 require the plan sponsor to measure the liability for this subsidy; that is, the difference between the true cost of the medical benefits and the cost sharing premiums paid by the retiree. To do this, our valuation consists of several steps:

First, we calculate the liability for the true cost of medical benefits expected to be received by retirees and their dependents. This liability is based on factors developed by Milliman's health actuaries that reflect how the cost of medical benefits varies by age and gender, as well as the other assumptions discussed in Appendix B. We term this amount the "gross liability."

Next, we calculate the liability for the future premiums expected to be paid by the retiree for their own and their dependents' coverage. This liability is based on the current premium rates without adjustment for age or gender. It also is based on the terms of the Other Post-Employment Benefits Plan – different retirees pay different percentages based on their union, date of retirement, age at retirement, and other factors. We term this amount the "offset liability."

Finally, the net liability for the Town is calculated as the difference between the gross liability and the offset liability.

Section V - Healthcare Information

B. Current Premiums

The annual blended premiums are shown below.

			Effective Date
Pre-65 Medical Plan	Employee	Spouse	
HDHP - BOE	\$11,214.84	\$11,215.08	7/1/2019
HDHP - Others	11,251.20	11,251.20	7/1/2019
PPO - All	15,861.12	15,874.44	7/1/2019
Post-65 Medical Plan			
High Option Plan 82 - All	1,913.16	1,913.16	7/1/2019
Major Medical Buy Up - All	4,257.96	4,257.96	7/1/2019
Plan F - All	6,132.12	6,132.12	7/1/2019
Dental Plan			
Dental - All	581.16	581.16	7/1/2019

Section V - Healthcare Information

C. Expected Healthcare Costs

Milliman's Health Cost Guidelines were used to develop the expected true cost of healthcare benefits by age and gender, separately for employees and spouses. Representative healthcare cost factors are shown in the table below. These factors were then applied to the plan's healthcare rates for the year beginning July 1, 2019 to arrive at the expected annual per capita claims costs for a 65-year-old, which are also shown below.

Medical for BOE Certified who are not eligible for Medicare

Age	Employee		Spouse	
	Male	Female	Male	Female
45	0.64049	0.97638	0.51382	0.63341
50	0.70128	0.90906	0.59786	0.70811
55	0.76275	0.85558	0.68577	0.78437
60	0.87299	0.91368	0.81228	0.86594
65	1.00000	1.00000	1.00000	1.00000
70	1.11594	1.08201	1.25463	1.19692
75	1.21670	1.13850	1.43355	1.31130
80	1.26514	1.15355	1.49061	1.32863
85	1.23634	1.11105	1.45668	1.27968
90	1.18766	1.05661	1.39933	1.21698

Age 65 per capita claims cost

All	\$22,229.55	\$21,187.62	\$19,877.36	\$19,403.66
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Medical for All Others

Age	Employee		Spouse	
	Male	Female	Male	Female
45	0.64049	0.97638	0.51382	0.63341
50	0.70128	0.90906	0.59786	0.70811
55	0.76275	0.85558	0.68577	0.78437
60	0.87299	0.91368	0.81228	0.86594
65	1.00000	1.00000	1.00000	1.00000
70	1.11594	1.07607	1.11594	1.07607
75	1.21670	1.12976	1.21670	1.12976
80	1.26514	1.14469	1.26514	1.14469
85	1.23634	1.10252	1.23634	1.10252
90	1.18766	1.04850	1.18766	1.04850

Age 65 per capita claims cost

Pre-65 HDHP - BOE	\$22,229.55	\$21,187.62	\$19,877.36	\$19,403.66
Pre-65 HDHP - Other	22,301.60	21,256.29	19,941.78	19,466.55
Pre-65 PPO - All	31,460.15	29,985.57	28,131.24	27,460.85
Post-65, no buy up	1,738.75	1,670.07	1,738.75	1,670.07
Post-65, with buy up	5,585.74	5,365.12	5,585.74	5,365.12

Section V - Healthcare Information

C. Expected Healthcare Costs

Dental

Age	Employee		Spouse	
	Male	Female	Male	Female
45	0.63678	0.74956	0.64131	0.75276
50	0.69790	0.80744	0.70167	0.80991
55	0.79512	0.88342	0.79769	0.88491
60	0.90267	0.95676	0.90389	0.95732
65	1.00000	1.00000	1.00000	1.00000
70	1.07940	1.02059	1.07836	1.02032
75	1.07940	1.02059	1.07836	1.02032
80	1.07940	1.02059	1.07836	1.02032
85	1.07940	1.02059	1.07836	1.02032
90	1.07940	1.02059	1.07836	1.02032
Age 65 per capita claims cost				
All	\$667.14	\$651.96	\$675.56	\$660.38

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus Interest to reflect the timing of the contribution relative to the valuation date.

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation was set based on industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Interest Rate 3.50% (prior: 6.50%)

Inflation 2.60%

Salary Scale Current:

Age	Police	Fire	Other
20	20.00%	22.00%	9.00%
25	12.92%	14.71%	7.38%
30	5.83%	7.42%	5.75%
35	3.00%	4.50%	4.13%
40+	3.00%	4.50%	2.50%

Prior: 2.60% for all groups

Medical Trend Pre-65: 6.50% - 4.10% over 54 years (prior: 7.00% - 4.60% over 5 years)

Post-65: 4.50% - 4.10% over 55 years (prior: 7.00% - 4.60% over 5 years)

The medical trend assumption used in this valuation is based on long-term healthcare trend rates generated by the Society of Actuaries' Getzen Trend Model. Inputs to the model are consistent with other assumptions used in the valuation.

The medical trend assumption includes the estimated impacts of the Affordable Care Act. It also includes the impact of the Further Consolidated Appropriations Act, 2020, which became law on December 20, 2019. This law repeals the Cadillac Tax completely and removes the Health Insurer Fee permanently beginning in 2021.

Dental Trend 4.00%

Healthy Mortality **BOE Certified[#]:** Current: For healthy retirees and beneficiaries, the RPH-2014 White Collar table with employee and annuitant rates blended from ages 50 to 80 projected to the year 2020 using the BB improvement scale and further adjusted to grade in increases (5% for females and 8% for males) to rates over age 80. This assumption includes a margin for mortality improvement beyond the valuation date.

Appendix B - Actuarial Assumptions

Healthy Mortality

All Others: Current: Pub-2010 Mortality Table with generational projection per the MP 2019 ultimate scale, with employee rates before commencement and healthy annuitant rates after benefit commencement. The Public Safety variant is used for Police and Fire and the General variant is used for all other groups. This assumption includes a margin for future improvements in longevity.

Prior: RP-2014 Adjusted to 2006 Total Dataset (Blue Collar for Police and Fire) Mortality Table projected to valuation date with Scale MP-2017.

Disabled Mortality

BOE Certified[#]: Current: For disabled retirees, RPH-2014 Disabled Mortality table projected to 2017 using the MP-2014 improvement scale. This assumption does not include a margin for mortality improvement beyond the valuation date.

All Others: Current: Pub-2010 Mortality Table for disabled retirees with generational projection per the MP 2019 ultimate scale. The Public Safety variant is used for Police and Fire. This assumption includes a margin for future improvements in longevity.

Prior: RP-2014 Adjusted to 2006 Total Dataset (Blue Collar for Police and Fire) Mortality Table projected to valuation date with Scale MP-2017.

Retirement

Current:

Service	Police*	Fire*
<25	0%	0%
25	90%	40%
26-29	15%	15%
30+	35%	35%

* Rate increases to 100% upon attainment of age 65.

Age	Paraprofessionals ¹	Others ¹
<55	0%	0%
55-59	0%	2%
60-61	0%	5%
62-63	0%	10%
64	0%	25%
65-69	10%	45%
70-71	10%	100%
72-74	35%	100%
75	100%	100%

¹ Rates are changed to 40% upon eligibility for Rule of 85.

Appendix B - Actuarial Assumptions

Retirement

Prior:

Service	Police	Service	Fire
<25	0%	<25	0%
25	35%	25	30%
26	30%	26	25%
27-29	20%	27-29	15%
30-34	50%	30	30%
35	100%	31-34	40%
		35	100%

Age	Others
55-59	2%
60	10%
61	5%
62	20%
63-64	5%
65	100%

BOE Certified[#]

Age	Unreduced		Proratable		Reduced	
	Male	Female	Male	Female	Male	Female
50	27.50%	27.50%			1.00%	1.00%
51	27.50%	27.50%			1.00%	1.25%
52	27.50%	27.50%			1.00%	1.75%
53	27.50%	27.50%			2.00%	2.25%
54	27.50%	27.50%			3.00%	2.75%
55	38.50%	27.50%			4.00%	4.75%
56	38.50%	27.50%			6.00%	6.25%
57	38.50%	27.50%			7.00%	6.75%
58	38.50%	27.50%			8.00%	7.25%
59	38.50%	27.50%			11.00%	8.50%
60	22.00%	27.50%	6.00%	5.50%		
61	25.30%	27.50%	6.00%	6.50%		
62	25.30%	27.50%	9.00%	7.50%		
63	27.50%	27.50%	11.00%	7.50%		
64	27.50%	27.50%	10.00%	8.00%		
65	36.30%	32.50%	13.00%	12.50%		
66-67	27.50%	32.50%	20.00%	12.50%		
68	27.50%	32.50%	20.00%	12.00%		
69	27.50%	32.50%	30.00%	14.50%		
70-73	100.00%	32.50%	30.00%	14.50%		
74-79	100.00%	32.50%	30.00%	18.00%		
80	100.00%	100.00%	100.00%	100.00%		

Dispatchers: 100% upon first becoming eligible for Normal Retirement, but not prior to age 62.

Appendix B - Actuarial Assumptions

Termination

BOE Certified[#]: Rates based on gender and length of service for first ten years and gender and age thereafter:

Service	Male	Female
0-1	14.00%	12.00%
1-2	11.00%	10.50%
2-3	8.00%	8.75%
3-4	6.50%	7.50%
4-5	4.50%	6.75%
5-6	3.50%	6.00%
6-7	3.00%	5.25%
7-8	2.75%	4.75%
8-9	2.50%	4.25%
9-10	2.50%	4.00%

After first ten years of service:

Age	Male	Female
25-34	1.50%	4.00%
35	1.50%	3.50%
40	1.50%	2.30%
45	1.59%	1.50%
50	2.04%	2.00%
55	3.44%	2.50%
59+	4.00%	2.90%

Police and Fire: Current: 3.00% per year for the first 10 years of service, none thereafter.

Prior: Crocker-Sarason T-1 withdrawal table

BOE Noncertified: Rates based on age:

Age	Paraprofessionals	Others
20	39.93%	10.41%
25	27.71%	6.31%
30	20.70%	4.54%
35	15.63%	3.50%
40	11.54%	2.77%
45	8.07%	2.20%
50	5.06%	1.74%
55	2.39%	1.34%
60	1.19%	1.00%

Others: Crocker-Sarason T-3 withdrawal table

Appendix B - Actuarial Assumptions

Disability	Age	Police	Fire
	20	0.06%	0.06%
	25	0.09%	0.09%
	30	0.11%	0.11%
	35	0.15%	0.15%
	40	0.22%	0.22%
	45	0.36%	0.36%
	50	0.61%	0.61%
	55	1.01%	1.01%
	60	1.63%	1.63%

Others: None assumed

Future Retiree Coverage **BOE Certified:** 85% of current active members will elect medical coverage at retirement.

Others: 90% of current active members will elect medical coverage at retirement.

Marital Status **BOE Certified:** 30% of current active members are assumed to be married with wives 3 years younger than husbands.

Others: 50% of current active members are assumed to be married with wives 3 years younger than husbands.

Future Post-65 Coverage 85% of current active **BOE Certified** members hired prior to April 1, 1986 and 100% of **Others** are assumed to be Medicare-eligible.

Post-65 Buy Up Assumption 20% of current active and pre-65 retired members who are Medicare-eligible will elect the Major Medical buy up.

Certain actuarial demographic assumptions for Teachers and Administrators are based on the assumptions used in the June 30, 2018 valuation of the Connecticut State Teachers' Retirement System.

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Eligibility	BOE Certified	Age 55 with 20 years of Credited Service Age 60 with 10 years of Credited Service 25 years of Credited Service
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BOE Local 818, Local 1933, Local 2727, Nurses and Non-Bargaining Unit

Hired prior to March 1, 1983	Age 62 with 8 years of Credited Service
Hired prior to January 1, 2006	Age 55 with 10 years of Credited Service Rule of 85
Hired on or after January 1, 2006	Not eligible for OPEB benefits

Paraprofessionals

Hired prior to July 1, 2015	10 years of Credited Service
Hired on or after July 1, 2015	Not eligible for OPEB benefits

Police and Fire	Age 52 with 25 years of Credited Service Age 65 with 15 years of Credited Service
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Dispatchers	Age 55 with 5 years of Credited Service 25 years of Credited Service Rule of 75
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Town Local 818, Local 1174, Local 2001 and Non-Bargaining Unit

Hired prior to March 1, 1983	Age 62 with 8 years of Credited Service
Hired prior to January 1, 2006	Age 55 with 10 years of Credited Service Rule of 85
Hired on or after January 1, 2006	Not eligible for OPEB benefits

Appendix C - Summary of Plan Provisions

Cost Sharing*	BOE Certified	Retiree and spouse pay 100%
	BOE Local 818	
	Retire prior to July 1, 2016	Town pays 100%
	Retire on or after July 1, 2016	Retiree pays active cost share (9.5% for medical and 24.0% for dental as of July 1, 2019)
		Spouse pays 100% regardless of retirement date
	BOE Local 1933	
	Retire prior to January 1, 2015	Town pays 100%
	Retire on or after January 1, 2015	Retiree pays active cost share (9.5% for medical and 23.0% for dental as of July 1, 2019)
		Spouse pays 100% regardless of retirement date
	BOE Local 2727	
	Retire prior to July 1, 2006	Town pays 100%
	Retire prior to January 1, 2015	Retiree pays active cost share in effect at time of retirement for duration of retirement
	Retire prior to July 1, 2015	Retiree pays active cost share (25.0% for medical and 23.0% for dental as of July 1, 2019)
	Retire prior to July 1, 2016	Retiree pays 20%
	Retire on or after July 1, 2016	Retiree pays 25%
		Spouse pays 100% regardless of retirement date
	BOE Nurses	
	Retire prior to July 1, 2017	Town pays 100%
	Retire on or after July 1, 2017	Retiree pays active cost share in effect at time of retirement for duration of retirement
		Spouse pays 100% regardless of retirement date

* As used throughout, this refers to how the premium is split between the Town and the retiree.

Appendix C - Summary of Plan Provisions

Cost Sharing **BOE Non-Bargaining Unit**

Retire prior to February 26, 2013 Pre-65: Town pays 100% for retiree and 50% for spouse (spouse pays 100% if retiree has not attained age 60)

Post-65: Town pays 100% for High Option Plan 82 for both retiree and spouse. Retiree pays full cost of buy up.

Retire on or after February 26, 2013 Retiree pays the following cost share for pre-65 benefits:

Retires prior to age 56: 50%
Retires prior to age 59: 25%
Retires prior to age 65: 0%

Retiree pays the following cost share for pre-65 benefits for spousal coverage:

Retires prior to age 56: 100%
Retires prior to age 59: 75%
Retires prior to age 65: 50%

Post-65: Not available

Paraprofessionals

Pre-65: Not available

Post-65: Retiree pays 15% and spouse pays 100%

Dental benefits are not available.

Police and Fire

Pre-65: Town pays 100% for retiree and 50% for spouse (spouse pays 100% if retiree has not attained age 60)

Post-65: Town pays 100% for High Option Plan 82 for both retiree and spouse. Retiree pays full cost of buy up.

Appendix C - Summary of Plan Provisions

Cost Sharing Dispatchers

Retire prior to January 1, 2011	Pre-65: Town pays 100% for retiree and 50% for spouse (spouse pays 100% if retiree has not attained age 60)
	Post-65: Town pays 100% for High Option Plan 82 for both retiree and spouse. Retiree pays full cost of buy up.
Retire on or after January 1, 2011	Retiree pays the following cost share for pre-65 benefits:
	Retires prior to age 56: 50% Retires prior to age 59: 25% Retires prior to age 65: 0%
	Retiree pays the following cost share for pre-65 benefits for spousal coverage:
	Retires prior to age 56: 100% Retires prior to age 59: 75% Retires prior to age 65: 50%
	Post-65: Not available
Town Local 818, Local 1174	Pre-65: Town pays 100% for retiree and 50% for spouse (spouse pays 100% if retiree has not attained age 60)
	Post-65: Town pays 100% for High Option Plan 82 for both retiree and spouse. Retiree pays full cost of buy up.

Appendix C - Summary of Plan Provisions

Cost Sharing Town Local 2001 and Non-Bargaining Unit

Retire prior to February 26, 2013	Pre-65: Town pays 100% for retiree and 50% for spouse (spouse pays 100% if retiree has not attained age 60)
	Post-65: Town pays 100% for High Option Plan 82 for both retiree and spouse. Retiree pays full cost of buy up.
Retire on or after February 26, 2013	Retiree pays the following cost share for pre-65 benefits:
	Retires prior to age 56: 50%
	Retires prior to age 59: 25%
	Retires prior to age 65: 0%
	Retiree pays the following cost share for pre-65 benefits for spousal coverage:
	Retires prior to age 56: 100%
	Retires prior to age 59: 75%
	Retires prior to age 65: 50%
	Post-65: Not available

Appendix C - Summary of Plan Provisions

Life Insurance	Paraprofessionals	No life insurance benefit
	BOE Non-Bargaining Unit	\$50,000
	All other BOE	\$3,000
	Police and Fire	\$15,000
	Dispatchers	\$5,000
	Town Local 818	\$10,000
	Town Local 1174, Local 2001	\$5,000
	Town Non-Bargaining Unit	\$50,000
Active Contributions towards Retiree Healthcare	Police	
	Hired before July 1, 2014	\$700 annually to OPEB trust
	Hired on or after July 1, 2014	\$1,700 annually to OPEB trust
	Fire	
	Hired before September 1, 2013	\$700 annually to OPEB trust
	Hired on or after September 1, 2013	\$1,700 annually to OPEB trust
	Town Local 818	1.25% of base salary
	Town Local 1174	1.00% of base salary
	Town Non-Bargaining Unit	1.00% of base salary

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Contribution ("ADC") - This is the employer's periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee's service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee's date of hire and costs are spread across all employment.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.