TOWN OF CHARLESTOWN
OTHER POST-EMPLOYMENT BENEFITS PLAN

Actuarial Valuation as of July 1, 2021
To Determine Funding for Fiscal Year 2022-23

Prepared by

Michelle L. Boyles, FSA
Consulting Actuary

November 5, 2021

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Certification

We have performed an actuarial valuation of the Plan as of July 1, 2021 to determine funding for fiscal year 2022-23. This report presents the results of our valuation.

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 recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable actuarial standards of practice. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.
- 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.

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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 develop the expected long term rate of return on assets and estimate 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.

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.

Michelle L. Boyles, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Demographic Changes and Plan Experience

From July 1, 2019 to July 1, 2021, the overall membership decreased from 54 to 53. The number of active members increased from 22 to 23, and the total number of members and spouses/dependents receiving benefits decreased from 32 to 30.

The average age of active members increased from 42.8 to 44.7, and the average age of members receiving benefits increased from 65.3 to 65.5.

We updated expected claims costs based on our analysis of the claims experience and premium information that was provided to us for this valuation. Per capita healthcare costs did not increase as much as expected, which decreased liabilities by about $801,000.

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

We have made the following assumption changes to better represent future expections.

We updated the pre-65 medical trend rate to an initial inflation rate of 5.40%, grading down to an ultimate inflation rate of 4.00%, over a period of 53 years and the post-65 medical trend rate to an initial inflation rate of 4.70%, grading down to an ultimate inflation rate of 4.00%, over a period of 53 years.

In developing our projection of medical costs, we considered the potential impact of the emerging situation regarding the COVID-19 pandemic. Given the substantial uncertainty regarding the impact of COVID-19 on claims costs, including whether the pandemic will increase or decrease costs in the future, we have chosen not to make an adjustment to the projected costs. At the time of this report, it is not possible to predict the outcomes; however, it is known that the COVID-19 pandemic could have a material impact on future costs.

We lowered the investment return assumption from 7.00% to 6.50%

These changes decreased the Unfunded Accrued Liability by about $46,000 and the Actuarially Determined Contribution by about $5,000.

Other Significant Changes

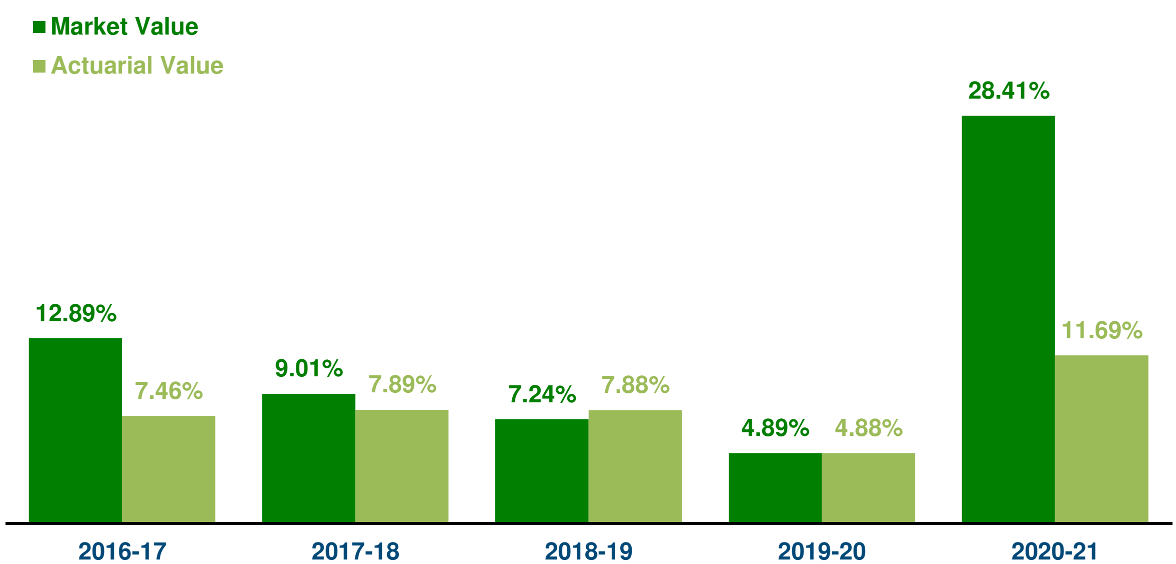
None.

Section I - Executive Summary
Assets

There are two different measures of the plan's assets that are used throughout this report. The Market Value is a snapshot of the plan's investments as of the valuation date. The Actuarial Value is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses non-asymptotically over five years.

	Market	Actuarial
Value as of July 1, 2019	$7,180,482	$7,064,210
Town Contributions	560,545	560,545
Investment Income	356,996	511,252
Benefit Payments	(312,231)	(312,231)
Value as of July 1, 2020	7,787,478	7,823,776
Town Contributions	668,907	668,907
Investment Income	2,258,279	933,685
Benefit Payments	(343,907)	(343,907)
Value as of July 1, 2021	10,370,757	9,082,461

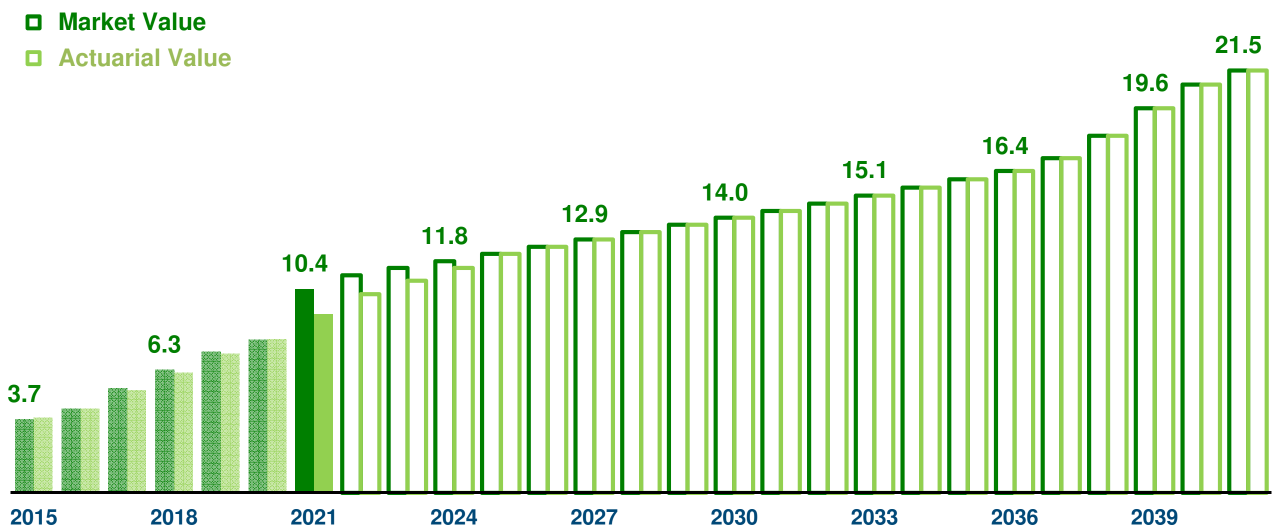
For fiscal year 2019-20, the plan's assets earned 4.89% on a Market Value basis. The actuarial assumption for this period was 7.00%; the result is an asset loss of about $154,000. For fiscal year 2020-21, the plan's assets earned 28.41% on a Market Value basis. The actuarial assumption for this period was 7.00%; the result is an asset gain of about $1.7 million. Historical rates of return are shown in the graph below.



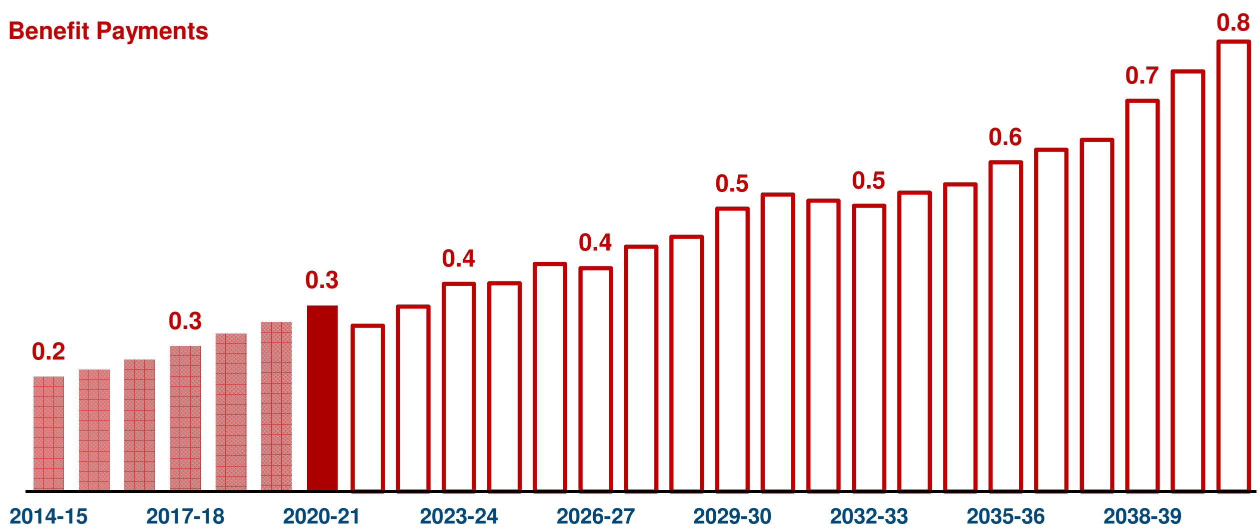
Please note that the Actuarial Value currently is less than the Market Value by $1,288,000. This figure represents investment gains that will be gradually recognized in future years. This process will exert downward pressure on the Town's contribution, unless there are offsetting market losses.

Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that the Town always contributes the Actuarially Determined Contribution and the investments always earn the assumed interest rate each year.

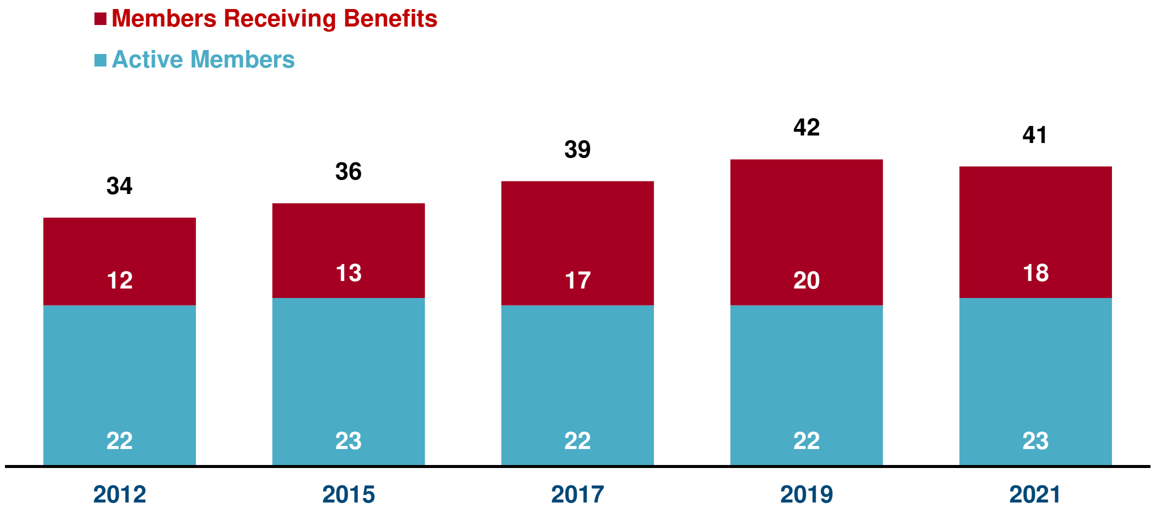


In 2020-21, the plan paid out $0.3 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $11 million in benefits to members.



Section I - Executive Summary
Membership

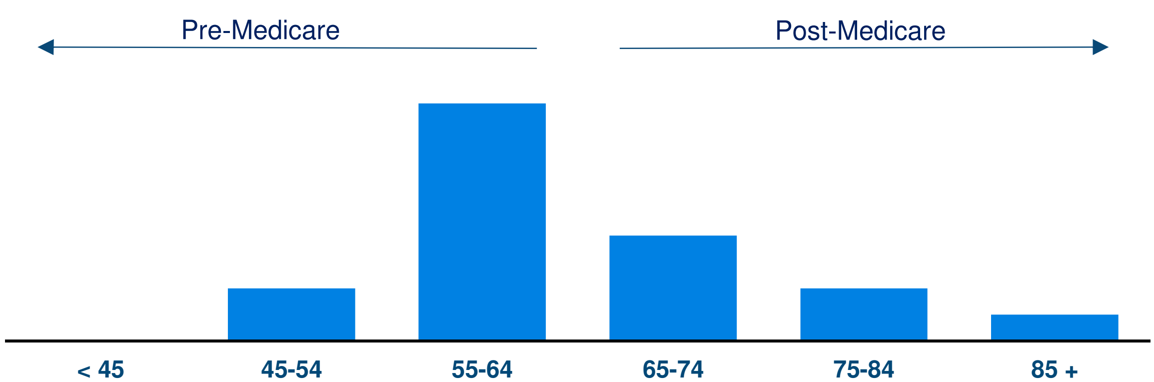
There are two basic categories of plan members included in the valuation: (1) members who are receiving benefits and (2) active employees who have met the eligibility requirements for membership.



Members Receiving Benefits on July 1, 2021

CPMA	4	Average Age	65.5
Police	14		
Total	18		

As of July 1, 2021, there were 18 members receiving benefits and 12 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, 2021

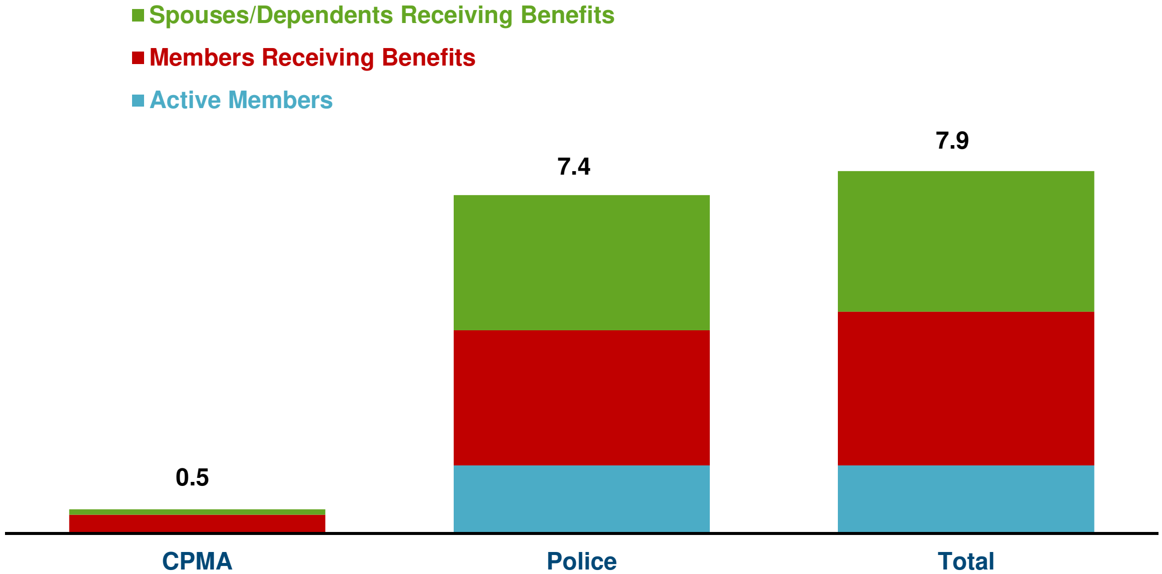
CPMA	3	Average Age	44.7
Police	20	Average Service	15.8
Total	23	Payroll	$1,719,992
		Average Payroll	74,782

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

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

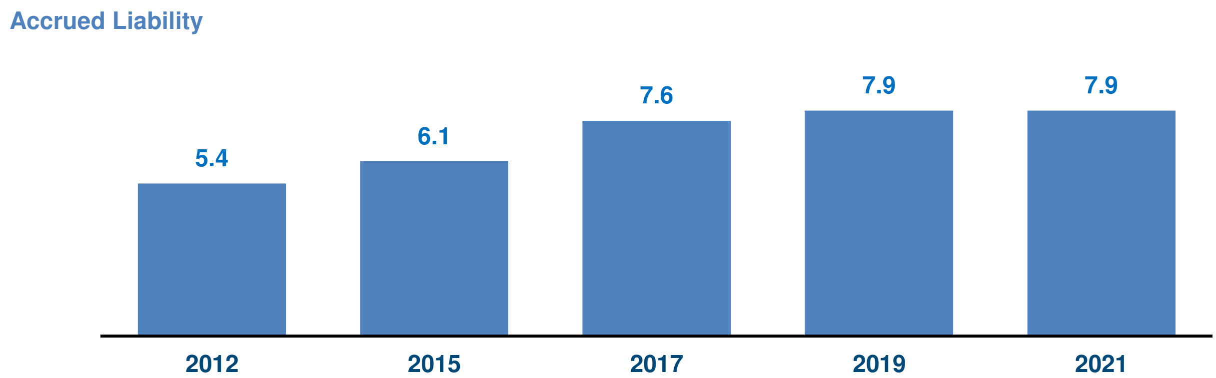
Section I - Executive Summary
Accrued Liability

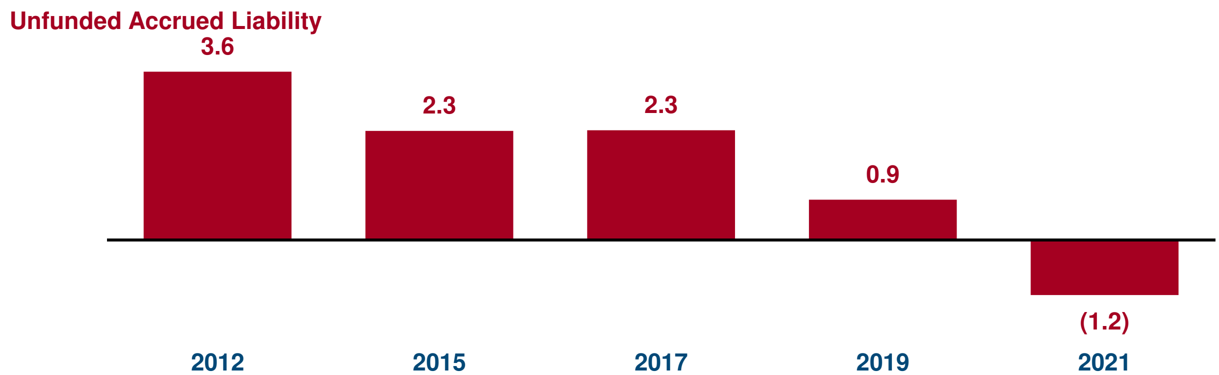
The Accrued Liability as of July 1, 2021 is $7,919,429, which consists of the following pieces:

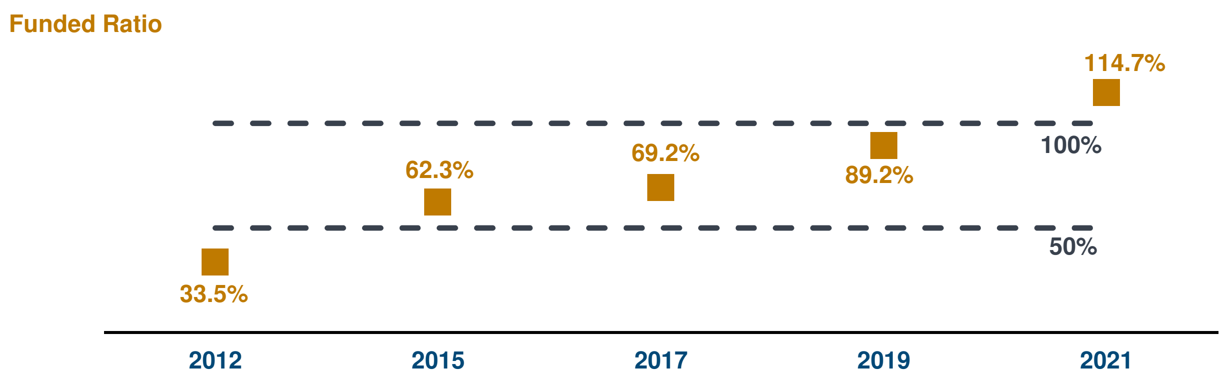


Section I - Executive Summary
Funded Status

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 Funded Ratio is the ratio of the two.



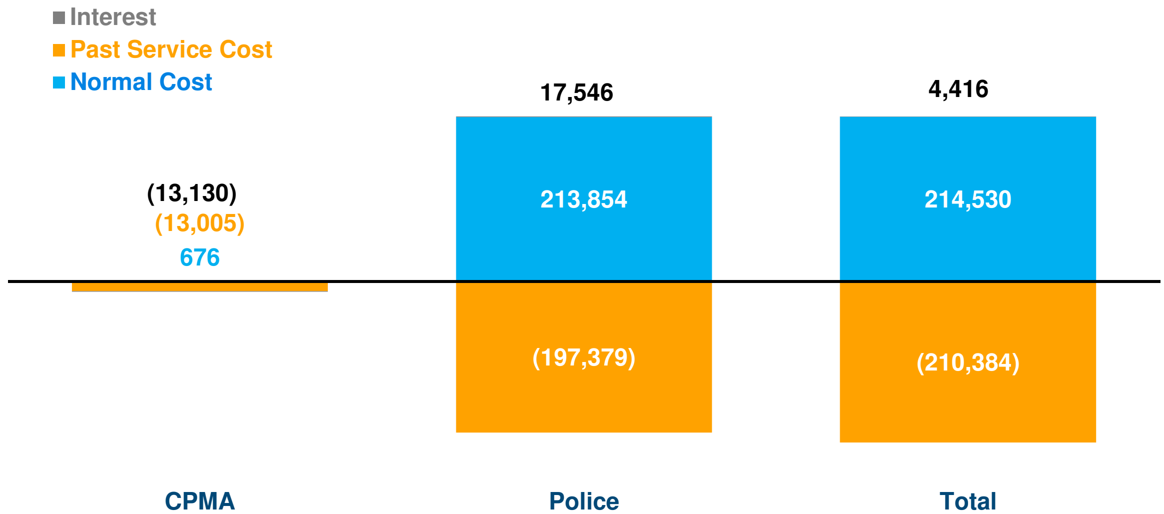




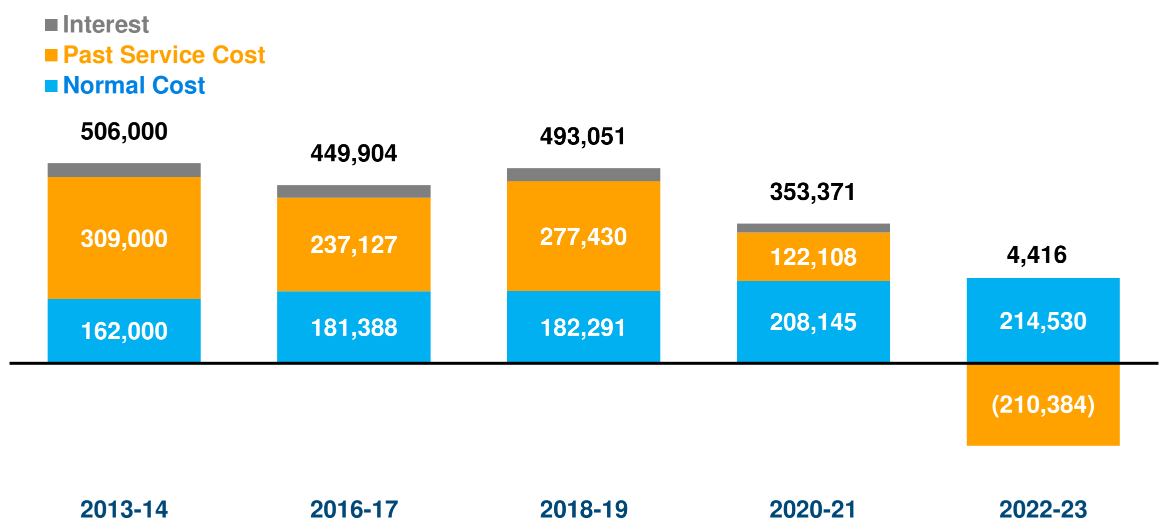
Section I - Executive Summary
Actuarially Determined Contribution

The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest to reflect the timing of the contribution relative to the valuation date.

The Actuarially Determined Contribution for fiscal year 2022-23 is $4,416, as shown graphically below.

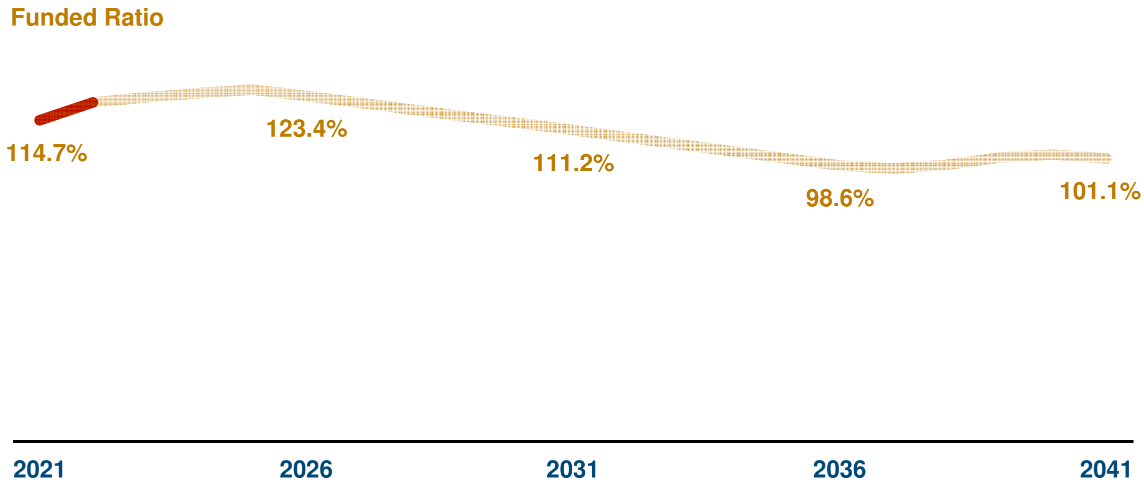


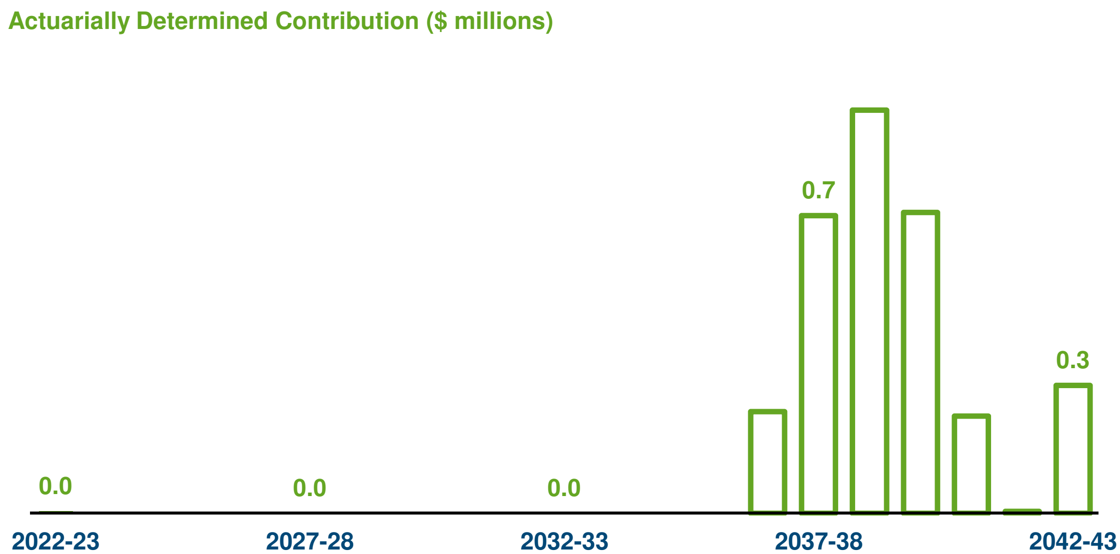
The chart below shows the Actuarially Determined Contribution for the past five fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects the impact of asset performance.



Section I - Executive Summary
Long-Range Forecast

If the Town pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the long-range contribution levels:





To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
Summary of Principal Results

Membership as of	July 1, 2019	July 1, 2021
Active Members	22	23
Members Receiving Benefits	20	18
Total Count	42	41
Payroll	$1,651,978	$1,719,992

Assets and Liabilities as of	July 1, 2019	July 1, 2021
Market Value of Assets	$7,180,482	$10,370,757
Actuarial Value of Assets	7,064,210	9,082,461
Accrued Liability for Active Members	3,050,596	3,544,167
Accrued Liability for Members Receiving Benefits	4,871,781	4,375,262
Total Accrued Liability	7,922,377	7,919,429
Unfunded Accrued Liability	858,167	(1,163,032)
Funded Ratio	89.2%	114.7%

Actuarially Determined Contribution for Fiscal Year	2020-21	2022-23
Normal Cost	$208,145	$214,530
Past Service Cost	122,108	(210,384)
Interest	23,118	270
Actuarially Determined Contribution	353,371	4,416
CPMA	($4,982)	($13,130)
Police	358,353	17,546
Total	353,371	4,416

Section II - Plan Assets
A. Summary of Fund Transactions

	CPMA	Police	Total
Market Value as of July 1, 2019	$657,911	$6,522,571	$7,180,482
Town Contributions	53,050	509,181	562,231
Member Contributions	0	0	0
Net Investment Income	32,150	324,846	356,996
Benefit Payments	(53,050)	(259,181)	(312,231)
Administrative Expenses	0	0	0
Market Value as of June 30, 2020	690,061	7,097,417	7,787,478
Expected Return on Market Value of Assets, 2019-20			511,037
Market Value (Gain)/Loss, 2019-20			154,041
Approximate Rate of Return, 2019-20*			4.89%
Market Value as of July 1, 2020	$690,061	$7,097,417	$7,787,478
Town Contributions	42,042	626,865	668,907
Member Contributions	0	0	0
Net Investment Income	196,019	2,062,260	2,258,279
Benefit Payments	(42,042)	(301,865)	(343,907)
Administrative Expenses	0	0	0
Market Value as of June 30, 2021	886,080	9,484,677	10,370,757
Expected Return on Market Value of Assets, 2020-21			556,423
Market Value (Gain)/Loss, 2020-21			(1,701,856)
Approximate Rate of Return, 2020-21*			28.41%

* 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.

Section II - Plan Assets
B. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses in equal installments ('non-asymptotically') over a five year period. The Actuarial Value of Assets as of July 1, 2021 is determined below.

	CPMA	Police	Total
1. Market Value of Assets as of July 1, 2021	$886,080	$9,484,677	$10,370,757
2. Market (Gains)/Losses			
06/30/2021	(147,721)	(1,554,135)	(1,701,856)
06/30/2020	13,872	140,169	154,041
06/30/2019	61	588	649
06/30/2018	(9,553)	(87,925)	(97,478)
3. Delayed Recognition of Market (Gains)/Losses:			
06/30/2021	(118,177)	(1,243,308)	(1,361,485)
06/30/2020	8,323	84,102	92,425
06/30/2019	24	236	260
06/30/2018	(1,911)	(17,585)	(19,496)
Total Amount Deferred	(111,741)	(1,176,555)	(1,288,296)
4. Actuarial Value of Assets as of July 1, 2021 (1) + (3)	774,339	8,308,122	9,082,461

Section III - Development of Contribution
A. Summary of Liabilities

We have calculated the Accrued Liability separately for 2 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.

	CPMA	Police	Total
Current active members			
Members Under Age 65	$0	$1,005,999	$1,005,999
Members Over Age 65	71,174	942,525	1,013,699
Spouses/Dependents Under Age 65	8,291	804,222	812,513
Spouses/Dependents Over Age 65	52,376	659,580	711,956
Total	131,841	3,412,326	3,544,167
Current members receiving benefits			
Members Under Age 65	72,556	689,236	761,792
Members Over Age 65	203,531	1,319,391	1,522,922
Spouses/Dependents Under Age 65	0	846,302	846,302
Spouses/Dependents Over Age 65	81,626	1,162,620	1,244,246
Total	357,713	4,017,549	4,375,262
Total Accrued Liability	489,554	7,429,875	7,919,429

Accrued Liability Sensitivity at July 1, 2021

	1% Decrease	Baseline	1% Increase
Discount Rate	9,236,961	7,919,429	6,875,647
Trend Rate	6,802,649	7,919,429	9,348,538

Section III - Development of Contribution
B. Actuarially Determined Contribution

The Actuarially Determined Contribution (ADC) for the OPEB program consists of three pieces: a **Normal Cost** (the cost of benefits earned each year should be accrued in that year) plus a **Past Service Cost** (a catch-up accrual to amortize the Unfunded Accrued Liability) plus **Interest** to reflect the timing lag between the valuation date and the fiscal year.

The amortization method produces annual payments that will increase by 3.00% annually. On this basis, the ADC is determined as follows:

	CPMA	Police	Total
Accrued Liability	$489,554	$7,429,875	$7,919,429
Actuarial Value of Assets	561,449	8,521,012	9,082,461
Unfunded Accrued Liability	(71,895)	(1,091,137)	(1,163,032)
Funded Ratio	114.7%	114.7%	114.7%
Amortization Period	6	6	6
Amortization Growth Rate	3.00%	3.00%	3.00%
Past Service Cost	(13,005)	(197,379)	(210,384)
Normal Cost	676	213,854	214,530
Employee Contributions	0	0	0
Expenses	0	0	0
Employer Normal Cost	676	213,854	214,530
Interest	(801)	1,071	270
ADC for FY 2022-23	(13,130)	17,546	4,416
Expected Benefit Payments	(38,929)	(302,563)	(341,492)
Net Budget Impact	(52,059)	(285,017)	(337,076)

The ADC is assumed to be paid at the beginning of the Fiscal Year.

Section III - Development of Contribution
C. Long Range Forecast

This forecast is based on the results of the July 1, 2021 actuarial valuation and assumes that the Town will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

	Values as of the Valuation Date					Cash Flows Projected to the Following Fiscal Year			
Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	Town Contributions	Member Contributions	Benefit Payments	Net Cash Flows
07/01/2021	$7,919,429	$9,082,461	($1,163,032)	114.7%	2022-23	$4,416	$0	($341,492)	($337,076)
07/01/2022	8,347,000	10,105,000	(1,758,000)	121.1%	2023-24	0	0	(383,000)	(383,000)
07/01/2023	8,777,000	10,786,000	(2,009,000)	122.9%	2024-25	0	0	(385,000)	(385,000)
07/01/2024	9,201,000	11,443,000	(2,242,000)	124.4%	2025-26	0	0	(420,000)	(420,000)
07/01/2025	9,667,000	12,151,000	(2,484,000)	125.7%	2026-27	0	0	(413,000)	(413,000)
07/01/2026	10,139,000	12,507,000	(2,368,000)	123.4%	2027-28	0	0	(452,000)	(452,000)
07/01/2027	10,663,000	12,894,000	(2,231,000)	120.9%	2028-29	0	0	(471,000)	(471,000)
07/01/2028	11,202,000	13,265,000	(2,063,000)	118.4%	2029-30	0	0	(522,000)	(522,000)
07/01/2029	11,767,000	13,642,000	(1,875,000)	115.9%	2030-31	0	0	(548,000)	(548,000)
07/01/2030	12,305,000	13,989,000	(1,684,000)	113.7%	2031-32	0	0	(537,000)	(537,000)
07/01/2031	12,891,000	14,332,000	(1,441,000)	111.2%	2032-33	0	0	(528,000)	(528,000)
07/01/2032	13,538,000	14,709,000	(1,171,000)	108.6%	2033-34	0	0	(552,000)	(552,000)
07/01/2033	14,249,000	15,121,000	(872,000)	106.1%	2034-35	0	0	(567,000)	(567,000)
07/01/2034	14,995,000	15,533,000	(538,000)	103.6%	2035-36	0	0	(608,000)	(608,000)
07/01/2035	15,786,000	15,957,000	(171,000)	101.1%	2036-37	236,000	0	(631,000)	(395,000)
07/01/2036	16,603,000	16,366,000	237,000	98.6%	2037-38	689,000	0	(650,000)	39,000
07/01/2037	17,468,000	17,022,000	446,000	97.4%	2038-39	934,000	0	(722,000)	212,000
07/01/2038	18,392,000	18,170,000	222,000	98.8%	2039-40	697,000	0	(776,000)	(79,000)
07/01/2039	19,303,000	19,570,000	(267,000)	101.4%	2040-41	225,000	0	(831,000)	(606,000)
07/01/2040	20,266,000	20,760,000	(494,000)	102.4%	2041-42	5,000	0	(918,000)	(913,000)

Section III - Development of Contribution
D. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
July 1, 2009	$502,000	$4,947,000	$4,445,000	10.1%
July 1, 2012	1,794,000	5,361,000	3,567,000	33.5%
July 1, 2015	3,824,783	6,140,520	2,315,737	62.3%
July 1, 2017	5,234,124	7,562,527	2,328,403	69.2%
July 1, 2019	7,064,210	7,922,377	858,167	89.2%
July 1, 2021	9,082,461	7,919,429	(1,163,032)	114.7%

Section III - Development of Contribution
E. History of Town Contributions

Fiscal Year	Actuarially Determined Contribution	Actual Town Contribution	Contribution Deficiency (Excess)
2014-15	$506,000	$612,000	($106,000)
2015-16	506,000	575,000	(69,000)
2016-17	449,904	694,081	(244,177)
2017-18	450,000	718,821	(268,821)
2018-19	493,051	741,884	(248,833)
2019-20	476,927	562,231	(85,304)
2020-21	353,371	668,907	(315,536)
2021-22	325,330	TBD	TBD
2022-23	4,416	TBD	TBD

Section IV - Membership Data
A. Statistics of Active Membership

		As of July 1, 2019	As of July 1, 2021
Number of Active Members	CPMA	3	3
	Police	19	20
	Total	22	23
Average Age	CPMA	62.8	64.8
	Police	39.6	41.7
	Total	42.8	44.7
Average Service	CPMA	31.2	33.2
	Police	11.8	13.1
	Total	14.4	15.8

Section IV - Membership Data
B. Distribution of Active Members as of July 1, 2021

CPMA

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

Police

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

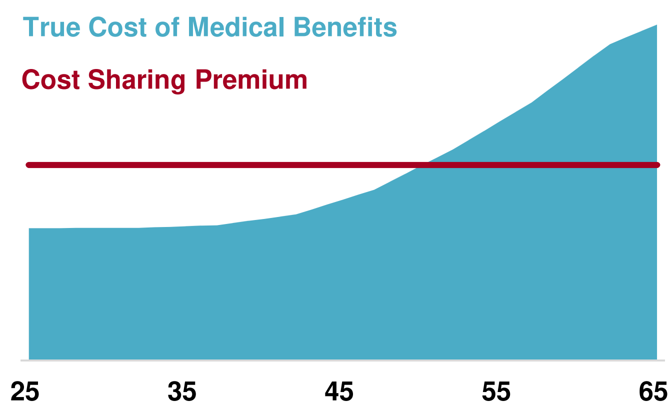
Section IV - Membership Data
C. Information on Members Receiving Benefits

	As of July 1, 2019	As of July 1, 2021
Members Receiving Benefits		
CPMA	5	4
Police	15	14
Total	20	18
Average Age		
CPMA	73.5	75.4
Police	62.5	61.3
Total	65.3	63.7
Spouses/Dependents Receiving Benefits		
CPMA	1	1
Police	11	11
Total	12	12
Average Age		
CPMA	77.1	79.1
Police	57.2	59.2
Total	58.8	60.8

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 this report. 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 medical premiums are shown below.

Pre-65 Medical Plan	Employee	Spouse	Effective Date
CPMA PPO	$9,035.76	$9,229.80	07/01/2021
Police PPO	9,035.76	10,582.74*	07/01/2021
Post-65 Medical Plan			
Medicare PPO	4,925.40	4,928.40	07/01/2021

* Includes child dependent costs.

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, 2021 to arrive at the expected annual per capita claims costs for a 65-year-old, which are also shown below. Given the substantial uncertainty regarding the impact of COVID-19 on plan costs, including whether the pandemic will increase or decrease costs during the term of our projections, we have chosen not to make an adjustment in the expected plan costs. It is possible that the COVID-19 pandemic could have a material impact on the projected costs.

CPMA

	Employee		Spouse	
Age	**Male**	**Female**	**Male**	**Female**
45	0.5794	0.9441	0.4735	0.6301
55	0.6867	0.8251	0.6463	0.7917
65	1.0000	1.0000	1.0000	1.0000
75	1.3425	1.2275	1.3425	1.2275
85	1.3996	1.2280	1.3996	1.2280

Age 65 per capita claims cost

	Employee Male	Employee Female	Spouse Male	Spouse Female
Pre-Medicare	$18,872.76	$16,854.93	$14,930.77	$13,773.91
Medicare	4,143.67	3,987.51	4,143.67	3,987.51

Police

	Employee		Spouse*	
Age	**Male**	**Female**	**Male**	**Female**
45	0.5794	0.9441	0.5066	0.6552
55	0.6867	0.8251	0.6683	0.8058
65	1.0000	1.0000	1.0000	1.0000
75	1.3425	1.2275	1.3425	1.2275
85	1.3996	1.2280	1.3996	1.2280

Age 65 per capita claims cost

	Employee Male	Employee Female	Spouse Male	Spouse Female
Pre-Medicare	$18,872.76	$16,854.93	$15,943.86	$14,779.75
Medicare	4,143.67	3,987.51	4,143.67	3,987.51

* Child dependent claim costs are included with pre-65 spouse claim costs.

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. This Unfunded Accrued Liability is amortized as a level percent over 10 years, beginning July 1, 2017.

The Actuarial Value of Assets is determined by recognizing market gains and losses non-asymptotically over a five year period.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years.

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 6.50% (prior: 7.00%)

Inflation 2.50%

Amortization Growth Rate 3.00%

Salary Scale 3.50%

Medical Trend

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 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.

Year Beginning			Pre-65	Year Beginning			Post-65
2021	to	2022	5.40%	2021	to	2022	4.70%
2022	to	2023	5.10%	2022	to	2023	4.90%
2023	to	2024	4.90%	2023	to	2024	5.00%
2024	to	2026	4.80%	2024	to	2026	4.90%
2026	to	2028	4.70%	2026	to	2029	4.80%
2028	to	2031	4.60%	2029	to	2031	4.70%
2031	to	2039	4.70%	2031	to	2040	4.80%
2039	to	2048	4.80%	2040	to	2050	4.90%
2048	to	2049	4.90%	2050	to	2056	4.80%
2049	to	2051	4.80%	2056	to	2064	4.70%
2051	to	2061	4.70%	2064	to	2066	4.60%
2061	to	2065	4.60%	2066	to	2067	4.50%
2065	to	2066	4.50%	2067	to	2069	4.40%
2066	to	2068	4.40%	2069	to	2070	4.30%
2068	to	2069	4.30%	2070	to	2072	4.20%
2069	to	2071	4.20%	2072	to	2073	4.10%
2071	to	2073	4.10%	2073	to	-	4.00%
2073	to	-	4.00%				

Appendix B - Actuarial Assumptions

Mortality

PubS-2010 Mortality Table with generational projection per the MP-2014 ultimate scale, with employee rates before benefit commencement and healthy or disabled annuitant rates after benefit commencement. This assumption includes a margin for improvements in longevity beyond the valuation date.

Turnover

Police: None.

CPMA: Rates based on age:

Age	Rate
20	6.6%
30	4.8%
40	3.8%
50	1.5%
60	0.0%

Retirement

Police hired prior to July 1, 2011: Rates are based on attained age:

Age	Rate
45-49	5%
50-54	10%
55	20%
56	30%
57	40%
58-59	50%
60+	100%

Police hired on or after July 1, 2011: 25% of members are assumed to retire when they are first eligible to retire. The rates in the table above are applied after first eligibility.

CPMA: Rates are based on attained age:

Age	Rate
55-61	20%
62-64	30%
65	50%
66-67	10%
68+	100%

Appendix B - Actuarial Assumptions

Disability

Police: Rates based on age:

Age	Rate
40-59	1%

CPMA: None.

Future Retiree Coverage

Active members are assumed to elect coverage at retirement as follows:

	Percentage
Police	100%
CPMA	40%
Teamsters	0%

Future Dependent Coverage

75% of active members are assumed to elect dependent coverage at retirement. All female spouses are assumed to be 3 years younger than males.

Future Post-65 Coverage

All current actives and pre-65 retirees are assumed to continue past age 65.

Valuation of Life, Dental and Post-65 Medicare Eligible Medical Benefits

It is assumed that there is no implicit rate subsidy associated with post-65 medical benefits for Medicare eligible retired members and their spouses who are paying 100% of the premium.

Valuation of Benefits for Children

Benefits attributed to children have been excluded from this valuation for all groups, except **Police**, as they were determined to be de minimis.

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

Police

A police-officer retiring, who is at least 60 years old, or who has completed at least 20 years of service regardless of age (25 years of service if hired on or after July 1, 2011) and eligible for pension benefits under the State of Rhode Island, Optional Retirement for Members of Police Force and Firefighters, shall be eligible to continue health insurance coverage for self and spouse.

CPMA

Eligible for retirement at an individually determined age. This age is based on the members' social security retirement age with a proportional downward adjustment based on years of service as of June 30, 2012. The minimum retirement age is 59.

Teamsters

Teamsters retiring before the age of 65 in accordance with the Rhode Island Municipal Employees Retirement System with the COLA provision.

Cost Sharing

Police

Retiring on or after July 1, 2012 but before June 30, 2014:

Pre-65	85% Town-paid for retiree and spouse.
Post-65	85% Town-paid for retiree and spouse (BC Plan 65); Medicare Part B reimbursement for retiree and spouse.

Retiring on or after June 30, 2014:

Pre-65	80% Town-paid for retiree and spouse.
Post-65	80% Town-paid for retiree and spouse (BC Plan 65); Medicare Part B reimbursement for retiree and spouse.

Appendix C - Summary of Plan Provisions

Cost Sharing

CPMA

Hired prior to July 1, 1996:

Pre-65	80% Town-paid for retiree and spouse.
Post-65	80% Town-paid for retiree and spouse (BC Plan 65).

Hired on or after July 1, 1996:

Not eligible for Town-paid post-retirement health benefits.

Teamsters

Retirees must pay 100% of the health premium for self and spouse.

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.