TOWN OF BRISTOL, RI
POLICE RETIREMENT PLAN

Actuarial Valuation as of July 1, 2020
For Fiscal Year 2021-22

Prepared by

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Certification

We have performed an actuarial valuation of the Plan as of July 1, 2020 to determine funding for fiscal year 2021-22. This report presents the results of our valuation.

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension 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 government regulations. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.
- Information needed to meet disclosure requirements.
- Review of plan experience for the previous year 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 ERISA and the related sections of the tax code. Additional determinations may be needed for purposes other than meeting funding requirements, 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 intended for valuations that use 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 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 . 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 pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

We 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. Castelhano, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

The 2019 valuation reflected a 50% phase-in of an update to the mortality assumption from the RP-2000 base table with generational projection of mortality improvements per Scale AA to the PubS-2010 base table with generational projection of mortality improvements per the MP Ultimate scale. This valuation reflects 100% of the updated mortality assumption. In addition, the amortization method was changed to reflect layered bases rather than a single amortization base.

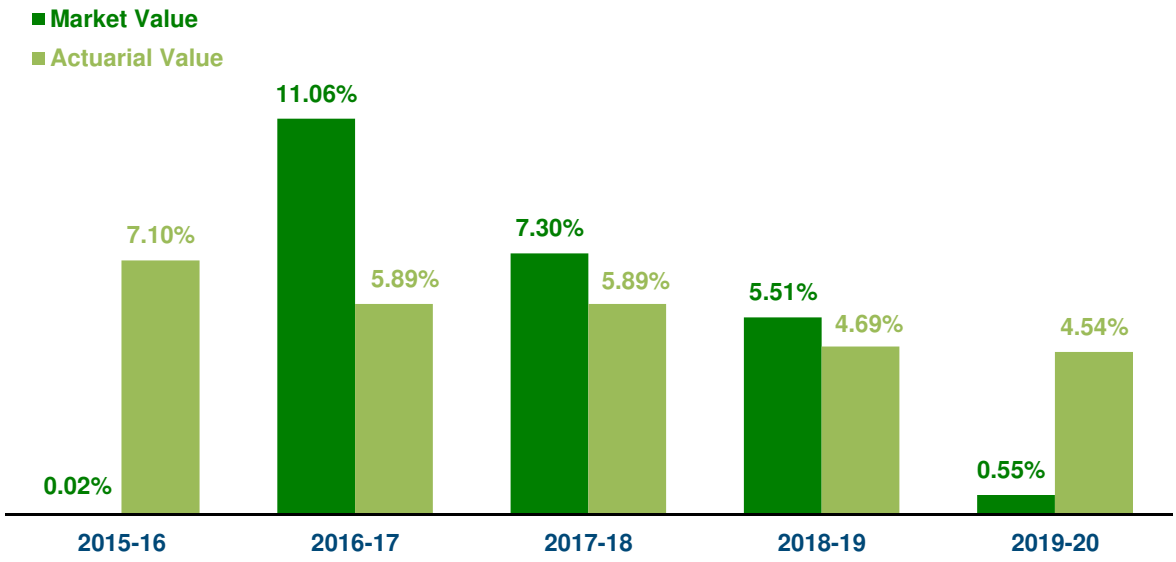
These changes in combination caused the Unfunded Accrued Liability to increase by about $678,000 and the Actuarially Determined Contribution to increase by about $226,000.

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	$17,285,080	$17,377,006
Town and Member Contributions	1,424,137	1,424,137
Investment Income	93,200	784,197
Benefit Payments	(1,764,956)	(1,764,956)
Value as of July 1, 2020	17,037,461	17,820,384

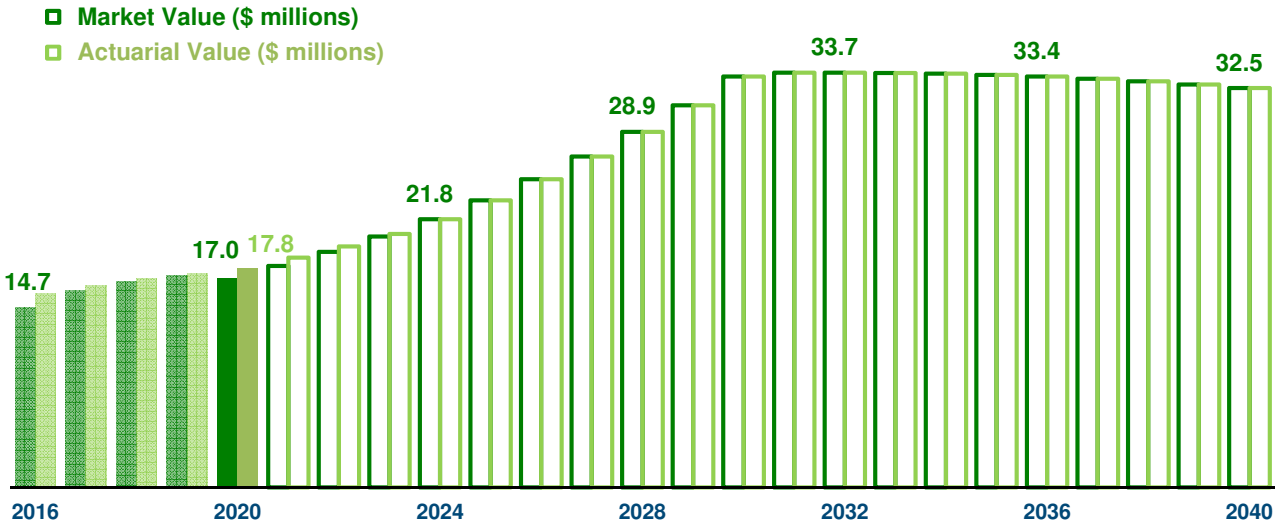
For fiscal year 2019-20, the plan's assets earned 0.545% on a Market Value basis and 4.542% on an Actuarial Value basis. The actuarial assumption for this period was 6.625%; the result is an asset loss of about $1.0 million on a Market Value basis and a loss of about $0.4 million on an Actuarial Value basis. Historical rates of return are shown in the graph below.



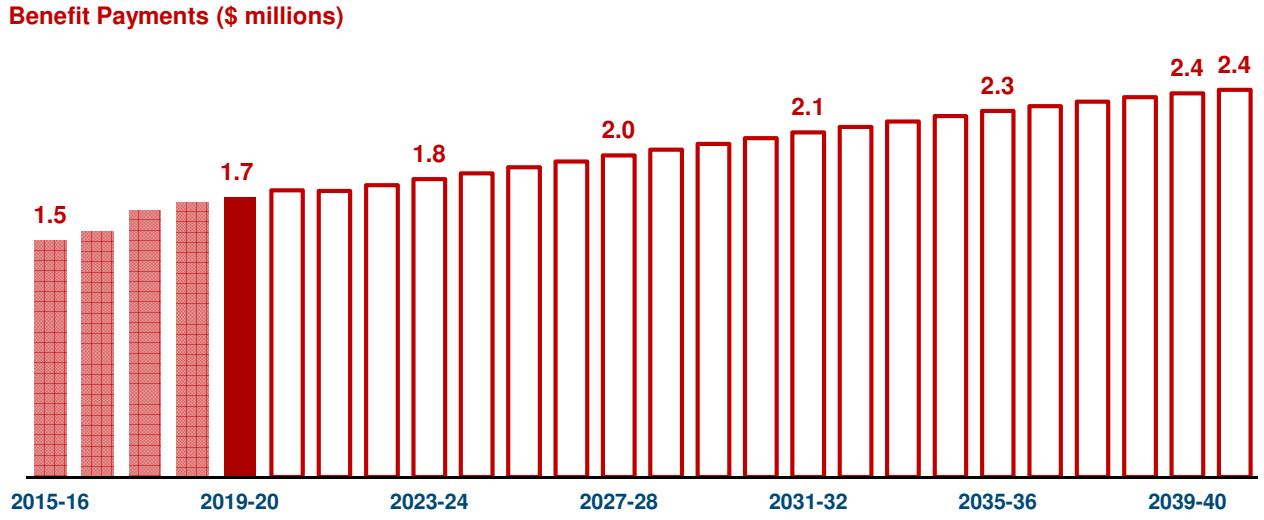
Please note that the Actuarial Value currently exceeds the Market Value by $0.8 million. This figure represents investment losses that will be gradually recognized in future years. This process will exert upward pressure on the Town's contribution, unless there are offsetting market gains.

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.

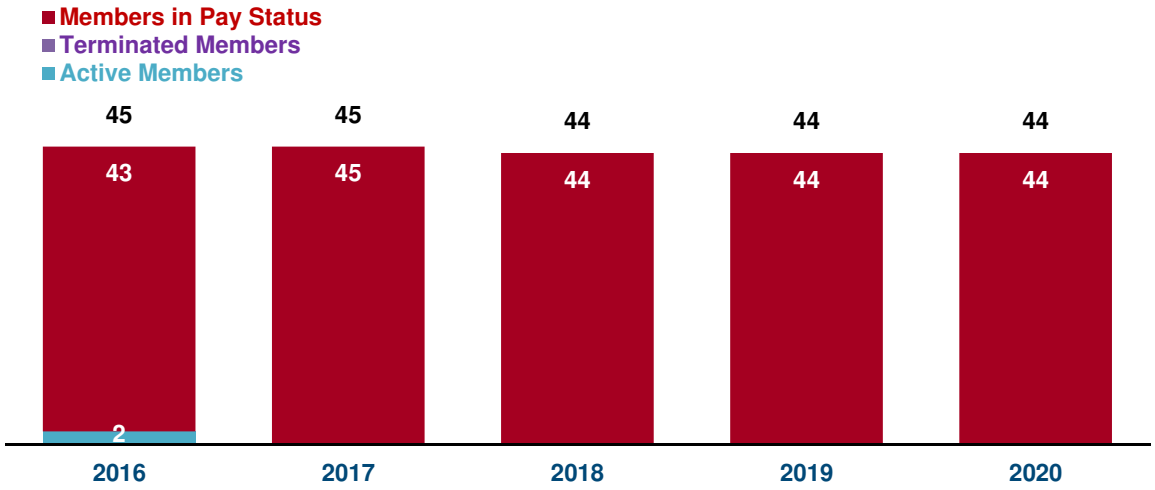


In 2019-20, the plan paid out $1.8 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $42 million in benefits to members.



Section I - Executive Summary
Membership

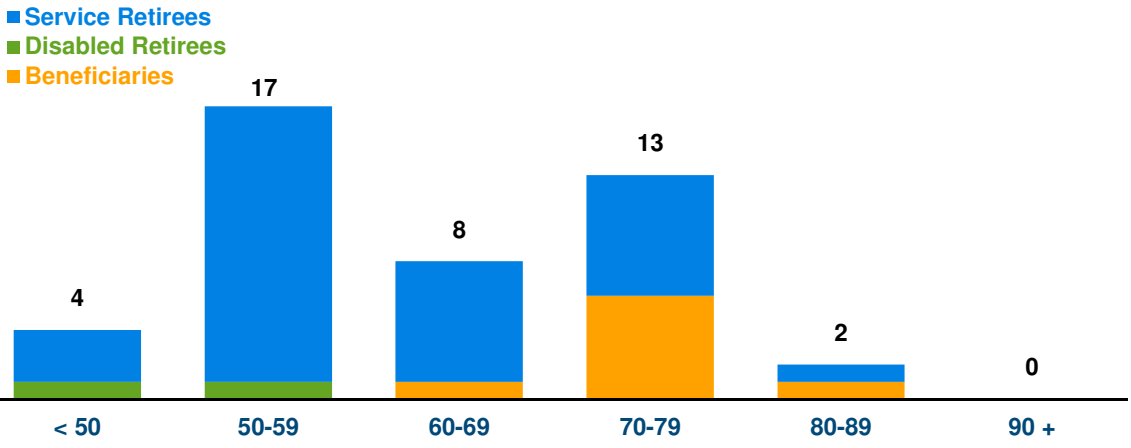
There are three basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) active employees who have met the eligibility requirements for membership.



Members in Pay Status on July 1, 2020

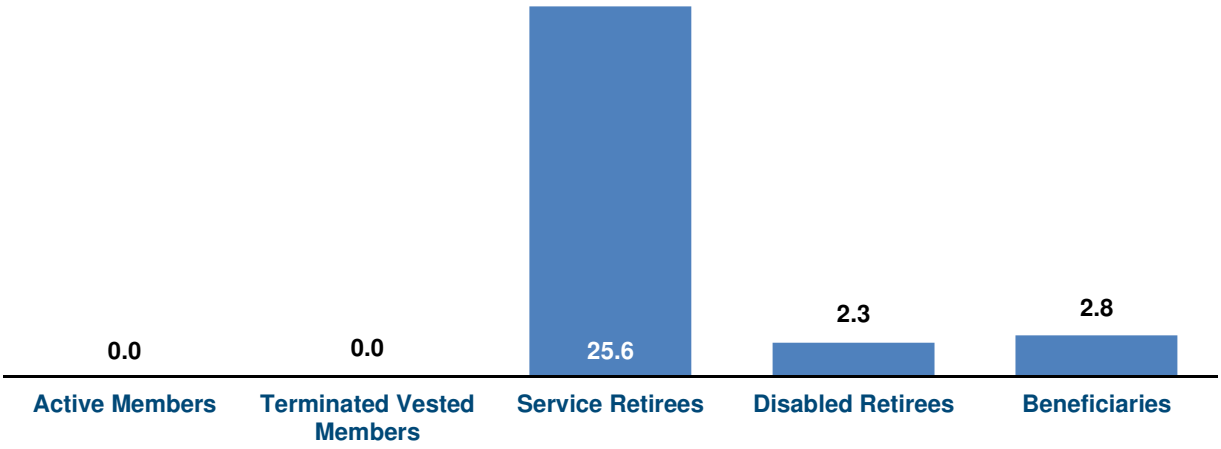
Service Retirees	34	Average Age	64.1
Disabled Retirees	2	Total Annual Benefit	$1,765,415
Beneficiaries	8	Average Annual Benefit	40,123
Total	44		

The members in pay status fall across a wide distribution of ages:



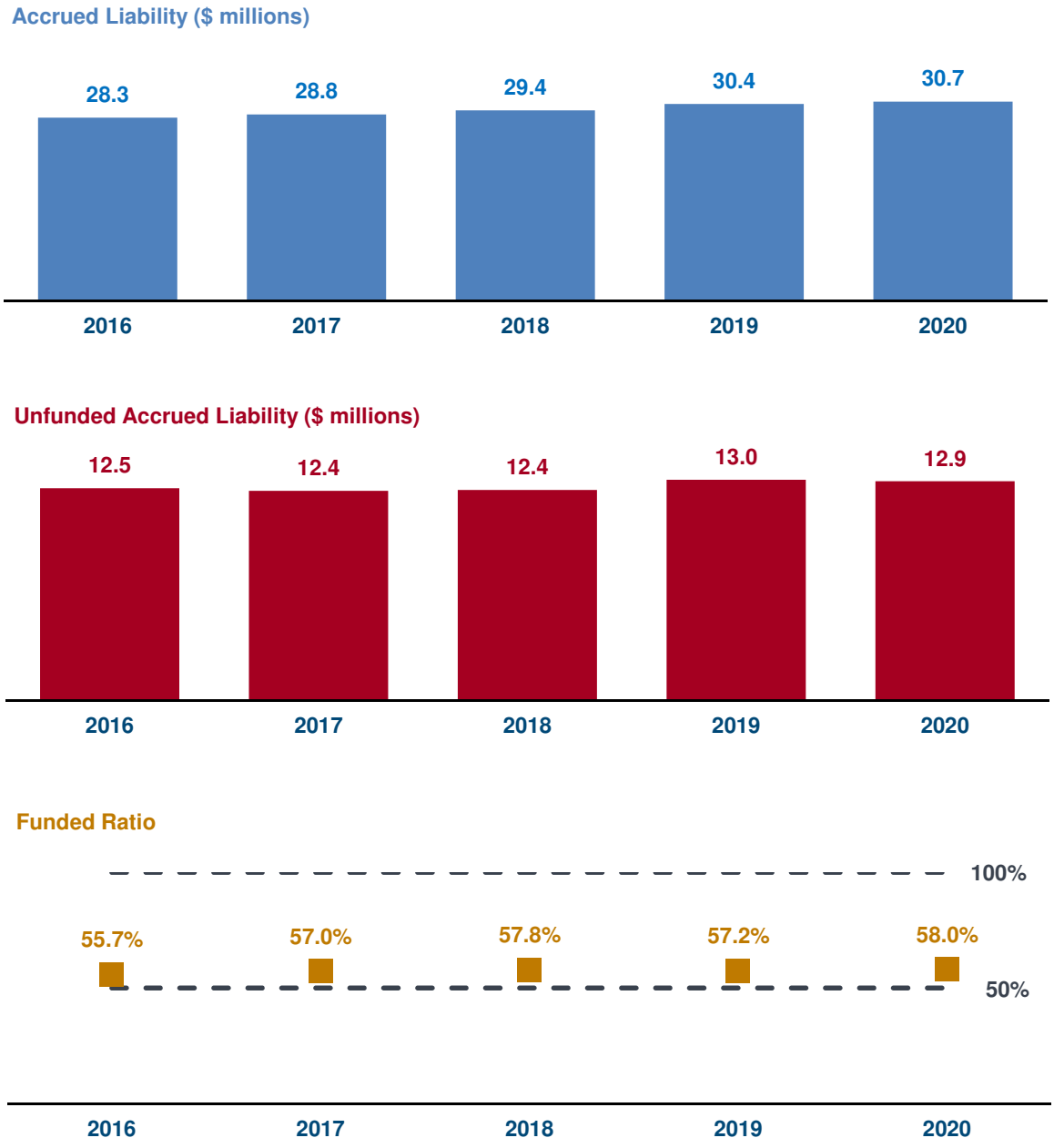
Section I - Executive Summary
Accrued Liability

The Accrued Liability as of July 1, 2020 is $30,746,270, which consists of the following pieces (in $ millions):



Section I - Executive Summary
Funded Status

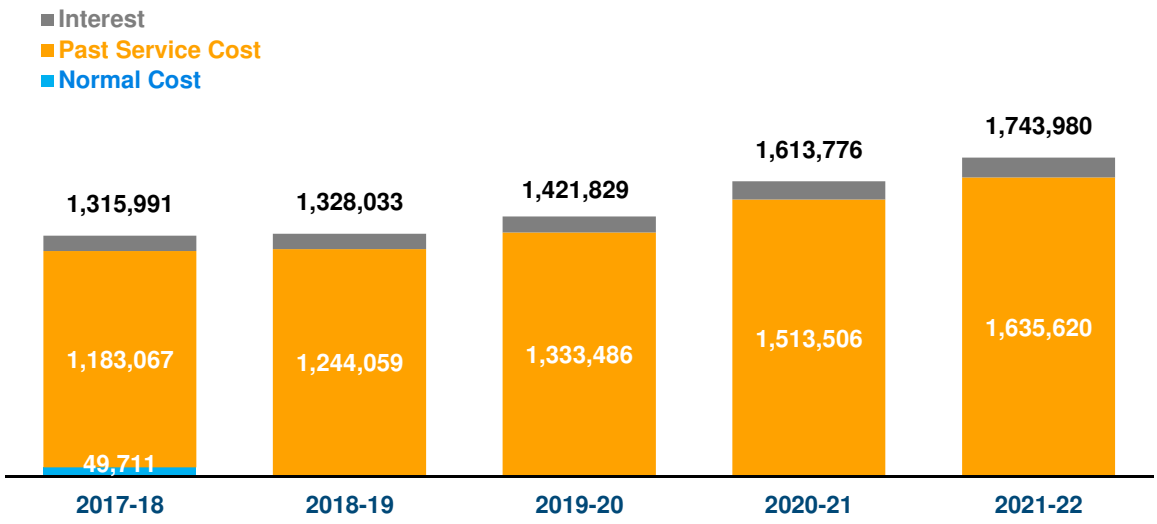
The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between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

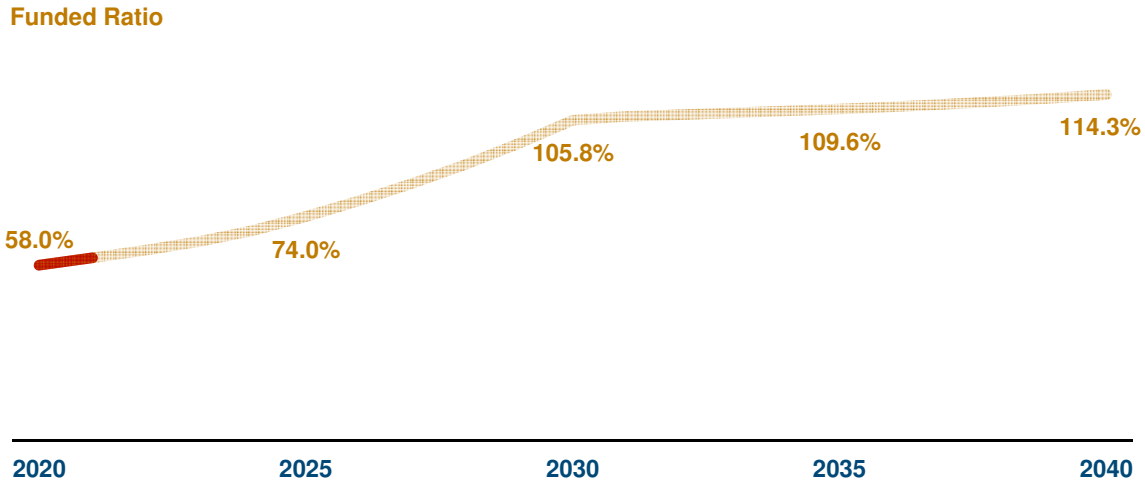
The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest to reflect the timing of the contribution relative to the valuation date.

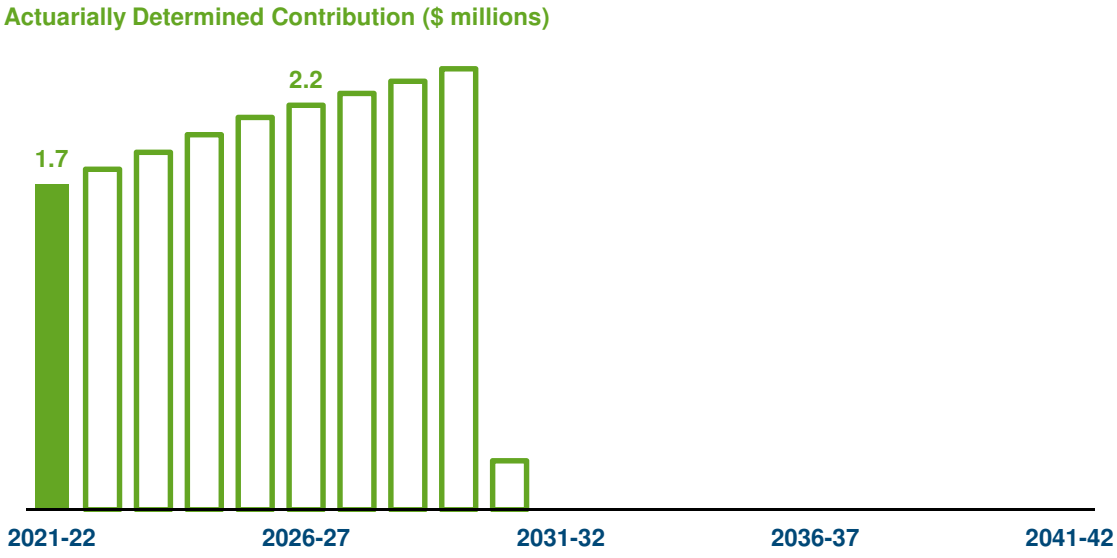
The Actuarially Determined Contribution for fiscal year 2021-22 is shown graphically below, along with the comparable figures for the preceding four fiscal years. Because there are no longer any active members covered by the plan, the Normal Cost is now zero.



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:

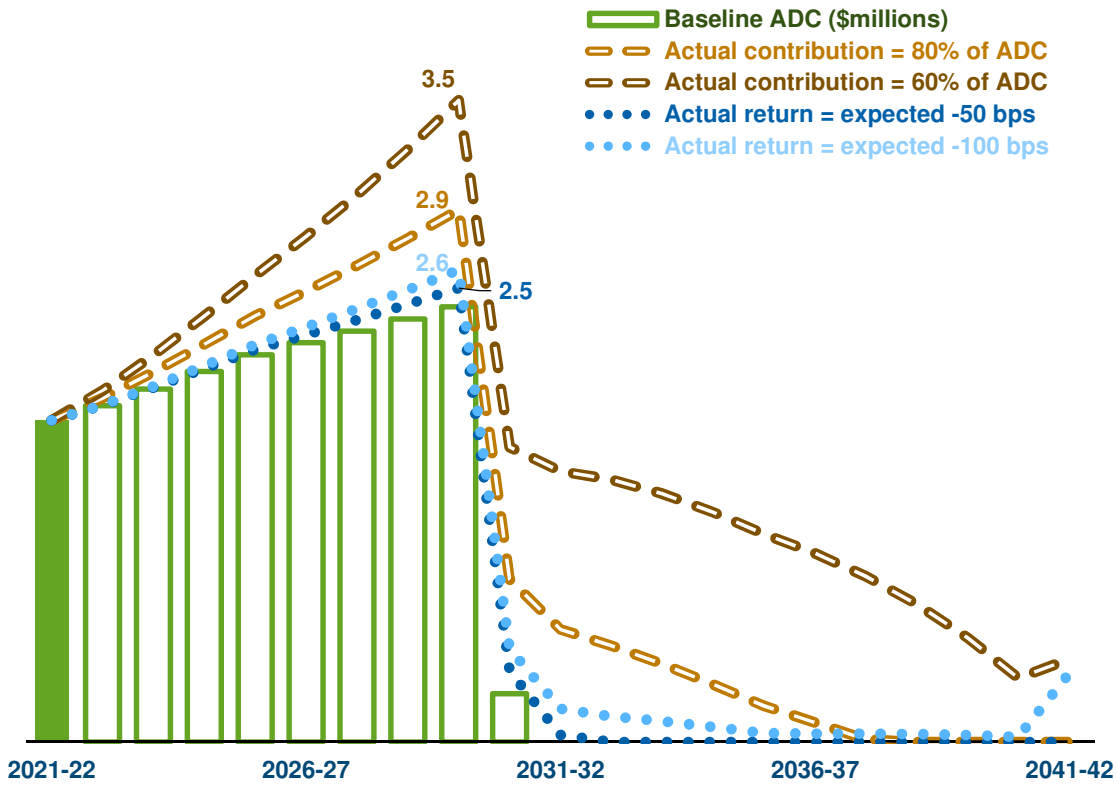




To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
Long-Range Forecast (continued)

Pension benefits are paid for through a combination of contributions from the Town and from employees, and from investment income. If the Town pays less than the Actuarially Determined Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer, and to compensate, the Town's contribution levels would be pushed higher. The risks of underfunding and underearning are illustrated in the hypothetical scenarios below:



The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the Town's future contribution levels. Stochastic projections could be prepared that would enable the Town to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	July 1, 2019	July 1, 2020
Active Members	0	0
Terminated Members	0	0
Members in Pay Status	44	44
Total Count	44	44
Payroll	$0	$0

Assets and Liabilities as of	July 1, 2019	July 1, 2020
Market Value of Assets	$17,285,080	$17,037,461
Actuarial Value of Assets	17,377,006	17,820,384
Accrued Liability for Active Members	0	0
Accrued Liability for Terminated Members	0	0
Accrued Liability for Members in Pay Status	30,394,494	30,746,270
Total Accrued Liability	30,394,494	30,746,270
Unfunded Accrued Liability	13,017,488	12,925,886
Funded Ratio	57.2%	58.0%

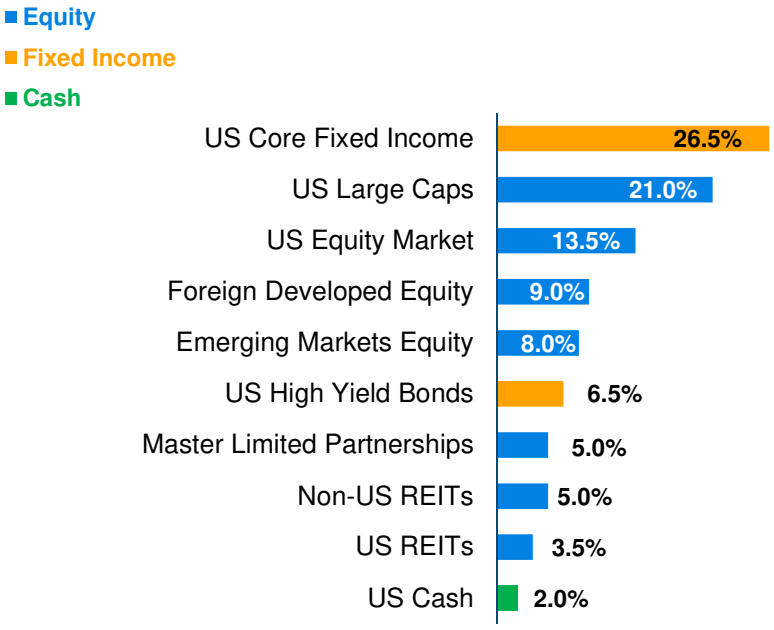
Actuarially Determined Contribution for Fiscal Year	2020-21	2021-22
Normal Cost	$0	$0
Past Service Cost	1,513,506	1,635,620
Interest	100,270	108,360
Actuarially Determined Contribution	1,613,776	1,743,980

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2019	$17,285,080
Town Contributions	1,424,137
Member Contributions	0
Net Investment Income	93,200
Benefit Payments	(1,764,956)
Administrative Expenses	0
Market Value as of June 30, 2020	17,037,461
Expected Return on Market Value of Assets	1,132,936
Market Value (Gain)/Loss	1,039,736
Approximate Rate of Return *	0.545%

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

Target Asset Allocation as of June 30, 2020



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, 2020 is determined below.

1.	Expected Market Value of Assets:	
	a. Market Value of Assets as of July 1, 2019	$17,285,080
	b. Town and Member Contributions	1,424,137
	c. Benefit Payments	(1,764,956)
	d. Expected Earnings Based on 6.625% Interest	1,132,936
	e. Expected Market Value of Assets as of July 1, 2020	18,077,197
2.	Actual Market Value of Assets as of July 1, 2020	17,037,461
3.	Market Value (Gain)/Loss: (1e) - (2)	1,039,736
4.	Delayed Recognition of Market (Gains)/Losses	

Plan Year End	(Gain)/Loss	Percent Not Recognized	Amount Not Recognized
06/30/2020	$1,039,736	80%	$831,789
06/30/2019	185,078	60%	111,047
06/30/2018	(86,862)	40%	(34,745)
06/30/2017	(625,842)	20%	(125,168)
			782,923

5.	Actuarial Value of Assets as of July 1, 2020: (2) + (4)	17,820,384
6.	Return on Actuarial Value of Assets: (5) - [(1a) + (1b) + (1c)]	781,665
7.	Approximate Rate of Return on Actuarial Value of Assets	4.542%
8.	Actuarial Value (Gain)/Loss	358,479

Section III - Development of Contribution
A. Funded Status

		July 1, 2019	July 1, 2020
1.	Accrued Liability		
	Active Members	$0	$0
	Terminated Members	0	0
	Service Retirees	26,160,390	25,636,858
	Disabled Retirees	3,001,969	2,302,712
	Beneficiaries	1,232,136	2,806,700
	Total Accrued Liability	30,394,494	30,746,270
2.	Actuarial Value of Assets (see Section IIB)	17,377,006	17,820,384
3.	Unfunded Accrued Liability: (1) - (2)	13,017,488	12,925,886
4.	Funded Ratio: (2) / (1)	57.2%	58.0%

Section III - Development of Contribution
B. Past Service Cost

For determining the Past Service Cost, the Unfunded Accrued Liability is amortized using a layered approach. The Unfunded Accrued Liability as of July 1, 2019, was amortized as a level percent of pay over a 10 year period. All future Unfunded Accrued Liability bases that result from actuarial experience will be amortized, as a level percent of pay, over a new 10 year period commencing on the valuation date.

1. Amortization Bases Established in Prior Years

Date Established	Original Amount	(a) Outstanding Balance July 1, 2020	Years Remaining July 1, 2020	(b) Annual Amortization Payment
July 1, 2019	$13,017,488	$12,266,121	9	$1,558,911
Total		12,266,121		1,558,911

2.	Unfunded Accrued Liability as of July 1, 2020 (see Section IIIA)	12,925,886
3.	New Amortization Based Established July 1, 2020: (2) - (1a Total)	659,765
4.	Amortization Period for New Amortization Base	10
5.	Amortization Growth Rate	3.00%
6.	Amortization Payment for July 1, 2020: (3) amortized over (4)	76,709
7.	Past Service Cost: (1b Total) + (6)	1,635,620

Section III - Development of Contribution
C. Actuarially Determined Contribution

		2020-21	2021-22
1.	Total Normal Cost	$0	$0
2.	Expected Member Contributions	0	0
3.	Expected Administrative Expenses	0	0
4.	Net Normal Cost: (1) - (2) + (3)	0	0
5.	Past Service Cost (see Section IIIB)	1,513,506	1,635,620
6.	Interest on (4) + (5) to the start of the fiscal year	100,270	108,360
7.	Actuarially Determined Contribution: (4) + (5) + (6)	1,613,776	1,743,980

Section III - Development of Contribution
D. Long Range Forecast

This forecast is based on the results of the July 1, 2020 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	Interest Rate	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	Town Contributions	Member Contributions	Benefit Payments	Net Cash Flows
7/1/2020	6.625%	$30,746,270	$17,820,384	$12,925,886	58.0%	2021-22	$1,743,980	$0	($1,797,108)	($53,128)
7/1/2021	6.625%	30,959,000	18,695,000	12,264,000	60.4%	2022-23	1,824,000	0	(1,834,000)	(10,000)
7/1/2022	6.625%	31,148,000	19,606,000	11,542,000	62.9%	2023-24	1,915,000	0	(1,870,000)	45,000
7/1/2023	6.625%	31,312,000	20,620,000	10,692,000	65.9%	2024-25	2,010,000	0	(1,907,000)	103,000
7/1/2024	6.625%	31,449,000	21,811,000	9,638,000	69.4%	2025-26	2,101,000	0	(1,943,000)	158,000
7/1/2025	6.625%	31,558,000	23,362,000	8,196,000	74.0%	2026-27	2,166,000	0	(1,979,000)	187,000
7/1/2026	6.625%	31,635,000	25,073,000	6,562,000	79.3%	2027-28	2,230,000	0	(2,015,000)	215,000
7/1/2027	6.625%	31,681,000	26,927,000	4,754,000	85.0%	2028-29	2,295,000	0	(2,051,000)	244,000
7/1/2028	6.625%	31,691,000	28,932,000	2,759,000	91.3%	2029-30	2,362,000	0	(2,087,000)	275,000
7/1/2029	6.625%	31,666,000	31,101,000	565,000	98.2%	2030-31	262,000	0	(2,122,000)	(1,860,000)
7/1/2030	6.625%	31,601,000	33,445,000	(1,844,000)	105.8%	2031-32	0	0	(2,156,000)	(2,156,000)
7/1/2031	6.625%	31,497,000	33,740,000	(2,243,000)	107.1%	2032-33	0	0	(2,189,000)	(2,189,000)
7/1/2032	6.625%	31,350,000	33,748,000	(2,398,000)	107.6%	2033-34	0	0	(2,222,000)	(2,222,000)
7/1/2033	6.625%	31,159,000	33,722,000	(2,563,000)	108.2%	2034-35	0	0	(2,253,000)	(2,253,000)
7/1/2034	6.625%	30,921,000	33,661,000	(2,740,000)	108.9%	2035-36	0	0	(2,283,000)	(2,283,000)
7/1/2035	6.625%	30,635,000	33,563,000	(2,928,000)	109.6%	2036-37	0	0	(2,311,000)	(2,311,000)
7/1/2036	6.625%	30,299,000	33,428,000	(3,129,000)	110.3%	2037-38	0	0	(2,338,000)	(2,338,000)
7/1/2037	6.625%	29,912,000	33,255,000	(3,343,000)	111.2%	2038-39	0	0	(2,362,000)	(2,362,000)
7/1/2038	6.625%	29,471,000	33,043,000	(3,572,000)	112.1%	2039-40	0	0	(2,383,000)	(2,383,000)
7/1/2039	6.625%	28,977,000	32,793,000	(3,816,000)	113.2%	2040-41	0	0	(2,402,000)	(2,402,000)

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

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
July 1, 2011	$12,235,119	$21,492,883	$9,257,764	56.9%
July 1, 2012	12,415,633	26,521,112	14,105,479	46.8%
July 1, 2013	12,857,275	27,204,260	14,346,985	47.3%
July 1, 2014	13,838,972	27,686,705	13,847,733	50.0%
July 1, 2015	14,844,801	27,771,291	12,926,490	53.5%
July 1, 2016	15,750,342	28,271,640	12,521,298	55.7%
July 1, 2017	16,404,560	28,761,407	12,356,847	57.0%
July 1, 2018	16,982,025	29,394,746	12,412,721	57.8%
July 1, 2019	17,377,006	30,394,494	13,017,488	57.2%
July 1, 2020	17,820,384	30,746,270	12,925,886	58.0%

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

Fiscal Year	Actuarially Determined Contribution	Actual Town Contribution	Payroll	Actual Contribution as a Percent of Payroll
2012-13	$899,460	$899,474	$472,541	190.3%
2013-14	1,288,194	$1,288,194	357,605	360.2%
2014-15	1,341,343	$1,382,578	300,035	460.8%
2015-16	1,327,427	$1,344,117	228,206	589.0%
2016-17	1,316,046	$1,374,450	236,091	582.2%
2017-18	1,315,991	$1,315,991	155,270	847.6%
2018-19	1,328,033	$1,328,053	0	N/A
2019-20	1,421,829	$1,424,137	0	N/A
2020-21	1,613,776	TBD	0	N/A
2021-22	1,743,980	TBD	0	N/A

Section IV - Membership Data
A. Reconciliation of Membership from Prior Valuation

Details of the changes in the Plan membership since the last valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section IV.

	Active Members	Terminated Vested Members	Nonvested Members Due Refunds	Service Retirees	Disabled Retirees	Beneficiaries	Total
Count July 1, 2019	0	0	0	35	3	6	44
Terminated not vested	-	-	-	-	-	-	0
Teminated, benefits du	-	-	-	-	-	-	0
Retired	-	-	-	-	-	-	0
Died, with beneficiary	-	-	-	(1)	(1)	-	(2)
Died, no beneficiary	-	-	-	-	-	-	0
New member	-	-	-	-	-	-	0
New beneficiary	-	-	-	-	-	2	2
Lump sum paid	-	-	-	-	-	-	0
Rehired	-	-	-	-	-	-	0
New QDRO	-	-	-	-	-	-	0
Correction	-	-	-	-	-	-	0
Count July 1, 2020	0	0	0	34	2	8	44

Section IV - Membership Data
D. Statistics of Inactive Membership

	As of July 1, 2019	As of July 1, 2020
Terminated Vested Members		
Number	0	0
Total Annual Benefit	$0	$0
Average Annual Benefit	0	0
Average Age	0.0	0.0
Nonvested Members Due Refunds		
Number	0	0
Service Retirees		
Number	35	34
Total Annual Benefit	$1,467,330	$1,418,533
Average Annual Benefit	41,924	41,722
Average Age	61.9	62.5
Disabled Retirees		
Number	3	2
Total Annual Benefit	$161,162	$112,097
Average Annual Benefit	53,721	56,049
Average Age	55.1	52.9
Beneficiaries		
Number	6	8
Total Annual Benefit	$140,750	$234,785
Average Annual Benefit	23,458	29,348
Average Age	77.9	73.9

Section IV - Membership Data
E. Distribution of Inactive Members as of July 1, 2020

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	0	$0
	50 - 59	0	0
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	0	0
Service Retirees	< 50	3	$159,847
	50 - 59	16	794,271
	60 - 69	7	312,439
	70 - 79	7	136,178
	80 - 89	1	15,798
	90 +	0	0
	Total	34	1,418,533
Disabled Retirees	< 50	1	$54,424
	50 - 59	1	57,673
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	2	112,097
Beneficiaries	< 50	0	$0
	50 - 59	0	0
	60 - 69	1	31,433
	70 - 79	6	163,581
	80 - 89	1	39,771
	90 +	0	0
	Total	8	234,785

Section V - Analysis of Risk
A. Introduction

The results of this actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match these assumptions. As an example, the plan's investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the plan, or of the plan's members.

In addition, as plans mature they accumulate larger pools of assets and liabilities. The increase in size in turn increases the potential magnitude of adverse experience. As an example, the dollar impact of a 10% investment loss on a plan with $1 billion in assets and liabilities is much greater than the dollar impact for a plan with $1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to provide pension plan sponsors with information concerning the risks associated with the plan:

- Identify risks that may be significant to the plan.
- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

This section of the report uses the framework of ASOP 51 to communicate important information about significant risks to the plan, the plan's maturity, and relevant historical plan data.

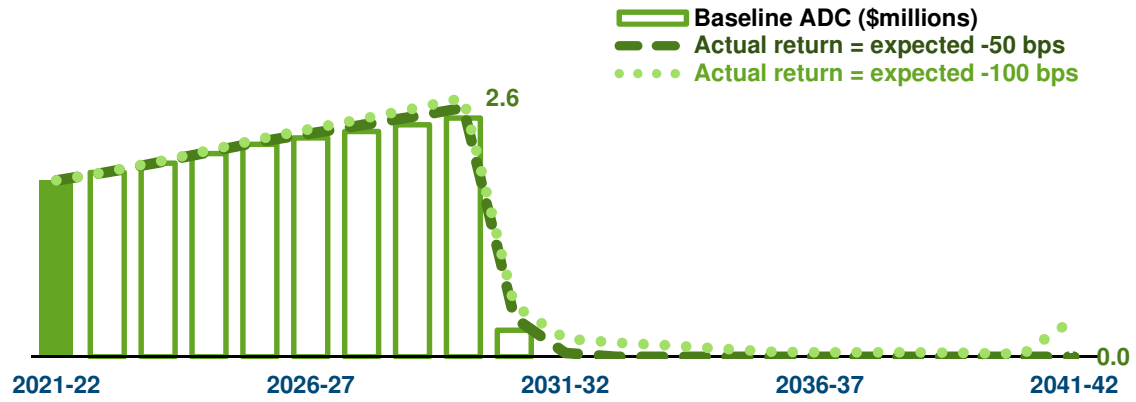
Please see Section III C for more information on the basis for the projected results shown on the following pages.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Investment Risk

Definition: This is the potential that investment returns will be different than expected.

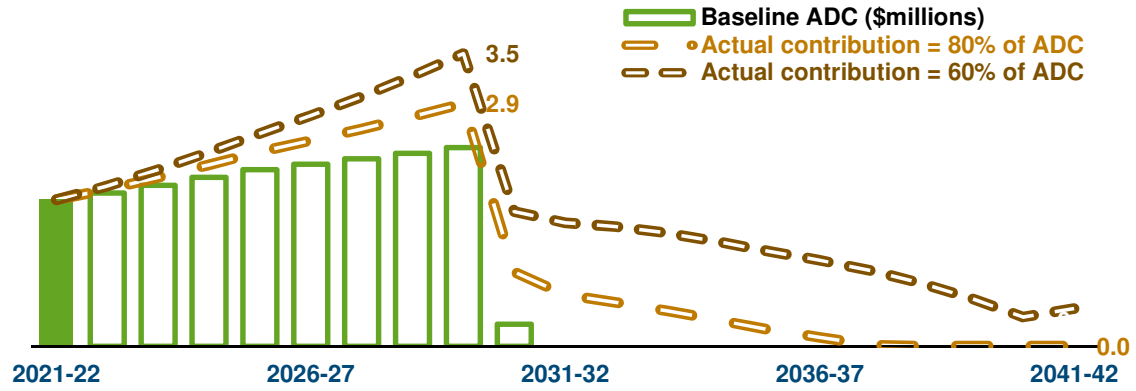
Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on future Actuarially Determined Contribution levels are illustrated below:



Contribution Risk

Definition: This is the potential that actual future contributions will be less than the Actuarially Determined Contribution.

Identification: Over the past 8 years, actual contributions have been 101.2% of the Actuarially Determined Contribution in total. The consequences of persistent underfunding on future Actuarially Determined Contribution levels are illustrated below:



Section V - Analysis of Risk
B. Risk Identification and Assessment

Liquidity Risk

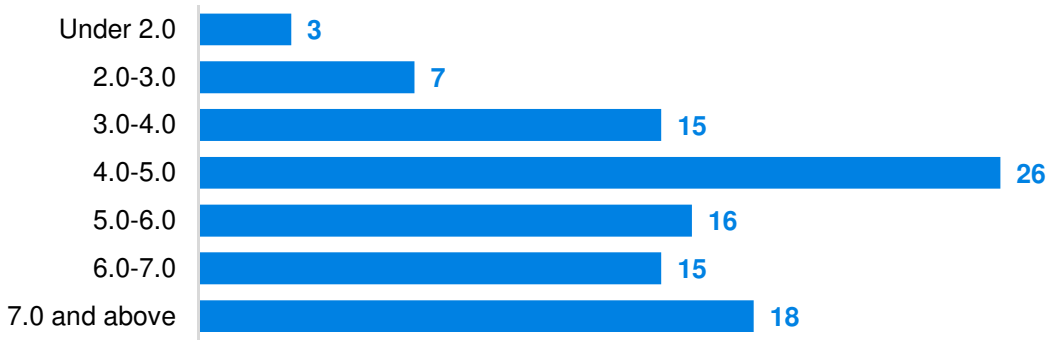
Definition: This is the potential that assets must be liquidated at a loss earlier than planned in order to pay for the plan's benefits and operating costs. This risk is heightened for plans with negative cash flows, in which contributions are not sufficient to cover benefit payments plus expenses.

Identification: In 2019-20, the plan had negative cash flow, with town and member contributions to the plan of $1,424,137 compared to $1,764,956 of benefit payments paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity characteristics of the plan's investment holdings.

Maturity Risk

Definition: This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time, and for plan assets and/or liabilities to become larger relative to the active member liability.

Identification: The plan is subject to maturity risk because as plan assets and liabilities continue to grow, the dollar impact of any gains or losses on the assets or liabilities also becomes larger. According to Milliman's 2020 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios (the ratio of the market value of plan assets to payroll):



Inflation Risk

Definition: This is the potential for a pension to lose purchasing power over time due to inflation.

Identification: The members of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: This plan provides for some postretirement benefit increases, but the increases are not directly tied to each year's rate of actual inflation; this leaves members bearing some inflation risk. However, not all members are eligible for these increases.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Insolvency Risk

Definition: This is the potential that a plan will become insolvent; that is, assets will be fully depleted.

Identification: If a plan becomes insolvent, contractually required benefits must be paid from the plan sponsor's other remaining assets.

Assessment: Under the GASB 68 depletion date methodology, the plan is not projected to become insolvent. Please see the GASB 68 report for more details on the underlying analysis.

Demographic Risks

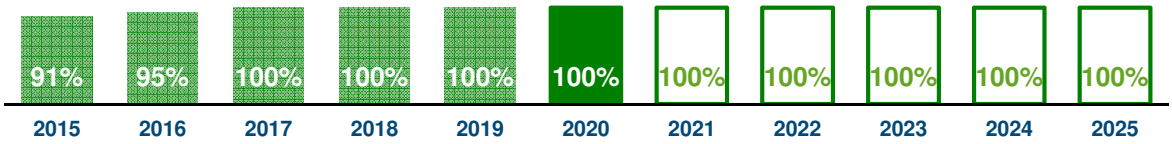
Definition: This is the potential that mortality, turnover, retirement, or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. Formal Experience Studies performed on a regular basis are helpful in ensuring that the demographic assumptions reflect emerging plan experience.

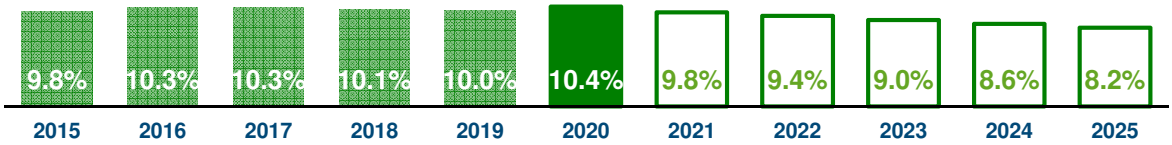
Section V - Analysis of Risk
C. Maturity Measures

The metrics presented below are different ways of understanding the plan's maturity level, both in the past and as it is expected to change in the coming years.

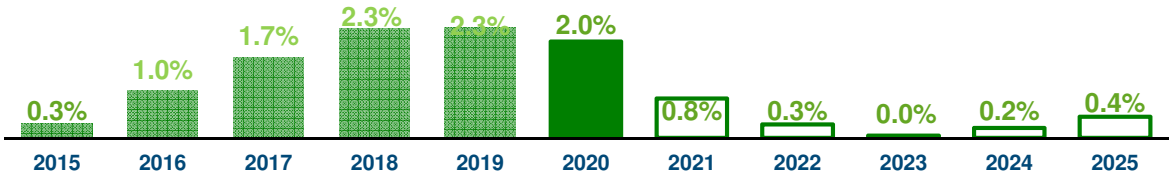
Accrued Liability for members in pay status compared to total Accrued Liability



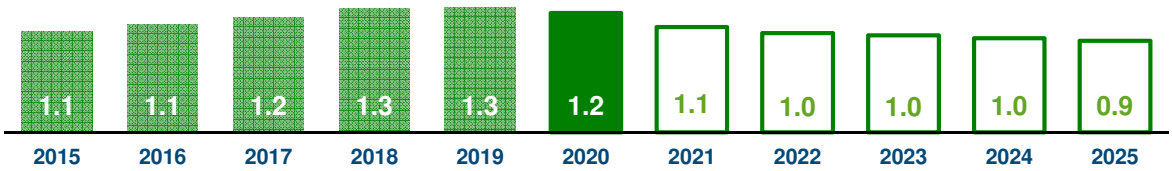
Benefit Payments compared to Market Value of Assets



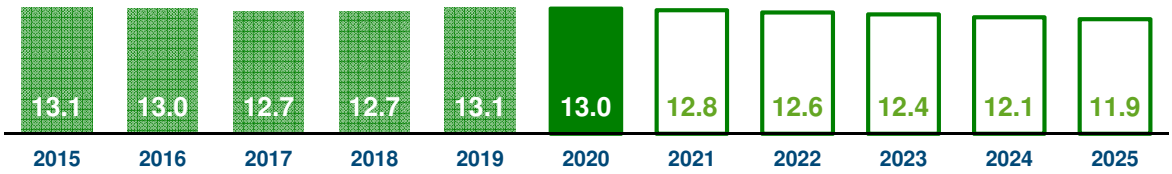
Net Cash Flows compared to Market Value of Assets



Benefit Payments compared to Town Contributions



Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)



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 with layered ten-year bases starting July 1, 2019. Each year a new amortization base is established for the actuarial gains or losses that have emerged since the last valuation.

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	6.625%
Cost of Living Increases	3.00%
Amortization Growth Rate	3.00%
Expenses	None.
Salary Scale	N/A
Turnover	None.
Retirement	None.
Disability	None.
Healthy Mortality	PUB-2010 Public Safety Mortality Tables for Employees and Healthy Annuitants, Male and Female, with generational projection of future mortality improvements per the MP-2014 ultimate scale. This assumption includes a margin for improvements in longevity beyond the valuation date. Prior: 50% phase in of above mortality blended with 50% RP-2000 Mortality Tables for Employees and Healthy Annuitants, Male and Female, with generational projection of future mortality improvements per scale AA. This assumption includes a margin for improvements in longevity beyond the valuation date.
Disabled Mortality	PUB-2010 Mortality Table for Disabled Annuitants, Male and Female, with generational projection of future mortality improvements per the MP-2014 Ultimate scale. This assumption includes a margin for improvements in longevity beyond the valuation date.

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	All members of the Town of Bristol Police Force hired prior to March 22, 1998 are eligible. Employees hired after March 22, 1998 will enter the State Retirement System.
Final Average Earnings	Average of the two highest consecutive years of base pay plus longevity and holiday pay.
Credited Service	Full years and fractions to the nearest month.
Normal Retirement Date	Completion of 20 or more years of service.
Normal Retirement Benefit	60% of final average earnings plus 1% of final average earnings for each year of service in excess of 20 years to a maximum of 10 additional
Deferred Retirement	Benefit payment will be deferred to actual retirement and will equal the Normal Retirement benefit based on years of service (maximum 30) and average compensation at actual retirement date.
Early Retirement Eligibility	Vested.
Early Retirement Benefit	Accrued benefits reduced actuarially for early payment.
Severance Benefit Eligibility	Less than 10 years of service.
Severance Benefit	Greater of employee's accumulations or (2) weeks pay for year of service.
Vested Benefit Eligibility	10 years of service.
Vested Benefit	Greater of: Normal Retirement Benefit reduced by ratio of actual years of service at date of termination over total years of service the participant would have worked had the participant continued working to Normal Retirement Date. Greater of 3 weeks pay for each year of service or the total of the participant's own contributions to the fund with interest at 3% is payable as a lump sum.

Appendix C - Summary of Plan Provisions

Pre-Retirement Survivor Benefit Eligibility	Death as a result of performance of duties or completed at least 5 years of service.
Pre-Retirement Survivor Benefit	Spouse is entitled to 67 ½% of "Accrued Benefit" (assuming constant future earnings to normal retirement date) and children to 22 ½% (i.e. one-third of 67 ½%) until the earliest of 22nd birthday, ceases to attend school unless disabled, or marriage of child. If spouse is more than 3 years younger than participant, then the survivor's benefit is reduced to the actuarial equivalent of a survivor's benefit where spouse is precisely 3 years younger (except for children where it's calculated without actuarial reduction). A maximum of three children are eligible to receive benefits for each death claim. If no survivor benefit is payable to a spouse or surviving children, the beneficiary will receive employee contributions with 3.5% interest.
Lump Sum Death Benefit	$2,500 if death occurs after actual
Post-Retirement Survivor Benefit Eligibility	Death of participant after retirement.
Post-Retirement Survivor Benefit	Spouse is entitled to 67 ½% of "Normal Retirement Benefit" and children to 22 ½% (i.e. one-third of 67 ½%) until the earliest of 22nd birthday, ceases to attend school unless disabled, or marriage of child. If spouse is more than 3 years younger than participant, then the survivor's benefit is reduced to the actuarial equivalent of a survivor's benefit where spouse is precisely 3 years younger. A maximum of three children are eligible to receive benefits for each death claim.
Accidental Disability Eligibility	Injuries sustained in the performance of duties.
Accidental Disability Benefit	72% of annual salary at the time of disability.
Ordinary Disability Eligibility	10 years of service.
Ordinary Disability	50% of final average earnings.

Appendix C - Summary of Plan Provisions

Cost of Living Adjustment (COLA)

All participants retiring on and after April 1, 1998 and all participants retiring on a disability pension will be eligible for an annual 3.0% Cost of Living Adjustment. The Cost of Living increase is payable July 1 of each year.

Employee Contributions

Prior to July 1, 1998: 38.5% of total cost of plan with a maximum of 9.4% of pay; the contributions are after-tax.

On and after July 1, 1998: 11% of pay with adjustments between 13% and 9% based on funding requirements. Post June 30, 1998 contributions are pre-tax.

Employee contributions are credited with 3.0% interest for termination and 3.5% for survivor benefits; compounded from each April 1.

Town Contributions

Prior to July 1, 1998: 61.5% of total cost of plan with a maximum of 15% of pay.

On and after July 1, 1998: 24% of pay with adjustments up or down based on funding requirements.

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.