TOWN OF NEWINGTON
ADMINISTRATIVE EMPLOYEES' PENSION PLAN

Actuarial Valuation as of July 1, 2020
To Determine Funding for Fiscal Year 2021-22

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Kerry Forrester, FSA
Consulting Actuary

80 Lamberton Road
Windsor, CT 06095 USA
(860) 687-2110
milliman.com

January 7, 2021

Table of Contents

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.

Milliman's work is prepared solely for the internal business use of the Town of Newington ("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 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.

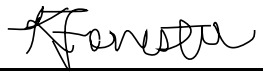
We further certify that, in our opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to 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 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 (ASOP). The models, including all input, calculations, and output may not be appropriate for any other purpose.

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.

Rebecca A. Sielman, FSA
Consulting Actuary



Kerry Forrester, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

None.

Other Significant Changes

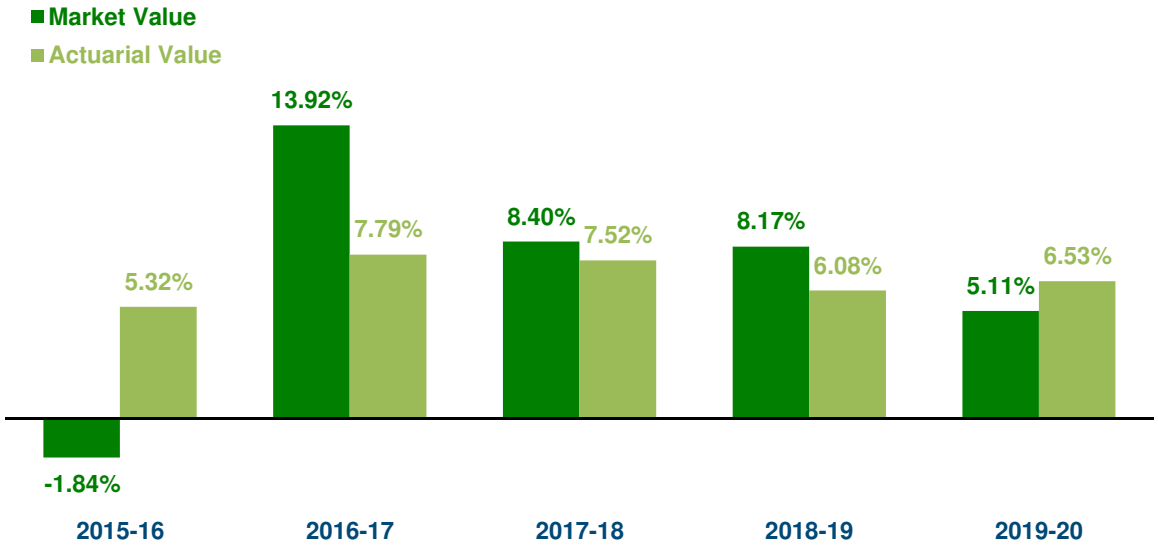
None.

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	$5,547,147	$5,422,977
Town and Member Contributions	535,408	535,408
Investment Income	271,508	338,791
Benefit Payments and Administrative Expenses	(1,009,918)	(1,009,918)
Value as of July 1, 2020	5,344,145	5,287,258

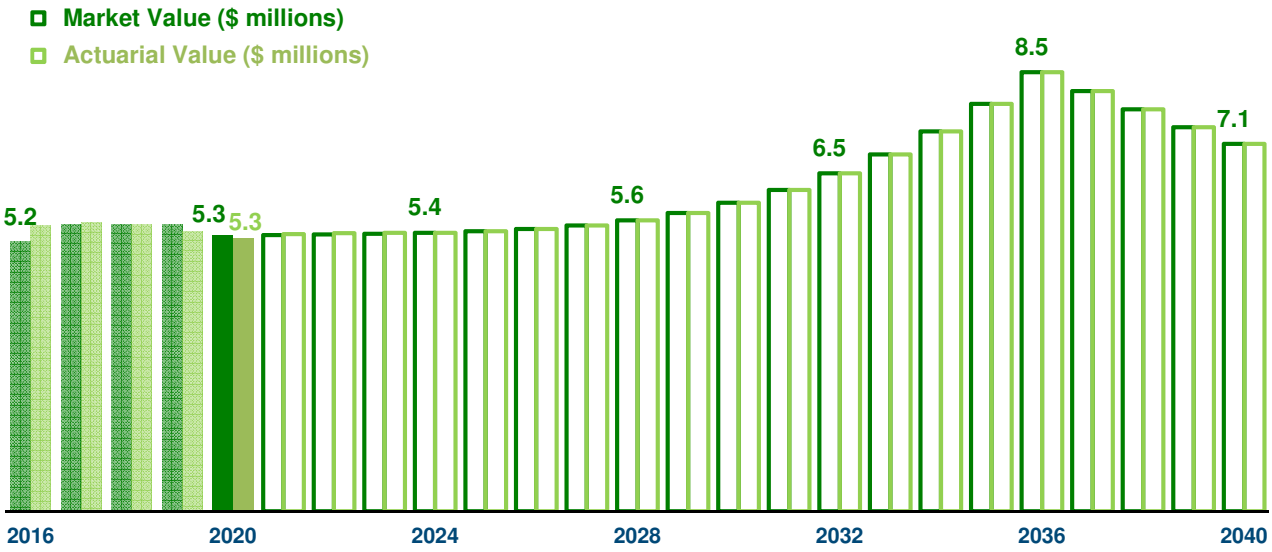
For fiscal year 2019-20, the plan's assets earned 5.110% on a Market Value basis and 6.530% on an Actuarial Value basis. The actuarial assumption for this period was 6.875%; the result is an asset loss of about $93,800 on a Market Value basis and a loss of about $17,900 on an Actuarial Value basis. Historical rates of return are shown in the graph below.



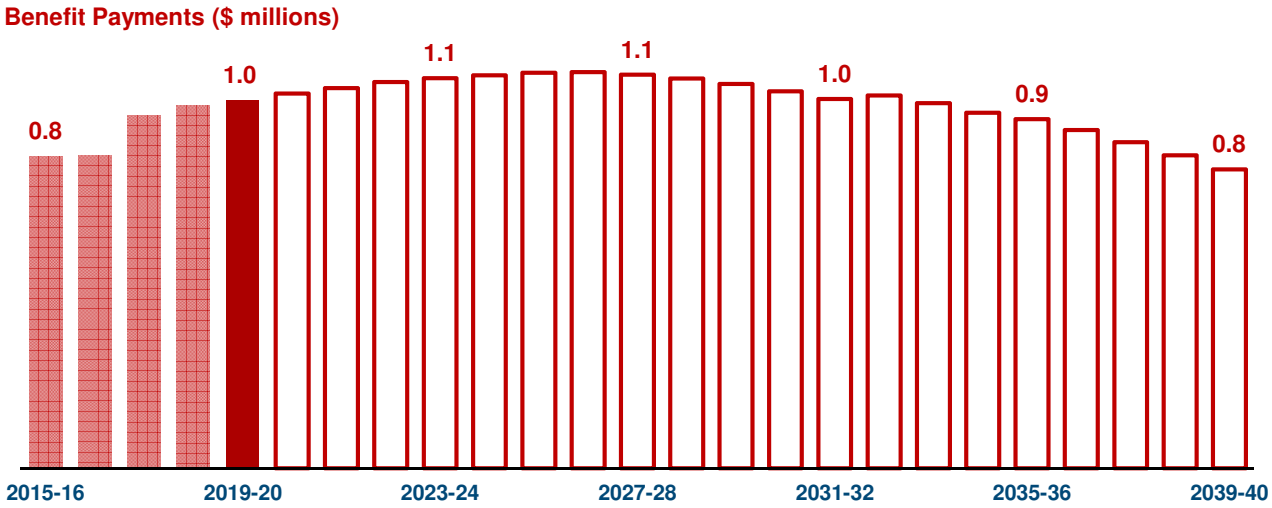
Please note that the Actuarial Value currently is less than the Market Value by $56,900. This figure represents investment gains that will be gradually recognized in future years. This process will exert downward pressure on the Town's contribution, unless there are offsetting market losses.

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.

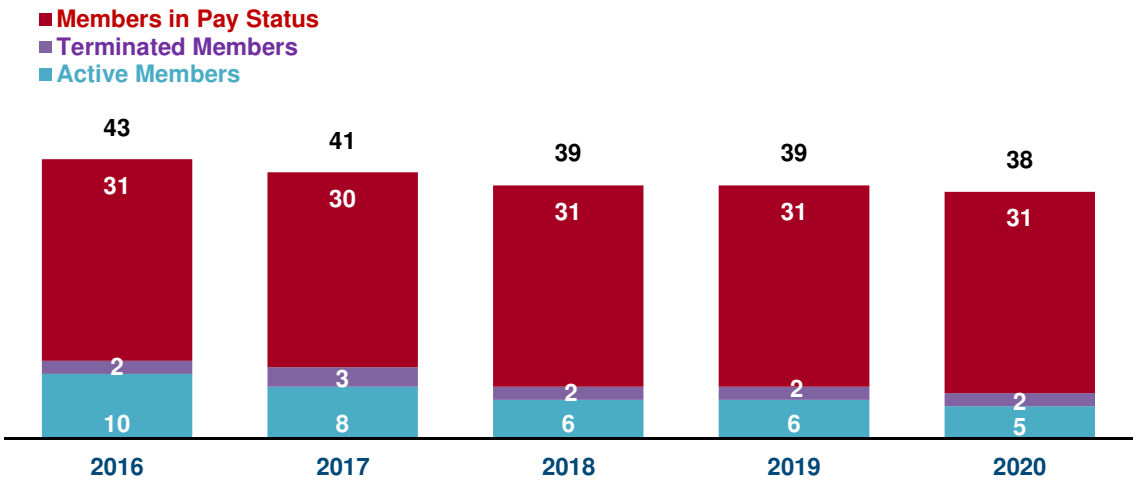


In 2019-20, the plan paid out $1,000,800 in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $19,955,000 in benefits to members.



Section I - Executive Summary
Membership

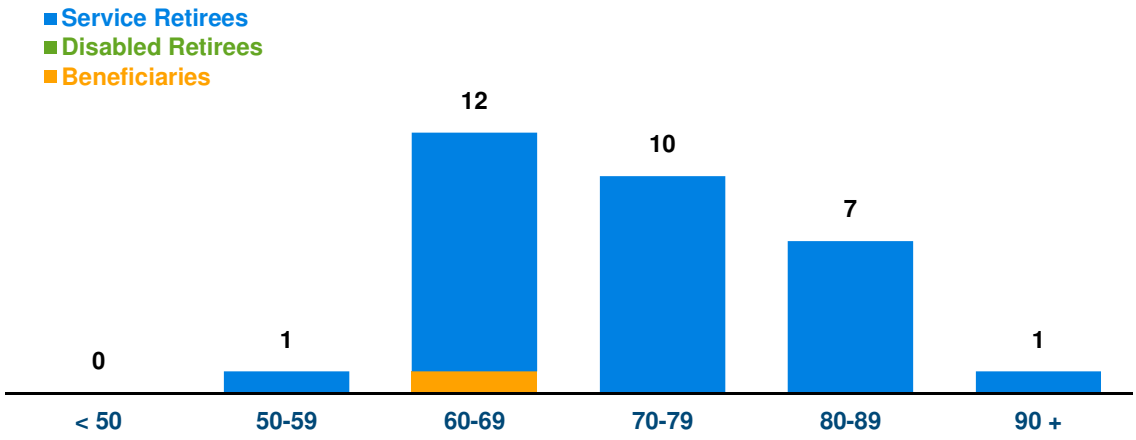
There are three basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) active employees who have met the eligibility requirements for membership.



Members in Pay Status on July 1, 2020

Service Retirees	30	Average Age	73.0
Disabled Retirees	0	Total Annual Benefit	$1,001,925
Beneficiaries	1	Average Annual Benefit	32,320
Total	31		

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



Section I - Executive Summary
Membership (continued)

Terminated Vested Members on July 1, 2020

Count	2
Average Age	58.9
Total Annual Benefit	$38,498
Average Annual Benefit	19,249

Nonvested Members Due Refunds on July 1, 2020

Count	0

Active Members on July 1, 2020

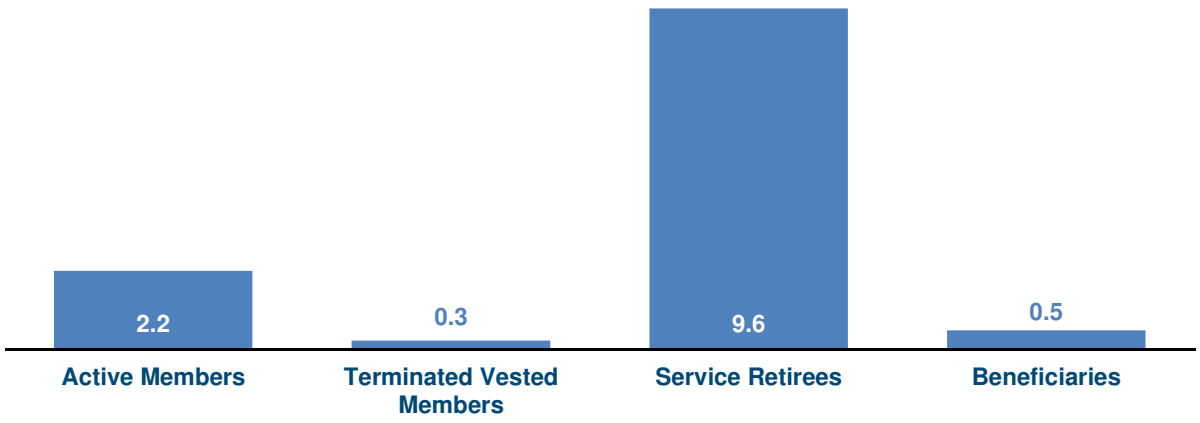
Count	5
Average Age	58.2
Average Service	24.1
Payroll	$484,166
Average Payroll	96,833

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

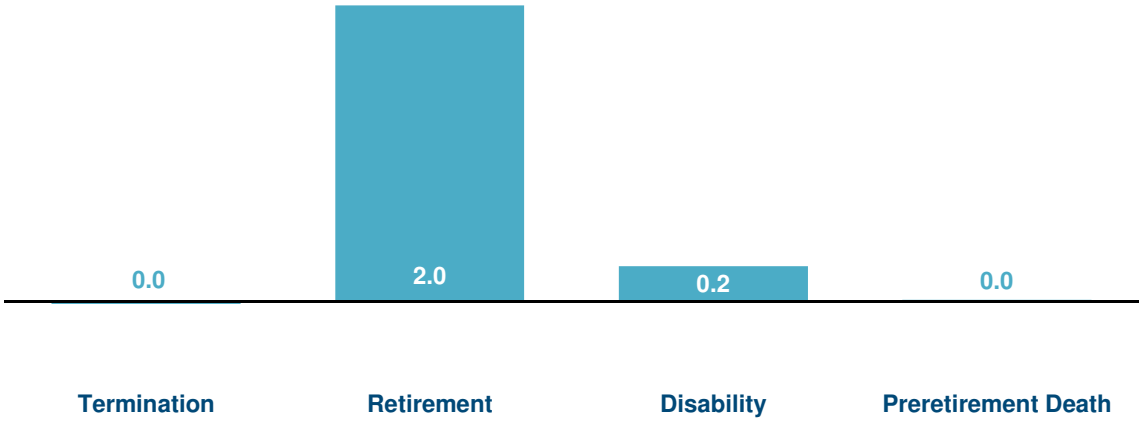
	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29								0
30-34								0
35-39								0
40-44								0
45-49								0
50-54							1	1
55-59				1	1			2
60-64				1			1	2
65+								0
Total	0	0	0	2	1	0	2	5

Section I - Executive Summary
Accrued Liability

The Accrued Liability as of July 1, 2020 is $12,621,848, which consists of the following pieces (in $ millions):

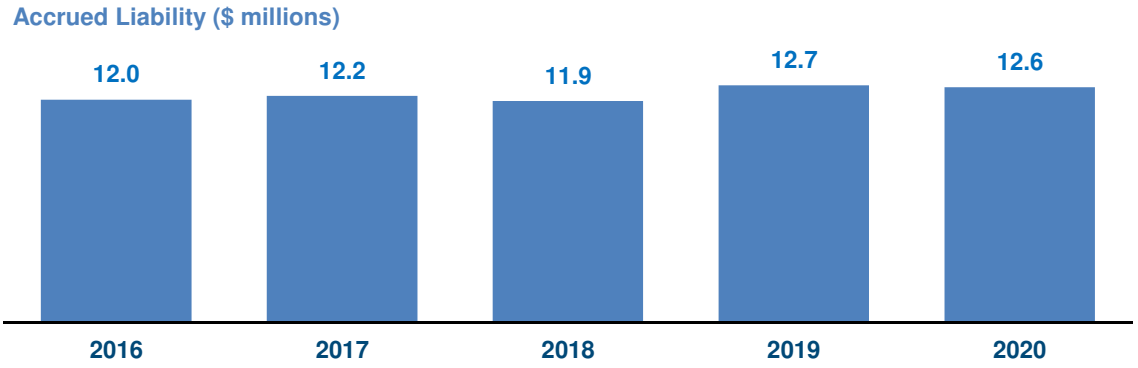


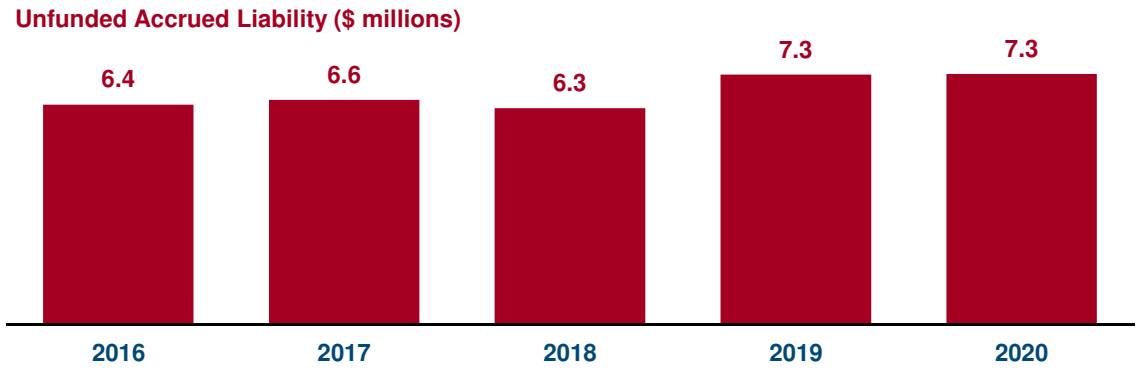
The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:

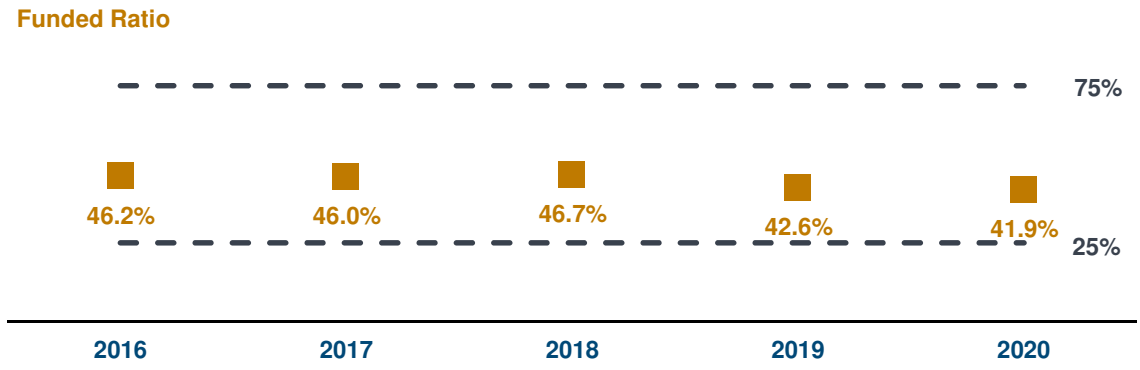


Section I - Executive Summary
Funded Status

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.



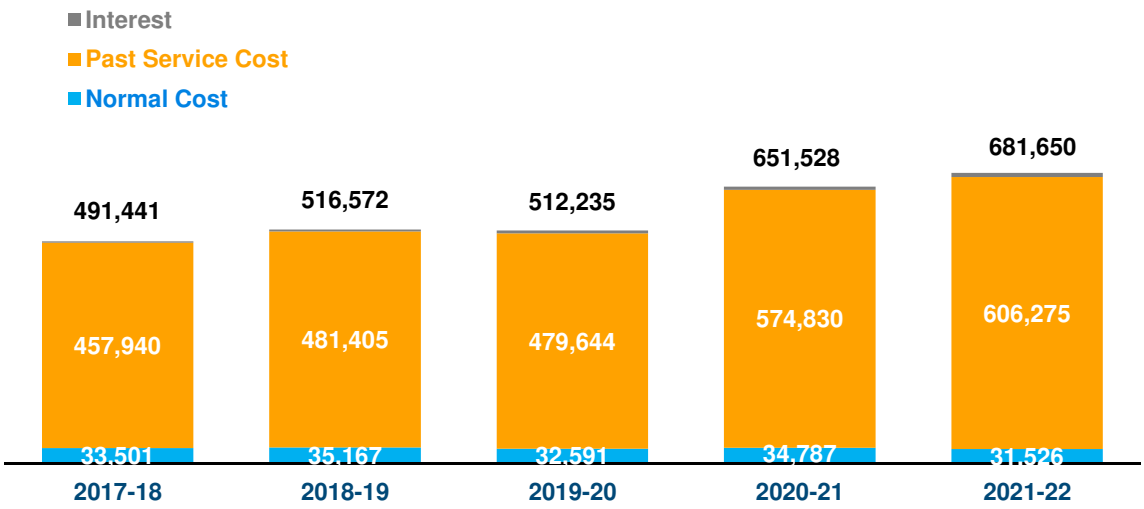




Section I - Executive Summary
Actuarially Determined Contribution

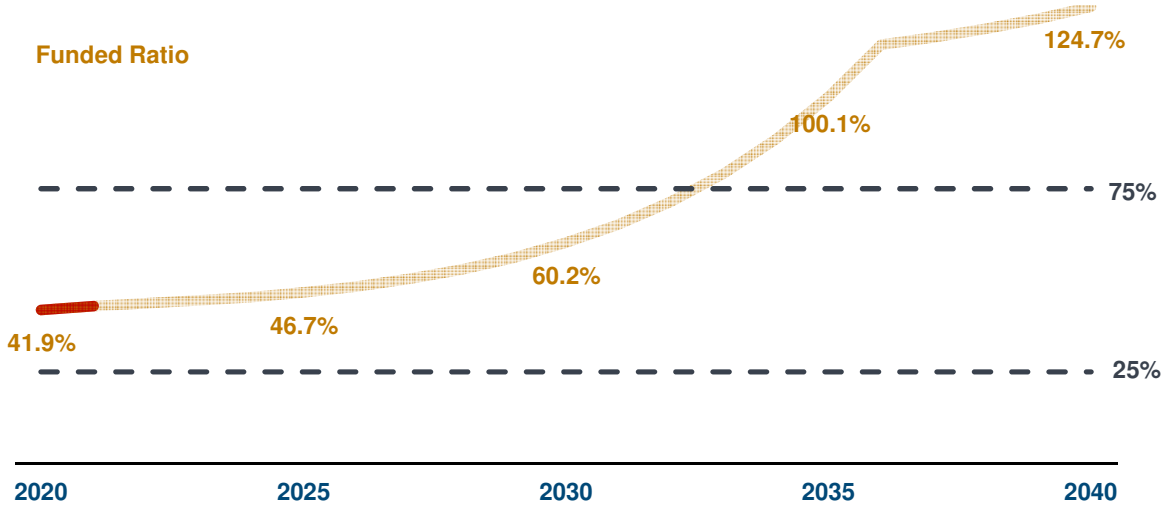
The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest to reflect the timing of the contribution relative to the valuation date.

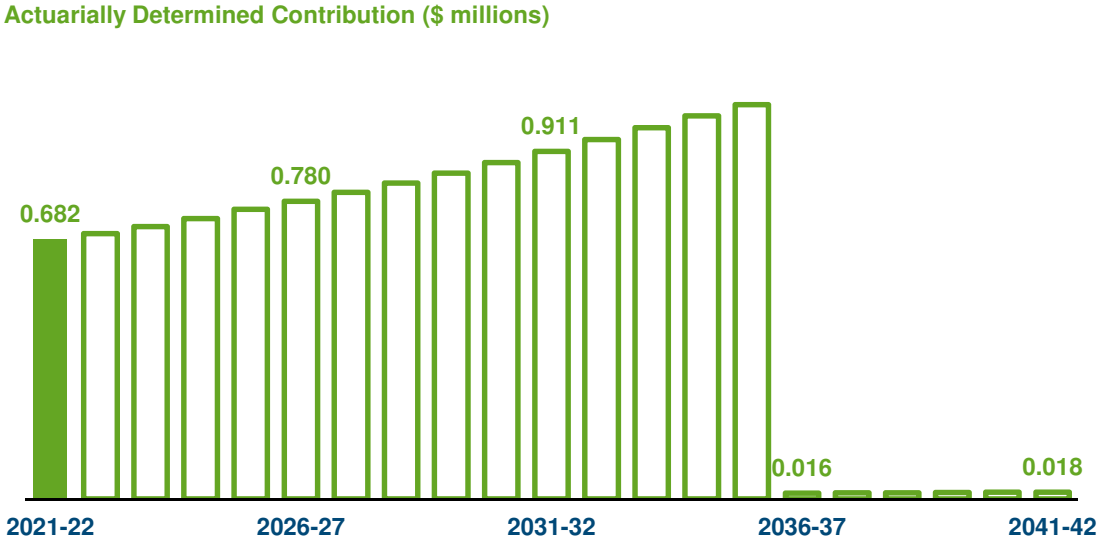
The Actuarially Determined Contribution for fiscal year 2021-22 is shown graphically below, along with the comparable figures for the preceding four fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects 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:

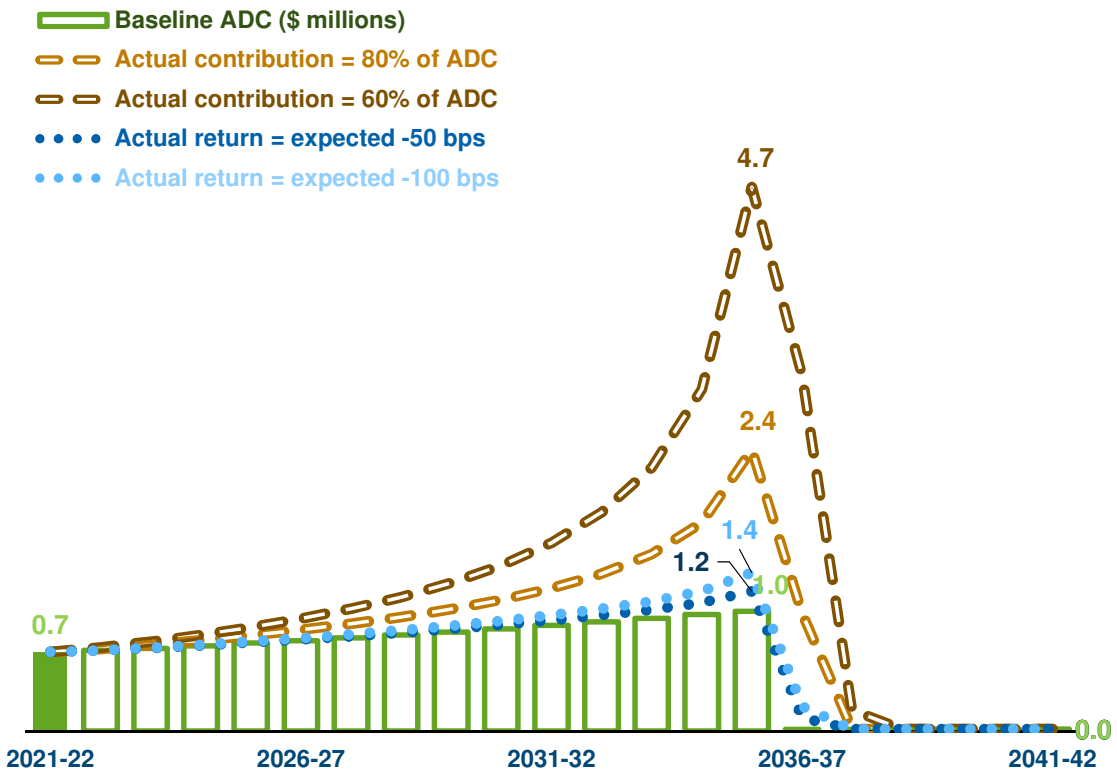




To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
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	6	5
Terminated Members	2	2
Members in Pay Status	31	31
Total Count	39	38
Payroll	$559,604	$484,166

Assets and Liabilities as of	July 1, 2019	July 1, 2020
Market Value of Assets	$5,547,147	$5,344,145
Actuarial Value of Assets	5,422,977	5,287,258
Accrued Liability for Active Members	2,429,629	2,211,725
Accrued Liability for Terminated Members	236,729	244,882
Accrued Liability for Members in Pay Status	10,066,020	10,165,241
Total Accrued Liability	12,732,378	12,621,848
Unfunded Accrued Liability	7,309,401	7,334,590
Funded Ratio	42.6%	41.9%

Actuarially Determined Contribution for Fiscal Year	2020-21	2021-22
Normal Cost	$34,787	$31,526
Past Service Cost	574,830	606,275
Interest	41,911	43,849
Actuarially Determined Contribution	651,528	681,650

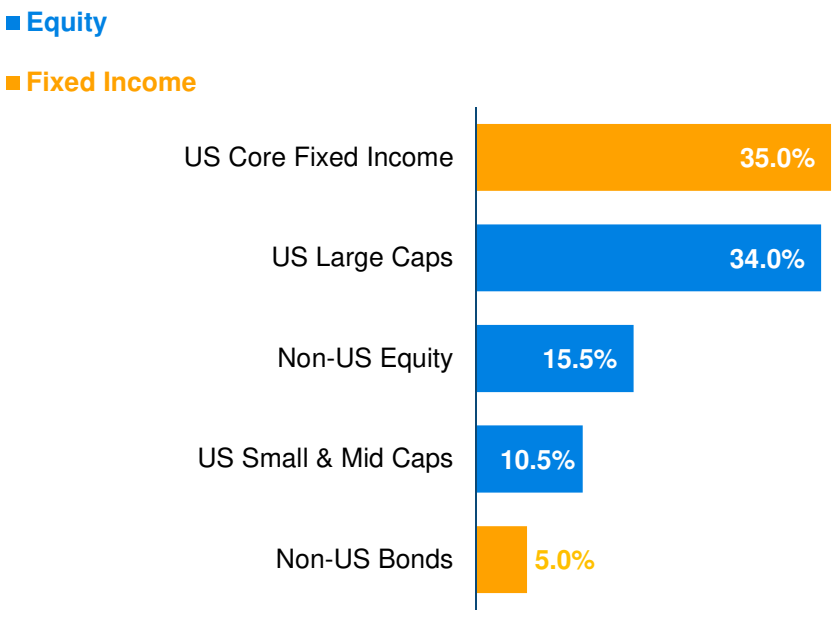
Breakdown of Actuarially Determined Contribution		
Board of Education	$92,972	$102,901
Town	558,556	578,749
Total	651,528	681,650

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2019	$5,547,147
Town Contributions	512,235
Member Contributions	23,173
Net Investment Income	271,508
Benefit Payments	(1,000,758)
Administrative Expenses	(9,160)
Market Value as of June 30, 2020	5,344,145
Expected Return on Market Value of Assets	365,287
Market Value (Gain)/Loss	93,779
Approximate Rate of Return *	5.110%

* 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 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	$5,547,147
	b. Town and Member Contributions	535,408
	c. Benefit Payments and Administrative Expenses	(1,009,918)
	d. Expected Earnings Based on 6.875% Interest	365,287
	e. Expected Market Value of Assets as of July 1, 2020	5,437,924
2.	Actual Market Value of Assets as of July 1, 2020	5,344,145
3.	Market Value (Gain)/Loss: (1e) - (2)	93,779
4.	Delayed Recognition of Market (Gains)/Losses:	

Plan Year End	(Gain)/Loss	Percent Not Recognized	Amount Not Recognized
06/30/2020	$93,779	80%	$75,023
06/30/2019	(62,427)	60%	(37,456)
06/30/2018	(68,241)	40%	(27,296)
06/30/2017	(335,791)	20%	(67,158)
			(56,887)

5.	Actuarial Value of Assets as of July 1, 2020: (2) + (4)	5,287,258
6.	Approximate Rate of Return on Actuarial Value of Assets	6.530%
7.	Actuarial Value (Gain)/Loss	17,899

Section III - Development of Contribution
A. Past Service Cost

In determining the Past Service Cost, the Unfunded Accrued Liability is amortized as a level percent over a closed period of 30 years starting on July 1, 2005.

		July 1, 2019	July 1, 2020
1.	Accrued Liability		
	Active Members	$2,429,629	$2,211,725
	Terminated Members	236,729	244,882
	Service Retirees	9,526,064	9,634,764
	Disabled Retirees	0	0
	Beneficiaries	539,956	530,477
	Total Accrued Liability	12,732,378	12,621,848
2.	Actuarial Value of Assets (see Section IIB)	5,422,977	5,287,258
3.	Unfunded Accrued Liability: (1) - (2)	7,309,401	7,334,590
4.	Funded Ratio: (2) / (1)	42.6%	41.9%
5.	Amortization Period	16	15
6.	Amortization Growth Rate	3.50%	3.50%
7.	Past Service Cost: (3) amortized over (5)	574,830	606,275

Section III - Development of Contribution
B. Actuarially Determined Contribution

		2020-21	2021-22
1.	Total Normal Cost	$52,869	$43,913
2.	Expected Member Contributions	25,182	21,787
3.	Expected Administrative Expenses	7,100	9,400
4.	Town Normal Cost: (1) - (2) + (3)	34,787	31,526
5.	Past Service Cost (see Section IIIA)	574,830	606,275
6.	Interest on (4) + (5) to beginning of fiscal year	41,911	43,849
7.	Actuarially Determined Contribution: (4) + (5) + (6)	651,528	681,650
8.	Actuarially Determined Contribution as a Percent of Payroll	116.4%	140.8%
9.	Allocation of Actuarially Determined Contribution (ADC) based on the Accrued Liability:		
	a. Accrued liability for Board of Education members	1,816,899	1,905,376
	b. Accrued liability for Town members	10,915,479	10,716,472
	c. Total accrued liability	12,732,378	12,621,848
	d. ADC allocated to Board of Education: (7) x (9a) / (9c)	92,972	102,901
	e. ADC allocated to Town: (7) x (9b) / (9c)	558,556	578,749

Section III - Development of Contribution
C. 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. For purposes of this forecast the amortization period declines to 1 year to illustrate the progress of the plan towards becoming fully funded; in actual practice the amortization period will not be less than 10 years in order to shield the Town from contribution volatility. 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
7/1/2020	$12,621,848	$5,287,258	$7,334,590	41.9%	2021-22	$681,650	$19,940	($1,032,593)	($331,003)
7/1/2021	12,481,000	5,363,000	7,118,000	43.0%	2022-23	696,000	18,000	(1,049,000)	(335,000)
7/1/2022	12,311,000	5,386,000	6,925,000	43.7%	2023-24	714,000	15,000	(1,059,000)	(330,000)
7/1/2023	12,107,000	5,391,000	6,716,000	44.5%	2024-25	735,000	13,000	(1,067,000)	(319,000)
7/1/2024	11,871,000	5,389,000	6,482,000	45.4%	2025-26	759,000	11,000	(1,074,000)	(304,000)
7/1/2025	11,606,000	5,419,000	6,187,000	46.7%	2026-27	780,000	8,000	(1,076,000)	(288,000)
7/1/2026	11,309,000	5,465,000	5,844,000	48.3%	2027-28	803,000	7,000	(1,069,000)	(259,000)
7/1/2027	10,985,000	5,532,000	5,453,000	50.4%	2028-29	828,000	6,000	(1,058,000)	(224,000)
7/1/2028	10,642,000	5,633,000	5,009,000	52.9%	2029-30	854,000	5,000	(1,044,000)	(185,000)
7/1/2029	10,283,000	5,776,000	4,507,000	56.2%	2030-31	882,000	3,000	(1,024,000)	(139,000)
7/1/2030	9,912,000	5,969,000	3,943,000	60.2%	2031-32	911,000	3,000	(1,003,000)	(89,000)
7/1/2031	9,534,000	6,223,000	3,311,000	65.3%	2032-33	942,000	2,000	(1,013,000)	(69,000)
7/1/2032	9,152,000	6,545,000	2,607,000	71.5%	2033-34	973,000	1,000	(991,000)	(17,000)
7/1/2033	8,732,000	6,909,000	1,823,000	79.1%	2034-35	1,004,000	1,000	(966,000)	39,000
7/1/2034	8,305,000	7,353,000	952,000	88.5%	2035-36	1,033,000	1,000	(948,000)	86,000
7/1/2035	7,875,000	7,885,000	(10,000)	100.1%	2036-37	16,000	0	(918,000)	(902,000)
7/1/2036	7,434,000	8,501,000	(1,067,000)	114.4%	2037-38	16,000	0	(886,000)	(870,000)
7/1/2037	6,993,000	8,137,000	(1,144,000)	116.4%	2038-39	17,000	0	(850,000)	(833,000)
7/1/2038	6,554,000	7,780,000	(1,226,000)	118.7%	2039-40	17,000	0	(812,000)	(795,000)
7/1/2039	6,123,000	7,437,000	(1,314,000)	121.5%	2040-41	18,000	0	(774,000)	(756,000)

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, 2012	$5,495,997	$11,043,839	$5,547,842	49.8%
July 1, 2013	5,303,177	11,515,341	6,212,164	46.1%
July 1, 2014	5,426,265	11,636,496	6,210,231	46.6%
July 1, 2015	5,601,205	11,711,195	6,109,990	47.8%
July 1, 2016	5,528,790	11,965,592	6,436,802	46.2%
July 1, 2017	5,590,931	12,161,577	6,570,646	46.0%
July 1, 2018	5,549,956	11,882,376	6,332,420	46.7%
July 1, 2019	5,422,977	12,732,378	7,309,401	42.6%
July 1, 2020	5,287,258	12,621,848	7,334,590	41.9%

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

Fiscal Year	Actuarially Determined Contribution	Actual Town Contribution	Payroll	Actual Contribution as a Percent of Payroll
2013-14	$412,313	$382,657	$750,544	51.0%
2014-15	436,353	436,353	841,894	51.8%
2015-16	449,398	449,398	864,498	52.0%
2016-17	455,458	455,458	899,426	50.6%
2017-18	491,441	491,441	924,684	53.1%
2018-19	516,572	516,572	766,280	67.4%
2019-20	512,235	512,235	541,650	94.6%
2020-21	651,528	TBD	559,604	TBD
2021-22	681,650	TBD	484,166	TBD

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	6	2	0	30	0	1	39
Terminated							
- no benefits due	-	-	-	-	-	-	0
- paid refund	-	-	-	-	-	-	0
- vested benefits due	-	-	-	-	-	-	0
Retired	(1)	-	-	1	-	-	0
Died							
- with beneficiary	-	-	-	-	-	-	0
- no beneficiary	-	-	-	(1)	-	-	(1)
Benefits expired	-	-	-	-	-	-	0
New member	-	-	-	-	-	-	0
Rehired	-	-	-	-	-	-	0
New Alternate Payee	-	-	-	-	-	-	0
Correction	-	-	-	-	-	-	0
Count July 1, 2020	5	2	0	30	0	1	38

Section IV - Membership Data
B. Statistics of Active Membership

	As of July 1, 2019	As of July 1, 2020
Number of Active Members	6	5
Average Age	58.7	58.2
Average Service	23.4	24.1
Total Payroll	$559,604	$484,166
Average Payroll	93,267	96,833

Section IV - Membership Data
C. Statistics of Inactive Membership

	As of July 1, 2019	As of July 1, 2020
Terminated Vested Members		
Number	2	2
Total Annual Benefit	$38,498	$38,498
Average Annual Benefit	19,249	19,249
Average Age	57.9	58.9
Nonvested Members Due Refunds		
Number	0	0
Service Retirees		
Number	30	30
Total Annual Benefit	$934,533	$951,866
Average Annual Benefit	31,151	31,729
Average Age	72.7	73.2
Disabled Retirees		
Number	0	0
Total Annual Benefit	$0	$0
Average Annual Benefit	0	0
Average Age	0.0	0.0
Beneficiaries		
Number	1	1
Total Annual Benefit	$50,059	$50,059
Average Annual Benefit	50,059	50,059
Average Age	66.8	67.8

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

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	0	$0
	50 - 59	1	30,273
	60 - 69	1	8,225
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	2	38,498
Service Retirees	< 50	0	$0
	50 - 59	1	49,117
	60 - 69	11	352,124
	70 - 79	10	362,624
	80 - 89	7	185,428
	90 +	1	2,573
	Total	30	951,866
Disabled Retirees	< 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
Beneficiaries	< 50	0	$0
	50 - 59	0	0
	60 - 69	1	50,059
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	1	50,059

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.

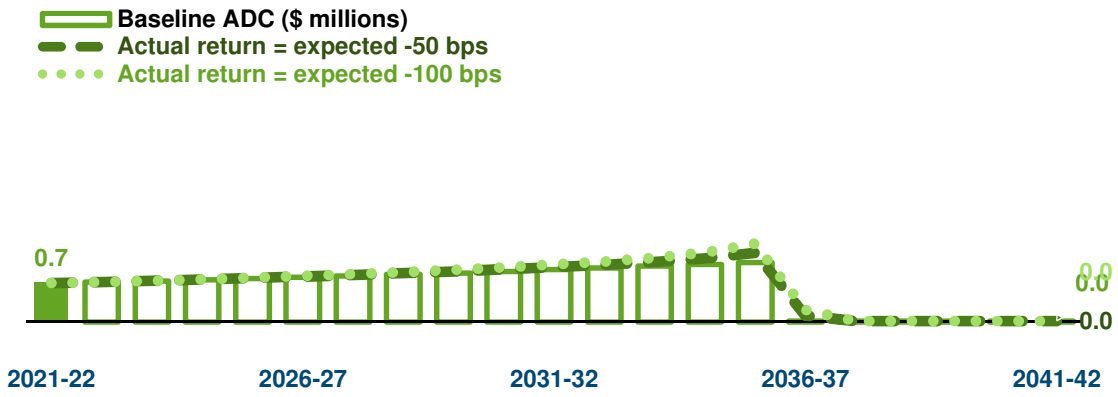
Please see Section III C for more information on the basis for the projected results shown on the following pages.

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.

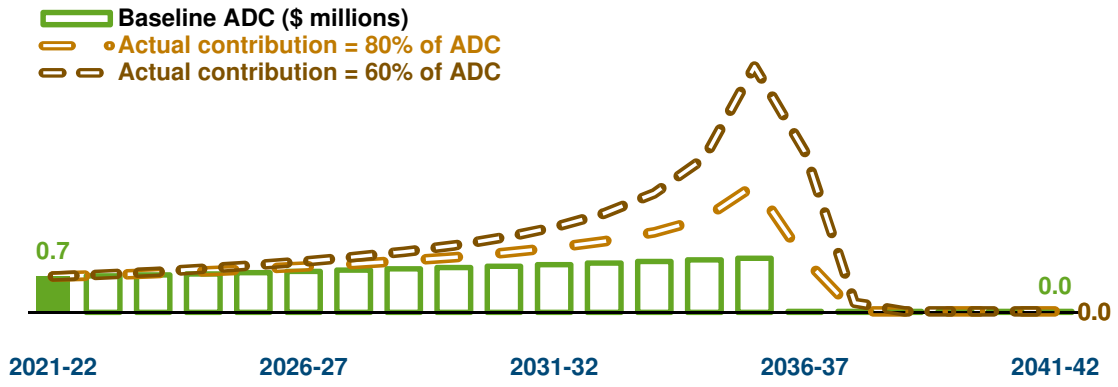
Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on 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 7 years, actual contributions have been 99.1% 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.

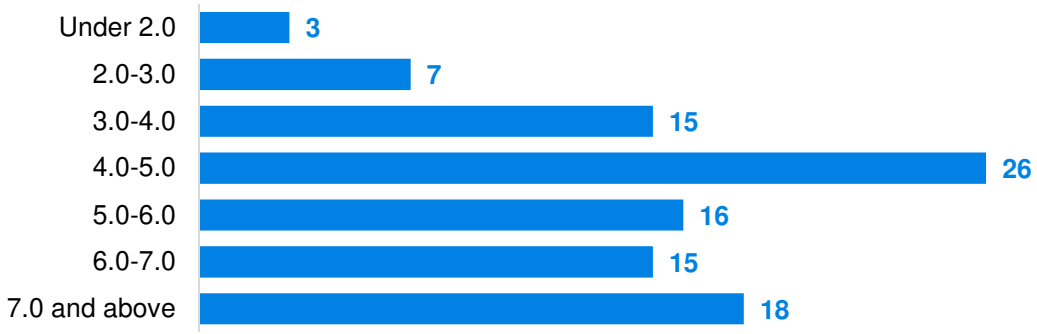
Identification: In 2019-20, the plan had negative cash flow, with town and member contributions to the plan of $535,408 compared to $1,009,918 of benefit payments and administrative expenses paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity 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.

Assessment: As of July 1, 2020, the plan's Asset Volatility Ratio (the ratio of the market value of plan assets to payroll) is 11.0. According to Milliman's 2020 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios:



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 does not contain a mechanism to regularly increase benefits after retirement, so members bear all of the inflation risk.

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.

Pensionable Earnings Risk

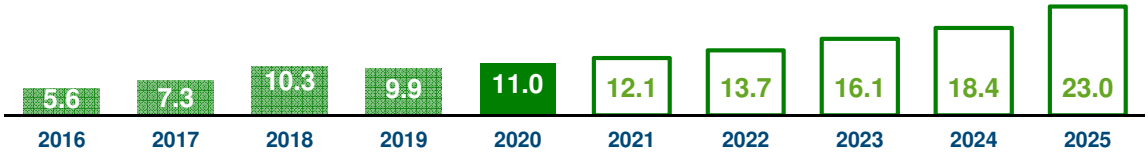
Definition: This is the potential for active members to add items to their pensionable earnings and receive pension benefits that are higher than expected.

Identification: This plan uses gross earnings to determine pension amounts. To the extent that members have years with substantial amounts of overtime pay, this could put upward pressure on subsequent Actuarially Determined Contributions.

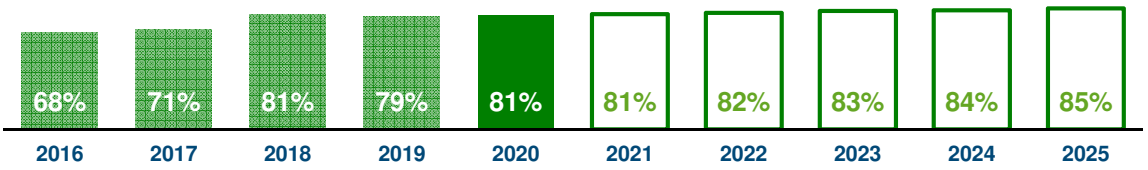
Section V - Analysis of Risk
C. Maturity Measures

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.

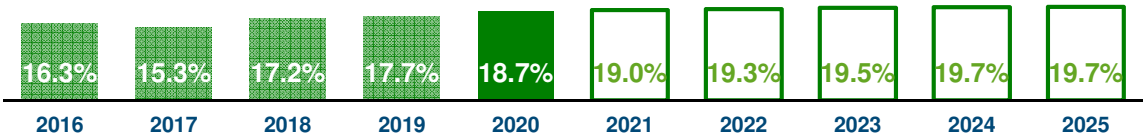
Asset Volatility Ratio: Market Value of Assets compared to Payroll



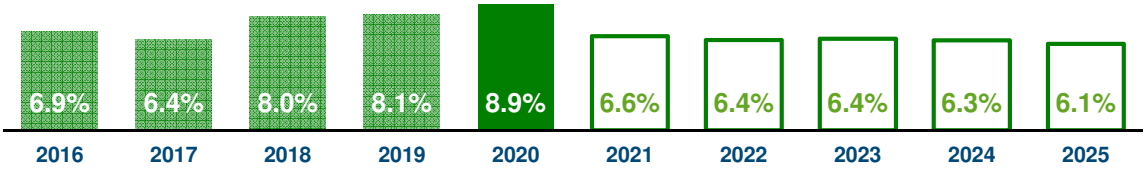
Accrued Liability for members in pay status compared to total Accrued Liability



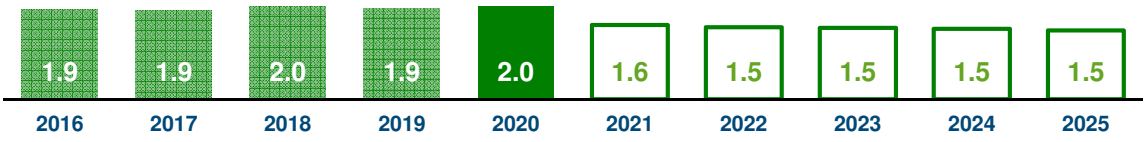
Benefit Payments compared to Market Value of Assets



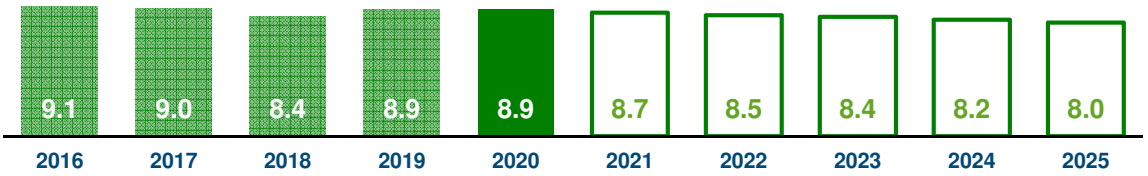
Net Cash Flows compared to Market Value of Assets



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 one-year lag between the valuation date and when the contribution is expected to be paid.

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 a closed period of 30 years starting on July 1, 2005.

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.

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

6.875%

Amortization Growth Rate

3.50%

Expenses

Administrative expenses paid in the prior year, increased by 3% and rounded to the nearest $100.

Salary Scale

3.50%

Mortality

Pub-2010 Mortality Table for Employees, Healthy Annuitants and Disabled Annuitants with generational projection of future improvements per the MP-2019 Ultimate scale. This assumption incorporates the expectation of mortality improvements beyond the valuation date.

Turnover

Age	Rate
20	11.9%
25	11.8%
30	11.0%
35	10.6%
40	9.5%
45	7.5%
50	5.1%
55	1.2%
60	0.3%

Retirement

Age	Rate
55-59	5%
60-61	10%
62-64	25%
65	35%
66-69	50%
70	100%

Disability

11th Railroad Retirement Board Disability Rates.

Marital Status

80% of members are assumed to be married with wives 3 years younger than husbands.

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	Employed for twenty or more hours a week for more than 5 months per calendar year. Employees hired after July 1, 1997 are not covered by this plan.
Final Average Earnings	Highest average gross earnings received in any three consecutive full calendar years.
Continuous Service	Period of continuous employment with the Town beginning with the first of the month following date of employment.
Aggregate Service	The sum of all periods of Continuous Service.
Member Contributions	4.5% of after tax Earnings. Interest is credited at 4% per annum. Refund of Employee Contributions with interest to date of termination of employment or death, unless the employee is eligible for a deferred retirement income.
Normal Form of Benefit	Modified Cash Refund.
Normal Retirement Date	Earlier of age 65, or age 55 with completion of 30 years of service.
Normal Retirement Benefit	1.75% of Final Average Earnings not in excess of $10,000 plus 2% of Final Average Earnings in excess of $10,000 multiplied by years of Aggregate Service with a minimum of $750 per year.
Early Retirement Date	Age 55 and 10 years of Continuous Service or 15 years of Aggregate Service.
Early Retirement Benefit	Accrued Benefit, actuarially reduced if payments begin prior to the member's 58th birthday.
Death Benefit Eligibility	Married Member (of at least one year) or with minor children. Age 30 with 5 years of Continuous Service.
Death Benefit	35% of benefit accrued to date of death.
Disability Retirement Eligibility	Ten years of Aggregate Service and not eligible for benefits under the Long Term Disability Contract.

Appendix C - Summary of Plan Provisions

Disability Retirement Benefit	Accrued Benefit, not less than $1,000 per year, payable to the earlier of the end of disability, death or Normal Retirement Date.
Vesting	Prior to July 1, 1989 - Ten years of Continuous Service or 15 years of Aggregate Service. Effective July 1, 1989 - Five years of Continuous Service or 15 years of Aggregate Service.
Termination Benefit	Benefit accrued to date of termination with payment commencing on Normal Retirement Date.

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.