Milliman

TOWN OF OLD SAYBROOK RETIREMENT PLAN

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

Prepared by

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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 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.

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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 (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.

Although it is possible that the COVID-19 pandemic could have a material impact on the projected mortality, liabilities, and contribution requirements, we have chosen not to make an adjustment in the projections at this time, given the substantial current uncertainty regarding the impact of COVID-19 on mortality and plan costs, including whether the pandemic will increase or decrease mortality during the term of our projections. We will be monitoring this development closely and may adjust future projections to reflect the impact of COVID-19, if and when it becomes appropriate.

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

Kai Petersen, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

The interest rate assumption was lowered from 7.00% to 6.75%. This change increased the Unfunded Accrued Liability by about $820,000 and increased the Actuarially Determined Contribution by about $94,000.

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, 2020	$23,283,089	$23,935,392
Town and Member Contributions	1,061,506	1,061,506
Investment Income	6,422,505	2,473,208
Benefit Payments and Administrative Expenses	(1,618,650)	(1,618,650)
Value as of July 1, 2021	29,148,450	25,851,456

For fiscal year 2020-21, the plan's assets earned 27.92% on a Market Value basis and 10.45% on an Actuarial Value basis. The actuarial assumption for this period was 7.00%; the result is an asset gain of about $4,812,000 on a Market Value basis and a gain of about $817,000 on an Actuarial Value basis. Historical rates of return are shown in the graph below.
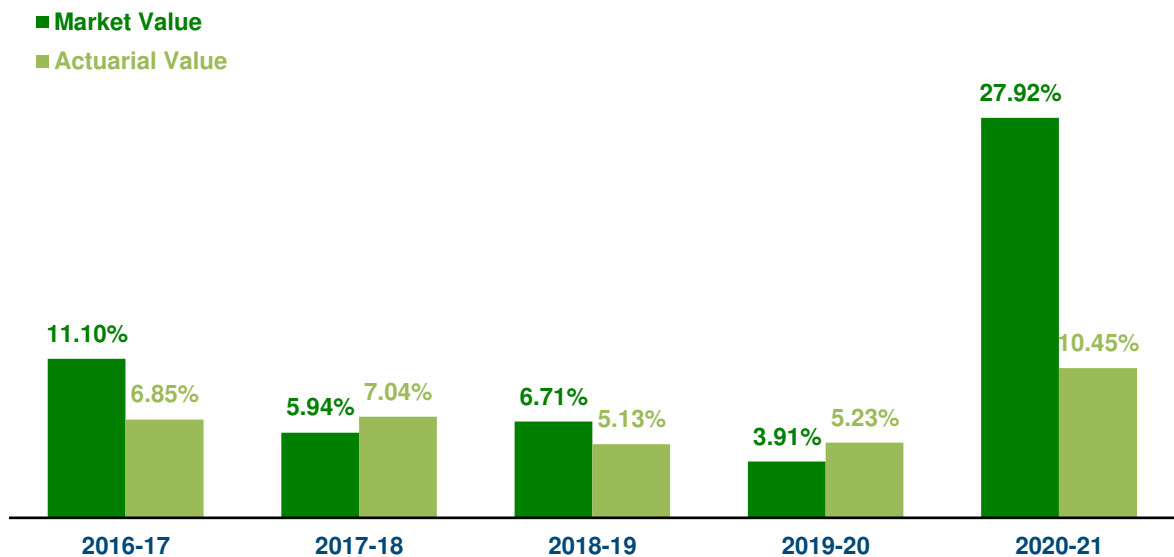
Please note that the Actuarial Value currently is less than the Market Value by $3,297,000. This figure represents investment gains that will be gradually recognized in future years. This process will exert downward pressure on the Town's contribution, unless there are offsetting market losses.

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.

□ **Market Value ($ millions)**
□ **Actuarial Value ($ millions)**
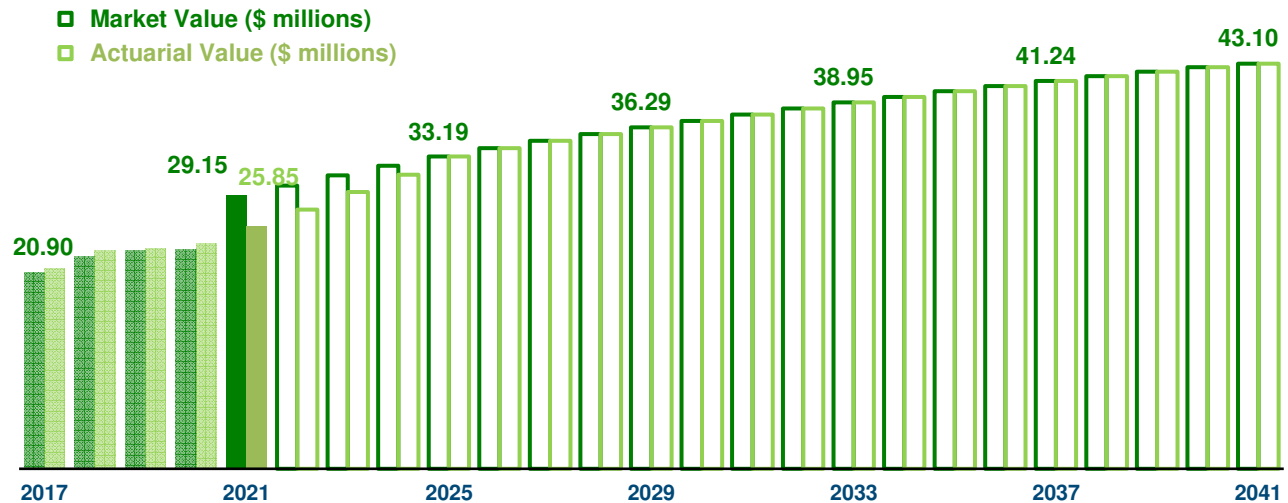
In 2020-21, the plan paid out $1.6 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $48 million in benefits to members.

Benefit Payments ($ millions)
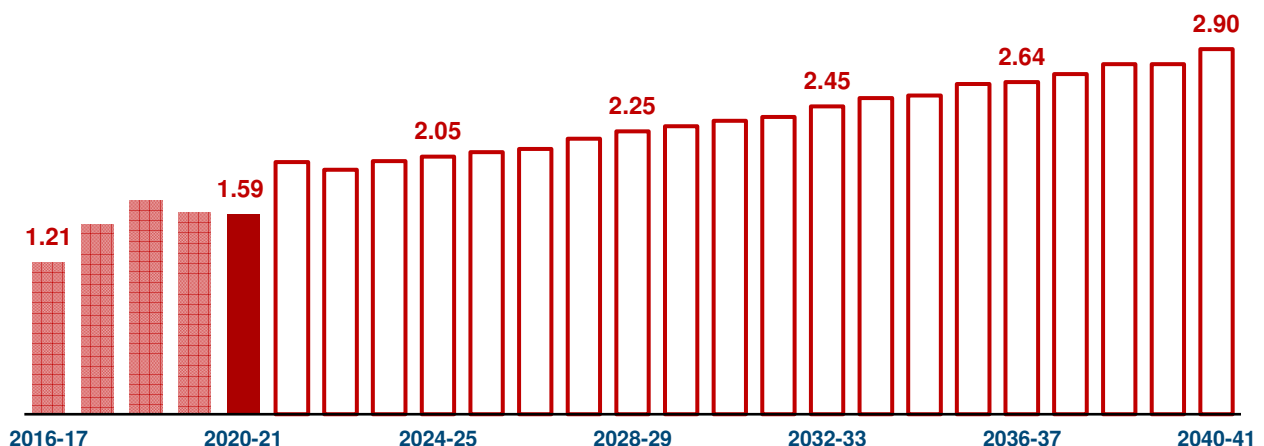
Section I - Executive Summary
Membership

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**
■ **Terminated Members**
■ **Active Members**

Year	Active Members	Terminated Members	Members in Pay Status	Total
2017	115	18	76	209
2018	112	15	85	212
2019	102	13	87	202
2020	97	13	86	196
2021	87	20	88	195
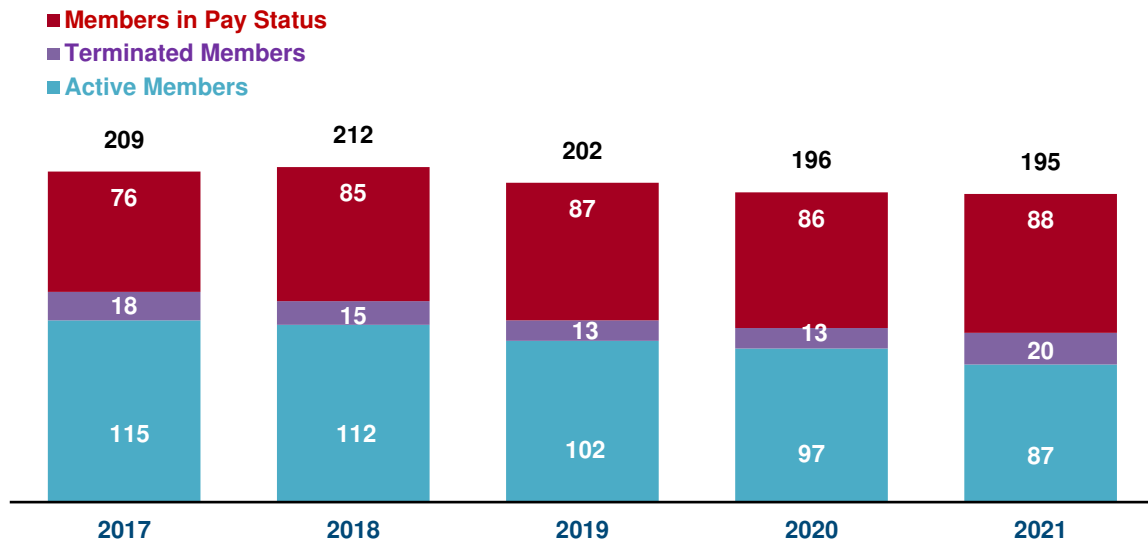
Members in Pay Status on July 1, 2021

Board of Education	8	Average Age	72.7
Police	5	Total Annual Benefit	$1,580,403
Town	75	Average Annual Benefit	17,959
Total	88		

As of July 1, 2021, there were 80 Retirees, 0 Disabled Retirees, and 8 Beneficiaries.

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

■ **Retirees**
■ **Disabled Retirees**
■ **Beneficiaries**

Age Group	Count
< 50	1
50-59	8
60-69	24
70-79	34
80-89	17
90 +	4
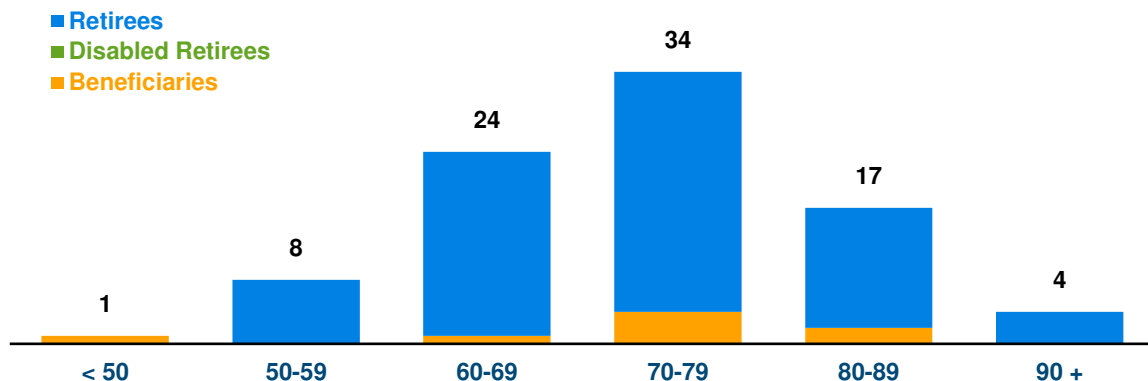
Section I - Executive Summary
Membership (continued)

Terminated Vested Members on July 1, 2021

Board of Education	1	Average Age	46.4
Police	5	Total Annual Benefit	$195,396
Town	5	Average Annual Benefit	17,763
Total	11		

Nonvested Members Due Refunds on July 1, 2021

Board of Education	1
Police	3
Town	5
Total	9

Active Members on July 1, 2021

Board of Education	23	Average Age	49.0
Police	23	Average Service	12.8
Town	41	Payroll	$6,127,886
Total	87	Average Payroll	70,435

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

Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total
< 25	2							2
25-29	4	3	1					8
30-34	3	4	1					8
35-39		6	4					10
40-44	1	1	1	2				5
45-49		2	1	3	4			10
50-54	1	3		1	3	2		10
55-59		4	2	1	2	1		10
60-64	2	4	5	2	2		1	16
65+	1	1	3	1	1		1	8
Total	14	28	18	10	12	3	2	87

Years of Service (header spanning 0-4 through 30+)

Section I - Executive Summary
Accrued Liability

The Accrued Liability as of July 1, 2021 is $30,424,392, which consists of the following pieces:

- **Beneficiaries = $603,331**
- **Disabled Retirees = $0**
- **Retirees = $15,109,979**
- **Terminated Vested Members = $1,193,866**
- **Active Members = $13,517,216**

Board of Education	Police	Town
4,624,135	8,109,431	17,690,826
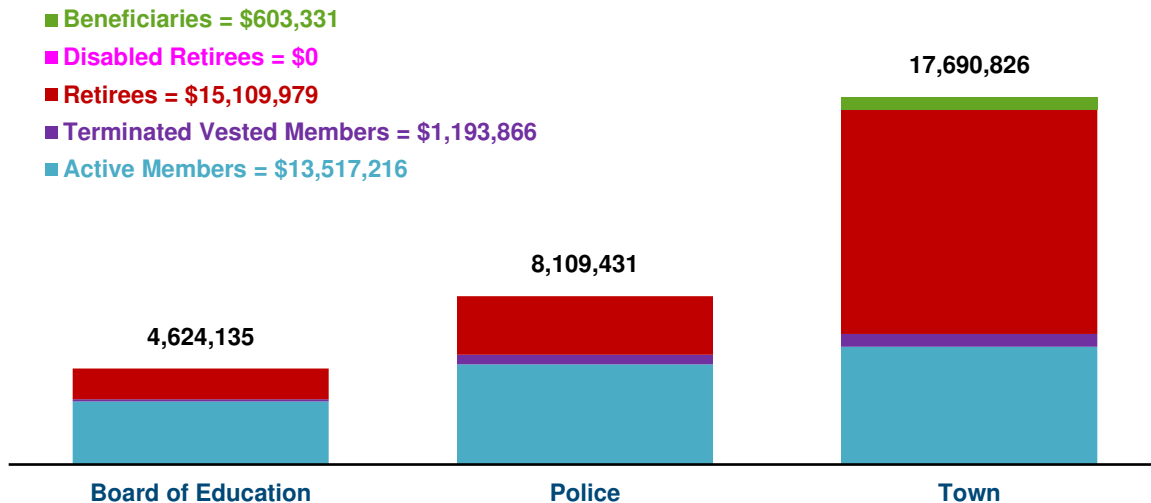
The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:

- **Preretirement Death = $58,851**
- **Disability = $247,761**
- **Retirement = $12,987,827**
- **Termination = $222,777**

Board of Education	Police	Town
3,030,528	4,818,160	5,668,528
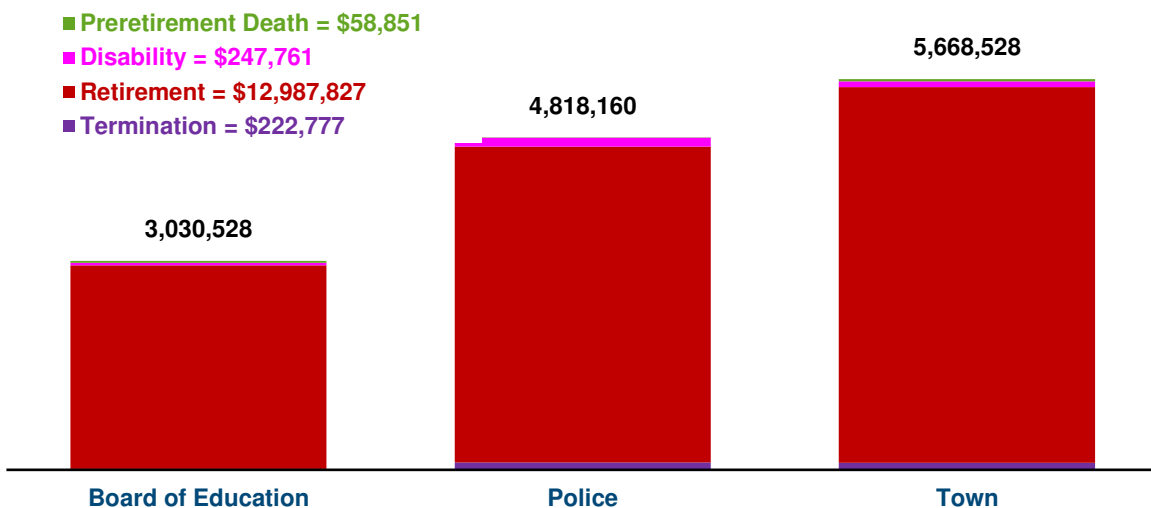
Section I - Executive Summary
Funded Status

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.

Accrued Liability ($ millions)

2017	2018	2019	2020	2021
23.80	25.46	27.91	28.33	30.42

Unfunded Accrued Liability ($ millions)

2017	2018	2019	2020	2021
2.51	2.28	4.41	4.39	4.57

Funded Ratio

2017	2018	2019	2020	2021
89.5%	91.0%	84.2%	84.5%	85.0%
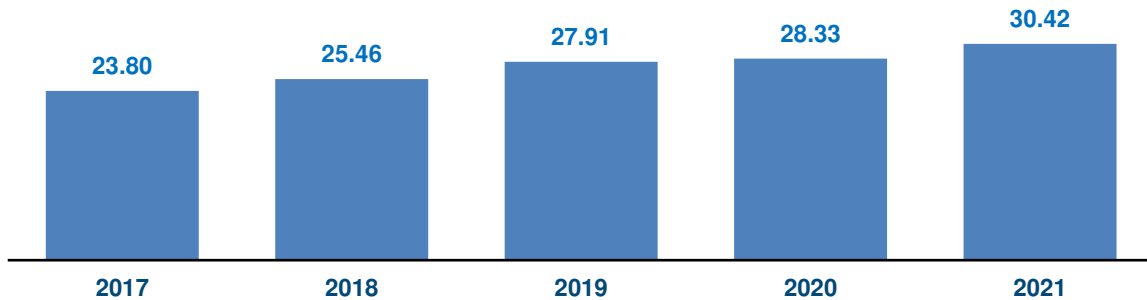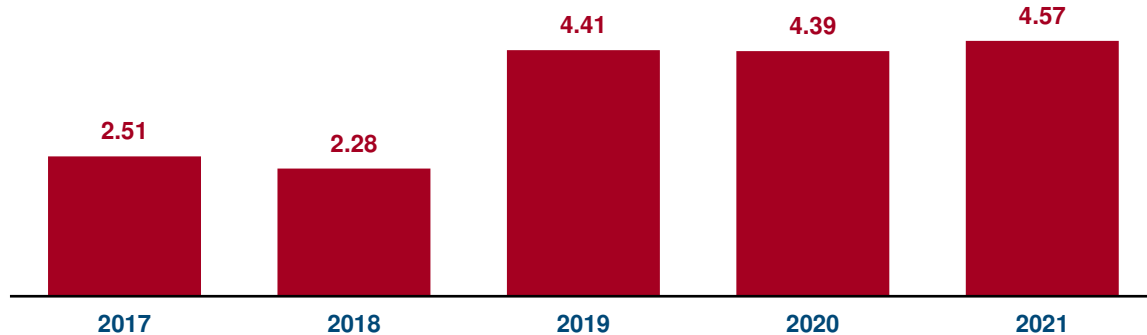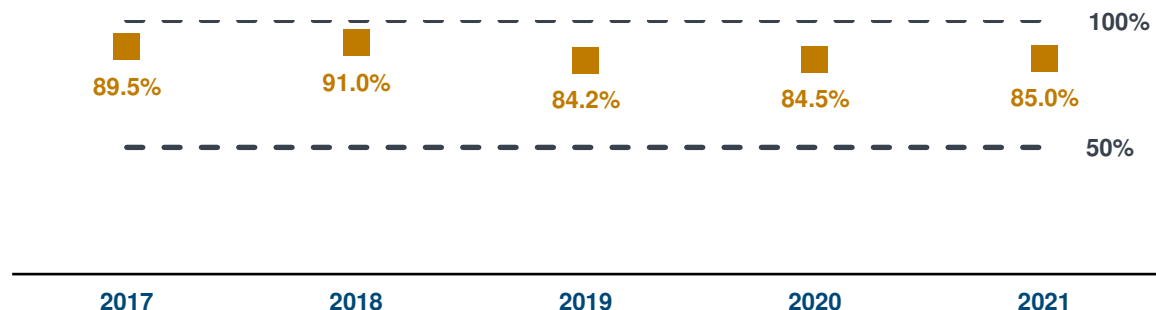
Section I - Executive Summary
Actuarially Determined Contribution

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 $788,953:

■ Interest = $49,887
■ Past Service Cost = $338,442
■ Normal Cost = $400,624

	Board of Education	Police	Town
Total	171,305	247,767	369,881
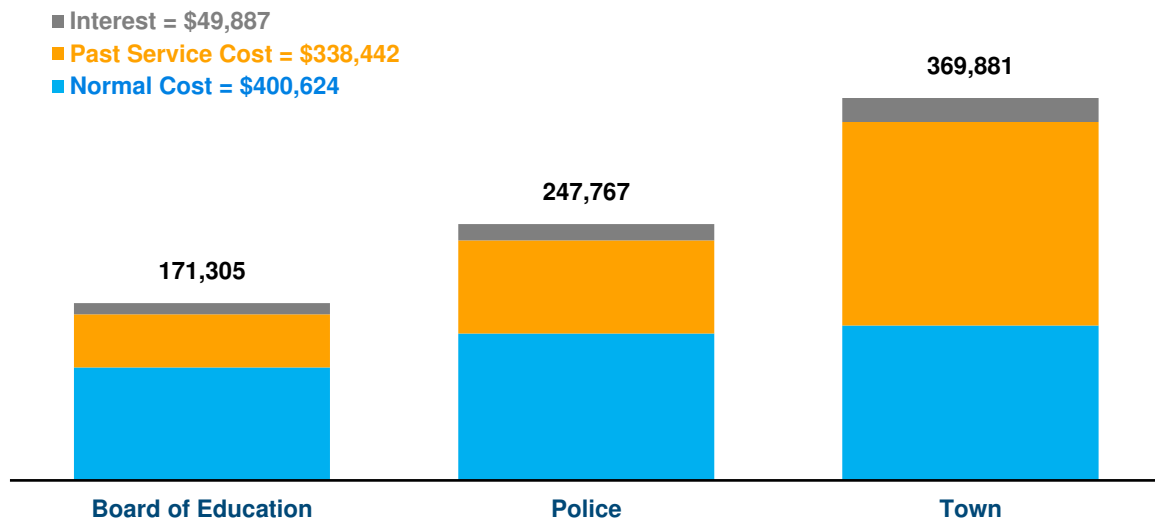
The chart below shows the Actuarially Determined Contribution for the past five fiscal years.

■ Interest
■ Past Service Cost
■ Normal Cost

	2018-19	2019-20	2020-21	2021-22	2022-23
Total	575,704	598,170	786,169	813,814	788,953
Past Service Cost	188,566	175,099	311,883	318,830	338,442
Normal Cost	346,973	382,635	421,997	441,744	400,624
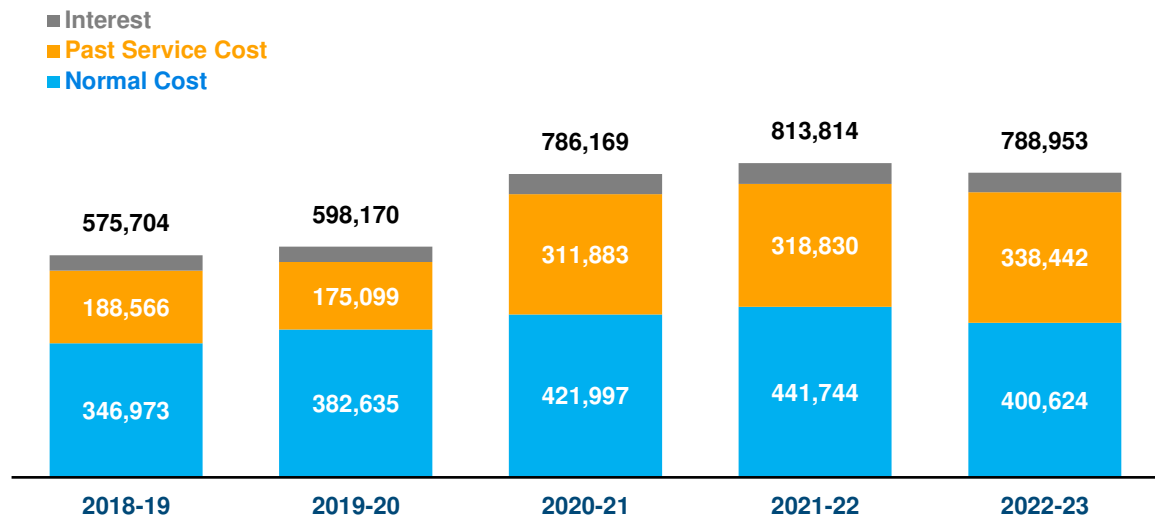
Section I - Executive Summary
Long-Range Forecast

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. Because the large market gains from 2020-21 will be gradually recognized in the Actuarial Value of Assets over the next four years, absent any offsetting market losses we expect to see substantial improvements in the funded ratio and corresponding declines in the Actuarially Determined Contribution over that period.

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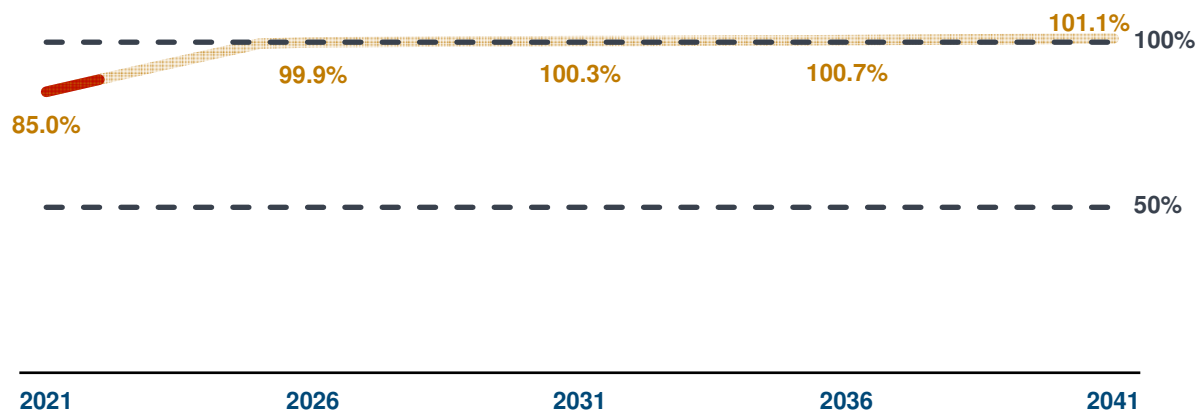
Actuarially Determined Contribution ($ millions)
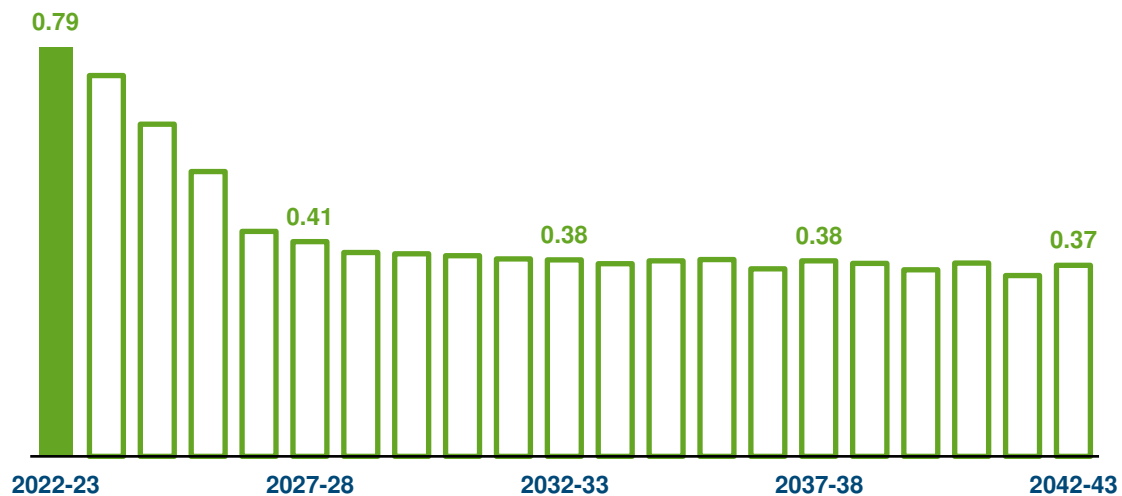
To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

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:
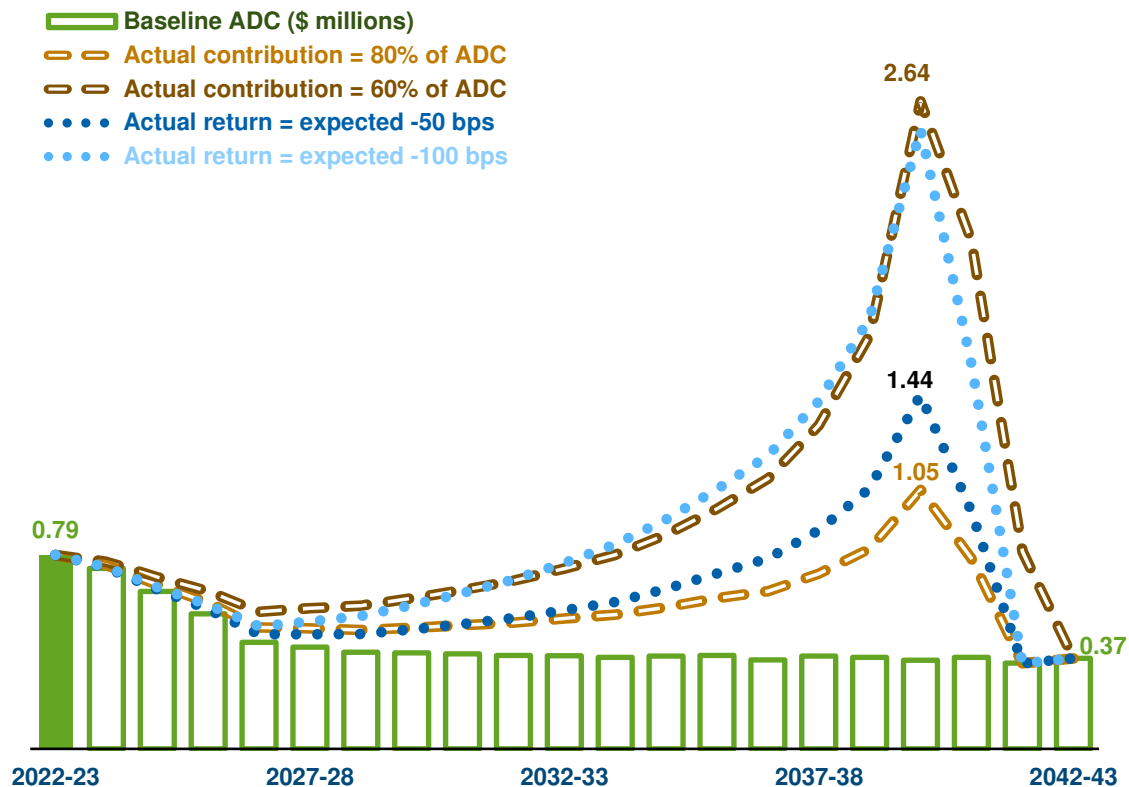
The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, 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, 2020	July 1, 2021
Active Members	97	87
Terminated Members	13	20
Members in Pay Status	<u>86</u>	<u>88</u>
Total Count	196	195
Payroll	$6,462,149	$6,127,886

Assets and Liabilities as of	July 1, 2020	July 1, 2021
Market Value of Assets	$23,283,089	$29,148,450
Actuarial Value of Assets	23,935,392	25,851,456
Accrued Liability for Active Members	12,463,990	13,517,216
Accrued Liability for Terminated Members	832,290	1,193,866
Accrued Liability for Members in Pay Status	<u>15,032,587</u>	<u>15,713,310</u>
Total Accrued Liability	28,328,867	30,424,392
Unfunded Accrued Liability	4,393,475	4,572,936
Funded Ratio	84.5%	85.0%

Actuarially Determined Contribution for Fiscal Year	2021-22	2022-23
Normal Cost	$441,744	$400,624
Past Service Cost	318,830	338,442
Interest	<u>53,240</u>	<u>49,887</u>
Actuarially Determined Contribution	813,814	788,953

Allocation of Actuarially Determined Contribution

Board of Education	158,182	171,305
Police	268,307	247,767
Town	<u>387,325</u>	<u>369,881</u>
Total	813,814	788,953

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2020	**$23,283,089**
Town Contributions	751,340
Member Contributions	310,166
Net Investment Income	6,422,505
Benefit Payments	(1,591,720)
Administrative Expenses	(26,930)
Market Value as of June 30, 2021	**29,148,450**
Expected Return on Market Value of Assets	1,610,227
Market Value (Gain)/Loss	(4,812,278)
Approximate Rate of Return *	27.92%

* 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, 2021

■**Equity**
■**Fixed Income**
■**Cash**

US Large Cap Equity	30.0%
US Core Fixed Income (Aggregate)	17.0%
US High Yield Bonds	10.0%
Foreign Developed Equity	10.0%
Emerging Markets Equity	10.0%
US Cash	7.0%
US Mid Cap Equity	7.0%
US Short (1-3 Yr) Credit Bonds	6.0%
US Small Cap Equity	3.0%
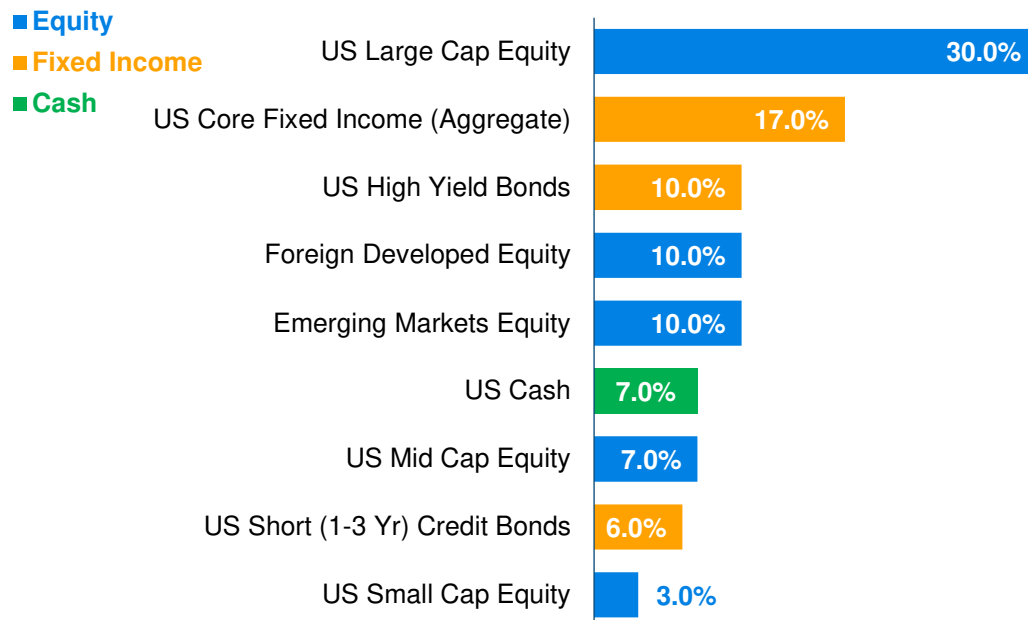
Section II - Plan Assets
B. Development of Actuarial Value of Assets

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.

1. Expected Market Value of Assets:
   a. Market Value of Assets as of July 1, 2020 $23,283,089
   b. Town and Member Contributions   1,061,506
   c. Benefit Payments and Administrative Expenses   (1,618,650)
   d. Expected Earnings Based on 7.00% Interest   <u>1,610,227</u>
   e. Expected Market Value of Assets as of July 1, 2021   24,336,172

2. Actual Market Value of Assets as of July 1, 2021   29,148,450

3. Market Value (Gain)/Loss: (1e) - (2)   (4,812,278)

4. Delayed Recognition of Market (Gains)/Losses

Plan Year End	(Gain)/Loss	Percent Not Recognized	Amount Not Recognized
06/30/2021	($4,812,278)	80%	($3,849,822)
06/30/2020	732,166	60%	439,300
06/30/2019	119,379	40%	47,752
06/30/2018	328,881	20%	<u>65,776</u>
			(3,296,994)

5. Actuarial Value of Assets as of July 1, 2021: (2) + (4)   25,851,456

6. Return on Actuarial Value of Assets   2,473,208

7. Approximate Rate of Return on Actuarial Value of Assets   10.45%

8. Actuarial Value (Gain)/Loss   (816,514)

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 20 year period starting July 1, 2019.

		Board of Education	Police	Town	Total
1.	Accrued Liability				
	Active Members	$3,030,528	$4,818,160	$5,668,528	$13,517,216
	Terminated Members	108,355	461,750	623,761	1,193,866
	Retirees	1,485,252	2,829,521	10,795,206	15,109,979
	Disabled Retirees	0	0	0	0
	Beneficiaries	0	0	603,331	603,331
	Total Accrued Liability	4,624,135	8,109,431	17,690,826	30,424,392
2.	Actuarial Value of Assets * (see Section IIB)	3,929,105	6,890,544	15,031,807	25,851,456
3.	Unfunded Accrued Liability: (1) - (2)	695,030	1,218,887	2,659,019	4,572,936
4.	Funded Ratio: (2) / (1)	85.0%	85.0%	85.0%	85.0%
5.	Amortization Period	18	18	18	18
6.	Amortization Growth Rate	3.00%	3.00%	3.00%	3.00%
7.	Past Service Cost: (3) amortized over (5)	51,439	90,210	196,793	338,442

* Allocated to the individual groups in proportion to the Total Accrued Liability.

Section III - Development of Contribution
B. Actuarially Determined Contribution for FY 2022-23

		Board of Education	Police	Town	Total
1.	Total Normal Cost	$178,232	$208,687	$246,506	$633,425
2.	Expected Member Contributions	73,408	74,180	112,913	260,501
3.	Expected Administrative Expenses*	4,210	7,383	16,107	27,700
4.	Net Normal Cost: (1) - (2) + (3)	109,034	141,890	149,700	400,624
5.	Past Service Cost (see Section IIIA)	51,439	90,210	196,793	338,442
6.	Interest on (4) + (5) to start of next fiscal year	10,832	15,667	23,388	49,887
7.	Actuarially Determined Contribution for FY 2022-23: (4) + (5) + (6)	171,305	247,767	369,881	788,953

* Allocated to the individual groups in proportion to the Total Accrued Liability.

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. 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
7/1/2021	$30,424,392	$25,851,456	$4,572,936	85.0%	2022-23	$788,953	$267,787	($1,943,082)	($886,342)
7/1/2022	31,073,000	27,555,000	3,518,000	88.7%	2023-24	734,000	260,000	(2,012,000)	(1,018,000)
7/1/2023	31,857,000	29,434,000	2,423,000	92.4%	2024-25	640,000	259,000	(2,048,000)	(1,149,000)
7/1/2024	32,599,000	31,275,000	1,324,000	95.9%	2025-26	549,000	253,000	(2,082,000)	(1,280,000)
7/1/2025	33,351,000	33,195,000	156,000	99.5%	2026-27	433,000	249,000	(2,109,000)	(1,427,000)
7/1/2026	34,099,000	34,080,000	19,000	99.9%	2027-28	414,000	239,000	(2,191,000)	(1,538,000)
7/1/2027	34,859,000	34,873,000	(14,000)	100.0%	2028-29	393,000	235,000	(2,249,000)	(1,621,000)
7/1/2028	35,552,000	35,602,000	(50,000)	100.1%	2029-30	391,000	227,000	(2,290,000)	(1,672,000)
7/1/2029	36,226,000	36,294,000	(68,000)	100.2%	2030-31	387,000	222,000	(2,332,000)	(1,723,000)
7/1/2030	36,888,000	36,978,000	(90,000)	100.2%	2031-32	381,000	211,000	(2,363,000)	(1,771,000)
7/1/2031	37,539,000	37,655,000	(116,000)	100.3%	2032-33	379,000	204,000	(2,446,000)	(1,863,000)
7/1/2032	38,188,000	38,328,000	(140,000)	100.4%	2033-34	372,000	206,000	(2,514,000)	(1,936,000)
7/1/2033	38,778,000	38,949,000	(171,000)	100.4%	2034-35	377,000	204,000	(2,533,000)	(1,952,000)
7/1/2034	39,344,000	39,536,000	(192,000)	100.5%	2035-36	380,000	193,000	(2,624,000)	(2,051,000)
7/1/2035	39,927,000	40,144,000	(217,000)	100.5%	2036-37	362,000	194,000	(2,641,000)	(2,085,000)
7/1/2036	40,424,000	40,690,000	(266,000)	100.7%	2037-38	377,000	185,000	(2,704,000)	(2,142,000)
7/1/2037	40,953,000	41,236,000	(283,000)	100.7%	2038-39	372,000	180,000	(2,783,000)	(2,231,000)
7/1/2038	41,436,000	41,760,000	(324,000)	100.8%	2039-40	360,000	181,000	(2,783,000)	(2,242,000)
7/1/2039	41,851,000	42,225,000	(374,000)	100.9%	2040-41	373,000	167,000	(2,903,000)	(2,363,000)
7/1/2040	42,306,000	42,708,000	(402,000)	101.0%	2041-42	349,000	168,000	(2,881,000)	(2,364,000)

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, 2011	$16,333,130	$19,249,102	$2,915,972	84.9%
July 1, 2012	16,697,547	20,083,455	3,385,908	83.1%
July 1, 2013	17,394,679	21,066,367	3,671,688	82.6%
July 1, 2014	18,553,292	22,384,073	3,830,781	82.9%
July 1, 2015	19,552,975	23,612,554	4,059,579	82.8%
July 1, 2016	20,258,042	23,950,369	3,692,327	84.6%
July 1, 2017	21,294,870	23,800,533	2,505,663	89.5%
July 1, 2018	23,178,423	25,463,018	2,284,595	91.0%
July 1, 2019	23,498,740	27,905,179	4,406,439	84.2%
July 1, 2020	23,935,392	28,328,867	4,393,475	84.5%
July 1, 2021	25,851,456	30,424,392	4,572,936	85.0%

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
2012-13	$675,246	$359,336	$4,140,391	8.7%
2013-14	712,919	411,211	4,542,061	9.1%
2014-15	758,105	437,437	4,627,012	9.5%
2015-16	802,803	475,113	5,040,802	9.4%
2016-17	828,573	500,830	5,112,538	9.8%
2017-18	675,326	1,576,474	6,391,246	24.7%
2018-19	575,704	558,125	6,518,727	8.6%
2019-20	598,170	560,074	6,746,930	8.3%
2020-21	786,169	751,340	6,628,087	11.3%
2021-22	813,814	TBD	6,462,149	TBD
2022-23	788,953	TBD	6,127,886	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	Retirees	Disabled Retirees	Beneficiaries	Total
Count July 1, 2020	97	9	4	79	0	7	196
Terminated							
- no benefits due	-	-	-	-	-	-	0
- paid refund	-	-	-	-	-	-	0
- vested benefits due	(7)	2	5	-	-	-	0
Retired	(3)	-	-	3	-	-	0
Died							
- with beneficiary	-	-	-	(1)	-	-	(1)
- no beneficiary	-	-	-	(1)	-	-	(1)
Benefits expired	-	-	-	-	-	-	0
New member	-	-	-	-	-	-	0
Rehired	-	-	-	-	-	-	0
New Alternate Payee	-	-	-	-	-	1	1
Correction	-	-	-	-	-	-	0
Count July 1, 2021	87	11	9	80	0	8	195
Breakdown July 1, 2021							
Board of Education	23	1	1	8	0	0	33
Police	23	5	3	5	0	0	36
Town	41	5	5	67	0	8	126
Total	87	11	9	80	0	8	195

Section IV - Membership Data
B. Statistics of Active Membership

		As of July 1, 2020	As of July 1, 2021
Number of Active Members	Board of Education	23	23
	Police	28	23
	Town	<u>46</u>	<u>41</u>
	Total	97	87
Average Age	Board of Education	50.2	51.2
	Police	35.4	37.2
	Town	53.6	54.5
	Total	47.5	49.0
Average Service	Board of Education	13.0	14.0
	Police	9.3	10.5
	Town	12.4	13.4
	Total	11.7	12.8
Total Payroll	Board of Education	$1,481,401	$1,516,906
	Police	2,168,938	1,956,501
	Town	<u>2,811,810</u>	<u>2,654,479</u>
	Total	6,462,149	6,127,886
Average Payroll	Board of Education	$64,409	$65,952
	Police	77,462	85,065
	Town	61,126	64,743
	Total	66,620	70,435

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

Board of Education

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

Police

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

Town

Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total
< 25								0
25-29		1	1					2
30-34		1						1
35-39		3	2					5
40-44	1		1	2				4
45-49				2	1			3
50-54		2			1			3
55-59		2	2	1	1			6
60-64		2	4	1	2			9
65+	1	1	3	1	1		1	8
Total	2	12	13	7	6	0	1	41

Section IV - Membership Data
D. Statistics of Inactive Membership

	As of July 1, 2020	As of July 1, 2021
Terminated Vested Members		
Number	9	11
Total Annual Benefit	$128,652	$179,024
Average Annual Benefit	14,295	16,275
Average Age	50.8	46.4
Nonvested Members Due Refunds		
Number	4	9
Retirees		
Number	79	80
Total Annual Benefit	$1,479,159	$1,520,524
Average Annual Benefit	18,724	19,007
Average Age	72.3	72.6
Disabled Retirees		
Number	0	0
Total Annual Benefit	$0	$0
Average Annual Benefit	0	0
Average Age	0.0	0.0
Beneficiaries		
Number	7	8
Total Annual Benefit	$51,842	$59,879
Average Annual Benefit	7,406	7,485
Average Age	71.4	73.7

Section IV - Membership Data
E. Distribution of Inactive Members as of July 1, 2021

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	5	$70,468
	50 - 59	5	99,002
	60 - 69	1	9,554
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	11	179,024
Retirees	< 50	0	$0
	50 - 59	8	319,772
	60 - 69	23	358,156
	70 - 79	30	525,702
	80 - 89	15	275,428
	90 +	4	41,466
	Total	80	1,520,524
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	1	$18,545
	50 - 59	0	0
	60 - 69	1	7,774
	70 - 79	4	22,307
	80 - 89	2	11,253
	90 +	0	0
	Total	8	59,879

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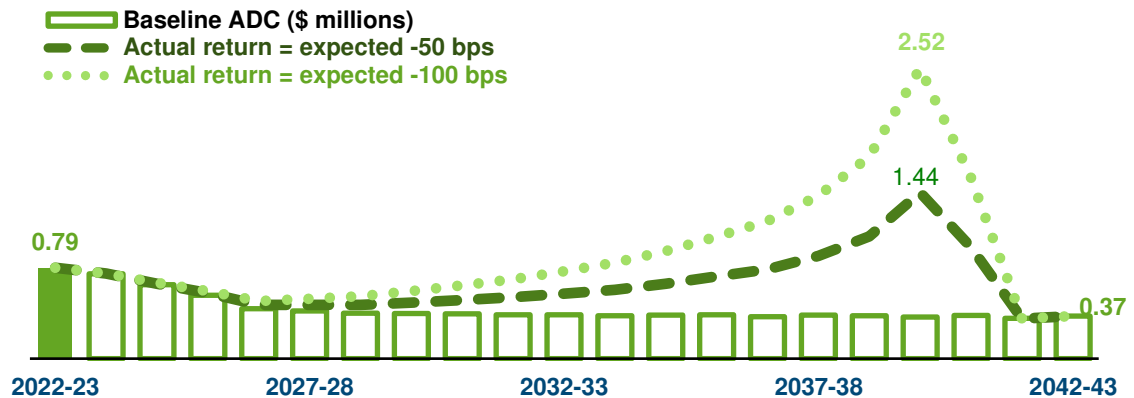
Section V - Analysis of Risk
B. Risk Identification and Assessment

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 10 years, actual contributions have been 84.9% of the Actuarially Determined Contribution in total. The consequences of persistent underfunding on future Actuarially Determined Contribution levels are illustrated below:
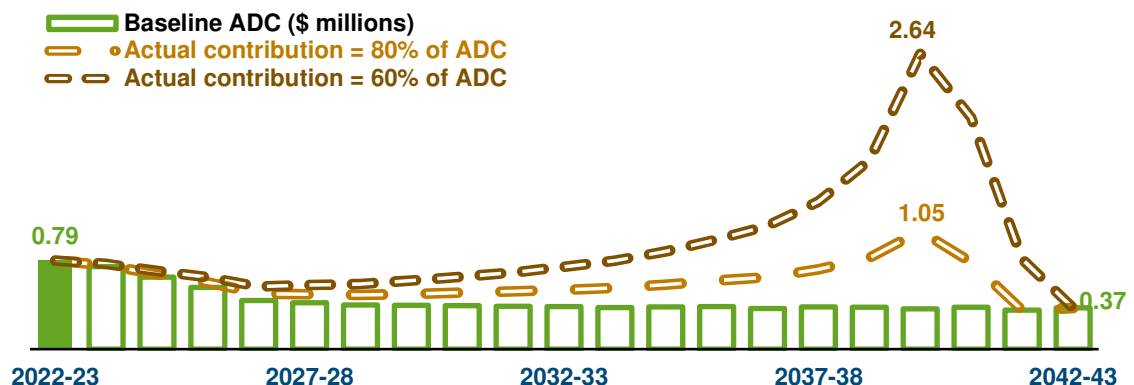
Section V - Analysis of Risk
B. Risk Identification and Assessment

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 2020-21, the plan had negative cash flow, with town and member contributions to the plan of $1,061,506 compared to $1,618,650 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, 2021, the plan's Asset Volatility Ratio (the ratio of the market value of plan assets to payroll) is 4.8. According to Milliman's 2021 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios:

Range	Count
Under 2.0	4
2.0-3.0	6
3.0-4.0	18
4.0-5.0	26
5.0-6.0	17
6.0-7.0	13
7.0 and above	16
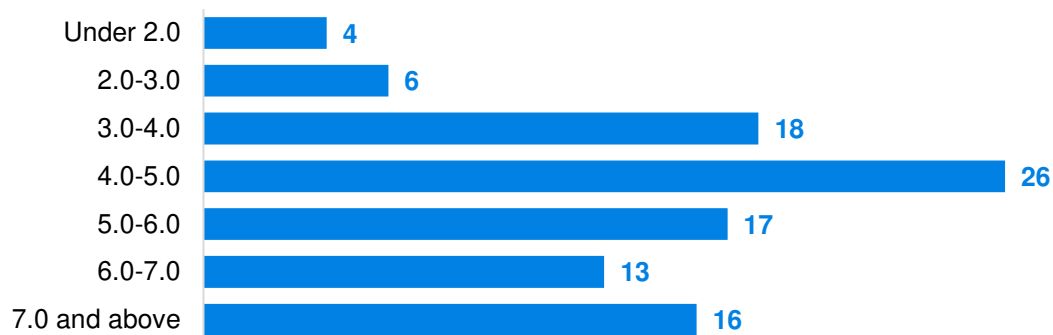
Inflation Risk

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.

Retirement Risk

Definition: This is the potential for members to retire and receive subsidized benefits that are more valuable than expected.

Identification: This plan permits members to retire with unreduced benefits at relatively young ages. If members retire at earlier ages than are anticipated by the actuarial assumptions, this will put upward pressure on subsequent Actuarially Determined Contributions.

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: Benefits provided by this plan are calculated using base pay; overtime pay is excluded. This plan therefore does not run the risk that benefits will be unexpectedly high due to unusual amounts of overtime worked just prior to retirement.
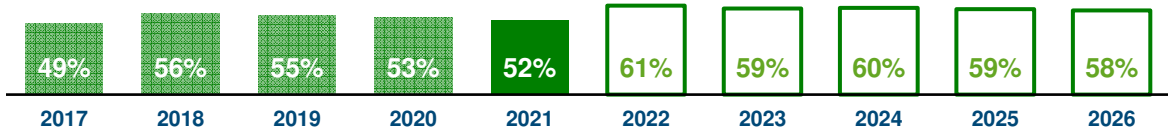
Section V - Analysis of Risk
C. Maturity Measures

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.
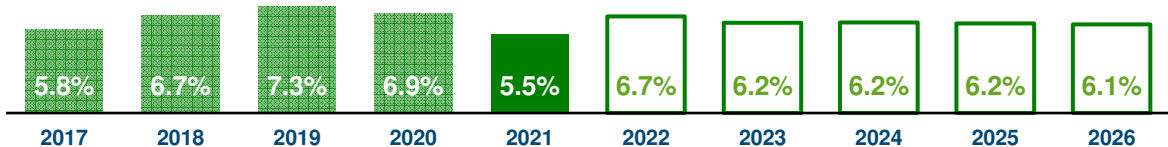
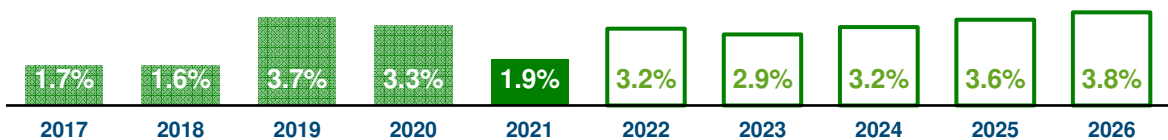**Asset Volatility Ratio: Market Value of Assets compared to Payroll**

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
3.21	3.34	3.49	3.60	4.76	5.39	5.69	6.00	6.31	6.62
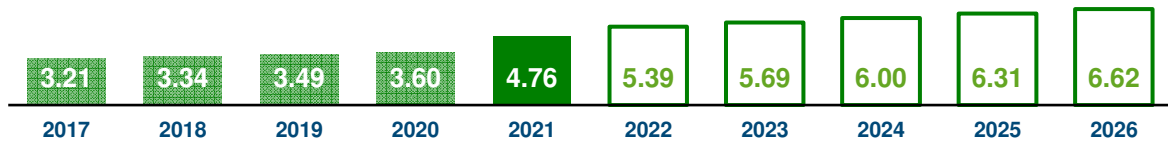
Accrued Liability for members in pay status compared to total Accrued Liability

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
49%	56%	55%	53%	52%	61%	59%	60%	59%	58%

Benefit Payments compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
5.8%	6.7%	7.3%	6.9%	5.5%	6.7%	6.2%	6.2%	6.2%	6.1%

Net Cash Flows compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1.7%	1.6%	3.7%	3.3%	1.9%	3.2%	2.9%	3.2%	3.6%	3.8%

Benefit Payments compared to Town Contributions

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
2.41	0.96	3.04	2.86	2.12	2.46	2.46	2.74	3.20	3.79
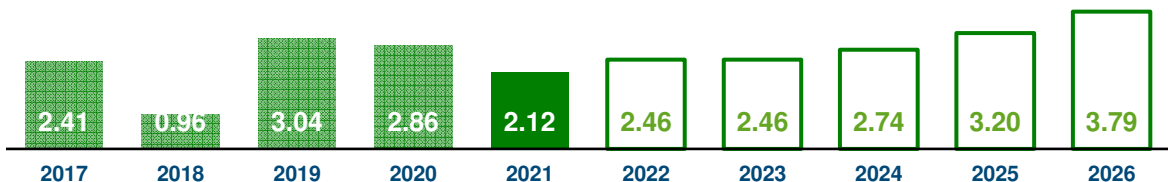
Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
9.4	10.4	10.7	10.9	11.1	11.1	11.1	11.1	11.1	11.1
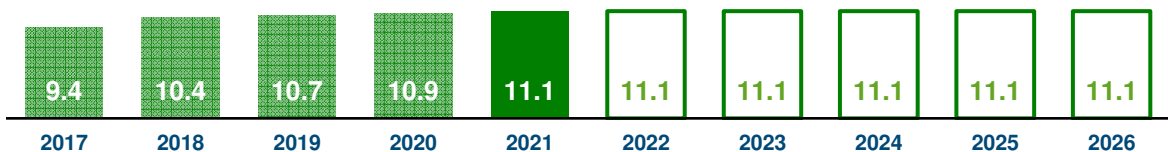
Appendix A - Actuarial Funding Method

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 a closed 20 year period starting July 1, 2019. The amortization period will decrease each year until it reaches 10 years, after which time it will remain at 10 years.

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   6.75% (prior: 7.00%)

Inflation   2.75%

Amortization Growth Rate   3.00%

Expenses   Prior year actual administrative expenses increased by 3% and rounded to the nearest $100.

Salary Scale

Age	Rate
25	5.25%
30	4.50%
35	4.00%
40	3.75%
45	3.50%
50	3.25%
55	3.00%
60+	2.75%

Turnover

Service	Rate
0-5	8.00%
6-9	4.00%
10+	2.00%

Healthy Mortality   Pub-2010 Mortality Table for Employees and Healthy Annuitants with generational projection of future improvements in longetivity per the MP-2019 Ultimate Scale. For Police, the PubS-2010 Mortality was used instead of the Pub-2010 Mortality Table. This assumption includes a margin for future improvements in longetivity.

Disabled Mortality   Pub-2010 Mortality Table for Disabled Annuitants with generational projection of future improvements in longetivity per the MP-2019 Ultimate Scale. For Police, the PubS-2010 Mortality was used instead of the Pub-2010 Mortality Table. This assumption includes a margin for future improvements in longetivity.

Percent Married   All members are assumed to have an eligible spouse with females 3 years younger than males.

Appendix B - Actuarial Assumptions

Retirement

Police: 100% are assumed to retire at the earlier of age 60 or the completion of 25 years of service.

All Others:

Age	Rate
55	5%
56-61	3%
62	15%
63-64	15%
65	15%
66-69	25%
70+	100%

All members older than the latest assumed retirement age as of the valuation date are assumed to retire immediately.

Disability

Age	Police	All Others
25	0.13%	0.06%
30	0.19%	0.06%
35	0.28%	0.08%
40	0.41%	0.12%
45	0.63%	0.23%
50	1.02%	0.52%
55	1.74%	0.00%
60+	2.42%	0.00%

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	Any individual employed by the Town of Old Saybrook whose customary employment is greater than 1200 hours per year and has completed 6 months (12 months prior to January 1, 2008) of continued employment and who elects to make the necessary contributions. The contributions begin as of the date the participant enters the Plan. The individuals covered include those individuals employed by the Town of Old Saybrook, the Board of Education, and Police. Board of Education and Town Dispatchers, Supervisors and Support Staff hired after 7/1/2017 are no longer eligible to participate in the Plan.
Employee Contributions	5% of Earnings.
	No contributions will be required after 35 years of service or after Normal Retirement Date.
	Employee Contributions will be credited with interest at the rate of 5% per year.
	A refund of Employee Contributions with interest to the date of termination of employment or death is paid, unless the employee is eligible for a deferred retirement benefit.
Credited Service	Whole years and full months from date of hire and while contributing, else from date of participation, but not greater than 35 years.
Final Average Earnings	Highest average base earnings received in any 3 years.
Normal Retirement Date	Police - The earlier of age 60 or 25 years of Credited Service.
	All Others - The later of age 62 and 5 years of Credited Service.
Normal Retirement Benefit	Police - 2% of Final Average Earnings multiplied by Credited Service up to 35 years. If completes less than 25 years of Credited Service, benefit is based on 2% between age 60 to age 62 and then 1½% after age 62.
	All Others - 1½% of Final Average Earnings multiplied by Credited Service prior to July 1, 1988 plus 2% of Final Average Earnings multiplied by Credited Service after July 1, 1988. Total Credited Service is limited to 35 years with service after July 1, 1988 counted first.

Appendix C - Summary of Plan Provisions

Early Retirement Date   The later of age 55 and the completion of 15 years of Credited Service.

Early Retirement Benefit   Benefit is based on Credited Service and Final Average Earnings to actual retirement date reduced by 6% for each year by which Early Retirement Date precedes Normal Retirement Date.

Deferred Retirement Date   Members may continue to work beyond Normal Retirement.

Deferred Retirement Benefit   Benefit based on Credited Service and Final Average Earnings to actual date of retirement.

Normal Form of Annuity   Modified Cash Refund.

Preretirement Death Benefit   A monthly survivor benefit payable on behalf of a member who has attained age 55 and completed 15 years of Credited Service, and who has a surviving spouse to whom the member has been married at least one year. The benefit will be 50% of the monthly retirement benefit which such member would have received had he or she retired on the day before death and elected a 50% Joint & Survivor Annuity.

Disability Eligibility   Police - 5 years of Credited Service.

                                  All Others - 15 years of Credited Service.

Disability Benefit   Benefit calculated using Credited Service and Final Average Earnings through Date of Disability, reduced by any payments received under the Worker's Compensation Act.

Vesting   A member is 100% vested after 10 years of Credited Service or upon attainment of Normal Retirement.

Termination Benefit   Normal Retirement Benefit calculated using Credited Service and Final Average Earnings through Date of Termination.

                                  All benefits are forfeited upon withdrawal of Employee Contributions.

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.