RETIREMENT PLAN FOR EMPLOYEES OF THE TOWN OF STRATFORD

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

Prepared by

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Certification

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

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable government regulations. In addition, this report provides:

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

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

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

Certification

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

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

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

The consultants who worked on this assignment are 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

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Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

In order to better anticipate future plan experience, we updated the mortality assumption to the Pub-2010 mortality table with generational projection per the MP-2019 ultimate scale. We also reduced the salary scale assumption by .25%. See Appendix B for more details regarding these assumptions. Additionally, we extended the amortization period from 15 years to 23 years as of July 1, 2020. The period will decrease by 1 year each valuation until it reaches 10 years, at which point it will remain at 10. Finally, we added a timing adjustment to the calculation of the Actuarially Determined Contribution to reflect the fact that the contribution is made a year after the valuation date.

These changes in combination caused the Unfunded Accrued Liability to increase by about $17.9 million and the Actuarially Determined Contribution to increase by about $105,700.

Other Significant Changes

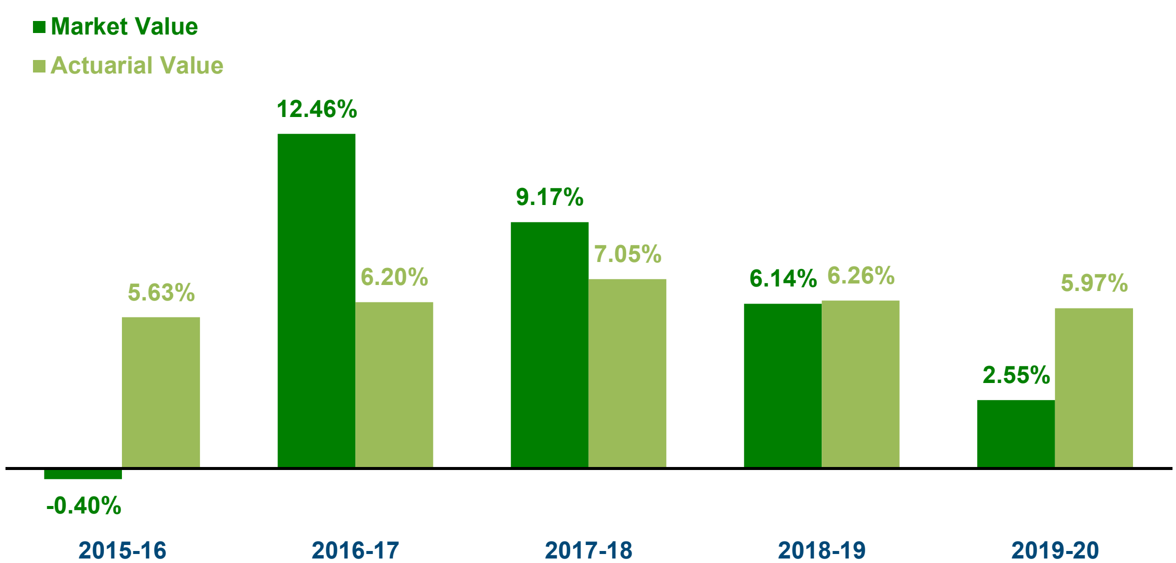
None.

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	$258,826,783	$254,789,285
Town and Member Contributions	6,630,493	6,630,493
Investment Income	6,375,620	14,714,696
Benefit Payments and Administrative Expenses	(23,418,304)	(23,418,304)
Value as of July 1, 2020	248,414,592	252,716,170

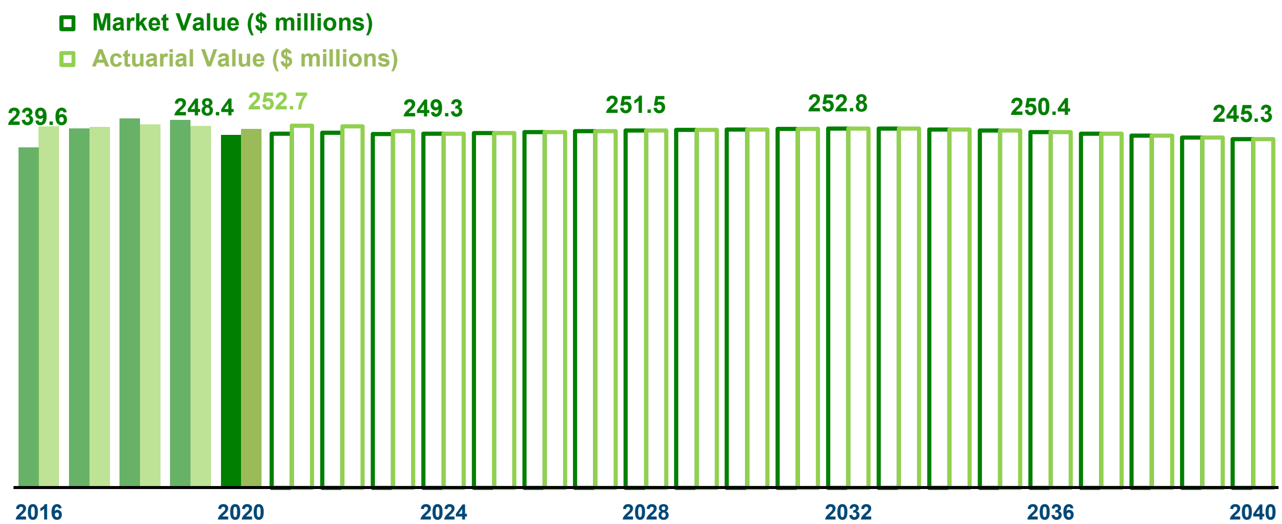
For fiscal year 2019-20, the plan's assets earned 2.55% on a Market Value basis and 5.97% on an Actuarial Value basis. The actuarial assumption for this period was 6.75%; the result is an asset loss of about $10.5 million on a Market Value basis and a loss of about $1.9 million on an Actuarial Value basis. Historical rates of return are shown in the graph below.



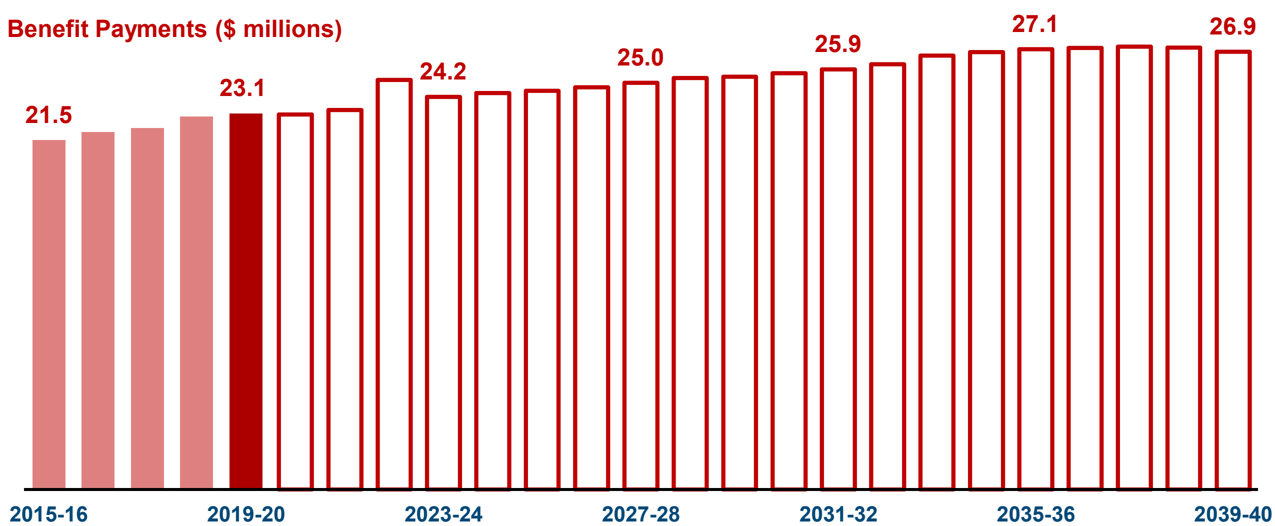
Please note that the Actuarial Value currently exceeds the Market Value by $4.3 million. This figure represents investment losses that will be gradually recognized in future years. This process will exert upward pressure on the Town's contribution, unless there are offsetting market gains.

Section I - Executive Summary
Assets (continued)

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



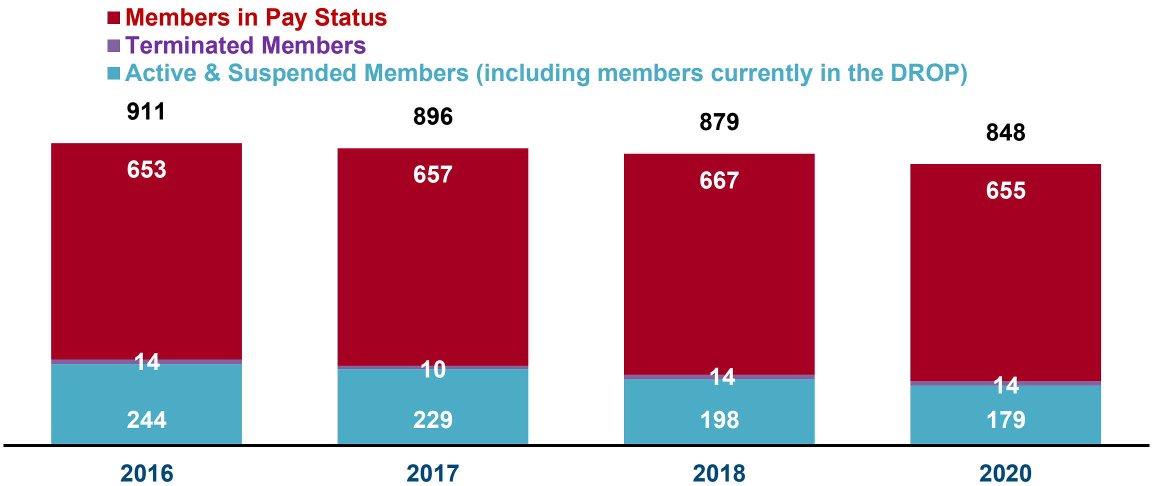
In 2019-20, the plan paid out $23.1 million in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $512 million in benefits to members.



Section I - Executive Summary
Membership

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

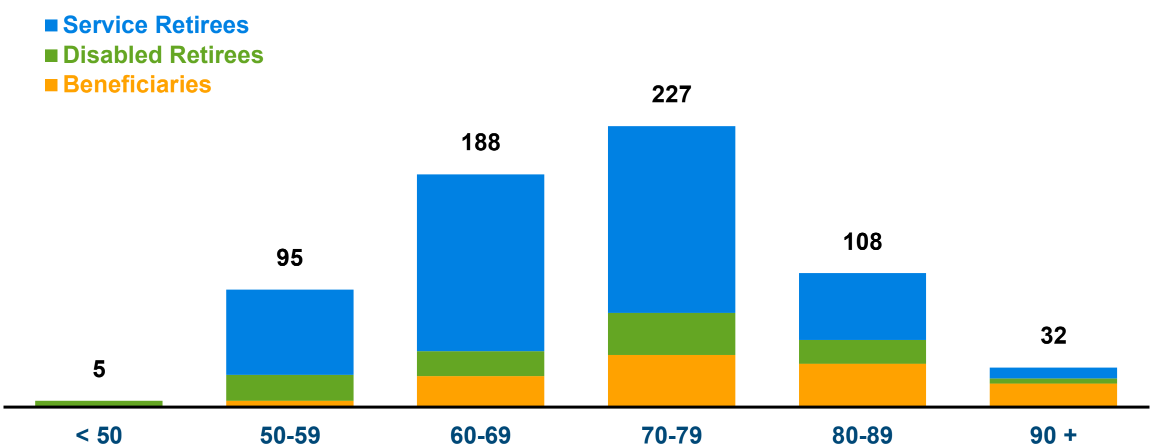
An interim valuation was performed as of July 1, 2019, so updated census data was not collected as of that date.



Members in Pay Status on July 1, 2020

Service Retirees	426	Average Age	71.7
Disabled Retirees	103	Total Annual Benefit	$22,866,575
Beneficiaries	126	Average Annual Benefit	34,911
Total	655		

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



Section I - Executive Summary
Membership (continued)

Suspended on July 1, 2020

Count	14
Total Annual Benefit	$354,438
Average Annual Benefit	25,317

Terminated Vested Members on July 1, 2020

Count	14

Active Members on July 1, 2020

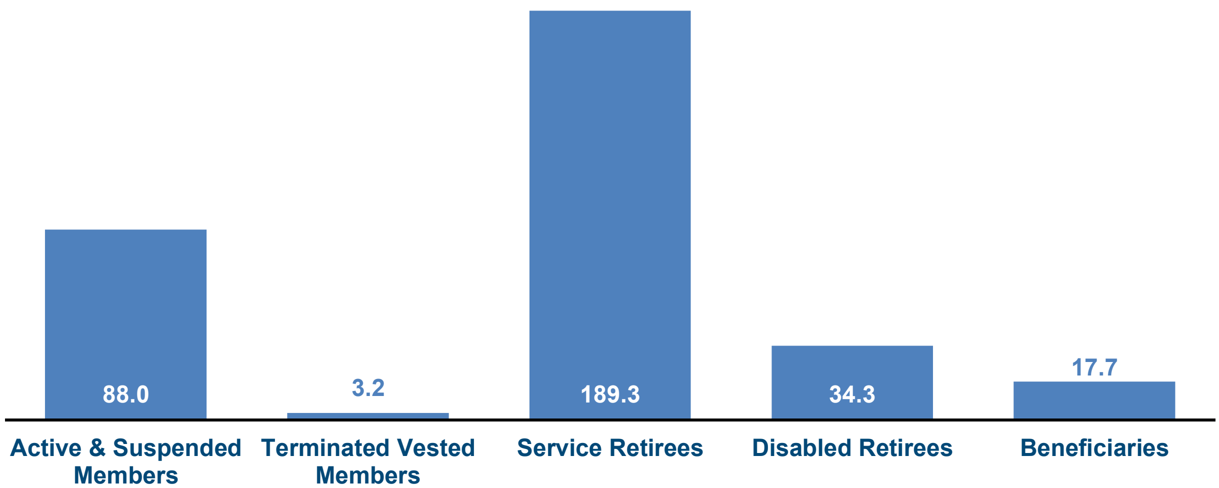
Count	165	(including 4 members in the DROP)
Average Age	48.8	
Average Service	19.2	
Payroll	$16,508,932	
Average Payroll	94,337	

The table below illustrates the age and years of service of the active membership (excluding those in the DROP):

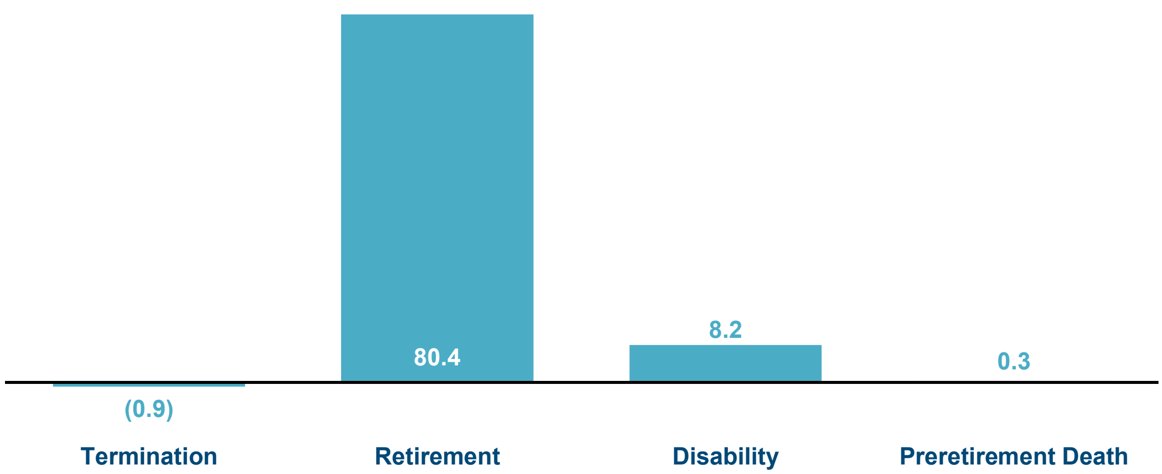
	Years of Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30+**	**Total**
< 25								0
25-29								0
30-34		2	5					7
35-39		2	17	2				21
40-44			12	16	3			31
45-49		1	7	12	13	2	1	36
50-54			4	2	14	3	1	24
55-59			1	6	10	2	3	22
60-64				3	3	9	3	18
65+					1		1	2
Total	0	5	46	41	44	16	9	161

Section I - Executive Summary
Accrued Liability

The Accrued Liability as of July 1, 2020 is $332,549,907, which consists of the following pieces (in $ millions):



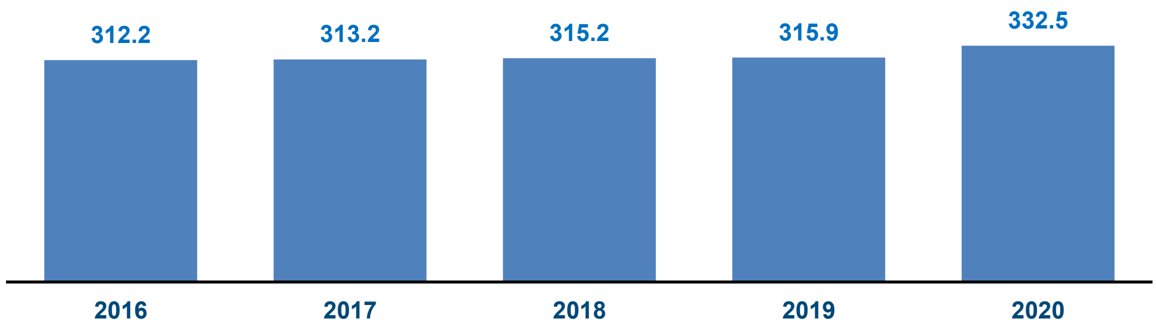
The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:



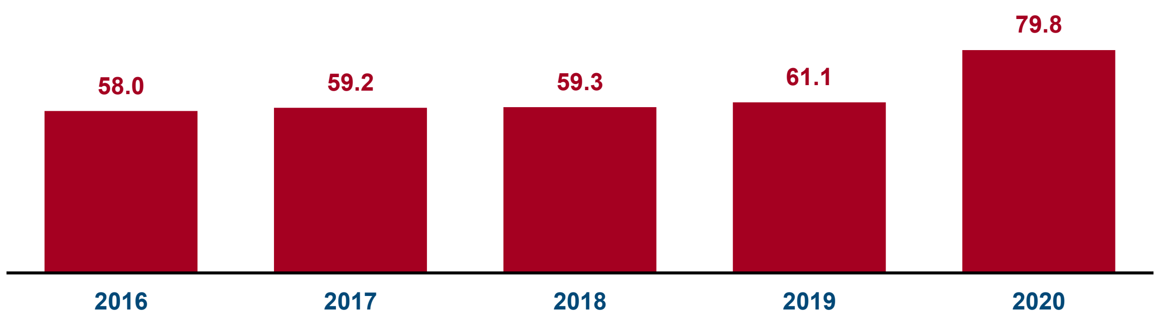
Section I - Executive Summary
Funded Status

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.

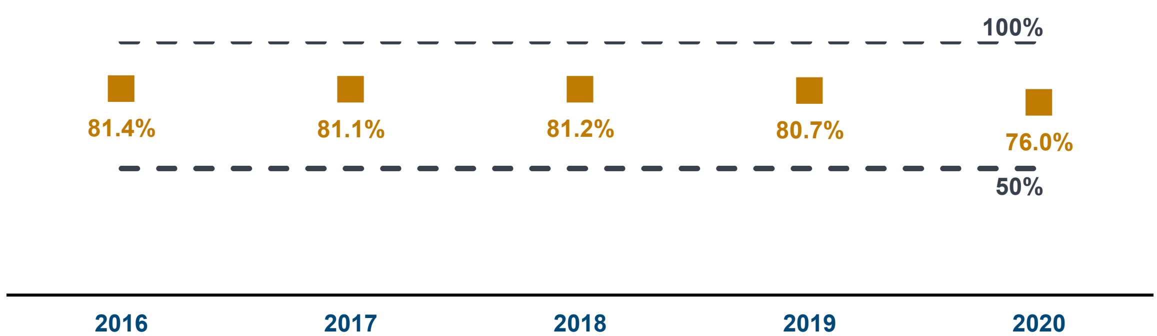
Accrued Liability ($ millions)



Unfunded Accrued Liability ($ millions)



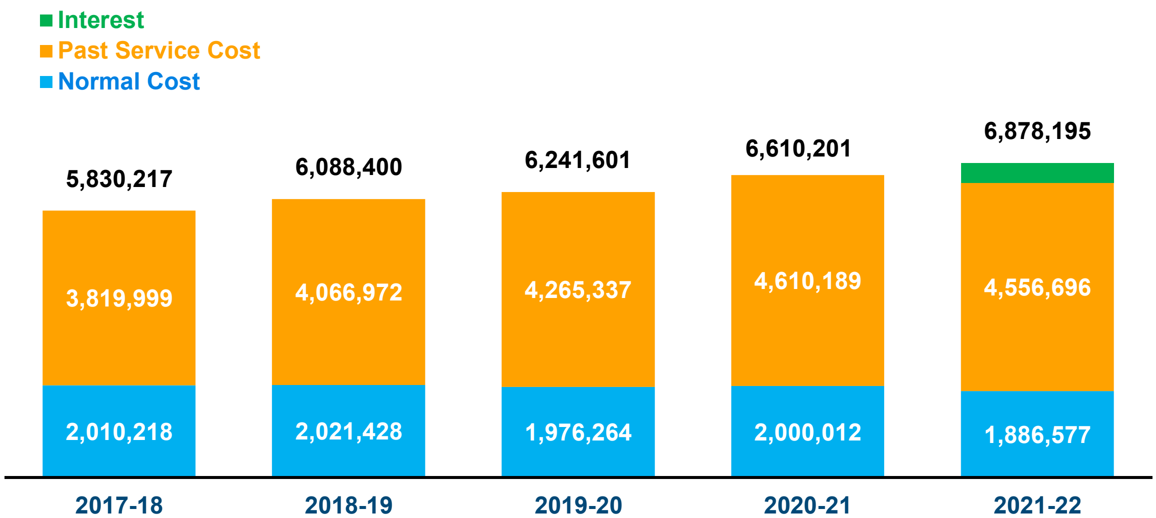
Funded Ratio



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 time lag between the valuation date and the start of the next fiscal year.

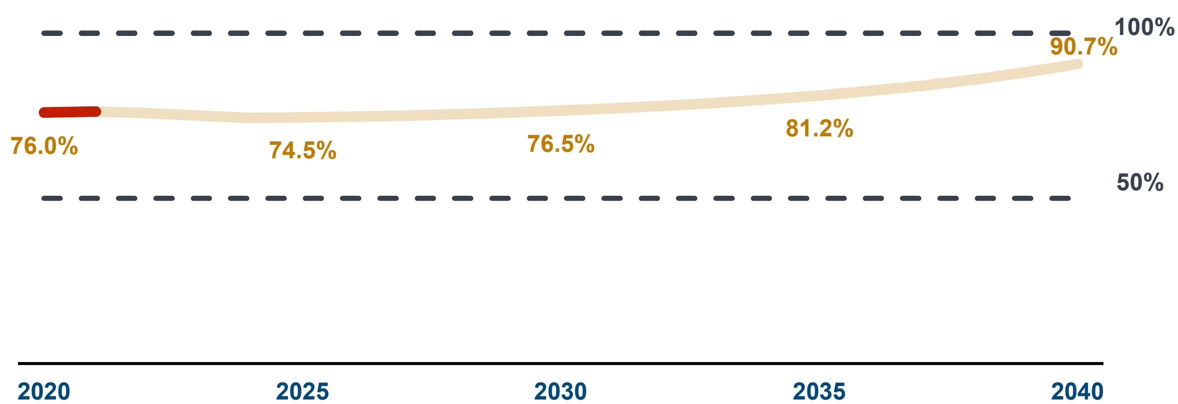
The Actuarially Determined Contribution for fiscal year 2021-22 is shown graphically below, along with the comparable figures for the preceding four fiscal years. Note that the Normal Cost is relatively consistent from year to year, whereas the Past Service Cost tends to be more volatile since it reflects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

Funded Ratio

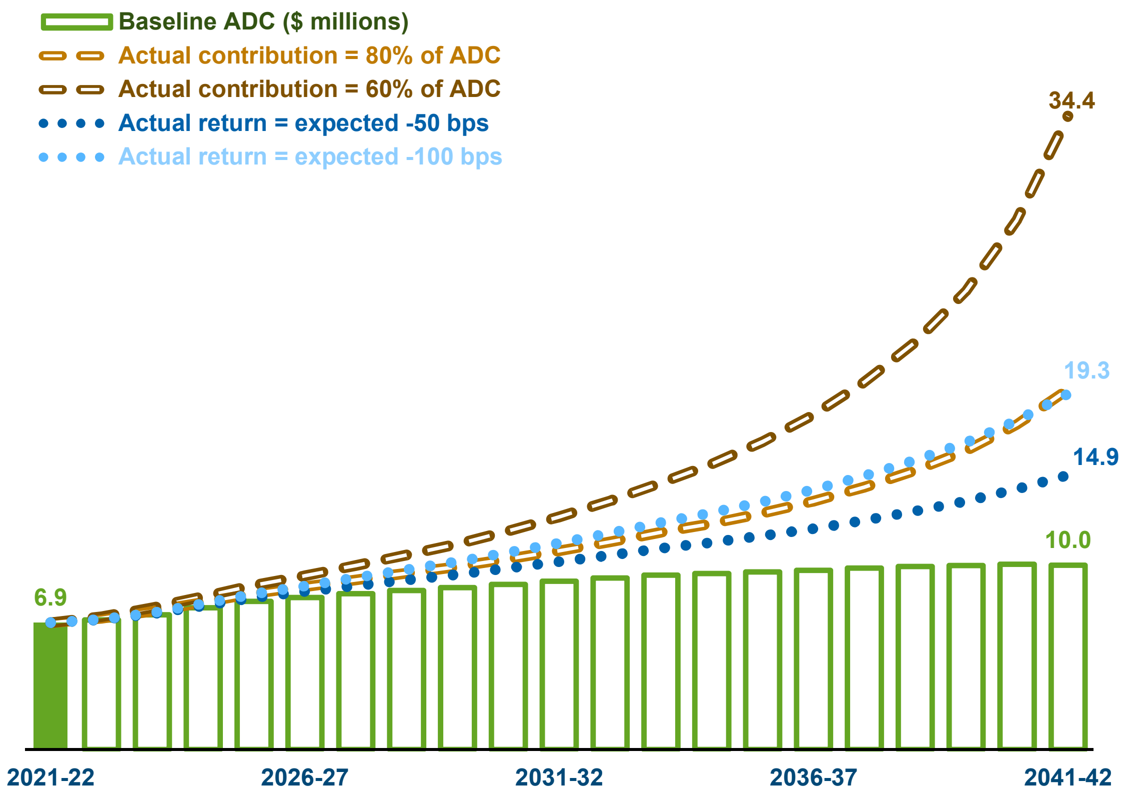


Actuarially Determined Contribution ($ millions)

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, 2019 **	July 1, 2020
Active Members	184	165
Suspended Employees*	14	14
Terminated Members	14	14
Members in Pay Status	667	655
Total Count	879	848
Payroll	$17,809,917	$16,508,932

Assets and Liabilities as of	July 1, 2019	July 1, 2020
Market Value of Assets	$258,826,783	$248,414,592
Actuarial Value of Assets	254,789,285	252,716,170
Accrued Liability for Active and Suspended Members	81,420,216	88,034,494
Accrued Liability for Terminated Members	4,415,535	3,242,530
Accrued Liability for Members in Pay Status	230,043,250	241,272,883
Total Accrued Liability	315,879,001	332,549,907
Unfunded Accrued Liability	61,089,716	79,833,737
Funded Ratio	80.7%	76.0%

Actuarially Determined Contribution for Fiscal Year	2020-21	2021-22
Normal Cost	$2,000,012	$1,886,577
Past Service Cost	4,610,189	4,556,696
Actuarially Determined Contribution	6,610,201	6,878,195

* Employees who have frozen their DB plan benefits and transferred to the Town's 401(a) plan.

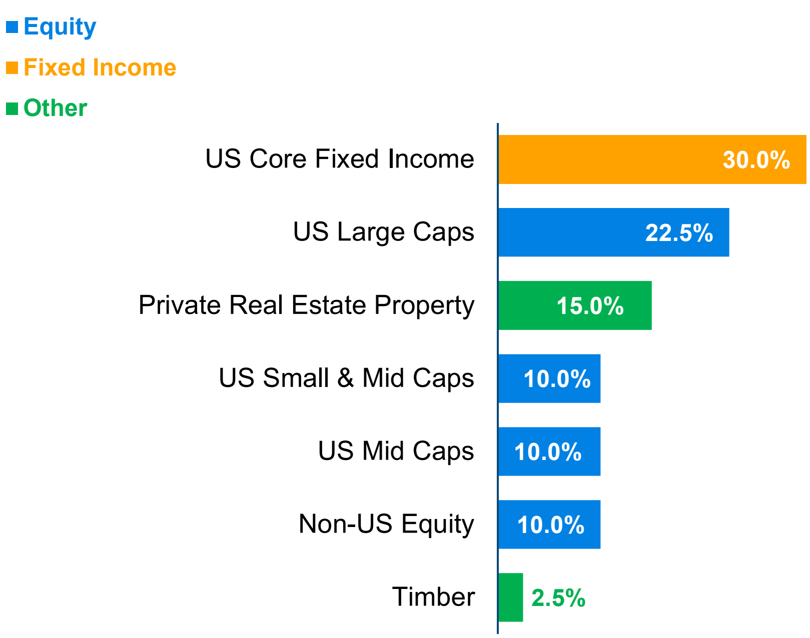
** Membership statistics displayed as of July 1, 2018 (last full valuation).

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of July 1, 2019	$258,826,783
Town Contributions	5,348,880
Member Contributions	1,281,613
Net Investment Income	6,375,620
Benefit Payments	(23,142,606)
Administrative Expenses	(275,698)
Market Value as of June 30, 2020	248,414,592
Expected Return on Market Value of Assets	16,876,641
Market Value (Gain)/Loss	10,501,021
Approximate Rate of Return *	2.55%

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

Target Asset Allocation as of June 30, 2020



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

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses in equal installments ('non-asymptotically') over a five year period. The Actuarial Value of Assets as of July 1, 2020 is determined below.

1.	Expected Market Value of Assets:	
	a. Market Value of Assets as of July 1, 2019	$258,826,783
	b. Town and Member Contributions	6,630,493
	c. Benefit Payments and Administrative Expenses	(23,418,304)
	d. Expected Earnings Based on 6.75% Interest	16,876,641
	e. Expected Market Value of Assets as of July 1, 2020	258,915,613
2.	Actual Market Value of Assets as of July 1, 2020	248,414,592
3.	Market Value (Gain)/Loss: (1e) - (2)	10,501,021
4.	Delayed Recognition of Market (Gains)/Losses	

Plan Year End	(Gain)/Loss	Percent Not Recognized	Amount Not Recognized	
06/30/2020	$10,501,021	80%	$8,400,817	
06/30/2019	1,535,552	60%	921,331	
06/30/2018	(5,932,508)	40%	(2,373,003)	
06/30/2017	(13,237,835)	20%	(2,647,567)	
				4,301,578

5.	Actuarial Value of Assets as of July 1, 2020: (2) + (4)	252,716,170
6.	Return on Actuarial Value of Assets	14,714,696
7.	Approximate Rate of Return on Actuarial Value of Assets	5.97%
8.	Actuarial Value (Gain)/Loss	1,922,523

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 23 years starting on July 1, 2020.

	BOE	EMS	Fire	Police	Short Beach	Town	WPCA	Total
1. Accrued Liability								
Active Members	$7,764,889	$0	$35,553,978	$26,544,949	$671,632	$15,000,203	$2,498,843	$88,034,494
Terminated Members	590,424	0	199,797	1,227,529	0	1,224,780	0	3,242,530
Service Retirees	31,771,208	1,035,828	43,584,378	59,320,937	467,682	45,852,975	7,253,959	189,286,967
Disabled Retirees	229,559	0	18,285,685	8,194,399	0	7,579,759	0	34,289,402
Beneficiaries	573,495	0	6,677,625	4,222,952	0	6,222,442	0	17,696,514
Total Accrued Liability	40,929,575	1,035,828	104,301,463	99,510,766	1,139,314	75,880,159	9,752,802	332,549,907
2. Actuarial Value of Assets* (see Section IIB)	31,103,799	787,162	79,262,287	75,621,671	865,804	57,663,956	7,411,491	252,716,170
3. Unfunded Accrued Liability: (1) - (2)	9,825,776	248,666	25,039,176	23,889,095	273,510	18,216,203	2,341,311	79,833,737
4. Funded Ratio: (2) / (1)	76.0%	76.0%	76.0%	76.0%	76.0%	76.0%	76.0%	76.0%
5. Amortization Period	23	23	23	23	23	23	23	23
6. Amortization Growth Rate	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
7. Past Service Cost: (3) amortized over (5)	560,829	14,193	1,429,169	1,363,526	15,611	1,039,732	133,636	4,556,696

* The Actuarial Value of Assets is allocated to the groups in proportion to their Total Accrued Liability

Section III - Development of Contribution
B. Actuarially Determined Contribution for FY 2021-22

	BOE	EMS	Fire	Police	Short Beach	Town	WPCA	Total
1. Total Normal Cost	$157,244	$0	$1,482,887	$969,168	$9,800	$171,931	$60,349	$2,851,379
2. Expected Member Contributions	96,614	0	617,102	384,911	7,086	115,350	27,739	1,248,802
3. Expected Administrative Expenses*	34,954	885	89,074	84,983	973	64,802	8,329	284,000
4. Net Normal Cost: (1) - (2) + (3)	95,584	885	954,859	669,240	3,687	121,383	40,939	1,886,577
5. Past Service Cost (see Section IIIA)	560,829	14,193	1,429,169	1,363,526	15,611	1,039,732	133,636	4,556,696
6. Interest on (4) + (5) to beginning of fiscal year	44,308	1,018	160,922	137,212	1,303	78,375	11,784	434,922
7. Actuarially Determined Contribution for FY 2021-22: (4) + (5) + (6)	700,721	16,096	2,544,950	2,169,978	20,601	1,239,490	186,359	6,878,195

* The Expected Administrative Expense is allocated to the groups in proportion to their Total Accrued Liability

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	$332,549,907	$252,716,170	$79,833,737	76.0%	2021-22	$6,878,195	$1,238,661	($23,356,562)	($15,239,706)
7/1/2021	334,146,000	254,881,000	79,265,000	76.3%	2022-23	7,035,000	1,215,000	(25,208,000)	(16,958,000)
7/1/2022	335,429,000	254,430,000	80,999,000	75.9%	2023-24	7,311,000	1,191,000	(24,175,000)	(15,673,000)
7/1/2023	334,748,000	251,060,000	83,688,000	75.0%	2024-25	7,684,000	1,163,000	(24,402,000)	(15,555,000)
7/1/2024	335,051,000	249,251,000	85,800,000	74.4%	2025-26	8,041,000	1,135,000	(24,536,000)	(15,360,000)
7/1/2025	335,038,000	249,674,000	85,364,000	74.5%	2026-27	8,252,000	1,095,000	(24,754,000)	(15,407,000)
7/1/2026	334,790,000	250,317,000	84,473,000	74.8%	2027-28	8,450,000	1,043,000	(25,032,000)	(15,539,000)
7/1/2027	334,187,000	250,945,000	83,242,000	75.1%	2028-29	8,623,000	984,000	(25,336,000)	(15,729,000)
7/1/2028	333,104,000	251,467,000	81,637,000	75.5%	2029-30	8,774,000	948,000	(25,402,000)	(15,680,000)
7/1/2029	331,453,000	251,818,000	79,635,000	76.0%	2030-31	8,961,000	890,000	(25,623,000)	(15,772,000)
7/1/2030	329,503,000	252,232,000	77,271,000	76.5%	2031-32	9,129,000	828,000	(25,868,000)	(15,911,000)
7/1/2031	327,030,000	252,568,000	74,462,000	77.2%	2032-33	9,298,000	749,000	(26,170,000)	(16,123,000)
7/1/2032	323,975,000	252,771,000	71,204,000	78.0%	2033-34	9,467,000	633,000	(26,704,000)	(16,604,000)
7/1/2033	320,223,000	252,757,000	67,466,000	78.9%	2034-35	9,542,000	550,000	(26,927,000)	(16,835,000)
7/1/2034	315,356,000	252,232,000	63,124,000	80.0%	2035-36	9,630,000	470,000	(27,102,000)	(17,002,000)
7/1/2035	309,685,000	251,420,000	58,265,000	81.2%	2036-37	9,724,000	396,000	(27,178,000)	(17,058,000)
7/1/2036	303,224,000	250,367,000	52,857,000	82.6%	2037-38	9,837,000	317,000	(27,259,000)	(17,105,000)
7/1/2037	296,058,000	249,172,000	46,886,000	84.2%	2038-39	9,929,000	252,000	(27,203,000)	(17,022,000)
7/1/2038	288,127,000	247,834,000	40,293,000	86.0%	2039-40	9,985,000	204,000	(26,943,000)	(16,754,000)
7/1/2039	279,524,000	246,476,000	33,048,000	88.2%	2040-41	10,055,000	142,000	(26,767,000)	(16,570,000)

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	$114,143,029	$259,719,466	$145,576,437	43.9%
July 1, 2012	108,730,191	292,885,687	184,155,496	37.1%
July 1, 2013	250,104,928	300,775,818	50,670,890	83.2%
July 1, 2014	251,796,179	303,003,949	51,207,770	83.1%
July 1, 2015	255,000,585	305,935,241	50,934,656	83.4%
July 1, 2016	254,217,139	312,191,259	57,974,120	81.4%
July 1, 2017	254,021,901	313,201,774	59,179,873	81.1%
July 1, 2018	255,866,830	315,196,226	59,329,396	81.2%
July 1, 2019	254,789,285	315,879,001	61,089,716	80.7%
July 1, 2020	252,716,170	332,549,907	79,833,737	76.0%

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	$10,264,676	$169,778,500	*	$23,551,913	720.9%
2013-14	12,720,477	2,209,000		22,770,569	9.7%
2014-15	5,185,559	5,220,069		22,237,216	23.5%
2015-16	5,212,079	5,393,200		20,317,247	26.5%
2016-17	5,470,701	5,385,385		19,912,480	27.0%
2017-18	5,830,217	5,643,634		18,755,885	30.1%
2018-19	6,088,400	5,399,899		18,713,339	28.9%
2019-20	6,241,601	5,348,880		17,809,917	30.0%
2020-21	6,610,201	TBD		17,809,917	TBD
2021-22	6,878,195	TBD		16,508,932	TBD

* Includes $9,778,500 Town contribution plus the deposit of the proceeds of the $160 million pension obligation bond issue of 2013 into the pension trust.

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

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

	Active Members	Suspended	Terminated Vested Members	Service Retirees	Disabled Retirees	Beneficiaries	Total
Count July 1, 2018	184	14	14	434	116	117	879
Terminated							
- no benefits due	-	-	-	-	-	-	0
- paid refund	-	-	-	-	-	-	0
- vested benefits due	(3)	-	3	-	-	-	0
Suspended	(2)	2	-	-	-	-	
Retired	(13)	(1)	(3)	17	-	-	0
Disabled	(2)	-	-	-	2	-	0
Entered DROP	(4)	-	-	-	-	-	(4)
Died							
- with beneficiary	-	(1)	-	(13)	(7)	-	(21)
- no beneficiary	-	-	-	(11)	(8)	(12)	(31)
Benefits expired	-	-	-	-	-	-	0
New DROP Members	4	-	-	-	-	-	4
Rehired	-	-	-	-	-	-	0
New Alternate Payee	-	-	-	-	-	21	21
Correction	1	-	-	(1)	-	-	0
Count July 1, 2020	165 *	14	14	426	103	126	848

**includes 4 members in the DROP*

Breakdown as of July 1, 2020							
Town/BOE	42	14	8	293	35	58	450
Fire	65	0	1	57	39	40	202
Police	58	0	5	76	29	28	196
Total	165	14	14	426	103	126	848

Section IV - Membership Data
B. Statistics of Active Membership

		As of July 1, 2018	As of July 1, 2020
Number of Active Members	Town/BOE	53	42
	Fire	66	63
	Police	65	58
	Total	184	165
Average Age	Town/BOE	56.3	57.8
	Fire	44.1	45.6
	Police	46.4	47.0
	Total	48.0	48.8
Average Service	Town/BOE	26.4	28.2
	Fire	14.9	16.6
	Police	16.5	17.2
	Total	18.2	19.2
Total Payroll	Town/BOE	$4,008,204	$3,356,703
	Fire	7,734,239	7,754,639
	Police	6,067,474	5,397,590
	Total	17,809,917	16,508,932
Average Payroll	Town/BOE	$59,824	$59,941
	Fire	117,185	123,090
	Police	93,346	96,386
	Total	89,949	94,337
Number of Suspended Members	Town/BOE	14	14
	Fire	0	0
	Police	0	0
	Total	14	14
Number of DROP Members	Town/BOE	0	0
	Fire	0	2
	Police	0	2
	Total	0	4

Section IV - Membership Data
C. Distribution of Active Members as of July 1, 2020

Town/BOE

	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					3			3
45-49					3	2	1	6
50-54					4	2	1	7
55-59				1	6	2	3	12
60-64					3	7	2	12
65+					1		1	2
Total	0	0	0	1	20	13	8	42

Fire

	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		2	4					6
35-39		2	6	2				10
40-44			6	10				16
45-49		1	3	7	5			16
50-54			2	1	5			8
55-59				2	2			4
60-64				2		1		3
65+								0
Total	0	5	21	24	12	1	0	63

Police

	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			1					1
35-39			11					11
40-44			6	6				12
45-49			4	5	5			14
50-54			2	1	5	1		9
55-59			1	3	2			6
60-64				1		1	1	3
65+								0
Total	0	0	25	16	12	2	1	56

Section IV - Membership Data
D. Statistics of Inactive Membership

	As of July 1, 2018	As of July 1, 2020
Terminated Vested Members		
Number	14	14
Total Annual Benefit	$206,900	$354,438
Average Annual Benefit	15,092	25,317
Average Age	50.0	53.6
Service Retirees		
Number	434	426
Total Annual Benefit	$17,083,991	$17,363,521
Average Annual Benefit	39,364	40,759
Average Age	69.4	70.3
Disabled Retirees		
Number	116	103
Total Annual Benefit	$3,666,935	$3,399,458
Average Annual Benefit	31,612	33,004
Average Age	70.1	70.3
Beneficiaries		
Number	117	126
Total Annual Benefit	$1,855,981	$2,103,596
Average Annual Benefit	15,863	16,695
Average Age	76.8	77.6

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

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	7	$138,289
	50 - 59	3	93,220
	60 - 69	4	122,929
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	14	354,438
Service Retirees	< 50	0	$0
	50 - 59	69	4,346,846
	60 - 69	143	6,543,786
	70 - 79	151	5,110,056
	80 - 89	54	1,126,875
	90 +	9	235,958
	Total	426	17,363,521
Disabled Retirees	< 50	5	$199,598
	50 - 59	21	853,578
	60 - 69	20	579,139
	70 - 79	34	1,097,392
	80 - 89	19	562,797
	90 +	4	106,954
	Total	103	3,399,459
Beneficiaries	< 50	0	$0
	50 - 59	5	84,048
	60 - 69	25	512,240
	70 - 79	42	733,228
	80 - 89	35	545,933
	90 +	19	228,147
	Total	126	2,103,596

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.

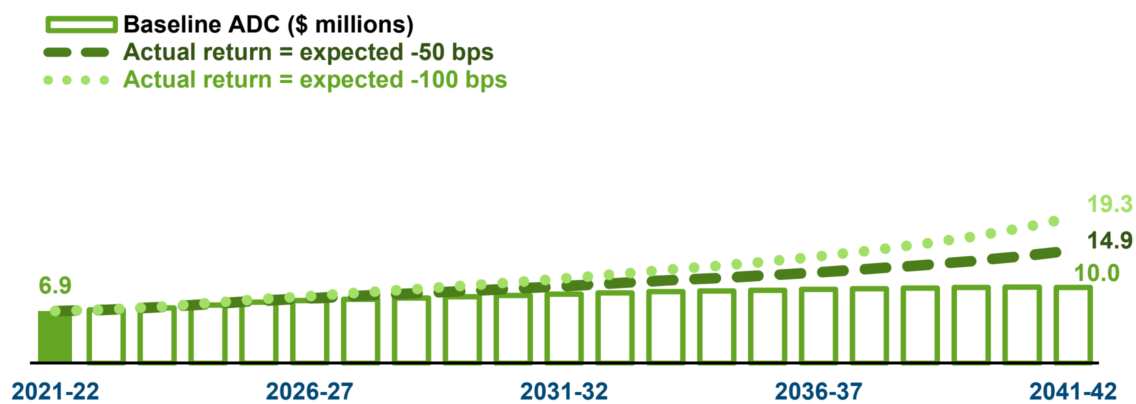
Please see Section III C for more information on the basis for the projected results shown on the following pages.

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.

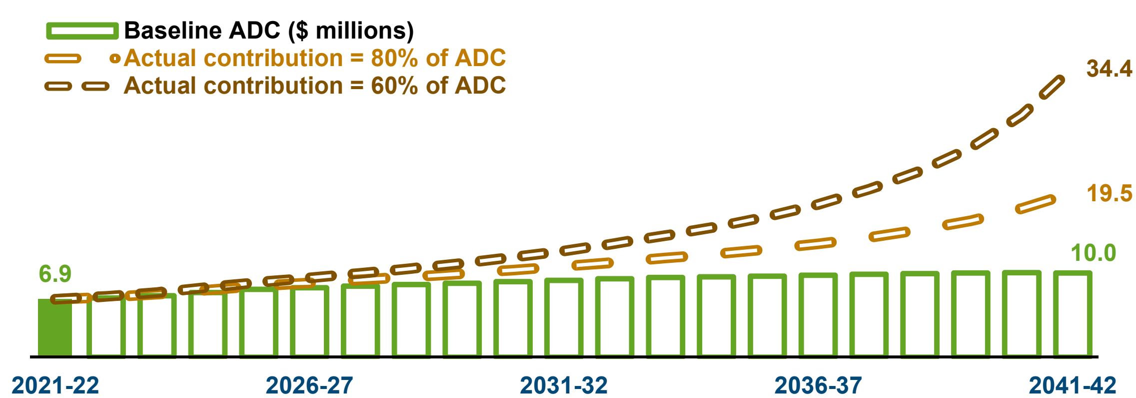
Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on 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 5 years, actual contributions have been 94.2% of the Actuarially Determined Contribution in total. The consequences of persistent underfunding on future Actuarially Determined Contribution levels are illustrated below:



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

Liquidity Risk

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

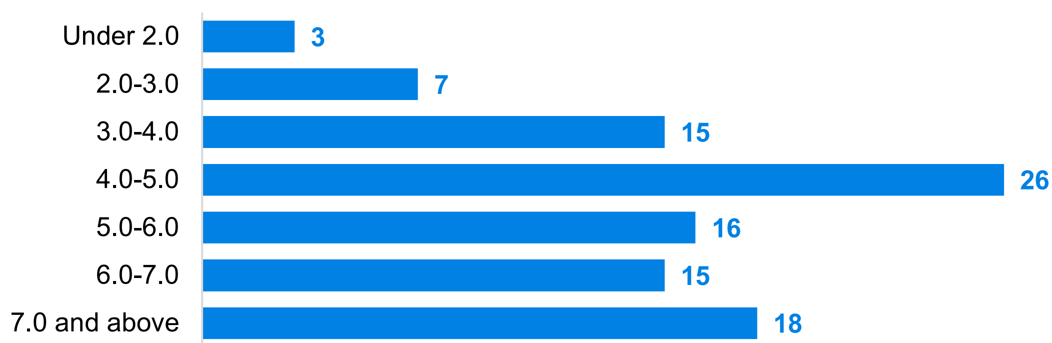
Identification: In 2019-20, the plan had negative cash flow, with town and member contributions to the plan of $6,630,493 compared to $23,418,304 of benefit payments and administrative expenses paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity 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 15.0. 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. However, not all members are eligible for these increases.

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

Insolvency Risk

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

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

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

Demographic Risks

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

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

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 at relatively young ages with unreduced benefits. 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

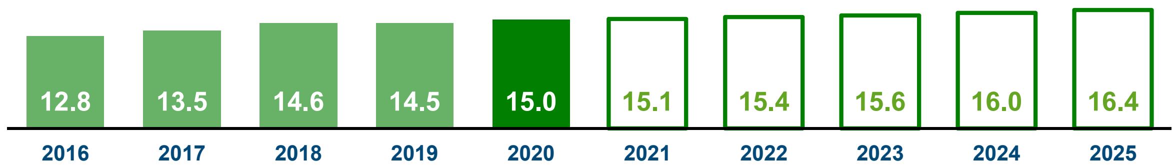
Definition: This is the potential for active members to add items to their pensionable earnings and receive pension benefits that are higher than expected.

Identification: This plan permits members to reflect some cashout payments at termination as part of their Average Annual Compensation. We assume that on average the cashout payments will increase benefits by 14% for eligible Police and by 9% for other eligible groups. If the value of the cashout payments increases benefits by more than the amount we assume, then this will put upward pressure on subsequent Actuarially Determined Contributions.

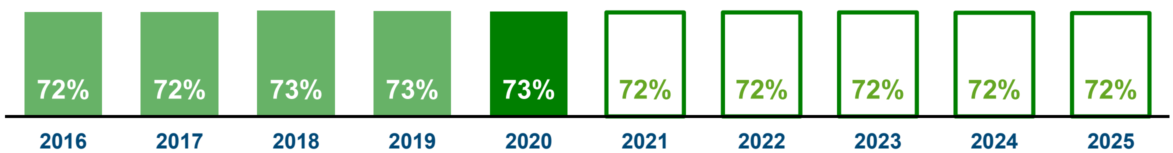
Section V - Analysis of Risk
C. Maturity Measures

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.

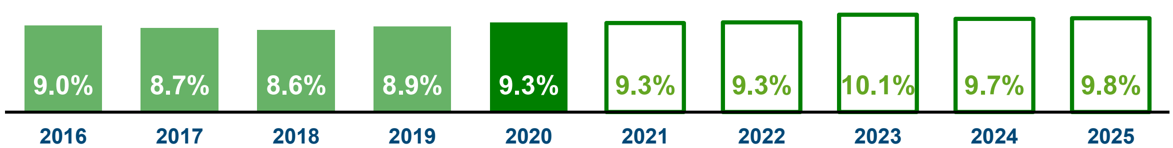
Asset Volatility Ratio: Market Value of Assets compared to Payroll



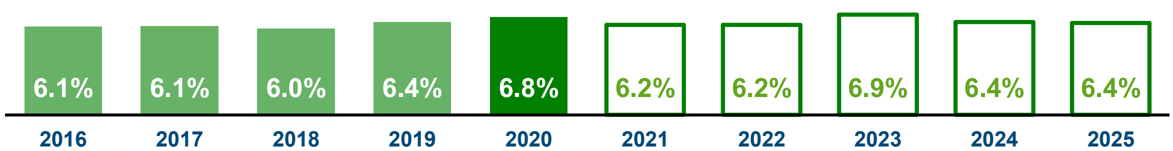
Accrued Liability for members in pay status compared to total Accrued Liability



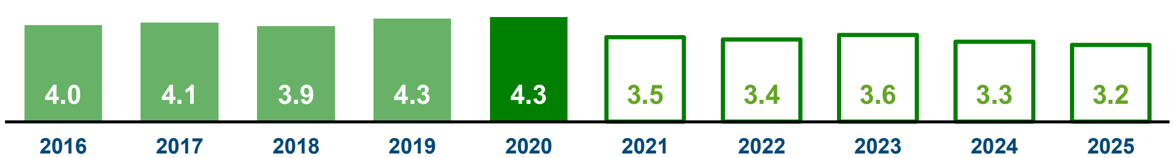
Benefit Payments compared to Market Value of Assets



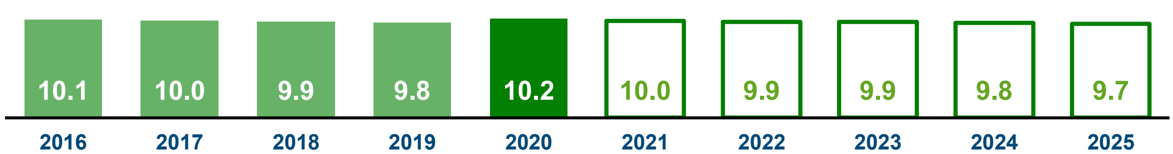
Net Cash Flows compared to Market Value of Assets



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, a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability and interest to reflect the time lag between the valuation date and the start of the next fiscal year.

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 23 years starting on July 1, 2020. Beginning on July 1, 2020, the amortization period is 23 years; the amortization period will decrease each year until it reaches 10 years, after which point 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.

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% per annum (net of investment expenses).

Inflation 2.50%

Amortization Growth Rate 4.00%

Expenses Actual administrative expenses paid in the prior year, increased by 3% and rounded to the nearest $1,000.

Salary Scale

Police and Fire 3.75% (Prior: 4%)

Town/Board of Education Based on the table below:

Age	Rate	Prior Rate
<25	5.75%	6.00%
25-29	5.25%	5.50%
30-34	5.00%	5.25%
35-39	4.75%	5.00%
40-44	4.50%	4.75%
45-49	4.25%	4.50%
50-54	3.75%	4.00%
55-59	3.50%	3.75%
60-64	3.25%	3.50%
65+	2.75%	3.00%

Percent Married 80%

Age of Spouse Females are assumed to be three years younger than their male spouses.

Load Factor This factor anticipates cashout payments at termination that are included in Average Annual Compensation: 14% for Police hired prior to 10/17/1996. 9% for Supervisors hired prior to 4/1/1985, Public Works hired prior to 7/1/1985, Town employees hired prior to 7/1/1985 and Firefighters, Custodians, Secretaries and Paraprofessionals.

Appendix B - Actuarial Assumptions

Mortality

Pub-2010 Mortality Table (Public Safety variant for Police, Fire and Public Works employees and General variant for others) with generational projection per the MP 2019 Ultimate scale, with employee rates before benefit commencement and healthy, contingent and disabled annuitant rates after benefit commencement. 80% of deaths among active Firefighters and Police are assumed to occur in the line of duty. 5% of deaths among all others are assumed to occur in the line of duty. This assumption includes a margin for mortality improvement beyond the valuation date.

(Prior: Pre-Retirement: 1994 Group Annuitant Mortality Table. Post-Retirement for healthy annuitants: RP-2000 Combined Healthy Mortality Table with generational projection per Scale AA. Disabled Annuitants: 1983 Railroad Retirement Board Disabled Mortality Table.)

Retirement

Police and Fire

Service	Rate
25-26	20%
27-29	10%
30	20%
31	10%
32	35%
33+	30%
Age 65	100%

Town/Board of Education

Age	Rate
<55	2%
55	15%
56-57	2%
58-61	10%
62-69	35%
70	100%

Suspended employees whose DB plan benefits have been frozen and who are currently covered by the Town's 401(a) plan are assumed to retire per the rates shown above.

Appendix B - Actuarial Assumptions

Turnover

Police and Fire

10% for the first five years of service; none thereafter.

Town/Board of Education

Age	Rate
25	9.68%
30	9.31%
35	8.72%
40	7.77%
45	6.38%
50	4.25%

Disability

Police, Fire, Public Works

Age	Male	Female
25	0.149%	0.182%
30	0.170%	0.238%
35	0.212%	0.350%
40	0.296%	0.473%
45	0.490%	0.677%
50	0.901%	1.068%
55	1.696%	1.645%
60	2.594%	2.097%

50% of disabilities are assumed to occur in the line of duty.

All Others

Age	Rate
25	0.075%
30	0.084%
35	0.096%
40	0.115%
45	0.162%
50	0.240%
55	0.400%
60	0.843%

5% of disabilities are assumed to occur in the line of duty.

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.

Effective Date	April 1, 1948
Eligibility	Full time employees excluding:
	Employees working less than 20 hours per week
	Officers elected by popular vote
	Employees accruing benefits under State Teachers Retirement Plan
	Members of the Supervisors, Town Hall and Public Works units hired after September 13, 1999 are not eligible. Board of Education, Secretaries and Custodians hired after July 1, 2000, Nurses hired after November 1, 2000 and Paraprofessionals hired after July 1, 2002 are not eligible. Police hired after July 1, 2010 are not eligible. Firefighters hired after July 1, 2012 are not eligible.
Compensation	Includes, but is not limited to, basic salary, longetivity pay, overtime/ callback pay, cashout of certain unused days, and pay for acting in a higher classification. Police Plan B is limited to basic salary.
Average Annual Compensation	
Town, Board of Education, Paraprofessionals and Nurses	Average of Compensation over last 24 months if less than 30 years of service. Average of Compensation over last 12 months if 30 or more years of service.
Police and Fire	Average of Compensation over last 24 months.
Continuous Service	Number of years and completed months of uninterrupted service.

Appendix C - Summary of Plan Provisions

Normal Retirement Eligibility

Board of Education and Supervisors	23 years of Continuous Service, and age 50 if hired after 4/1/1985, or 5 years of service and age 55.
Paraprofessionals	23 years of Continuous Service, and age 50 if hired after 4/1/1985, or 5 years of service and age 55.
Public Works	23 years of Continuous Service, and age 50 if hired after 7/1/1985, or 5 years of service and age 55.
Town Hall and Nurses	23 years of Continuous Service, and age 50 if hired after 7/1/1977, or 5 years of service and age 55.
Police and Fire	25 years of Continuous Service.

Normal Retirement Benefit

Town, Board of Education, Paraprofessionals and Nurses	2.4% of Average Annual Compensation for each of the first 25 years of Continuous Service, plus 2% of Average Annual Compensation for years 26-30 and 0.5% of Average Annual Compensation for years 31-35.
Police	2.4% of Average Annual Compensation for each of the first 25 years of Continuous Service, plus 2% of Average Annual Compensation for each year of Continuous Service over 25 years.
Fire	2.4% of Average Annual Compensation for each year of Continuous Service.

Maximum Retirement Benefit

Town/Board of Education	72.5% of Average Annual Compensation.
Police and Fire	70% of Average Annual Compensation.

Optional Forms of Benefit 100% or 50% Contingent Annuitant; if the Contingent Annuitant dies before the Primary Annuitant, the election is revoked.

Appendix C - Summary of Plan Provisions

Disability Eligibility

Members (except Police and Fire) hired after July 1, 1985 (Town Hall, Paraprofessionals and Nurses hired after July 1, 1962; Supervisors hired after April 1, 1985) who are eligible for Superannuation are not eligible for Disability Benefits.

Disability Benefit, Duty

50% of Average Annual Compensation.

Disability Benefit, Non-Duty

Town, Board of Education, Paraprofessionals and Nurses

2.4% of Average Annual Compensation for each year of Continuous Service, if Member has 5 years of Continuous Service. Maximum Benefit is 50% of Average Annual Compensaion; Minnimum Benefit is 30% of Average Annual Compensation.

Police and Fire

2.4% of Average Annual Compensation for each year of Continuous Service. If Member has 5 years of Continuous Service, Maximum Benefit is 50% of Average Annual Compensaion; Minimum Benefit is 25% of Average Annual Compensation.

Death Benefit

Pre-Retirement Death

Incurred in the line of duty: 50% of last 12 months of Compensation, or $1,500 if greater, to spouse until death or remarriage.

Not Incurred in the line of duty: 25% of Compensation, if Member had 10 years of Continuous Service, to spouse until death or remarriage.

Post-Retirement Death

Greater of 25% of Compensation or 50% of the Pension Benefit payable to spouse until death or remarriage.

If death is due to an accident in the line of duty within one year of retirement, benefit is equal to 50% of Compensation or $1,500 if greater.

Death Benefits (pre and post retirement) are payable to dependent children under age 21 if no surviving spouse, and to dependent parents if no surviving spouse or children. If no survivors, Accumulated Contributions in excess of benefits paid will be paid to the estate.

Member Contributions

Town, Board of Education, Paraprofessionals and Nurses

8% of Compensation; not payable in excess of 35 years.

Police

8% of Compensation. 7% of Compensation if hired after 10/17/1996.

Fire

8% of Compensation.

Appendix C - Summary of Plan Provisions

Vesting	Upon termination after 5 years of service (10 years for Police and Fire), Member has accrued the following benefits: 2.4% of Average Annual Compensation (over 24 months) times years of service. Post-Retirement Death: 50% of vested pension benefit payable to spouse until death or remarriage. Continuation of death benefits available to dependent children and parents. Upon termination prior to vesting, Member contributions are returned with interest. If vested upon termination, member can elect a refund of Member contributions with interest in lieu of a benefit.
Deferred Retirement Option Program (DROP)	An amendment may be made to specific individual pension agreements to modify the payment of pension benefits. Monthly pension benefits will be frozen on the DROP start date and the member will continue to work. The specific provisions of the DROP may vary, but typically an account will be set up and be credited with interest and cost of living adjustments. At the end of the DROP period, the member will retire. The member will receive a single lump sum equal to the balance in the DROP account and monthly pension benefits will start.

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.