

**PLYMOUTH COUNTY
CONTRIBUTORY RETIREMENT SYSTEM**

December 31, 2022 Actuarial Valuation Report

GASB 67 & 68

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Introduction

This report presents the Governmental Accounting Standards Statements 67 & 68 based on the findings of an actuarial valuation as of January 1, 2022, of the Plymouth County Contributory Retirement System. Liabilities were rolled forward to December 31, 2022 assuming all actuarial assumptions were realized.

The actuarial valuation is based on:

- Provisions of Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2022.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Plymouth County Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board
- Assets as of December 31, 2022

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2022.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

GASB Statements No. 67 and No. 68

Effective for periods beginning after June 15, 2013, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 67 and 68. These statements, which amend GASB Statements No. 25 and No. 27, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

The statement requires the system to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position. The statement of fiduciary net position presents the following items as of the end of the plan’s reporting period, as applicable:

- Assets
- Deferred outflows of resources (consumption of net assets by the employers that is applicable to a future reporting period)
- Liabilities
- Deferred inflows of resources (acquisition of net assets by the employers that is applicable to a future reporting period)
- Fiduciary net position (Assets + Deferred outflows – Liabilities – Deferred inflows)

The system is considered a cost-sharing multiple-employer pension plan since pension obligations exist for employees of more than one employer and plan assets can be used to pay the benefits of the employees of any employer.

This report does not include all items required under GASB Statements No. 67 and No. 68. Rather, it provides all items required that are not readily available from other sources such as the Annual Statement of the Financial Condition prepared by the Board, Chapter 32 of the Massachusetts General Laws and investment reports prepared by the plan’s investment consultant.

Discount Rate

The discount rate, and all other actuarial assumptions, are the as those described in Exhibit 5. The discount rate was selected based on a projection of employer and employee contributions, benefit payments, expenses and the long term expected rate of return on trust assets. Under Chapter 32 of the Massachusetts Laws, employers are required to make the necessary contributions to the trust such that the plan reaches a full funding status by 2040. In addition, Chapter 32 also gives the Retirement Board the right to go directly to the Assessors of the community and add an additional property tax to bills for amounts not paid by employer.

Based on these laws and assumptions, the pensions plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

The Board selected 7.875% as the long term expectation of investment returns. The average return for the 37 years ending as of December 31, 2021 was 9.36%. The average return for the past 10 years ending December 31, 2021 was 10.07%.

Net Position Restricted for Pensions

The Net Position Restricted for Pensions as of December 31, 2022 is \$1,318,257,317. The 2022 Annual Statement of the Financial Condition contains the values for previous years and the changes in Net Position Restricted for Pensions. Investments are reported at fair value.

December 31, 2021 Net Position	1,440,354,319
Employer Contributions	92,532,679
Employee Contributions	33,343,742
Other Payments	7,933,460
Benefit Payments	(143,864,661)
Expenses	(2,207,522)
Investment Income	<u>(109,834,700)</u>
December 31, 2022 Net Position	1,318,257,317

Pension Liability as of December 31, 2022

The following presents the changes in the pension liability during 2022.

December 31, 2021 Liability	1,908,113,972
Service Cost	32,509,384
Interest on Liability and Service Cost	147,266,755
Change in Plan Provisions	0
Experience (Gain) and Loss	0
Change in Assumptions	0
Benefit Payments	(143,864,661)
Other	0
December 31, 2022 Liability	1,944,025,450

Net Pension Liability as of December 31, 2022

The following presents the net pension liability of the system calculated using the discount rate of 7.875%, as well as what the system's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.875%) or 1-percentage-point higher (8.875%) than the current rate:

	1% Decrease (6.875%)	Current Discount Rate (7.875%)	1% Increase (8.875%)
Total Pension Liability	2,140,718,112	1,944,025,450	1,776,261,346
Plan Fiduciary Net Position	<u>1,318,257,317</u>	<u>1,318,257,317</u>	<u>1,318,257,317</u>
Net Pension Liability	822,460,795	625,768,133	458,004,029

The Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 67.8%.

	Unit	1% Decrease (6.875%)	Current Discount Rate (7.875%)	1% Increase (8.875%)
County of Plymouth	1	12,869,867	9,792,020	7,166,847
Hospital	2	0	0	0
Abington	3	29,988,565	22,816,758	16,699,743
Bridgewater	4	42,187,304	32,098,151	23,492,859
Bridgewater Housing	5	586,415	446,173	326,557
Bridgewater/Raynham				
Regional School	6	19,336,876	14,712,435	10,768,133
Carver	7	23,257,546	17,695,471	12,951,438
Carver/Marion/Wareham				
Regional Refuse	8	0	0	0
Duxbury	9	45,999,410	34,998,586	25,615,707
Duxbury Housing	10	231,934	176,467	129,157
East Bridgewater	11	29,407,908	22,374,965	16,376,392
East Bridgewater Housing	12	467,980	356,062	260,604
Halifax	13	13,942,355	10,608,021	7,764,084
Hanover	14	39,732,259	30,230,233	22,125,717
Hanson	15	18,278,369	13,907,071	10,178,682
Kingston	16	28,696,480	21,833,676	15,980,219
Kingston Housing	17	50,993	38,798	28,396
Lakeville	18	12,181,467	9,268,252	6,783,498
Marion	19	13,361,698	10,166,229	7,440,733
Marshfield	20	67,589,006	51,424,999	37,638,313
Marshfield Housing	21	448,241	341,044	249,612
Mattapoisett	22	14,390,597	10,949,065	8,013,696
Middleborough	23	74,816,791	56,924,250	41,663,252
Middleborough Housing	24	1,421,212	1,081,327	791,431
Norwell	25	30,468,883	23,182,206	16,967,217
Norwell Housing	26	394,781	300,369	219,842
Old Rochester Regional				
School	27	7,879,997	5,995,484	4,388,137
Onset Fire District	28	3,013,496	2,292,814	1,678,127
Pembroke	29	38,731,324	29,468,673	21,568,326
Plymouth County Mosquito				
Control	30	1,792,142	1,363,549	997,991
Plympton	31	5,829,602	4,435,445	3,246,333
Rochester	32	9,268,311	7,051,781	5,161,247
Rockland	33	45,338,974	34,496,094	25,247,930
Scituate	34	55,164,913	41,972,146	30,719,704
Scituate Housing	35	921,979	701,486	513,423
Silver Lake Regional School	36	8,188,420	6,230,148	4,559,888
South Shore Regional				
School	38	4,059,666	3,088,792	2,260,708
Wareham	39	45,250,148	34,428,511	25,198,466

	<u>Unit</u>	1% Decrease (6.875%)	Current Discount Rate (7.875%)	1% Increase (8.875%)
Wareham Fire District	40	10,219,898	7,775,795	5,691,158
Wareham Housing	41	500,056	380,467	278,466
West Bridgewater	42	24,640,103	18,747,388	13,721,343
Whitman	43	23,685,226	18,020,871	13,189,600
Whitman/Hanson Regional School	44	13,006,395	9,895,897	7,242,876
Whitman Housing	45	894,015	680,210	497,850
Abington Housing	46	376,687	286,602	209,766
Pembroke Housing	47	965,569	734,652	537,697
Hanson Housing	48	292,796	222,773	163,049
Rockland Housing	49	409,585	311,633	228,086
Halifax Housing	50	0	0	0
Mattapoisett Housing	51	275,524	209,632	153,431
Hanover Housing	52	0	0	0
Acushnet/Rochester/Marion Health District	53	273,879	208,381	152,515
West Bridgewater Housing	54	172,717	131,411	96,181
South Shore Tri Town Development	55	1,202,438	914,873	669,602
Carver Housing	56	0	0	0
Retirement Staff	59	0	0	0
Total		822,460,795	625,768,133	458,004,029

Employer Contributions during 2022

	<u>Unit</u>	<u>Contribution</u>	<u>Portion</u>
County of Plymouth	1	3,008,140	0.032509
Hospital	2	-	-
Abington	3	3,396,405	0.036705
Bridgewater	4	4,452,802	0.048121
Bridgewater Housing	5	68,862	0.000744
Bridgewater/Raynham			
Regional School	6	2,121,538	0.022927
Carver	7	2,596,245	0.028058
Carver/Marion/Wareham			
Regional Refuse	8	-	-
Duxbury	9	5,047,880	0.054552
Duxbury Housing	10	26,952	0.000291
East Bridgewater	11	3,196,515	0.034545
East Bridgewater Housing	12	47,418	0.000512
Halifax	13	1,579,441	0.017069
Hanover	14	4,378,322	0.047316
Hanson	15	2,037,978	0.022024
Kingston	16	3,113,044	0.033643
Kingston Housing	17	2,124	0.000023
Lakeville	18	1,387,192	0.014991
Marion	19	1,392,356	0.015047
Marshfield	20	7,506,720	0.081125
Marshfield Housing	21	53,239	0.000575
Mattapoissett	22	1,615,172	0.017455
Middleborough	23	8,370,279	0.090458
Middleborough Housing	24	163,122	0.001763
Norwell	25	3,334,635	0.036037
Norwell Housing	26	36,942	0.000399
Old Rochester Regional			
School	27	864,670	0.009344
Onset Fire District	28	312,778	0.003380
Pembroke	29	4,298,632	0.046455
Plymouth County Mosquito			
Control	30	215,980	0.002334
Plympton	31	611,897	0.006613
Rochester	32	1,013,747	0.010956
Rockland	33	4,971,554	0.053728
Scituate	34	6,213,897	0.067154
Scituate Housing	35	108,661	0.001174
Silver Lake Regional School	36	973,288	0.010518
South Shore Regional			
School	38	468,351	0.005061
Wareham	39	4,935,270	0.053335

	<u>Unit</u>	<u>Contribution</u>	<u>Portion</u>
Wareham Fire District	40	1,156,961	0.012503
Wareham Housing	41	59,215	0.000640
West Bridgewater	42	2,716,633	0.029359
Whitman	43	2,602,185	0.028122
Whitman/Hanson Regional School	44	1,491,409	0.016118
Whitman Housing	45	95,564	0.001033
Abington Housing	46	46,060	0.000498
Pembroke Housing	47	121,266	0.001311
Hanson Housing	48	35,039	0.000379
Rockland Housing	49	53,814	0.000582
Halifax Housing	50	-	-
Mattapoissett Housing	51	31,655	0.000342
Hanover Housing	52	-	-
Acushnet/Rochester/Marion Health District	53	21,676	0.000234
West Bridgewater Housing	54	19,792	0.000214
South Shore Tri Town Development	55	159,363	0.001722
Carver Housing	56	-	-
Retirement Staff	59	-	-
		92,532,679	100.0000%

Pension Expense for 2022

Service Cost	32,509,384
Interest	147,266,755
Difference in Experience - Amortization	26,542,144
Change in Assumptions - Amortization	1,589,085
Changes in Plan Provisions	0
Employee Contributions	(33,343,742)
Projected Earnings	(112,954,223)
Administration Expense	2,207,522
Other Changes in Fiduciary Net Position	0
Asset (Gain) / Loss Amortization	<u>22,646,025</u>
Total Expense	86,462,950

Schedules of Required Supplementary Information

	<u>2022</u>
Total Pension Liability – Beginning	1,908,113,972
Total Pension Liability – Ending (a)	1,944,025,450
Plan Fiduciary Net Position – Beginning	1,440,354,319
Plan Fiduciary Net Position – Ending (b)	1,318,257,317
Net Pension Liability – Ending (a) – (b)	625,768,133
Plan Fiduciary Net Positions as a percentage of the Total Pension Liability	67.8%
Covered-employee payroll	327,799,516
Net Pension Liability as a percentage of Covered-employee Payroll	190.9%

Schedule of Net Position Restricted for Pensions Amortization Recognition

Below is the schedule of amortization adjustments to the Pension Expense for the coming years. A positive number indicates that the actual return was less than the expected return and will be added to the Pension Expense.

Assets

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
2022	222,788,923	5	44,557,785	44,557,785	44,557,785	44,557,785	44,557,783
2021	(107,074,734)	5	(21,414,947)	(21,414,947)	(21,414,947)	(21,414,946)	
2020	(57,527,931)	5	(11,505,586)	(11,505,586)	(11,505,587)		
2019	(95,891,389)	5	(19,178,278)	(19,178,279)			
2018	150,935,263	5	30,187,051				

Experience

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
2021	38,494,413	4.33	8,890,165	8,890,165	8,890,165	2,933,753	
2019	55,982,071	4.36	12,839,925	4,622,371			
2018	59,806,942	4.35	4,812,054				

Assumptions

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>
2018	19,750,049	4.35	1,589,085				

Reconciliation of Net Pension Liability for 2022

NPL Beginning	467,759,653
Expense	86,462,950
Contribution	(92,532,679)
Deferred Outflow Changes	119,912,858
Deferred Inflow Changes	52,098,811
Revenue	<u>(7,933,460)</u>
NPL Ending	625,768,133

	<u>County of Plymouth</u>	<u>Hospital</u>	<u>Abington</u>	<u>Bridgewater</u>	<u>Bridgewater Housing</u>	<u>Bridgewater/ Raynham Regional School</u>
Net Pension Liability	9,792,020	0	22,816,758	32,098,151	446,173	14,712,435
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	396,464	0	923,818	1,299,608	18,065	595,685
Net Asset Loss	2,788,961	0	6,498,664	9,142,188	127,079	4,190,392
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	0	0	118,319	620,936	0	49,132
Total Deferred Outflows	3,185,425	0	7,540,801	11,062,732	145,144	4,835,209
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	1,665,484	0	3,880,808	5,459,440	75,887	2,502,377
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	6,328,643	0	75,245	55,369	32,927	38,677
Total Deferred Inflows	7,994,127	0	3,956,053	5,514,809	108,814	2,541,054
Pension Expense						
Proportionate share of plan Pension Expense	1,352,972	0	3,152,612	4,435,031	61,648	2,032,830
Net Amortization from changes in Share Proportions	(1,340,357)	0	61,447	(115,904)	(30,413)	(71,897)
Total Employer Pension Expense	12,615	0	3,214,059	4,319,127	31,235	1,960,933
Revenue	124,143	0	289,270	406,939	5,657	186,524

	<u>Carver</u>	<u>Carver/Marion/ Wareham Regional</u>	<u>Duxbury</u>	<u>Duxbury Housing</u>	<u>East Bridgewater</u>	<u>East Bridgewater Housing</u>
Net Pension Liability	17,695,471	0	34,998,586	176,467	22,374,965	356,062
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	716,464	0	1,417,043	7,145	905,930	14,417
Net Asset Loss	5,040,020	0	9,968,289	50,261	6,372,833	101,414
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	145,378	13,780	674,753	393	240,981	11,483
Total Deferred Outflows	5,901,862	13,780	12,060,085	57,799	7,519,744	127,314
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	3,009,749	0	5,952,764	30,015	3,805,665	60,561
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	64,721	175,324	0	7,334	86,643	3,130
Total Deferred Inflows	3,074,470	175,324	5,952,764	37,349	3,892,308	63,691
Pension Expense						
Proportionate share of plan Pension Expense	2,444,999	0	4,835,786	24,383	3,091,569	49,197
Net Amortization from changes in Share Proportions	(127,202)	(54,816)	349,415	(3,623)	(51,885)	(8,026)
Total Employer Pension Expense	2,317,797	(54,816)	5,185,201	20,760	3,039,684	41,171
Revenue	224,342	0	443,710	2,237	283,669	4,514

	<u>Halifax</u>	<u>Hanover</u>	<u>Hanson</u>	<u>Kingston</u>	<u>Kingston Housing</u>	<u>Lakeville</u>
Net Pension Liability	10,608,021	30,230,233	13,907,071	21,833,676	38,798	9,268,252
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	429,504	1,223,979	563,078	884,015	1,571	375,258
Net Asset Loss	3,021,374	8,610,168	3,961,009	6,218,663	11,050	2,639,781
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	208,997	405,226	227,286	625,874	7,429	139,566
Total Deferred Outflows	3,659,875	10,239,373	4,751,373	7,728,552	20,050	3,154,605
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	1,804,274	5,141,734	2,365,396	3,713,599	6,599	1,576,398
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	9,926	0	0	174	420	0
Total Deferred Inflows	1,814,200	5,141,734	2,365,396	3,713,773	7,019	1,576,398
Pension Expense						
Proportionate share of plan Pension Expense	1,465,720	4,176,939	1,921,553	3,016,779	5,361	1,280,603
Net Amortization from changes in Share Proportions	87,268	195,727	86,110	248,227	(2,372)	86,220
Total Employer Pension Expense	1,552,988	4,372,666	2,007,663	3,265,006	2,989	1,366,823
Revenue	134,488	383,258	176,313	276,806	492	117,502

	<u>Marion</u>	<u>Marshfield</u>	<u>Marshfield</u> <u>Housing</u>	<u>Mattapoissett</u>	<u>Middleboroug</u> <u>h</u>	<u>Middleboroug</u> <u>h Housing</u>
Net Pension Liability	10,166,229	51,424,999	341,044	10,949,065	56,924,250	1,081,327
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	411,617	2,082,125	13,808	443,312	2,304,782	43,782
Net Asset Loss	2,895,543	14,646,857	97,136	3,118,510	16,213,152	307,983
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	406,206	279,344	17,158	319,426	238,811	34,146
Total Deferred Outflows	3,713,366	17,008,326	128,102	3,881,248	18,756,745	385,911
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	1,729,131	8,746,664	58,007	1,862,281	9,682,007	183,919
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	55,686	0	3,412	1,388	98,652	156
Total Deferred Inflows	1,784,817	8,746,664	61,419	1,863,669	9,780,659	184,075
Pension Expense						
Proportionate share of plan Pension Expense	1,404,677	7,105,439	47,122	1,512,842	7,865,275	149,408
Net Amortization from changes in Share Proportions	(19,751)	82,482	11,984	151,575	65,158	21,949
Total Employer Pension Expense	1,384,926	7,187,921	59,106	1,664,417	7,930,433	171,357
Revenue	128,887	651,964	4,324	138,812	721,683	13,709

		<u>Old Rochester</u>				<u>Plymouth</u>
		<u>Norwell</u>	<u>Regional</u>	<u>Onset Fire</u>	<u>Pembroke</u>	<u>County</u>
	<u>Norwell</u>	<u>Housing</u>	<u>School</u>	<u>District</u>		<u>Mosquito</u>
						<u>Control</u>
Net Pension Liability	23,182,206	300,369	5,995,484	2,292,814	29,468,673	1,363,549
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	938,614	12,161	242,749	92,833	1,193,144	55,209
Net Asset Loss	6,602,751	85,551	1,707,633	653,039	8,393,261	388,366
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	396,283	5,962	20,585	86,374	289,574	0
Total Deferred Outflows	7,937,648	103,674	1,970,967	832,246	9,875,979	443,575
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	3,942,965	51,088	1,019,748	389,975	5,012,204	231,920
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	13,481	614	0	4,732	0	92,369
Total Deferred Inflows	3,956,446	51,702	1,019,748	394,707	5,012,204	324,289
Pension Expense						
Proportionate share of plan Pension Expense	3,203,106	41,502	828,402	316,800	4,071,713	188,403
Net Amortization from changes in Share Proportions	86,024	(2,800)	15,303	(5,567)	129,792	(64,695)
Total Employer Pension Expense	3,289,130	38,702	843,705	311,233	4,201,505	123,708
Revenue	293,903	3,808	76,010	29,068	373,602	17,287

	<u>Plympton</u>	<u>Rochester</u>	<u>Rockland</u>	<u>Scituate</u>	<u>Scituate Housing</u>	<u>Silver Lake Regional School</u>
Net Pension Liability	4,435,445	7,051,781	34,496,094	41,972,146	701,486	6,230,148
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	179,584	285,516	1,396,697	1,699,392	28,403	252,249
Net Asset Loss	1,263,302	2,008,487	9,825,170	11,954,497	199,797	1,774,469
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	122,464	185,905	422,470	411,288	867	73,408
Total Deferred Outflows	1,565,350	2,479,908	11,644,337	14,065,177	229,067	2,100,126
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	754,406	1,199,407	5,867,296	7,138,867	119,313	1,059,660
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	7,595	11,076	155,649	102,330	35,130	101,684
Total Deferred Inflows	762,001	1,210,483	6,022,945	7,241,197	154,443	1,161,344
Pension Expense						
Proportionate share of plan Pension Expense	612,849	974,351	4,766,357	5,799,329	96,925	860,825
Net Amortization from changes in Share Proportions	(20,537)	46,784	(42,430)	151,432	(27,118)	42,867
Total Employer Pension Expense	592,312	1,021,135	4,723,927	5,950,761	69,807	903,692
Revenue	56,232	89,402	437,340	532,121	8,893	78,986

	<u>South Shore</u> <u>Mosquito</u> <u>Control</u>	<u>South Shore</u> <u>Regional</u> <u>School</u>	<u>Wareham</u>	<u>Wareham Fire</u> <u>District</u>	<u>Wareham</u> <u>Housing</u>	<u>West</u> <u>Bridgewater</u>
Net Pension Liability	0	3,088,792	34,428,511	7,775,795	380,467	18,747,388
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	0	125,061	1,393,961	314,831	15,405	759,054
Net Asset Loss	0	879,749	9,805,921	2,214,700	108,365	5,339,627
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	0	33,271	560,187	319,359	32,916	302,255
Total Deferred Outflows	0	1,038,081	11,760,069	2,848,890	156,686	6,400,936
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	0	525,360	5,855,801	1,322,553	64,712	3,188,664
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	0	80,933	201,353	3,956	12,115	521
Total Deferred Inflows	0	606,293	6,057,154	1,326,509	76,827	3,189,185
Pension Expense						
Proportionate share of plan Pension Expense	0	426,781	4,757,019	1,074,389	52,569	2,590,344
Net Amortization from changes in Share Proportions	0	9,481	(178,662)	165,923	23,590	168,935
Total Employer Pension Expense	0	436,262	4,578,357	1,240,312	76,159	2,759,279
Revenue	0	39,160	436,483	98,581	4,824	237,679

	<u>Whitman</u>	<u>Whitman/Han son Regional School</u>	<u>Whitman Housing</u>	<u>Abington Housing</u>	<u>Pembroke Housing</u>	<u>Hanson Housing</u>
Net Pension Liability	18,020,871	9,895,897	680,210	286,602	734,652	222,773
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	729,639	400,670	27,541	11,605	29,745	9,019
Net Asset Loss	5,132,700	2,818,547	193,737	81,630	209,243	63,450
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	327,857	22,717	75,066	2,727	549	212
Total Deferred Outflows	6,190,196	3,241,934	296,344	95,962	239,537	72,681
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	3,065,096	1,683,152	115,694	48,747	124,954	37,891
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	3,643	78,431	24,861	21,212	24,912	8,404
Total Deferred Inflows	3,068,739	1,761,583	140,555	69,959	149,866	46,295
Pension Expense						
Proportionate share of plan Pension Expense	2,489,960	1,367,325	93,985	39,600	101,508	30,781
Net Amortization from changes in Share Proportions	93,415	(5,239)	(16,988)	(2,193)	7,172	(2,331)
Total Employer Pension Expense	2,583,375	1,362,086	76,997	37,407	108,680	28,450
Revenue	228,468	125,460	8,624	3,634	9,314	2,824

	<u>Rockland</u>	<u>Halifax</u>	<u>Mattapoissett</u>	<u>Hanover</u>	<u>Acushnet/Roc</u> <u>hester/Marion</u>	<u>West</u> <u>Bridgewater</u>
	<u>Housing</u>	<u>Housing</u>	<u>Housing</u>	<u>Housing</u>	<u>Health District</u>	<u>Housing</u>
Net Pension Liability	311,633	0	209,632	0	208,381	131,411
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	12,617	0	8,488	0	8,437	5,321
Net Asset Loss	88,759	0	59,707	0	59,351	37,429
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	0	51,745	0	60,044	7,093
Total Deferred Outflows	101,376	0	119,940	0	127,832	49,843
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	53,004	0	35,655	0	35,443	22,351
Changes in Assumptions	0	0	0	0	0	0
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	45,352	51,321	24,807	0	42,836	1,226
Total Deferred Inflows	98,356	51,321	60,462	0	78,279	23,577
Pension Expense						
Proportionate share of plan Pension Expense	43,059	0	28,965	0	28,792	18,157
Net Amortization from changes in Share Proportions	(18,989)	(60,595)	3,886	0	97,919	3,516
Total Employer Pension Expense	24,070	(60,595)	32,851	0	126,711	21,673
Revenue	3,951	0	2,658	0	2,642	1,666

	<u>South Shore</u>			<u>Other</u>	
	<u>Tri Town</u>	<u>Carver</u>	<u>No Carver</u>	<u>(Retirement</u>	
	<u>Development</u>	<u>Housing</u>	<u>Water District</u>	<u>Staff)</u>	<u>Total</u>
Net Pension Liability	914,873	0	0	0	625,768,133
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	37,041	0	0	0	25,336,456
Net Asset Loss	260,574	0	0	0	178,231,138
Changes in Assumptions	0	0	0	0	0
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	15,564	156	0	0	8,611,522
Total Deferred Outflows	313,179	156	0	0	212,179,116
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	155,607	0	0	0	106,434,292
Changes in Assumptions	0	0	0	0	0
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	58,520	34,191	0	330,512	8,611,593
Total Deferred Inflows	214,127	34,191	0	330,512	115,045,885
Pension Expense					
Proportionate share of plan Pension Expense	126,409	0	0	0	86,462,950
Net Amortization from changes in Share Proportions	25,546	(24,373)	0	(220,353)	28
Total Employer Pension Expense	151,955	(24,373)	0	(220,353)	86,462,978
Revenue	11,599	0	0	0	7,933,462

EXHIBITS

Exhibit 1 - Age/Service Distribution with Salary as of January 1, 2022

Attained Age	Average Salary	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	7	0	0	0	0	0	0	0	0	7
	26,226	0	0	0	0	0	0	0	0	26,226
20-24	208	4	0	0	0	0	0	0	0	212
	37,708	52,148	0	0	0	0	0	0	0	37,981
25-29	382	60	1	0	0	0	0	0	0	443
	45,375	56,493	0	0	0	0	0	0	0	46,961
30-34	265	197	24	0	0	0	0	0	0	486
	49,949	71,534	78,891	0	0	0	0	0	0	60,128
35-39	201	128	85	40	4	2	0	0	0	460
	43,746	65,835	79,399	80,874	110,052	0	0	0	0	60,263
40-44	322	127	52	96	31	1	0	0	0	629
	37,272	57,840	77,878	81,320	87,203	114,137	0	0	0	54,088
45-49	204	135	63	85	110	38	2	0	0	637
	37,706	46,147	55,017	74,022	89,127	97,035	71,806	0	0	58,579
50-54	218	198	96	104	101	86	32	2	0	837
	38,892	42,561	52,045	63,211	80,262	100,095	104,381	129,371	0	58,291
55-59	159	204	155	169	132	71	66	20	1	977
	37,921	47,423	43,723	51,595	63,519	87,844	94,391	95,520	93,334	55,328
60-64	88	107	94	149	162	81	43	15	8	747
	39,987	48,192	46,630	49,563	51,072	58,014	80,455	83,028	135,132	52,480
65-69	30	40	32	65	54	42	19	5	2	289
	39,964	44,470	38,429	46,633	47,117	50,639	60,772	72,238	89,989	47,078
70+	26	19	8	17	11	9	11	0	3	104
	26,746	30,358	47,047	43,630	46,893	49,965	39,376	#DIV/0!	48,849	37,841
Total Employees	2,110	1,219	610	725	605	330	173	42	14	5,828
Average Salary	41,234	53,573	55,608	60,393	67,392	78,552	85,323	#DIV/0!	107,208	54,376

Exhibit 2 - Retiree Distribution as of January 1, 2022

Attained Age	Number of Employees			Total Payments		
	Female	Male	Total	Female	Male	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	2	0	2	34,972	0	34,972
35-39	4	0	4	40,990	0	40,990
40-44	0	3	3	0	34,739	34,739
45-49	2	4	6	13,766	128,881	142,647
50-54	13	34	47	345,118	1,780,417	2,125,535
55-59	102	89	191	1,799,647	4,531,205	6,330,853
60-64	270	185	455	4,520,962	8,170,680	12,691,641
65-69	512	342	854	10,631,530	14,439,484	25,071,013
70-74	584	361	945	12,407,668	13,887,093	26,294,761
75-79	481	283	764	9,140,671	9,997,273	19,137,944
80-84	312	150	462	6,067,165	4,464,935	10,532,100
85-89	201	73	274	3,254,915	1,930,898	5,185,813
90-94	86	22	108	1,461,202	437,353	1,898,555
95+	43	6	49	503,152	129,885	633,036
Total	2612	1552	4164	50,221,758	59,932,843	110,154,600
Average (Age/Payment)	74.07	71.8	73.22	19,227	38,617	26,454
Frequency Percent	62.7	37.3	100	45.6	54.4	100

Exhibit 3 - Disabled Retiree Distribution as of January 1, 2022

Attained Age	Number of Employees			Total Payments		
	Female	Male	Total	Female	Male	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	1	0	1	32,619	0	32,619
40-44	0	2	2	0	105,019	105,019
45-49	3	11	14	96,672	597,622	694,294
50-54	9	25	34	366,654	1,124,576	1,491,230
55-59	11	45	56	373,457	1,973,834	2,347,290
60-64	18	44	62	575,224	1,910,056	2,485,280
65-69	10	52	62	241,807	1,983,281	2,225,087
70-74	10	48	58	208,162	1,673,756	1,881,918
75-79	12	43	55	334,732	1,484,105	1,818,838
80-84	4	25	29	89,335	774,809	864,143
85-89	0	9	9	0	271,198	271,198
90-94	0	2	2	0	38,998	38,998
95-99	0	0	0	0	0	0
Total	78	306	384	2,318,662	11,937,253	14,255,914
Average (Age/Payment)	65.17	67.33	66.89	29,726	39,011	37,125
Frequency Percent	20.3	79.7	100	16.3	83.7	100

EXHIBIT 4 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2022, and does not take into account any subsequent changes.

1. Administration

Each of the 104 contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

Chapter 176 of the Acts of 2011 created different plan provisions within these groups for those hired on or after April 2, 2012.

3. **Salary**

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

<u>Date of Hire</u>	<u>Member Contribution Rate</u>
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later	9.0% of Salary
1979 and Later	Plus 2.0% of Salary in excess of \$30,000

For Group 1 employees who become members on or after April 2, 2012, the Contribution Rate shall be 6% after the completion of 30 years of service.

5. **Average Salary**

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.). For employees who become members on or after April 2, 2012, the averaging period shall be five years.

6. **Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. Service Retirement

a. Eligibility:

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

- (i) completion of 20 years of service
- (ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service
- (iv) for a Group 1 employee hired on or after April 2, 2012, attainment of age 60 and completion of ten years of service

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table for those hired prior to April 2, 2012:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For those hired after April 1, 2012 who retire with less than 30 years of service, the following rates are applied:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
67 or Over	.0250	.0250	.0250
66	.0235	.0250	.0250
65	.0220	.0250	.0250
64	.0205	.0250	.0250
63	.0190	.0250	.0250
62	.0175	.0250	.0250
61	.0160	.0235	.0250
60	.0145	.0220	.0250
59		.0205	.0250
58		.0190	.0250
57		.0175	.0250
56		.0160	.0235
55		.0145	.0220
54			.0205
53			.0190
52			.0175
51			.0160
50			.0145

For those hired after April 1, 2012 who retire with at least 30 years of service, the following rates are applied:

Age at Retirement	Percentage of Average Salary		
	Group 1	Group 2	Group 4
67 or Over	.02500	.02500	.02500
66	.02375	.02500	.02500
65	.02250	.02500	.02500
64	.02125	.02500	.02500
63	.02000	.02500	.02500
62	.01875	.02500	.02500
61	.01750	.02375	.02500
60	.01625	.02250	.02500
59		.02125	.02500
58		.02000	.02500
57		.01875	.02500
56		.01750	.02375
55		.01625	.02250
54			.02125
53			.02000
52			.01875
51			.01750
50			.01625

8. Deferred Vested Retirement

a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

9. Accidental Disability

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus \$450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. Ordinary Disability

a. Eligibility:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55 or age 60 if hired on or after April 2, 2012).

b. Benefit Amount:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55 (age 60 if hired on or after April 2, 2012). If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55 (age 60 if hired on or after April 2, 2012), he

will receive not less than the superannuation allowance to which he is entitled.

11. Survivor Benefits

a. Occupational Death:

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

b. Non-Occupational Death:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. Cost-of-Living Increases

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$16,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A – Life annuity
- (ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

EXHIBIT 5 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

1. Member Data

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

2. Valuation Date

January 1, 2022.

3. Actuarial Cost Method

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. Rate of Investment Return

It is assumed that the assets of the fund will accumulate at a compound annual rate of 7.875% per annum, net of investment expenses. The rationale for the selection of this rate is based on past performance and future expectations. The asset policy continues to have a high concentration in equities and equity like investments. The Board continues to take an aggressive posture in its investment allocations.

5. Salary Scale

It is assumed that salaries including longevity will increase at a rate of 3.75% per year. The rationale for this assumption is based on the 2015 Experience Study and the history of municipal revenue and Proposition 2-1/2. The member units are limited to how much it can raise in property tax revenue to 2.5% of the previous year's figure, plus new growth. This restriction limits the largest portion of their revenue to about 3% per year. By extension, payroll increases are limited by the growth in revenue. Over an employee's career, promotions are expected to add .75% to the increases.

6. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$16,000 per year. Under State law the increase is limited to 3% or CPI. The Board has always granted 3%.

7. Value of Investments

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). The actuarial value of assets is determined using a five-year smoothing of asset returns greater than or less than the assumed rate of return, with a 20% corridor.

8. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Service</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
0	0.1821	0.1500
5	0.1020	0.1000
10	0.0650	0.0600
15	0.0417	0.0600
20	0.0400	0.0000
25	0.0400	0.0000

9. Annual Rate of Mortality

It is assumed that both pre-retirement mortality and beneficiary mortality is represented by the RP-2014 Blue Collar Mortality with Scale MP-2016, fully generational. Mortality for retired members for Group 1 and 2 is represented by the RP-2014 Blue Collar Mortality Table set forward five years for males and 3 years for females, fully generational. Mortality for retired members for Group 4 is represented by the RP-2014 Blue Collar Mortality Table set forward three years for males, and six years for females, fully generational. Mortality for disabled members for Group 1 and 2 is represented by the RP-2000 Mortality Table set forward six years. Mortality for disabled members for Group 4 is represented by the RP-2000 Mortality Table set forward two years. Generational adjusting is based on Scale MP-2016.

10. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired prior to April 2, 2012:

<u>Age</u>	<u>Male General Employees</u>	<u>Female General Employees</u>	<u>Male and Female Police and Fire Employees</u>
50	0.0360	0.1019	0.0382
51	0.0405	0.0714	0.0351
52	0.0437	0.0562	0.0436
53	0.0366	0.0448	0.0527
54	0.0451	0.0488	0.0999
55	0.0477	0.0469	0.1110
56	0.0574	0.0518	0.1413
57	0.0632	0.0509	0.1292
58	0.0765	0.0552	0.1499
59	0.0917	0.0645	0.1679
60	0.1057	0.0774	0.1871
61	0.1224	0.1038	0.2073
62	0.1473	0.1168	0.2176
63	0.1777	0.1440	0.3338
64	0.2136	0.1708	0.5664
65	0.2615	0.1939	1.0000
66	0.2682	0.1959	1.0000
67	0.2500	0.2000	1.0000
68	0.2500	0.2000	1.0000
69	0.2500	0.2000	1.0000
70 to 76	0.2500	0.2500	1.0000
77 to 79	0.3500	0.2500	1.0000
80	1.0000	1.0000	1.0000

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired on or after April 2, 2012:

<u>Age</u>	<u>Male General Employees</u>	<u>Female General Employees</u>	<u>Male and Female Police and Fire Employees</u>
50	0.0000	0.0000	0.0191
51	0.0000	0.0000	0.0176
52	0.0000	0.0000	0.0436
53	0.0000	0.0000	0.0211
54	0.0000	0.0000	0.0266
55	0.0000	0.0000	0.0370
56	0.0000	0.0000	0.1060
57	0.0000	0.0000	0.1938
58	0.0000	0.0000	0.1499
59	0.0000	0.0000	0.1119
60	0.0477	0.0469	0.0936
61	0.0574	0.0518	0.1555
62	0.0632	0.0509	0.1741
63	0.0765	0.0552	0.2670
64	0.0917	0.0645	0.4720
65	0.1057	0.0774	1.0000
66	0.1224	0.1038	1.0000
67	0.1473	0.1168	1.0000
68	0.1777	0.1440	1.0000
69	0.2136	0.1708	1.0000
70	0.2615	0.1939	1.0000
70 to 76	0.2682	0.1959	1.0000
77 to 79	0.2500	0.2000	1.0000

12. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

<u>Attained Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.000100	0.000500
30	0.000152	0.000967
40	0.000663	0.002500
50	0.001271	0.007634

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

13. Family Composition

It is assumed that 80% of all male members will be survived by a spouse and 60% of all female members will be survived by a spouse. Females (males) are three years younger (older) than members.

14. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2022 is \$2,100,000 and is anticipated to increase at 3.75% per year.

CERTIFICATION:

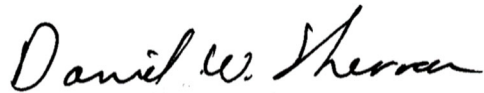
This report fairly represents the actuarial position of the Plymouth County Retirement System as of December 31, 2022, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations and represents our best estimate of anticipated plan experience.

The funded status measure is appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. The funded status measure is appropriate for assessing the need for or the amount of future contributions. The funded status measure would be different if the measure reflected the market value of assets rather than the actuarial value of assets.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as 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 our assignment, we did not perform an analysis of the potential range of such future measurements.

The report was prepared under the supervision of Daniel Sherman, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries, who takes responsibility for the overall appropriateness of the analysis, assumptions and results. Daniel Sherman is deemed to meet the General Qualification Standard and the basic education and experience requirement in the pension area. Based on over thirty years of performing valuations of similar complexity, Mr. Sherman is qualified by experience. Daniel Sherman has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sherman Actuarial Services, LLC



Daniel W. Sherman, ASA, MAAA

June, 2023