



**PLYMOUTH COUNTY  
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report  
January 1, 2017

**TABLE OF CONTENTS**

	<u>Page</u>
<b>REPORT SUMMARY</b>	
Highlights	1
Introduction	2
Actuarial Experience	3
<b>ACTUARIAL COSTS AND LIABILITIES</b>	
Normal Costs	4
Present Value of Actuarial Accrued Liabilities	5
Present Value of Future Benefits	6
<b>FUNDED STATUS AND APPROPRIATIONS</b>	
Market Value of Plan Assets	7
Actuarial Value of Assets	8
Unfunded Actuarial Accrued Liabilities	9
Appropriations	10
Appropriation Forecast	11
<b>EXHIBITS</b>	
1 Age/Service Distribution with Salary	14
2 Retiree Distribution	15
3 Disabled Retiree Distribution	16
4 Distribution Forecast	17
5 Summary of Plan Provisions	18
6 Actuarial Methods and Assumptions	27
7 Glossary of Terms	32
<b>CERTIFICATION</b>	34
<b>BREAKOUTS</b>	35

## Report Summary:

### Highlights

January 1, 2015

January 1, 2017

#### Contributions

Funding Schedule FY 2018	\$69,789,479	\$69,789,479
Funding Schedule FY 2019	72,293,830	73,431,347

#### Funded Ratios

Using Actuarial Value of Assets	58.3%	61.7%
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#### Participants

Actives	5,871	5,815
Retirees and Beneficiaries	3,430	3,602
Vested	0	0
Inactives	2,314	1,808
Disabled	<u>359</u>	<u>366</u>
Total	11,974	11,591

#### Payroll

Payroll of Active Members	\$246,703,686	\$265,029,194
Average Payroll	42,021	45,577

#### Normal Cost

Employer	10,702,586	3,718,064
Employee	21,335,589	23,089,568
Administrative Expenses	<u>1,800,000</u>	<u>2,000,000</u>
Total	33,838,175	28,807,632

#### Actuarial Accrued Liabilities

Actives	614,471,947	652,084,974
Retirees, Beneficiaries, Disabilities and Inactives	<u>803,018,163</u>	<u>868,005,471</u>
Total	1,417,490,110	1,520,090,445

#### Actuarial Value of Assets

<u>826,923,777</u>	<u>937,406,228</u>
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#### Unfunded Actuarial Accrued Liabilities

\$590,566,333	\$582,684,217
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## **Introduction**

The purpose of this report is to present the findings of an actuarial valuation as of January 1, 2017, of the Plymouth County Contributory Retirement System.

The actuarial valuation is based on:

- Provisions of Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2017.
- 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

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2017. The report also includes results under GASB Statements #25 and #27.

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.

### Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the last two years, the total unfunded actuarial accrued liability decreased by 1.4% to \$582,684,217. The decrease is the result of changes in the actuarial assumptions, offset by an increase in the COLA base to \$14,000 and net unfavorable actuarial experience during the preceding years. The sources of change are as follows:

Asset losses	20,780,308
Salary Increases	(272,201)
New Participants	6,624,341
Active - Retirements	(13,391,705)
Active - Terminations	2,948,595
Active - Mortality	(579,412)
Active - Disabilities	(1,850,047)
Inactive - Mortality and data adjustments	30,674,833
Benefit Payments	(442,399)
Other, including data, contribution interest, purchased service	<u>3,567,588</u>
Total (Gain) / Loss	48,059,901

The demographic assumptions were changed based on the 2015 Actuarial Experience Study for Plymouth County and the Statewide Experience Study completed by Sherman Actuarial Services, LLC. The COLA base was increased to \$14,000. These changes decreased the accrued liability by \$16,702,430, and the Normal Cost by \$7,227,481.



## Actuarial Costs and Liabilities:

### Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

**Table I**

	<u>January 1, 2015</u>	<u>January 1, 2017</u>
Superannuation	\$20,508,053	\$15,706,063
Termination	3,995,033	5,916,605
Death	1,836,690	2,050,994
Disability	5,698,399	3,133,970
Administrative Expenses	<u>1,800,000</u>	<u>2,000,000</u>
Total Normal Cost	33,838,175	28,807,632
% of Pay	13.7%	10.9%
Employee Contributions	21,335,589	23,089,568
% of Pay	8.6%	8.7%
Employer Normal Cost	\$12,502,586	\$5,718,064
% of Pay	5.1%	2.2%

**Present Value of Actuarial Accrued Liabilities**

The actuarial accrued liabilities (AAL) represents a portion of today's value of all projected benefits attributable to past service for the actives and inactive. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

**Table II**

	<u>January 1, 2015</u>	<u>January 1, 2017</u>
Actives		
Superannuations	\$577,090,475	\$592,548,579
Termination	(10,911,870)	10,466,136
Death	16,408,551	26,794,117
Disability	31,884,791	22,276,142
Retirees and Inactives		
Retirees and Beneficiaries	679,619,246	734,401,238
Vested	0	0
Terminated (Refund)	12,723,183	13,231,295
Disabled	<u>110,675,734</u>	<u>120,372,938</u>
Total	\$1,417,490,110	\$1,520,090,445

**Present Value of Future Benefits**

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

**Table III**

	<u>January 1, 2015</u>	<u>January 1, 2017</u>
Actives		
Superannuation	\$734,708,449	\$697,909,843
Termination	20,301,500	39,989,484
Death	29,890,734	38,895,554
Disability	82,615,357	44,025,957
Retirees and Inactives		
Retirees and Beneficiaries	679,619,246	734,401,238
Vested	0	0
Terminated (Refund)	12,723,183	13,231,295
Disabled	<u>110,675,734</u>	<u>120,372,938</u>
Total	\$1,670,534,203	\$1,688,826,309



## Funded Status and Appropriations:

### Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

**Table IV**

	<u>January 1, 2015</u>	<u>January 1, 2017</u>
Cash equivalents	\$46,169,755	\$3,126,639
Short term investments	7,789,490	6,632,517
Fixed income securities	147,059,475	166,924,643
Equities	396,703,891	458,640,108
International	55,373,947	81,812,790
Real Estate	118,466,211	111,742,432
Venture Capital	0	0
Other	62,486,277	52,164,811
Accounts receivable	4,631,686	6,417,472
Accounts payable	(5,252,264)	(3,900,129)
Accrued income	<u>1,153,501</u>	<u>1,157,441</u>
Total Market Value	\$834,581,969	\$884,718,724
Total Actuarial Value	\$826,923,777	\$937,406,228

## Actuarial Value of Assets

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.00%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 20%. The calculation of the actuarial value of assets as of January 1, 2017 is presented in Table V.

### Table V

	<u>January 1, 2017</u>
(1) Market value at January 1, 2016	\$832,637,491
(2) 2016 Contributions	\$96,160,410
(3) 2016 Payments	(\$96,723,797)
(4) Net interest adjustment at 8.25% on (1), (2), and (3) to December 31, 2016	\$67,546,068
(5) Expected market value on January 1, 2017	\$899,620,172
(1) + (2) + (3) + (4)	
(6) Actual market value on January 1, 2017	\$884,718,724
(7) 2016 (Gain) / Loss	\$14,901,448
(8) 80% of 2016 (Gain) / Loss	\$11,921,158
(9) 2015 (Gain) / Loss	\$63,959,388
(10) 60% of 2015 (Gain) / Loss	\$38,375,633
(11) 2014 (Gain) / Loss	\$34,241,959
(12) 40% of 2014 (Gain) / Loss	\$13,696,784
(13) 2013 (Gain) / Loss	(\$56,530,355)
(14) 20% of 2013 (Gain) / Loss	(\$11,306,071)
(15) Actuarial value on January 1, 2017, (6) + (8) + (10) + (12) + (14) but not less than 80% nor greater than 120% of (6)	\$937,406,228
(16) Ratio of actuarial value to market value	105.96%
(17) Actuarial Value Return for 2015	6.90%
(18) Actuarial Value Return for 2016	6.80%
(19) Market Value Return for 2015	0.42%
(20) Market Value Return for 2016	6.24%

**Unfunded Actuarial Accrued Liabilities**

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

**Table VI**

	<u>January 1, 2015</u>	<u>January 1, 2017</u>
Actuarial Accrued Liability	\$1,417,490,110	\$1,520,090,445
Actuarial Assets	<u>826,923,777</u>	<u>937,406,228</u>
Unfunded Actuarial Accrued Liability	\$590,566,333	\$582,684,217
Funded Status	58.3%	61.7%

**Appropriations**

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the unfunded actuarial accrued liability by June 30, 2029  
    \$ 580,579,806 over 12 years with 3.5% increasing payments
- Level amortization of the 2002 Early Retirement Incentive June 30, 2019  
    \$ 1,058,360 over 2 years
- Level amortization of the 2003 Early Retirement Incentive June 30, 2020  
    \$ 765,398 over 3 years
- Level amortization of the 2013 Early Retirement Incentive June 30, 2028  
    \$ 280,653 over 11 years
- Interest adjustment for payments deposited semiannually.

The pension appropriation is shown in Table VII.

**Table VII**

	<u>January 1, 2015</u>	<u>January 1, 2017</u>
Normal cost	\$12,502,586	\$5,718,064
Amortization payment of the accrued liability	47,970,112	60,487,067
Amortization payment of 2002 ERI liability	549,533	549,533
Amortization payment of 2003 ERI liability	275,000	275,000
Amortization payment of 2011 ERI liability	<u>36,401</u>	<u>36,401</u>
Total cost	\$61,333,632	\$67,066,065
% of Pay	24.9%	25.3%
Fiscal 2018 cost	\$69,789,479	\$69,789,479
Fiscal 2019 cost	\$72,293,830	\$73,431,347

## **Appropriation Forecast**

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 3.75% per year. The employee contribution rate is expected to increase to 10.5% by 2041 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost is expected to increase during the next 11 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents about 26% of payroll, decreasing to about 25% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 1% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions and the effect of the 2012 pension plan modifications to benefits.

**Appropriation Forecast**

Fiscal Year	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Unfunded Liability	Funded Ratio %**
2018	\$23,089,568	\$6,056,705	\$63,732,774	\$69,789,479	26.3	\$582,684,217	61.7
2019	\$24,169,174	\$6,057,426	\$67,373,921	\$73,431,347	26.7	\$564,391,434	63.5
2020	\$25,297,281	\$6,049,683	\$69,118,012	\$75,167,695	26.3	\$540,838,198	66.0
2021	\$26,476,008	\$6,032,841	\$71,234,312	\$77,267,153	26.1	\$513,622,083	68.5
2022	\$27,707,566	\$6,006,228	\$73,726,163	\$79,732,391	26.0	\$482,070,539	71.1
2023	\$28,994,258	\$5,969,136	\$76,305,230	\$82,274,366	25.8	\$445,453,801	73.9
2024	\$30,338,488	\$5,920,816	\$78,974,563	\$84,895,379	25.7	\$403,277,717	77.0
2025	\$31,742,763	\$5,860,477	\$81,737,323	\$87,597,800	25.5	\$355,005,489	80.2
2026	\$33,209,695	\$5,787,287	\$84,596,780	\$90,384,067	25.4	\$300,054,152	83.6
2027	\$34,742,008	\$5,700,367	\$87,556,318	\$93,256,685	25.3	\$237,790,773	87.3
2028	\$36,342,543	\$5,598,789	\$90,619,440	\$96,218,229	25.1	\$167,528,329	91.2
2029	\$38,014,263	\$5,481,577	\$93,751,214	\$99,232,791	25.0	\$88,521,266	95.5
2030	\$39,760,255	\$5,347,700	\$0	\$5,347,700	1.3	(\$0)	100.0
2031	\$41,583,739	\$5,196,075	\$0	\$5,196,075	1.2	(\$0)	100.0
2032	\$43,488,072	\$5,025,557	\$0	\$5,025,557	1.1	(\$0)	100.0
2033	\$45,476,752	\$4,834,943	\$0	\$4,834,943	1.1	(\$0)	100.0
2034	\$47,553,428	\$4,622,966	\$0	\$4,622,966	1.0	(\$0)	100.0
2035	\$49,721,903	\$4,388,292	\$0	\$4,388,292	0.9	(\$0)	100.0
2036	\$51,986,142	\$4,129,516	\$0	\$4,129,516	0.8	(\$0)	100.0
2037	\$54,350,277	\$3,845,160	\$0	\$3,845,160	0.7	(\$0)	100.0
2038	\$56,818,617	\$3,533,671	\$0	\$3,533,671	0.6	(\$0)	100.0
2039	\$59,395,652	\$3,193,413	\$0	\$3,193,413	0.6	(\$0)	100.0
2040	\$62,086,064	\$2,822,667	\$0	\$2,822,667	0.5	(\$0)	100.0
2041	\$64,894,731	\$2,419,624	\$0	\$2,419,624	0.4	(\$0)	100.0
2042	\$67,328,284	\$2,510,360	\$0	\$2,510,360	0.4	(\$0)	100.0
2043	\$69,853,094	\$2,604,498	\$0	\$2,604,498	0.4	(\$0)	100.0
2044	\$72,472,585	\$2,702,167	\$0	\$2,702,167	0.4	(\$0)	100.0
2045	\$75,190,307	\$2,803,498	\$0	\$2,803,498	0.4	(\$0)	100.0
2046	\$78,009,944	\$2,908,629	\$0	\$2,908,629	0.4	(\$0)	100.0
2047	\$80,935,317	\$3,017,703	\$0	\$3,017,703	0.4	(\$0)	100.0
2048	\$83,970,391	\$3,130,867	\$0	\$3,130,867	0.4	(\$0)	100.0
2049	\$87,119,281	\$3,248,274	\$0	\$3,248,274	0.4	(\$0)	100.0

**EXHIBITS**



**Exhibit 1 - Age/Service Distribution with Salary as of January 1, 2017**

Attained Age	Average Salary	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	9	0	0	0	0	0	0	0	0	9
	16,320	0	0	0	0	0	0	0	0	16,320
20-24	137	1	0	0	0	0	0	0	0	138
	30,985	59,932	0	0	0	0	0	0	0	31,194
25-29	306	32	0	0	0	0	0	0	0	338
	43,426	55,804	0	0	0	0	0	0	0	44,598
30-34	180	98	45	4	0	0	0	0	0	327
	43,462	57,025	62,658	88,238	0	0	0	0	0	50,716
35-39	158	63	99	30	1	0	0	0	0	351
	42,725	57,904	63,935	68,198	99,291	0	0	0	0	53,770
40-44	389	82	106	116	38	2	0	0	0	733
	28,081	45,855	58,675	73,063	70,865	54,286	0	0	0	43,902
45-49	271	127	130	117	98	46	6	0	0	795
	28,954	39,250	55,099	62,967	78,864	88,826	94,247	0	0	49,989
50-54	247	215	223	164	93	87	42	3	0	1,074
	32,224	34,654	39,027	51,788	65,029	78,903	90,085	101,474	0	46,188
55-59	141	136	215	235	130	75	57	25	0	1,014
	34,937	36,279	39,235	40,133	43,995	71,687	76,246	88,706	0	44,760
60-64	68	72	136	164	111	90	38	15	5	699
	31,798	35,969	37,063	39,143	47,122	51,941	69,219	83,589	80,527	43,496
65-69	29	21	44	42	33	34	20	6	8	237
	18,668	33,150	39,503	40,880	45,981	44,138	51,183	52,994	66,388	40,436
70+	14	12	17	14	14	16	6	6	2	101
	23,792	28,114	33,536	36,003	33,275	32,040	28,023	35,728	45,168	31,643
Total Employees	1,949	859	1,015	886	518	350	169	55	15	5,816
Average Salary	34,349	41,717	46,324	50,572	56,953	66,068	74,066	78,332	68,272	45,578

**Exhibit 2 - Retiree Distribution as of January 1, 2017**

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	1	1	2	6,716	13,000	19,716
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	1	11	12	7,496	285,899	293,395
50-54	10	29	39	199,134	876,723	1,075,857
55-59	73	87	160	739,144	3,400,851	4,139,995
60-64	236	214	450	3,591,610	9,293,020	12,884,630
65-69	452	343	795	8,164,885	12,658,976	20,823,861
70-74	444	335	779	7,634,020	10,892,583	18,526,603
75-79	330	221	551	5,513,790	5,999,274	11,513,065
80-84	248	145	393	3,692,390	3,154,117	6,846,507
85-89	151	85	236	1,956,304	1,682,892	3,639,196
90-94	93	43	136	992,512	653,252	1,645,764
95+	32	17	49	265,197	198,647	463,843
<b>Total</b>	<b>2071</b>	<b>1531</b>	<b>3602</b>	<b>32,763,199</b>	<b>49,109,234</b>	<b>81,872,433</b>
<b>Average (Age/Payment)</b>	<b>73.99</b>	<b>71.95</b>	<b>73.13</b>	<b>15,820</b>	<b>32,077</b>	<b>22,730</b>
<b>Frequency Percent</b>	<b>57.5</b>	<b>42.5</b>	<b>100</b>	<b>40.0</b>	<b>60.0</b>	<b>100</b>

**Exhibit 3 - Disabled Retiree Distribution as of January 1, 2017**

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	0	1	1	0	56,362	56,362
40-44	1	6	7	32,714	268,537	301,252
45-49	3	16	19	66,380	607,485	673,865
50-54	9	30	39	300,235	1,160,759	1,460,994
55-59	16	33	49	460,460	1,321,059	1,781,519
60-64	7	50	57	163,505	1,803,934	1,967,439
65-69	11	54	65	211,303	1,753,264	1,964,568
70-74	12	48	60	309,593	1,544,735	1,854,327
75-79	4	37	41	81,188	1,051,123	1,132,311
80-84	1	20	21	5,317	521,931	527,247
85-89	0	7	7	0	138,850	138,850
90-94	0	0	0	0	0	0
95-99	0	0	0	0	0	0
<b>Total</b>	<b>64</b>	<b>302</b>	<b>366</b>	<b>1,630,695</b>	<b>10,228,038</b>	<b>11,858,734</b>
<b>Average (Age/Payment)</b>	<b>63.03</b>	<b>65.92</b>	<b>65.41</b>	<b>25,480</b>	<b>33,868</b>	<b>32,401</b>
<b>Frequency Percent</b>	<b>17.5</b>	<b>82.5</b>	<b>100</b>	<b>13.8</b>	<b>86.2</b>	<b>100</b>

**EXHIBIT 4 - CASHFLOW FORECAST:**

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2017	\$118,086,145	\$23,089,568	\$69,789,479	\$71,340,638	\$46,133,540
2018	109,079,687	24,169,174	73,431,347	75,545,914	64,066,747
2019	113,394,749	25,297,281	75,167,695	80,542,559	67,612,787
2020	117,558,640	26,476,008	77,267,153	85,836,850	72,021,372
2021	121,954,843	27,707,566	79,732,391	91,482,858	76,967,972
2022	126,426,326	28,994,258	82,274,366	97,524,175	82,366,473
2023	130,898,011	30,338,488	84,895,379	104,000,011	88,335,867
2024	135,198,211	31,742,763	87,597,800	110,962,889	95,105,241
2025	139,304,048	33,209,695	90,384,067	118,477,823	102,767,536
2026	143,274,495	34,742,008	93,256,685	126,614,059	111,338,257
2027	146,974,686	36,342,543	96,218,229	135,449,694	121,035,780
2028	150,493,542	38,014,263	99,232,791	145,070,763	131,824,275
2029	153,584,822	39,760,255	5,347,700	153,659,295	45,182,428
2030	156,227,280	41,583,739	5,196,075	157,187,136	47,739,670
2031	158,238,486	43,488,072	5,025,557	160,945,695	51,220,838
2032	159,726,774	45,476,752	4,834,943	165,004,713	55,589,634
2033	160,627,024	47,553,428	4,622,966	169,437,838	60,987,208
2034	160,897,611	49,721,903	4,388,292	174,329,094	67,541,678
2035	160,600,632	51,986,142	4,129,516	179,768,687	75,283,713
2036	159,812,558	54,350,277	3,845,160	185,848,720	84,231,599
2037	158,598,654	56,818,617	3,533,671	192,663,201	94,416,835
2038	156,987,371	59,395,652	3,193,413	200,310,107	105,911,801
2039	154,871,985	62,086,064	2,822,667	208,898,516	118,935,262
2040	152,276,494	64,894,731	2,419,624	218,549,883	133,587,744
2041	149,314,897	67,328,284	2,510,360	229,360,660	149,884,407
2042	145,937,979	69,853,094	2,604,498	241,491,748	168,011,361
2043	142,234,855	72,472,585	2,702,167	255,086,084	188,025,981
2044	138,289,671	75,190,307	2,803,498	270,291,391	209,995,525
2045	134,149,871	78,009,944	2,908,629	287,262,214	234,030,916
2046	129,836,473	80,935,317	3,017,703	306,163,007	260,279,554

## **EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:**

This summary is prepared in accordance with Chapter 32 as of January 1, 2017, 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 plus	9.0% of Salary
1979 and Later	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 \$14,000. 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 6 – 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, 2017.

### **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 8.00% per annum, net of investment expenses. The rationale for the selection of this rate is based on past performance and future expectations. Since 1987 the fund has had an average return of 9.04%. 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 \$14,000 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 2018 is \$2,000,000 and is anticipated to increase at 3.75% per year.

## **EXHIBIT 7 – GLOSSARY OF TERMS:**

This glossary summarizes the technical terms contained in this report.

### **1. Actuarial Accrued Liability**

That portion of the Actuarial Present Value of projected plan benefits that is not provided for by future employer Normal Costs or employee contributions.

### **2. Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

### **3. Actuarial Cost Method**

A procedure for allocating the Actuarial Present Value of projected pension plan benefits between Normal Cost and Actuarial Accrued Liability.

### **4. Actuarial Present Value**

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

### **5. Forecast**

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

**6. Normal Cost**

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

**7. Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

**8. Actuarial Valuation Method**

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

**9. Vested Liability**

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

## **CERTIFICATION:**

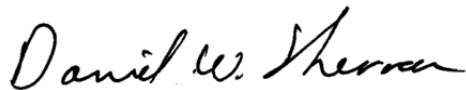
This report fairly represents the actuarial position of the Plymouth County Retirement System contributing as of January 1, 2017, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial 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



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Daniel W. Sherman, ASA, MAAA

July, 2017



## **BREAKOUTS**

## County of Plymouth

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	81
Inactives	29
Retirees and Disableds	232
Total	342
Payroll	3,483,617
Average	43,008

### Valuation Results

Normal Cost	
Employee	357,258
Employer	13,252
Administrative Expense	93,677
Total	464,187
Actuarial Accrued Liability	
Actives	11,707,605
Inactives	357,162
Retirees and Disableds	59,134,311
Total	71,199,078
Assets	\$44,359,883
Unfunded Actuarial Accrued Liability	\$26,839,195
Estimated FY19 Contribution - semiannual payments	\$3,177,716
Estimated FY19 Contribution - July payment	\$3,117,737
Estimated FY20 Contribution - semiannual payments	\$3,288,489
Estimated FY20 Contribution - July payment	\$3,226,419



## Hospital

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	0
Inactives	1
Retirees and Disableds	71
Total	72
Payroll	0
Average	0

### Valuation Results

Normal Cost	
Employee	0
Employer	0
Administrative Expense	9,809
Total	9,809

Actuarial Accrued Liability	
Actives	0
Inactives	67,821
Retirees and Disableds	7,387,637
Total	7,455,458

Assets \$4,595,286

Unfunded Actuarial Accrued Liability \$2,860,172

Estimated FY19 Contribution - semiannual payments	\$336,983
Estimated FY19 Contribution - July payment	\$330,622
Estimated FY20 Contribution - semiannual payments	\$348,815
Estimated FY20 Contribution - July payment	\$342,231



**Abington**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	216
Inactives	84
Retirees and Disableds	146
Total	<u>446</u>
Payroll	9,323,971
Average	43,167

## Valuation Results

Normal Cost	
Employee	820,807
Employer	125,882
Administrative Expense	73,218
Total	<u>1,019,907</u>
Actuarial Accrued Liability	
Actives	19,916,262
Inactives	920,488
Retirees and Disableds	34,812,088
Total	<u>55,648,838</u>
Assets	\$34,300,012
Unfunded Actuarial Accrued Liability	\$21,348,826
Estimated FY19 Contribution - semiannual payments	\$2,670,940
Estimated FY19 Contribution - July payment	\$2,620,527
Estimated FY20 Contribution - semiannual payments	\$2,756,202
Estimated FY20 Contribution - July payment	\$2,704,179

## Bridgewater

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	166
Inactives	23
Retirees and Disableds	147
Total	336
Payroll	12,349,097
Average	74,392

### Valuation Results

Normal Cost	
Employee	1,111,352
Employer	40,082
Administrative Expense	101,164
Total	1,252,598
Actuarial Accrued Liability	
Actives	36,008,745
Inactives	258,943
Retirees and Disableds	40,621,297
Total	76,888,985
Assets	\$47,391,702
Unfunded Actuarial Accrued Liability	\$29,497,283
Estimated FY19 Contribution - semiannual payments	\$3,619,282
Estimated FY19 Contribution - July payment	\$3,550,969
Estimated FY20 Contribution - semiannual payments	\$3,638,000
Estimated FY20 Contribution - July payment	\$3,569,333



## Bridgewater Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	4
Inactives	2
Retirees and Disableds	6
Total	12
Payroll	216,656
Average	54,164

### Valuation Results

Normal Cost	
Employee	18,696
Employer	4,468
Administrative Expense	1,514
Total	24,678
Actuarial Accrued Liability	
Actives	301,687
Inactives	56,228
Retirees and Disableds	792,487
Total	1,150,402
Assets	\$709,068
Unfunded Actuarial Accrued Liability	\$441,334
Estimated FY19 Contribution - semiannual payments	\$73,324
Estimated FY19 Contribution - July payment	\$71,940
Estimated FY20 Contribution - semiannual payments	\$64,571
Estimated FY20 Contribution - July payment	\$63,352

**Bridgewater/Raynham Regional School**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	171
Inactives	78
Retirees and Disableds	134
Total	<u>383</u>
Payroll	6,202,333
Average	36,271

## Valuation Results

Normal Cost	
Employee	521,430
Employer	84,209
Administrative Expense	44,928
Total	<u>650,567</u>
Actuarial Accrued Liability	
Actives	14,582,655
Inactives	364,304
Retirees and Disableds	19,199,988
Total	<u>34,146,947</u>
Assets	\$21,046,993
Unfunded Actuarial Accrued Liability	\$13,099,954
Estimated FY19 Contribution - semiannual payments	\$1,746,150
Estimated FY19 Contribution - July payment	\$1,713,192
Estimated FY20 Contribution - semiannual payments	\$1,753,257
Estimated FY20 Contribution - July payment	\$1,720,164

**Carver**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	216
Inactives	95
Retirees and Disableds	105
Total	<u>416</u>
Payroll	6,814,591
Average	31,549

## Valuation Results

Normal Cost	
Employee	587,518
Employer	83,215
Administrative Expense	55,304
Total	<u>726,037</u>
Actuarial Accrued Liability	
Actives	16,908,456
Inactives	465,090
Retirees and Disableds	24,659,667
Total	<u>42,033,213</u>
Assets	\$25,907,814
Unfunded Actuarial Accrued Liability	\$16,125,399
Estimated FY19 Contribution - semiannual payments	\$2,149,152
Estimated FY19 Contribution - July payment	\$2,108,587
Estimated FY20 Contribution - semiannual payments	\$2,079,306
Estimated FY20 Contribution - July payment	\$2,040,060



**Carver/Marion/Wareham Regional Refuse**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	5
Inactives	0
Retirees and Disableds	1
Total	<u>6</u>
Payroll	174,216
Average	34,843

## Valuation Results

Normal Cost	
Employee	10,434
Employer	8,587
Administrative Expense	1,238
Total	<u>20,259</u>
Actuarial Accrued Liability	
Actives	554,096
Inactives	0
Retirees and Disableds	386,480
Total	<u>940,576</u>
Assets	\$579,738
Unfunded Actuarial Accrued Liability	\$360,838
Estimated FY19 Contribution - semiannual payments	\$51,427
Estimated FY19 Contribution - July payment	\$50,457
Estimated FY20 Contribution - semiannual payments	\$52,712
Estimated FY20 Contribution - July payment	\$51,717

**Duxbury**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	364
Inactives	156
Retirees and Disableds	211
Total	<u>731</u>
Payroll	16,118,261
Average	44,281

## Valuation Results

Normal Cost	
Employee	1,402,575
Employer	182,644
Administrative Expense	104,502
Total	<u>1,689,721</u>
Actuarial Accrued Liability	
Actives	41,340,038
Inactives	943,607
Retirees and Disableds	37,142,725
Total	<u>79,426,370</u>
Assets	\$48,955,658
Unfunded Actuarial Accrued Liability	\$30,470,712
Estimated FY19 Contribution - semiannual payments	\$3,779,624
Estimated FY19 Contribution - July payment	\$3,708,285
Estimated FY20 Contribution - semiannual payments	\$3,901,245
Estimated FY20 Contribution - July payment	\$3,827,610

## Duxbury Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	1
Inactives	0
Retirees and Disableds	5
Total	6
Payroll	42,945
Average	42,945

### Valuation Results

Normal Cost	
Employee	3,450
Employer	1,386
Administrative Expense	639
Total	5,475
Actuarial Accrued Liability	
Actives	97,247
Inactives	0
Retirees and Disableds	388,191
Total	485,438
Assets	\$299,207
Unfunded Actuarial Accrued Liability	\$186,231
Estimated FY19 Contribution - semiannual payments	\$23,380
Estimated FY19 Contribution - July payment	\$22,939
Estimated FY20 Contribution - semiannual payments	\$24,117
Estimated FY20 Contribution - July payment	\$23,662



## East Bridgewater

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	242
Inactives	102
Retirees and Disableds	128
Total	472
Payroll	10,519,927
Average	43,471

### Valuation Results

Normal Cost	
Employee	925,577
Employer	164,358
Administrative Expense	70,137
Total	1,160,072
Actuarial Accrued Liability	
Actives	23,233,082
Inactives	553,344
Retirees and Disableds	29,520,527
Total	53,306,953
Assets	\$32,856,556
Unfunded Actuarial Accrued Liability	\$20,450,397
Estimated FY19 Contribution - semiannual payments	\$2,580,059
Estimated FY19 Contribution - July payment	\$2,531,361
Estimated FY20 Contribution - semiannual payments	\$2,660,671
Estimated FY20 Contribution - July payment	\$2,610,451



## East Bridgewater Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	4
Inactives	1
Retirees and Disableds	3
Total	8
Payroll	200,117
Average	50,029

### Valuation Results

Normal Cost	
Employee	17,938
Employer	5,083
Administrative Expense	912
Total	23,933
Actuarial Accrued Liability	
Actives	449,511
Inactives	40,113
Retirees and Disableds	203,230
Total	692,854
Assets	\$427,051
Unfunded Actuarial Accrued Liability	\$265,803
Estimated FY19 Contribution - semiannual payments	\$42,717
Estimated FY19 Contribution - July payment	\$41,911
Estimated FY20 Contribution - semiannual payments	\$37,569
Estimated FY20 Contribution - July payment	\$36,860



## Halifax

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	116
Inactives	30
Retirees and Disableds	56
Total	202
Payroll	5,010,003
Average	43,190

### Valuation Results

Normal Cost	
Employee	438,292
Employer	69,240
Administrative Expense	31,899
Total	539,431
Actuarial Accrued Liability	
Actives	11,464,701
Inactives	208,438
Retirees and Disableds	12,571,652
Total	24,244,791
Assets	\$14,943,648
Unfunded Actuarial Accrued Liability	\$9,301,143
Estimated FY19 Contribution - semiannual payments	\$1,167,727
Estimated FY19 Contribution - July payment	\$1,145,686
Estimated FY20 Contribution - semiannual payments	\$1,204,524
Estimated FY20 Contribution - July payment	\$1,181,789



**Hanover**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	294
Inactives	68
Retirees and Disableds	190
Total	<u>552</u>
Payroll	14,492,915
Average	49,296

## Valuation Results

Normal Cost	
Employee	1,277,342
Employer	241,754
Administrative Expense	90,407
Total	<u>1,609,503</u>
Actuarial Accrued Liability	
Actives	29,812,464
Inactives	458,815
Retirees and Disableds	38,442,471
Total	<u>68,713,750</u>
Assets	\$42,352,770
Unfunded Actuarial Accrued Liability	\$26,360,980
Estimated FY19 Contribution - semiannual payments	\$3,356,779
Estimated FY19 Contribution - July payment	\$3,293,420
Estimated FY20 Contribution - semiannual payments	\$3,459,965
Estimated FY20 Contribution - July payment	\$3,394,659



**Hanson**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	98
Inactives	15
Retirees and Disableds	72
Total	<u>185</u>
Payroll	5,181,778
Average	52,875

## Valuation Results

Normal Cost	
Employee	459,128
Employer	60,357
Administrative Expense	42,929
Total	<u>562,414</u>
Actuarial Accrued Liability	
Actives	12,974,765
Inactives	224,865
Retirees and Disableds	19,428,462
Total	<u>32,628,092</u>
Assets	\$20,110,823
Unfunded Actuarial Accrued Liability	\$12,517,269
Estimated FY19 Contribution - semiannual payments	\$1,537,426
Estimated FY19 Contribution - July payment	\$1,508,408
Estimated FY20 Contribution - semiannual payments	\$1,587,743
Estimated FY20 Contribution - July payment	\$1,557,775



**Kingston**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	182
Inactives	61
Retirees and Disableds	103
Total	<u>346</u>
Payroll	9,717,354
Average	53,392

## Valuation Results

Normal Cost	
Employee	791,251
Employer	111,624
Administrative Expense	62,086
Total	<u>964,961</u>
Actuarial Accrued Liability	
Actives	24,646,742
Inactives	308,426
Retirees and Disableds	22,232,864
Total	<u>47,188,032</u>
Assets	\$29,085,065
Unfunded Actuarial Accrued Liability	\$18,102,967
Estimated FY19 Contribution - semiannual payments	\$2,262,604
Estimated FY19 Contribution - July payment	\$2,219,898
Estimated FY20 Contribution - semiannual payments	\$2,334,784
Estimated FY20 Contribution - July payment	\$2,290,716



## Kingston Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	0
Inactives	3
Retirees and Disableds	0
Total	3
Payroll	0
Average	0

### Valuation Results

Normal Cost	
Employee	0
Employer	0
Administrative Expense	54
Total	54
Actuarial Accrued Liability	
Actives	0
Inactives	41,349
Retirees and Disableds	0
Total	41,349
Assets	\$25,486
Unfunded Actuarial Accrued Liability	\$15,863
Estimated FY19 Contribution - semiannual payments	\$1,869
Estimated FY19 Contribution - July payment	\$1,834
Estimated FY20 Contribution - semiannual payments	\$1,935
Estimated FY20 Contribution - July payment	\$1,898



**Lakeville**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	75
Inactives	19
Retirees and Disableds	70
Total	164
Payroll	3,883,066
Average	51,774

## Valuation Results

Normal Cost	
Employee	335,900
Employer	59,370
Administrative Expense	28,092
Total	423,362
Actuarial Accrued Liability	
Actives	8,909,167
Inactives	98,904
Retirees and Disableds	12,343,218
Total	21,351,289
Assets	\$13,160,193
Unfunded Actuarial Accrued Liability	\$8,191,096
Estimated FY19 Contribution - semiannual payments	\$1,026,696
Estimated FY19 Contribution - July payment	\$1,007,318
Estimated FY20 Contribution - semiannual payments	\$1,059,141
Estimated FY20 Contribution - July payment	\$1,039,150



**Marion**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	93
Inactives	22
Retirees and Disableds	51
Total	<u>166</u>
Payroll	4,686,427
Average	50,392

## Valuation Results

Normal Cost	
Employee	409,503
Employer	60,789
Administrative Expense	28,412
Total	<u>498,704</u>
Actuarial Accrued Liability	
Actives	11,716,268
Inactives	128,335
Retirees and Disableds	9,749,554
Total	<u>21,594,157</u>
Assets	\$13,309,889
Unfunded Actuarial Accrued Liability	\$8,284,268
Estimated FY19 Contribution - semiannual payments	\$1,039,147
Estimated FY19 Contribution - July payment	\$1,019,533
Estimated FY20 Contribution - semiannual payments	\$1,071,943
Estimated FY20 Contribution - July payment	\$1,051,710

**Marshfield**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	514
Inactives	185
Retirees and Disableds	295
Total	<u>994</u>
Payroll	21,859,954
Average	42,529

## Valuation Results

Normal Cost	
Employee	1,894,974
Employer	414,194
Administrative Expense	159,712
Total	<u>2,468,880</u>
Actuarial Accrued Liability	
Actives	54,004,960
Inactives	1,255,915
Retirees and Disableds	66,127,785
Total	<u>121,388,660</u>
Assets	\$74,819,757
Unfunded Actuarial Accrued Liability	\$46,568,903
Estimated FY19 Contribution - semiannual payments	\$5,916,659
Estimated FY19 Contribution - July payment	\$5,804,983
Estimated FY20 Contribution - semiannual payments	\$6,099,258
Estimated FY20 Contribution - July payment	\$5,984,136



## Marshfield Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	5
Inactives	0
Retirees and Disableds	2
Total	7
Payroll	205,134
Average	41,027

### Valuation Results

Normal Cost	
Employee	17,759
Employer	2,257
Administrative Expense	837
Total	20,853
Actuarial Accrued Liability	
Actives	428,742
Inactives	0
Retirees and Disableds	207,575
Total	636,317
Assets	\$392,204
Unfunded Actuarial Accrued Liability	\$244,113
Estimated FY19 Contribution - semiannual payments	\$31,104
Estimated FY19 Contribution - July payment	\$30,517
Estimated FY20 Contribution - semiannual payments	\$32,059
Estimated FY20 Contribution - July payment	\$31,454



**Mattapoisett**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	117
Inactives	19
Retirees and Disableds	56
Total	192
Payroll	5,086,347
Average	43,473

## Valuation Results

Normal Cost	
Employee	436,898
Employer	46,539
Administrative Expense	31,778
Total	515,215
Actuarial Accrued Liability	
Actives	13,788,525
Inactives	157,201
Retirees and Disableds	10,207,066
Total	24,152,792
Assets	\$14,886,943
Unfunded Actuarial Accrued Liability	\$9,265,849
Estimated FY19 Contribution - semiannual payments	\$1,140,004
Estimated FY19 Contribution - July payment	\$1,118,486
Estimated FY20 Contribution - semiannual payments	\$1,177,205
Estimated FY20 Contribution - July payment	\$1,154,986



**Middleborough**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	444
Inactives	101
Retirees and Disableds	314
Total	<u>859</u>
Payroll	22,492,657
Average	50,659

## Valuation Results

Normal Cost	
Employee	1,975,483
Employer	330,683
Administrative Expense	182,546
Total	<u>2,488,712</u>
Actuarial Accrued Liability	
Actives	55,477,631
Inactives	736,980
Retirees and Disableds	82,528,551
Total	<u>138,743,162</u>
Assets	\$85,516,469
Unfunded Actuarial Accrued Liability	\$53,226,693
Estimated FY19 Contribution - semiannual payments	\$6,632,051
Estimated FY19 Contribution - July payment	\$6,506,872
Estimated FY20 Contribution - semiannual payments	\$6,844,217
Estimated FY20 Contribution - July payment	\$6,715,034



## Middleborough Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	8
Inactives	0
Retirees and Disableds	5
Total	13
Payroll	374,152
Average	46,769

### Valuation Results

Normal Cost	
Employee	31,477
Employer	2,358
Administrative Expense	3,047
Total	36,882
Actuarial Accrued Liability	
Actives	1,356,326
Inactives	0
Retirees and Disableds	959,322
Total	2,315,648
Assets	\$1,427,285
Unfunded Actuarial Accrued Liability	\$888,363
Estimated FY19 Contribution - semiannual payments	\$108,892
Estimated FY19 Contribution - July payment	\$106,836
Estimated FY20 Contribution - semiannual payments	\$110,732
Estimated FY20 Contribution - July payment	\$108,642



**Norwell**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	230
Inactives	98
Retirees and Disableds	152
Total	480
Payroll	9,911,164
Average	43,092

## Valuation Results

Normal Cost	
Employee	865,394
Employer	190,509
Administrative Expense	69,114
Total	1,125,017
Actuarial Accrued Liability	
Actives	24,333,967
Inactives	703,977
Retirees and Disableds	27,491,598
Total	52,529,542
Assets	\$32,377,386
Unfunded Actuarial Accrued Liability	\$20,152,156
Estimated FY19 Contribution - semiannual payments	\$2,572,066
Estimated FY19 Contribution - July payment	\$2,523,519
Estimated FY20 Contribution - semiannual payments	\$2,650,811
Estimated FY20 Contribution - July payment	\$2,600,777



## Norwell Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	4
Inactives	0
Retirees and Disableds	2
Total	6
Payroll	140,751
Average	35,188

### Valuation Results

Normal Cost	
Employee	12,008
Employer	1,290
Administrative Expense	929
Total	14,227
Actuarial Accrued Liability	
Actives	469,577
Inactives	0
Retirees and Disableds	236,248
Total	705,825
Assets	\$435,046
Unfunded Actuarial Accrued Liability	\$270,779
Estimated FY19 Contribution - semiannual payments	\$33,242
Estimated FY19 Contribution - July payment	\$32,615
Estimated FY20 Contribution - semiannual payments	\$34,331
Estimated FY20 Contribution - July payment	\$33,683

## Old Rochester Regional School

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	71
Inactives	19
Retirees and Disableds	50
Total	140
Payroll	2,831,526
Average	39,881

### Valuation Results

Normal Cost	
Employee	243,668
Employer	46,195
Administrative Expense	18,728
Total	308,591
Actuarial Accrued Liability	
Actives	6,954,019
Inactives	191,794
Retirees and Disableds	7,088,040
Total	14,233,853
Assets	\$8,773,253
Unfunded Actuarial Accrued Liability	\$5,460,600
Estimated FY19 Contribution - semiannual payments	\$691,316
Estimated FY19 Contribution - July payment	\$678,267
Estimated FY20 Contribution - semiannual payments	\$712,784
Estimated FY20 Contribution - July payment	\$699,331



## Onset Fire District

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	13
Inactives	4
Retirees and Disableds	12
Total	29
Payroll	727,122
Average	55,932

### Valuation Results

Normal Cost	
Employee	64,891
Employer	3,536
Administrative Expense	6,509
Total	74,936
Actuarial Accrued Liability	
Actives	2,253,675
Inactives	15,176
Retirees and Disableds	2,678,578
Total	4,947,429
Assets	\$3,049,424
Unfunded Actuarial Accrued Liability	\$1,898,005
Estimated FY19 Contribution - semiannual payments	\$239,046
Estimated FY19 Contribution - July payment	\$234,534
Estimated FY20 Contribution - semiannual payments	\$235,058
Estimated FY20 Contribution - July payment	\$230,621



## Pembroke

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	251
Inactives	65
Retirees and Disableds	137
Total	453
Payroll	11,989,992
Average	47,769

### Valuation Results

Normal Cost	
Employee	1,061,365
Employer	129,459
Administrative Expense	87,590
Total	1,278,414
Actuarial Accrued Liability	
Actives	30,979,781
Inactives	385,003
Retirees and Disableds	35,207,628
Total	66,572,412
Assets	\$41,032,924
Unfunded Actuarial Accrued Liability	\$25,539,488
Estimated FY19 Contribution - semiannual payments	\$3,315,017
Estimated FY19 Contribution - July payment	\$3,252,447
Estimated FY20 Contribution - semiannual payments	\$3,435,286
Estimated FY20 Contribution - July payment	\$3,370,446



## Plymouth County Mosquito Control

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	11
Inactives	1
Retirees and Disableds	9
Total	21
Payroll	646,866
Average	58,806

### Valuation Results

Normal Cost	
Employee	58,452
Employer	3,789
Administrative Expense	5,730
Total	67,971
Actuarial Accrued Liability	
Actives	1,156,867
Inactives	40,359
Retirees and Disableds	3,157,981
Total	4,355,207
Assets	\$2,684,398
Unfunded Actuarial Accrued Liability	\$1,670,809
Estimated FY19 Contribution - semiannual payments	\$222,320
Estimated FY19 Contribution - July payment	\$218,123
Estimated FY20 Contribution - semiannual payments	\$207,606
Estimated FY20 Contribution - July payment	\$203,688



## Plympton

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	50
Inactives	10
Retirees and Disableds	24
Total	84
Payroll	1,932,777
Average	38,656

### Valuation Results

Normal Cost	
Employee	167,740
Employer	74,203
Administrative Expense	11,203
Total	253,146
Actuarial Accrued Liability	
Actives	3,506,510
Inactives	108,359
Retirees and Disableds	4,899,926
Total	8,514,795
Assets	\$5,248,224
Unfunded Actuarial Accrued Liability	\$3,266,571
Estimated FY19 Contribution - semiannual payments	\$478,880
Estimated FY19 Contribution - July payment	\$469,842
Estimated FY20 Contribution - semiannual payments	\$473,604
Estimated FY20 Contribution - July payment	\$464,665





**Rochester**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	69
Inactives	22
Retirees and Disableds	34
Total	<u>125</u>
Payroll	3,268,990
Average	47,377

## Valuation Results

Normal Cost	
Employee	285,439
Employer	53,949
Administrative Expense	<u>20,005</u>
Total	359,393
Actuarial Accrued Liability	
Actives	8,694,414
Inactives	202,438
Retirees and Disableds	<u>6,307,544</u>
Total	15,204,396
Assets	\$9,371,462
Unfunded Actuarial Accrued Liability	\$5,832,934
Estimated FY19 Contribution - semiannual payments	\$772,767
Estimated FY19 Contribution - July payment	\$758,181
Estimated FY20 Contribution - semiannual payments	\$766,054
Estimated FY20 Contribution - July payment	\$751,595

**Rockland**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	330
Inactives	90
Retirees and Disableds	206
Total	<u>626</u>
Payroll	14,264,455
Average	43,226

## Valuation Results

Normal Cost	
Employee	1,241,774
Employer	149,151
Administrative Expense	108,654
Total	<u>1,499,579</u>
Actuarial Accrued Liability	
Actives	37,090,519
Inactives	392,697
Retirees and Disableds	45,098,898
Total	<u>82,582,114</u>
Assets	\$50,900,749
Unfunded Actuarial Accrued Liability	\$31,681,365
Estimated FY19 Contribution - semiannual payments	\$3,968,623
Estimated FY19 Contribution - July payment	\$3,893,717
Estimated FY20 Contribution - semiannual payments	\$4,096,064
Estimated FY20 Contribution - July payment	\$4,018,752

## Scituate

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	375
Inactives	121
Retirees and Disableds	249
Total	745
Payroll	17,428,266
Average	46,475

### Valuation Results

Normal Cost	
Employee	1,517,560
Employer	355,895
Administrative Expense	129,597
Total	2,003,052
Actuarial Accrued Liability	
Actives	43,424,190
Inactives	896,191
Retirees and Disableds	54,179,005
Total	98,499,386
Assets	\$60,711,603
Unfunded Actuarial Accrued Liability	\$37,787,783
Estimated FY19 Contribution - semiannual payments	\$4,821,558
Estimated FY19 Contribution - July payment	\$4,730,553
Estimated FY20 Contribution - semiannual payments	\$4,969,246
Estimated FY20 Contribution - July payment	\$4,875,453



## Scituate Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	5
Inactives	0
Retirees and Disableds	6
Total	11
Payroll	280,736
Average	56,147

### Valuation Results

Normal Cost	
Employee	25,362
Employer	16,967
Administrative Expense	2,175
Total	44,504
Actuarial Accrued Liability	
Actives	547,252
Inactives	0
Retirees and Disableds	1,106,053
Total	1,653,305
Assets	\$1,019,040
Unfunded Actuarial Accrued Liability	\$634,265
Estimated FY19 Contribution - semiannual payments	\$110,121
Estimated FY19 Contribution - July payment	\$108,042
Estimated FY20 Contribution - semiannual payments	\$94,553
Estimated FY20 Contribution - July payment	\$92,769



**Silver Lake Regional School**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	113
Inactives	35
Retirees and Disableds	58
Total	<u>206</u>
Payroll	3,498,407
Average	30,959

## Valuation Results

Normal Cost	
Employee	294,913
Employer	56,067
Administrative Expense	23,404
Total	<u>374,384</u>
Actuarial Accrued Liability	
Actives	8,190,584
Inactives	291,812
Retirees and Disableds	9,305,912
Total	<u>17,788,308</u>
Assets	\$10,964,096
Unfunded Actuarial Accrued Liability	\$6,824,212
Estimated FY19 Contribution - semiannual payments	\$736,423
Estimated FY19 Contribution - July payment	\$722,524
Estimated FY20 Contribution - semiannual payments	\$745,535
Estimated FY20 Contribution - July payment	\$731,463



## South Shore Mosquito Control

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Payroll	0
Average	0

### Valuation Results

Normal Cost	
Employee	0
Employer	0
Administrative Expense	0
Total	0
Actuarial Accrued Liability	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Assets	\$0
Unfunded Actuarial Accrued Liability	\$0
Estimated FY19 Contribution - semiannual payments	\$0
Estimated FY19 Contribution - July payment	\$0
Estimated FY20 Contribution - semiannual payments	\$0
Estimated FY20 Contribution - July payment	\$0



## South Shore Regional School

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	44
Inactives	13
Retirees and Disableds	22
Total	79
Payroll	1,753,004
Average	39,841

### Valuation Results

Normal Cost	
Employee	150,718
Employer	40,722
Administrative Expense	9,679
Total	201,119
Actuarial Accrued Liability	
Actives	3,322,520
Inactives	78,867
Retirees and Disableds	3,954,778
Total	7,356,165
Assets	\$4,534,085
Unfunded Actuarial Accrued Liability	\$2,822,080
Estimated FY19 Contribution - semiannual payments	\$374,766
Estimated FY19 Contribution - July payment	\$367,693
Estimated FY20 Contribution - semiannual payments	\$385,453
Estimated FY20 Contribution - July payment	\$378,178



**Wareham**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	320
Inactives	72
Retirees and Disableds	235
Total	<u>627</u>
Payroll	14,023,370
Average	43,823

## Valuation Results

Normal Cost	
Employee	1,210,582
Employer	149,548
Administrative Expense	107,425
Total	<u>1,467,555</u>
Actuarial Accrued Liability	
Actives	34,325,119
Inactives	892,396
Retirees and Disableds	46,430,115
Total	<u>81,647,630</u>
Assets	\$50,324,765
Unfunded Actuarial Accrued Liability	\$31,322,865
Estimated FY19 Contribution - semiannual payments	\$4,053,461
Estimated FY19 Contribution - July payment	\$3,976,952
Estimated FY20 Contribution - semiannual payments	\$4,013,167
Estimated FY20 Contribution - July payment	\$3,937,419



## Wareham Fire District

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	47
Inactives	3
Retirees and Disableds	28
Total	78
Payroll	2,739,513
Average	58,288

### Valuation Results

Normal Cost	
Employee	244,432
Employer	28,158
Administrative Expense	21,393
Total	293,983
Actuarial Accrued Liability	
Actives	9,517,012
Inactives	15,989
Retirees and Disableds	6,726,294
Total	16,259,295
Assets	\$10,021,665
Unfunded Actuarial Accrued Liability	\$6,237,630
Estimated FY19 Contribution - semiannual payments	\$779,847
Estimated FY19 Contribution - July payment	\$765,127
Estimated FY20 Contribution - semiannual payments	\$789,262
Estimated FY20 Contribution - July payment	\$774,365



## Wareham Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	1
Inactives	1
Retirees and Disableds	2
Total	4
Payroll	81,291
Average	81,291

### Valuation Results

Normal Cost	
Employee	7,706
Employer	2,162
Administrative Expense	780
Total	10,648
Actuarial Accrued Liability	
Actives	114,341
Inactives	26
Retirees and Disableds	478,771
Total	593,138
Assets	\$365,590
Unfunded Actuarial Accrued Liability	\$227,548
Estimated FY19 Contribution - semiannual payments	\$29,054
Estimated FY19 Contribution - July payment	\$28,505
Estimated FY20 Contribution - semiannual payments	\$29,943
Estimated FY20 Contribution - July payment	\$29,378

## West Bridgewater

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	155
Inactives	32
Retirees and Disableds	102
Total	289
Payroll	7,382,825
Average	47,631

### Valuation Results

Normal Cost	
Employee	652,234
Employer	104,405
Administrative Expense	56,425
Total	813,064
Actuarial Accrued Liability	
Actives	16,589,599
Inactives	306,839
Retirees and Disableds	25,989,465
Total	42,885,903
Assets	\$26,433,382
Unfunded Actuarial Accrued Liability	\$16,452,521
Estimated FY19 Contribution - semiannual payments	\$2,046,798
Estimated FY19 Contribution - July payment	\$2,008,165
Estimated FY20 Contribution - semiannual payments	\$2,112,326
Estimated FY20 Contribution - July payment	\$2,072,457



**Whitman**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	115
Inactives	25
Retirees and Disableds	97
Total	<u>237</u>
Payroll	6,659,296
Average	57,907

## Valuation Results

Normal Cost	
Employee	599,333
Employer	88,547
Administrative Expense	54,686
Total	<u>742,566</u>
Actuarial Accrued Liability	
Actives	18,235,367
Inactives	327,371
Retirees and Disableds	23,000,894
Total	<u>41,563,632</u>
Assets	\$25,618,380
Unfunded Actuarial Accrued Liability	\$15,945,252
Estimated FY19 Contribution - semiannual payments	\$1,970,571
Estimated FY19 Contribution - July payment	\$1,933,377
Estimated FY20 Contribution - semiannual payments	\$2,034,385
Estimated FY20 Contribution - July payment	\$1,995,986

**Whitman/Hanson Regional School**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	166
Inactives	101
Retirees and Disableds	112
Total	<u>379</u>
Payroll	4,756,618
Average	28,654

## Valuation Results

Normal Cost	
Employee	404,107
Employer	81,364
Administrative Expense	32,408
Total	<u>517,879</u>
Actuarial Accrued Liability	
Actives	8,990,440
Inactives	657,713
Retirees and Disableds	14,983,500
Total	<u>24,631,653</u>
Assets	\$15,182,096
Unfunded Actuarial Accrued Liability	\$9,449,557
Estimated FY19 Contribution - semiannual payments	\$1,197,798
Estimated FY19 Contribution - July payment	\$1,175,190
Estimated FY20 Contribution - semiannual payments	\$1,234,915
Estimated FY20 Contribution - July payment	\$1,211,606

**Whitman Housing**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	6
Inactives	0
Retirees and Disableds	5
Total	<u>11</u>
Payroll	304,623
Average	50,771

## Valuation Results

Normal Cost	
Employee	26,119
Employer	(2,364)
Administrative Expense	2,336
Total	<u>26,091</u>
Actuarial Accrued Liability	
Actives	824,449
Inactives	0
Retirees and Disableds	950,731
Total	<u>1,775,180</u>
Assets	\$1,094,159
Unfunded Actuarial Accrued Liability	\$681,021
Estimated FY19 Contribution - semiannual payments	\$81,932
Estimated FY19 Contribution - July payment	\$80,385
Estimated FY20 Contribution - semiannual payments	\$80,658
Estimated FY20 Contribution - July payment	\$79,135

**Abington Housing**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	3
Inactives	0
Retirees and Disableds	3
Total	<u>6</u>
Payroll	148,461
Average	49,487

## Valuation Results

Normal Cost	
Employee	11,527
Employer	(60)
Administrative Expense	1,008
Total	<u>12,475</u>
Actuarial Accrued Liability	
Actives	480,199
Inactives	0
Retirees and Disableds	285,688
Total	<u>765,887</u>
Assets	\$472,066
Unfunded Actuarial Accrued Liability	\$293,821
Estimated FY19 Contribution - semiannual payments	\$39,490
Estimated FY19 Contribution - July payment	\$38,745
Estimated FY20 Contribution - semiannual payments	\$40,707
Estimated FY20 Contribution - July payment	\$39,939

## Pembroke Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	6
Inactives	0
Retirees and Disableds	6
Total	12
Payroll	293,960
Average	48,993

### Valuation Results

Normal Cost	
Employee	25,761
Employer	7,921
Administrative Expense	2,528
Total	36,210
Actuarial Accrued Liability	
Actives	450,243
Inactives	0
Retirees and Disableds	1,471,327
Total	1,921,570
Assets	\$1,184,389
Unfunded Actuarial Accrued Liability	\$737,181
Estimated FY19 Contribution - semiannual payments	\$95,076
Estimated FY19 Contribution - July payment	\$93,282
Estimated FY20 Contribution - semiannual payments	\$97,934
Estimated FY20 Contribution - July payment	\$96,085



## Hanson Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	3
Inactives	0
Retirees and Disableds	3
Total	6
Payroll	183,305
Average	61,102

### Valuation Results

Normal Cost	
Employee	16,213
Employer	6,412
Administrative Expense	661
Total	23,286
Actuarial Accrued Liability	
Actives	100,937
Inactives	0
Retirees and Disableds	401,311
Total	502,248
Assets	\$309,568
Unfunded Actuarial Accrued Liability	\$192,680
Estimated FY19 Contribution - semiannual payments	\$29,357
Estimated FY19 Contribution - July payment	\$28,803
Estimated FY20 Contribution - semiannual payments	\$29,999
Estimated FY20 Contribution - July payment	\$29,433



## Rockland Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	3
Inactives	1
Retirees and Disableds	4
Total	8
Payroll	166,308
Average	55,436

### Valuation Results

Normal Cost	
Employee	14,128
Employer	17,266
Administrative Expense	1,256
Total	32,650
Actuarial Accrued Liability	
Actives	333,478
Inactives	1,721
Retirees and Disableds	619,622
Total	954,821
Assets	\$588,519
Unfunded Actuarial Accrued Liability	\$366,302
Estimated FY19 Contribution - semiannual payments	\$61,080
Estimated FY19 Contribution - July payment	\$59,928
Estimated FY20 Contribution - semiannual payments	\$62,177
Estimated FY20 Contribution - July payment	\$61,003



## Halifax Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	1
Inactives	0
Retirees and Disableds	2
Total	3
Payroll	22,651
Average	22,651

### Valuation Results

Normal Cost	
Employee	1,770
Employer	1,344
Administrative Expense	1,460
Total	4,574
Actuarial Accrued Liability	
Actives	62,944
Inactives	0
Retirees and Disableds	1,046,574
Total	1,109,518
Assets	\$683,868
Unfunded Actuarial Accrued Liability	\$425,650
Estimated FY19 Contribution - semiannual payments	\$51,545
Estimated FY19 Contribution - July payment	\$50,572
Estimated FY20 Contribution - semiannual payments	\$53,273
Estimated FY20 Contribution - July payment	\$52,267



## Mattapoisett Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	2
Inactives	0
Retirees and Disableds	0
Total	2
Payroll	94,106
Average	47,053

### Valuation Results

Normal Cost	
Employee	6,755
Employer	(1,143)
Administrative Expense	592
Total	6,204
Actuarial Accrued Liability	
Actives	449,639
Inactives	0
Retirees and Disableds	0
Total	449,639
Assets	\$277,142
Unfunded Actuarial Accrued Liability	\$172,497
Estimated FY19 Contribution - semiannual payments	\$19,137
Estimated FY19 Contribution - July payment	\$18,776
Estimated FY20 Contribution - semiannual payments	\$19,878
Estimated FY20 Contribution - July payment	\$19,503



## Hanover Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Payroll	0
Average	0

### Valuation Results

Normal Cost	
Employee	0
Employer	0
Administrative Expense	0
Total	0
Actuarial Accrued Liability	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Assets	\$0
Unfunded Actuarial Accrued Liability	\$0
Estimated FY19 Contribution - semiannual payments	\$0
Estimated FY19 Contribution - July payment	\$0
Estimated FY20 Contribution - semiannual payments	\$0
Estimated FY20 Contribution - July payment	\$0



## Acushnet/Rochester/Marion Health District

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	1
Inactives	0
Retirees and Disableds	0
Total	1
Payroll	71,126
Average	71,126

### Valuation Results

Normal Cost	
Employee	6,054
Employer	(2,462)
Administrative Expense	505
Total	4,097
Actuarial Accrued Liability	
Actives	383,890
Inactives	0
Retirees and Disableds	0
Total	383,890
Assets	\$236,616
Unfunded Actuarial Accrued Liability	\$147,274
Estimated FY19 Contribution - semiannual payments	\$14,796
Estimated FY19 Contribution - July payment	\$14,517
Estimated FY20 Contribution - semiannual payments	\$15,465
Estimated FY20 Contribution - July payment	\$15,173



## West Bridgewater Housing

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	1
Inactives	0
Retirees and Disableds	1
Total	2
Payroll	52,144
Average	52,144

### Valuation Results

Normal Cost	
Employee	4,687
Employer	1,773
Administrative Expense	330
Total	6,790
Actuarial Accrued Liability	
Actives	27,637
Inactives	0
Retirees and Disableds	223,366
Total	251,003
Assets	\$154,710
Unfunded Actuarial Accrued Liability	\$96,293
Estimated FY19 Contribution - semiannual payments	\$13,186
Estimated FY19 Contribution - July payment	\$12,937
Estimated FY20 Contribution - semiannual payments	\$13,541
Estimated FY20 Contribution - July payment	\$13,285

## South Shore Tri Town Development

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	3
Inactives	1
Retirees and Disableds	3
Total	7
Payroll	258,395
Average	86,132

### Valuation Results

Normal Cost	
Employee	23,833
Employer	1,125
Administrative Expense	3,472
Total	28,430
Actuarial Accrued Liability	
Actives	596,131
Inactives	76,239
Retirees and Disableds	1,966,290
Total	2,638,660
Assets	\$1,626,378
Unfunded Actuarial Accrued Liability	\$1,012,282
Estimated FY19 Contribution - semiannual payments	\$120,434
Estimated FY19 Contribution - July payment	\$118,161
Estimated FY20 Contribution - semiannual payments	\$124,594
Estimated FY20 Contribution - July payment	\$122,242





**Carver Housing**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	0
Inactives	0
Retirees and Disableds	1
Total	<u>1</u>
Payroll	0
Average	0

## Valuation Results

Normal Cost	
Employee	0
Employer	0
Administrative Expense	580
Total	<u>580</u>
Actuarial Accrued Liability	
Actives	0
Inactives	0
Retirees and Disableds	440,885
Total	<u>440,885</u>
Assets	\$271,746
Unfunded Actuarial Accrued Liability	\$169,139
Estimated FY19 Contribution - semiannual payments	\$19,928
Estimated FY19 Contribution - July payment	\$19,552
Estimated FY20 Contribution - semiannual payments	\$20,627
Estimated FY20 Contribution - July payment	\$20,238

## No Carver Water District

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Payroll	0
Average	0

### Valuation Results

Normal Cost	
Employee	0
Employer	0
Administrative Expense	0
Total	0
Actuarial Accrued Liability	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Assets	\$0
Unfunded Actuarial Accrued Liability	\$0
Estimated FY19 Contribution - semiannual payments	\$0
Estimated FY19 Contribution - July payment	\$0
Estimated FY20 Contribution - semiannual payments	\$0
Estimated FY20 Contribution - July payment	\$0



## No Carver Water District

Actuarial Valuation as of January 1, 2017

### Participant Information

Participants	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Payroll	0
Average	0

### Valuation Results

Normal Cost	
Employee	0
Employer	0
Administrative Expense	0
Total	0
Actuarial Accrued Liability	
Actives	0
Inactives	0
Retirees and Disableds	0
Total	0
Assets	\$0
Unfunded Actuarial Accrued Liability	\$0
Estimated FY19 Contribution - semiannual payments	\$0
Estimated FY19 Contribution - July payment	\$0
Estimated FY20 Contribution - semiannual payments	\$0
Estimated FY20 Contribution - July payment	\$0



**Other (Retirement Staff)**

Actuarial Valuation as of January 1, 2017

## Participant Information

Participants	
Actives	9
Inactives	0
Retirees and Disableds	3
Total	<u>12</u>
Payroll	681,624
Average	75,736

## Valuation Results

Normal Cost	
Employee	60,205
Employer	(7,592)
Administrative Expense	5,935
Total	<u>58,548</u>
Actuarial Accrued Liability	
Actives	1,764,061
Inactives	0
Retirees and Disableds	2,746,475
Total	<u>4,510,536</u>
Assets	\$2,780,138
Unfunded Actuarial Accrued Liability	\$1,730,398
Estimated FY19 Contribution - semiannual payments	\$195,993
Estimated FY19 Contribution - July payment	\$192,294
Estimated FY20 Contribution - semiannual payments	\$203,335
Estimated FY20 Contribution - July payment	\$199,497