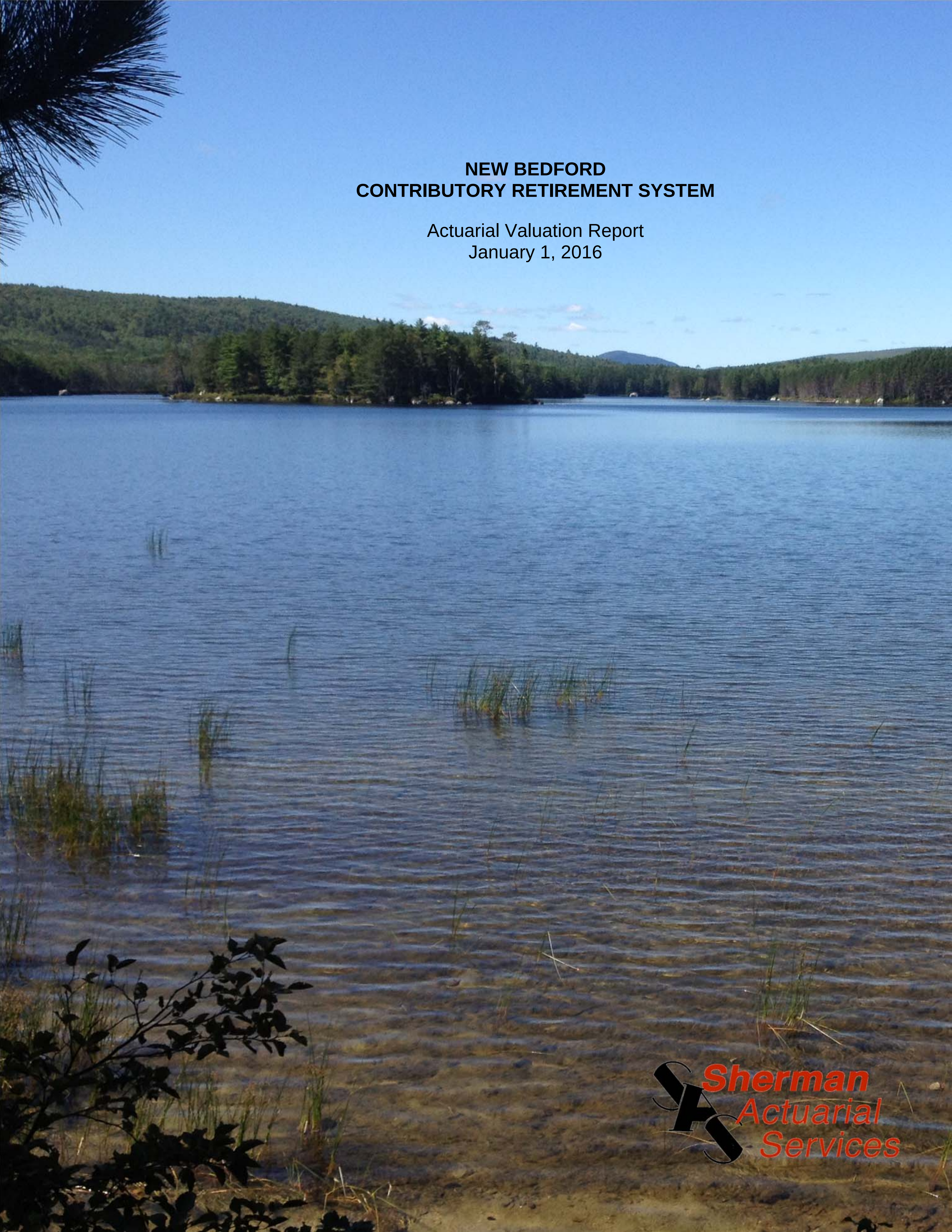
NEW BEDFORD
CONTRIBUTORY RETIREMENT SYSTEM

Actuarial Valuation Report
January 1, 2016



Sherman Actuarial Services

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Report Summary:

Highlights	January 1, 2014	January 1, 2016
Contributions		
Funding Schedule FY 2017	$30,810,829	$30,810,829
Funding Schedule FY 2018	31,902,100	32,069,145
Funded Ratios		
GAS No. 25	42.5%	46.3%
Participants		
Actives	1,903	1,961
Retirees and Beneficiaries	1,470	1,509
Inactives	454	409
Disabled	342	334
Total	4,169	4,213
Payroll		
Payroll of Active Members	$84,425,116	$89,560,393
Average Payroll	44,364	45,671
Normal Cost		
Employer	3,156,615	2,316,944
Employee	7,212,866	7,670,441
Administrative Expenses and Section 3(8)(c)	1,450,000	1,500,000
Total	11,819,481	11,487,385
Actuarial Accrued Liabilities		
Actives	230,625,553	229,234,053
Retirees, Beneficiaries, Disabilities and Inactives	376,303,950	389,785,714
Total	606,929,503	619,019,767
Actuarial Value of Assets	258,136,977	286,761,179
Unfunded Actuarial Accrued Liabilities	$348,792,526	$332,258,588

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2016, of New Bedford Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2016.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of New Bedford 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, 2016.

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, based on the 2014 actuarial assumptions and plan provisions, the total unfunded actuarial accrued liability increased by .7% to $353,678,452. The increase is the result of net unfavorable actuarial experience during the preceding years. The sources of actuarial (gains) and losses are as follows:

Assets	(12,823,771)
Retirements	(979,988)
Terminations	283,321
Death while active	(189,271)
Disabled while active	96,013
Salary	1,795,094
New Participants	1,325,999
Inactive Mortality and data	10,968,537
Other	(63,727)
Total (Gain) / Loss	412,207

The 2015 Experience Study of several Massachusetts Public Sector plans, required changes in the actuarial assumptions. These changes reduced the unfunded actuarial accrued liability by $21,419,864, and the employer Normal Cost by $897,526.

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

	January 1, 2014	January 1, 2016
Superannuation	$6,210,025	$4,700,880
Termination	898,720	2,972,836
Death	454,657	405,579
Disability	2,806,079	1,908,090
Administrative Expenses and Section 3(8)(c)	1,450,000	1,500,000
Total Normal Cost	11,819,481	11,487,385
% of Pay	14.0%	12.8%
Employee Contributions	7,212,866	7,670,441
% of Pay	8.5%	8.6%
Employer Normal Cost	$4,606,615	$3,816,944
% of Pay	5.5%	4.3%

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Present Value of Actuarial Accrued Liabilities

The actuarial accrued liabilities (AAL) represents today's value of all benefits based on the past service of the actives and inactives. 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

	January 1, 2014	January 1, 2016
Actives		
Superannuations	$192,749,466	$202,317,090
Termination	3,265,550	(6,820,886)
Death	6,344,354	5,285,857
Disability	28,266,183	28,451,992
Retirees and Inactives		
Retirees and Beneficiaries	259,114,922	272,246,925
Terminated (Refund)	5,667,361	5,377,085
Disabled	111,521,667	112,161,704
Total	$606,929,503	$619,019,767

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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

	January 1, 2014	January 1, 2016
Actives		
Superannuation	$300,801,012	$290,041,872
Termination	13,045,178	15,486,571
Death	13,408,504	11,977,800
Disability	12,279,666	10,020,321
Retirees and Inactives		
Retirees and Beneficiaries	259,114,922	272,246,925
Terminated (Refund)	5,667,361	5,377,085
Disabled	111,521,667	112,161,704
Total	$715,838,310	$717,312,278

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

	January 1, 2014	January 1, 2016
Cash equivalents	$5,708,211	$2,280,261
Short term investments	0	0
Fixed income securities	43,754,205	43,015,738
Equities	158,668,399	157,894,247
International	36,219,317	33,490,849
Real Estate	18,138,993	22,894,497
Venture Capital	0	0
Other	13,955,111	15,694,205
Accounts receivable	644,483	1,308,701
Accounts payable	(1,505,829)	(1,626,243)
Accrued income	416,697	137,751
Total Market Value	$275,999,587	$275,090,006
Total Actuarial Value	$258,136,977	$286,761,179

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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 (7.75%) 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 10%. The calculation of the actuarial value of assets as of January 1, 2016 is presented in Table V.

Table V

		January 1, 2016
(1)	Market value at January 1, 2015	$284,479,132
(2)	2015 Contributions	$39,770,822
(3)	2015 Payments	($46,464,668)
(4)	Net interest adjustment at 7.75% on (1), (2), and (3) to December 31, 2015	$21,787,747
(5)	Expected market value on January 1, 2016 (1) + (2) + (3) + (4)	$299,573,033
(6)	Actual market value on January 1, 2016	$275,090,006
(7)	2015 (Gain) / Loss	$24,483,027
(8)	80% of 2015 (Gain) / Loss	$19,586,422
(9)	2014 (Gain) / Loss	$4,867,801
(10)	60% of 2014 (Gain) / Loss	$2,920,681
(11)	2013 (Gain) / Loss	($20,353,680)
(12)	40% of 2013 (Gain) / Loss	($8,141,472)
(13)	2012 (Gain) / Loss	($13,472,287)
(14)	20% of 2012 (Gain) / Loss	($2,694,457)
(15)	Actuarial value on January 1, 2016, (6) + (8) + (10) + (12) + (14) but not less than 90% nor greater than 110% of (6)	$286,761,179
(16)	Ratio of actuarial value to market value	104.24%
(17)	Actuarial Value Return for 2014	9.73%
(18)	Actuarial Value Return for 2015	6.74%
(19)	Market Value Return for 2014	5.96%
(20)	Market Value Return for 2015	-0.96%

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

	January 1, 2014	January 1, 2016
Actuarial Accrued Liability	$606,929,503	$619,019,767
Actuarial Assets	258,136,977	286,761,179
Unfunded Actuarial Accrued Liability	$348,792,526	$332,258,588
Funded Status	42.5%	46.3%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Sections 22D and 22F of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2040, 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, 2034
  $ 330,498,071 over 18 years with 3.5% increasing payments
- Level amortization of the Early Retirement Incentive by June 30, 2019
  $ 1,760,517 over 3 years
- Interest adjustment for payments deposited August 1st.

The pension appropriation is shown in Table VII.

Table VII

	January 1, 2014	January 1, 2016
Normal cost	$4,606,615	$3,816,944
Amortization payment of the accrued liability	22,250,884	25,294,502
Amortization payment of 2002 ERI liability	631,146	631,146
Total cost	$27,488,645	$29,742,592
% of Pay	32.6%	33.2%
Fiscal 2017 cost	$30,810,829	$30,810,829
Fiscal 2018 cost	$31,902,100	$32,069,145

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% per year. The employee contribution rate is expected to increase to 10.5% by 2046 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 17 years until the unfunded liabilities are substantially paid off, at which time only the normal cost will remain. The total cost represents 34.8% of payroll, increasing to 35.3% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 3% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

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Appropriation Forecast

Fiscal Year Ending	Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2017	$89,560,393	$7,670,441	$3,986,813	$26,824,016	$30,810,829	34.4	46.3
2018	$92,247,205	$7,962,120	$4,042,112	$28,027,033	$32,069,145	34.8	48.5
2019	$95,014,621	$8,264,396	$4,097,140	$28,984,906	$33,082,046	34.8	50.7
2020	$97,865,060	$8,577,643	$4,151,833	$29,317,070	$33,468,903	34.2	53.1
2021	$100,801,011	$8,902,246	$4,206,120	$30,343,167	$34,549,287	34.3	55.4
2022	$103,825,042	$9,238,606	$4,259,927	$31,405,178	$35,665,105	34.4	57.8
2023	$106,939,793	$9,587,136	$4,313,177	$32,504,359	$36,817,536	34.4	60.4
2024	$110,147,987	$9,948,263	$4,365,788	$33,642,012	$38,007,800	34.5	63.0
2025	$113,452,426	$10,322,429	$4,417,674	$34,819,482	$39,237,156	34.6	65.7
2026	$116,855,999	$10,710,091	$4,468,744	$36,038,164	$40,506,908	34.7	68.6
2027	$120,361,679	$11,111,723	$4,518,902	$37,299,500	$41,818,402	34.7	71.6
2028	$123,972,529	$11,527,813	$4,568,048	$38,604,982	$43,173,030	34.8	74.7
2029	$127,691,705	$11,958,869	$4,616,076	$39,956,157	$44,572,233	34.9	77.9
2030	$131,522,457	$12,405,413	$4,662,874	$41,354,622	$46,017,496	35.0	81.2
2031	$135,468,130	$12,867,986	$4,708,325	$42,802,034	$47,510,359	35.1	84.7
2032	$139,532,174	$13,347,149	$4,752,307	$44,300,105	$49,052,412	35.2	88.4
2033	$143,718,139	$13,843,481	$4,794,690	$45,850,609	$50,645,299	35.2	92.1
2034	$148,029,684	$14,357,580	$4,835,340	$47,455,380	$52,290,720	35.3	96.0
2035	$152,470,574	$14,890,066	$4,874,112	$0	$4,874,112	3.2	100.0
2036	$157,044,691	$15,441,580	$4,910,860	$0	$4,910,860	3.1	100.0
2037	$161,756,032	$16,012,783	$4,945,426	$0	$4,945,426	3.1	100.0
2038	$166,608,713	$16,604,360	$4,977,646	$0	$4,977,646	3.0	100.0
2039	$171,606,974	$17,217,021	$5,007,348	$0	$5,007,348	2.9	100.0
2040	$176,755,184	$17,851,498	$5,034,352	$0	$5,034,352	2.8	100.0
2041	$182,057,839	$18,508,548	$5,058,470	$0	$5,058,470	2.8	100.0
2042	$187,519,574	$19,188,955	$5,079,505	$0	$5,079,505	2.7	100.0
2043	$193,145,161	$19,893,528	$5,097,248	$0	$5,097,248	2.6	100.0
2044	$198,939,516	$20,623,106	$5,111,485	$0	$5,111,485	2.6	100.0
2045	$204,907,702	$21,378,554	$5,121,988	$0	$5,121,988	2.5	100.0
2046	$211,054,933	$22,160,768	$5,128,522	$0	$5,128,522	2.4	100.0
2047	$217,386,581	$22,825,591	$5,282,377	$0	$5,282,377	2.4	100.0
2048	$223,908,178	$23,510,359	$5,440,849	$0	$5,440,849	2.4	100.0

* Calendar basis

** Beginning of Fiscal Year

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GASB Statements No. 25 and No. 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, 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.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to $0. The required disclosure information is shown in Table VIII.

Table VIII

		January 1, 2014	January 1, 2016
(1)	Actuarial Accrued Liability	$606,929,503	$619,019,767
(2)	Actuarial Value of Assets	258,136,977	286,761,179
(3)	Unfunded Actuarial Accrued Liability	348,792,526	332,258,588
(4)	Funded Ratio (2)/(1)	42.5%	46.3%
(5)	Covered Payroll	$84,425,116	$89,560,393
(6)	UAAL as a percentage of payroll: (3)/(5)	413.1%	371.0%
(7)	Annual Required Contribution (ARC)	$28,253,951	$30,810,829
(8)	Net Pension Obligation	$0	$0

EXHIBITS

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Exhibit 1 - Age/Service Distribution with Salary as of January 1, 2016

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	40	0	0	0	0	0	0	0	0	40
	12,833	0	0	0	0	0	0	0	0	12,833
20-24	50	2	0	0	0	0	0	0	0	52
	29,963	0	0	0	0	0	0	0	0	29,971
25-29	119	15	1	0	0	0	0	0	0	135
	35,169	47,872	51,221	0	0	0	0	0	0	36,700
30-34	88	50	20	0	0	0	0	0	0	158
	44,358	54,888	61,155	0	0	0	0	0	0	49,817
35-39	72	39	56	11	0	0	0	0	0	178
	38,133	53,700	58,558	59,846	0	0	0	0	0	49,311
40-44	75	36	33	65	16	1	0	0	0	226
	34,693	47,118	59,384	59,120	58,445	0	0	0	0	49,151
45-49	54	39	40	52	74	45	0	0	0	304
	40,031	41,302	46,219	59,932	67,659	64,613	0	0	0	54,776
50-54	59	37	42	67	41	53	21	1	0	321
	35,805	31,108	41,864	41,534	62,145	64,492	63,431	51,772	0	47,210
55-59	48	32	46	50	34	43	23	7	0	283
	33,692	33,039	37,268	44,237	50,572	44,593	57,992	65,262	0	42,502
60-64	12	18	29	40	23	30	14	12	3	181
	23,668	40,899	37,568	44,213	34,598	43,112	57,832	69,020	84,100	43,411
65-69	6	7	11	15	7	8	8	1	3	66
	30,550	36,690	26,652	40,542	43,979	43,694	42,496	53,271	37,252	37,937
70+	0	3	4	1	3	2	2	1	1	17
	0	39,907	33,623	33,802	26,666	31,415	30,161	50,827	39,658	31,882
Total Employees	623	278	282	301	198	182	68	22	7	1,961
Average Salary	35,002	43,830	47,347	49,909	57,540	54,664	56,997	65,498	57,673	45,671

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Exhibit 2 - Retiree Distribution as of January 1, 2016

	Number of Employees			Total Payments		
Attained Age	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	7,961	6,408	14,370
35-39	0	0	0	0	0	0
40-44	0	1	1	0	15,135	15,135
45-49	0	4	4	0	55,909	55,909
50-54	1	11	12	6,692	288,224	294,916
55-59	27	28	55	321,949	1,055,690	1,377,639
60-64	94	80	174	1,907,190	2,952,916	4,860,106
65-69	143	173	316	2,481,790	5,794,560	8,276,351
70-74	136	133	269	2,136,248	3,578,742	5,714,990
75-79	115	92	207	1,682,926	2,392,842	4,075,767
80-84	92	73	165	1,319,026	1,489,488	2,808,514
85-89	84	78	162	877,259	1,546,007	2,423,265
90-94	41	62	103	358,241	949,868	1,308,109
95+	15	26	41	151,353	342,217	493,570
Total	749	762	1511	11,250,635	20,468,007	31,718,642
Average (Age/Payment)	75.06	74.95	75.01	15,021	26,861	20,992
Frequency Percent	49.6	50.4	100.0	35.5	64.5	100.0

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Exhibit 3 - Disabled Retiree Distribution as of January 1, 2016

	Number of Employees			Total Payments		
Attained Age	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	1	2	3,992	51,653	55,645
40-44	0	7	7	0	347,172	347,172
45-49	2	10	12	11,787	409,066	420,853
50-54	6	14	20	298,931	585,461	884,391
55-59	3	44	47	109,242	1,809,473	1,918,715
60-64	6	42	48	121,253	1,877,381	1,998,634
65-69	10	58	68	219,840	2,183,024	2,402,864
70-74	8	46	54	185,773	1,787,068	1,972,842
75-79	1	37	38	23,855	1,224,275	1,248,131
80-84	1	17	18	8,318	493,066	501,385
85-89	3	8	11	50,035	228,094	278,129
90-94	0	8	8	0	186,069	186,069
95-99	1	0	1	5,336	0	5,336
Total	42	292	334	1,038,363	11,181,803	12,220,166
Average (Age/Payment)	66.0	67.1	67.0	24,723	38,294	36,587
Frequency Percent	12.6	87.4	100.0	8.5	91.5	100.0

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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
2016	$35,542,983	$7,670,441	$30,810,829	$21,067,627	$24,005,914
2017	36,679,819	7,962,120	32,069,145	22,635,229	25,986,675
2018	38,011,431	8,264,396	33,082,046	24,604,042	27,939,053
2019	39,297,314	8,577,643	33,468,903	26,705,477	29,454,709
2020	40,599,622	8,902,246	34,549,287	28,944,997	31,796,908
2021	41,933,307	9,238,606	35,665,105	31,365,285	34,335,689
2022	43,293,514	9,587,136	36,817,536	33,981,783	37,092,941
2023	44,735,774	9,948,263	38,007,800	36,809,332	40,029,621
2024	46,176,709	10,322,429	39,237,156	39,865,033	43,247,909
2025	47,523,405	10,710,091	40,506,908	43,174,268	46,867,862
2026	48,958,646	11,111,723	41,818,402	46,761,242	50,732,720
2027	50,346,400	11,527,813	43,173,030	50,650,132	55,004,575
2028	51,758,812	11,958,869	44,572,233	54,869,767	59,642,056
2029	53,036,526	12,405,413	46,017,496	59,454,570	64,840,953
2030	54,337,170	12,867,986	47,510,359	64,442,088	70,483,263
2031	55,582,101	13,347,149	49,052,412	69,869,708	76,687,168
2032	56,725,085	13,843,481	50,645,299	75,782,743	83,546,437
2033	57,713,332	14,357,580	52,290,720	82,234,024	91,168,992
2034	58,576,339	14,890,066	4,874,112	87,730,030	48,917,869
2035	59,308,086	15,441,580	4,910,860	91,454,694	52,499,048
2036	59,904,810	16,012,783	4,945,426	95,461,016	56,514,415
2037	60,303,076	16,604,360	4,977,646	99,785,029	61,063,959
2038	60,474,039	17,217,021	5,007,348	104,469,203	66,219,533
2039	60,462,265	17,851,498	5,034,352	109,558,783	71,982,368
2040	60,138,863	18,508,548	5,058,470	115,105,704	78,533,859
2041	59,592,478	19,188,955	5,079,505	121,167,685	85,843,667
2042	58,803,201	19,893,528	5,097,248	127,804,227	93,991,802
2043	57,815,036	20,623,106	5,111,485	135,078,593	102,998,148
2044	56,641,502	21,378,554	5,121,988	143,056,750	112,915,790
2045	57,911,215	22,160,768	5,128,522	151,709,331	121,087,406

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2016, 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:

Date of Hire	Member Contribution Rate
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. <u>Service Retirement</u>

a. <u>Eligibility</u>:

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:

Age at Retirement	Percentage of Average Salary Group 1	Group 2	Group 4
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:

Age at Retirement	Percentage of Average Salary Group 1	Group 2	Group 4
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 with interest.

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 $751.80 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 $12,000. 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, 2016.

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 7.75% per annum.

5. Salary Scale

It is assumed that salaries including longevity will increase at the following rates.

Service	Rate
0 - 2	4.50%
3	4.00%
4	3.75%
5	3.75%
6	3.50%
7	3.50%
8 +	3.25%

6. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and $12,000 per year.

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.

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:

Service	General Employees	Police and Fire Employees
0	0.2080	0.0150
5	0.1020	0.0150
10	0.0650	0.0150
15	0.0417	0.0150
20	0.0400	0.0000
30	0.0000	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-2014, 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-2014.

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:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0360	0.1019	0.0144
51	0.0405	0.0714	0.0144
52	0.0437	0.0562	0.0123
53	0.0366	0.0448	0.0210
54	0.0451	0.0488	0.0569
55	0.0477	0.0469	0.0879
56	0.0574	0.0518	0.0931
57	0.0632	0.0509	0.0897
58	0.0765	0.0552	0.0846
59	0.0917	0.0645	0.1022
60	0.1057	0.0774	0.1455
61	0.1224	0.1038	0.1844
62	0.1473	0.1168	0.2741
63	0.1777	0.1440	0.1984
64	0.2136	0.1708	0.4139
65	0.2615	0.1939	1.00000
66	0.2682	0.1959	1.00000
67	0.2500	0.2000	1.00000
68	0.2500	0.2000	1.00000
69	0.2500	0.2000	1.00000
70 to 76	0.2500	0.2500	1.00000
77 to 79	0.3500	0.2500	1.00000
80	1.0000	1.0000	1.00000

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:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0000	0.0000	0.0072
51	0.0000	0.0000	0.0072
52	0.0000	0.0000	0.0062
53	0.0000	0.0000	0.0105
54	0.0000	0.0000	0.0105
55	0.0000	0.0000	0.0389
56	0.0000	0.0000	0.0631
57	0.0000	0.0000	0.0897
58	0.0000	0.0000	0.0846
59	0.0000	0.0000	0.1022
60	0.0477	0.0469	0.1455
61	0.0574	0.0518	0.1844
62	0.0632	0.0509	0.2741
63	0.0765	0.0552	0.1984
64	0.0917	0.0645	0.4139
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
80	1.0000	1.0000	1.0000

12. <u>Annual Rate of Disability Prior to Retirement</u>

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

Attained Age	General Employees	Police and Fire Employees
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 20% of all disabilities are ordinary (80% are service connected). For police and fire employees, 5% of all disabilities are assumed to be ordinary (95% are service connected).

13. <u>Family Composition</u>

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

14. <u>Administrative Expenses</u>

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2016 is $1,500,000 and is anticipated to increase at 3.0% per year.

EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. <u>Actuarial Accrued Liability</u>

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

2. <u>Actuarial Assumptions</u>

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. <u>Actuarial Cost Method</u>

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

4. <u>Actuarial Present Value</u>

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. <u>Forecast</u>

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. 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 City of New Bedford Retirement System contributing as of January 1, 2016, 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

July, 2016