

**NORFOLK COUNTY
CONTRIBUTORY RETIREMENT SYSTEM**

December 31, 2017 Actuarial Valuation Report

GASB 67 & 68

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Introduction

This report presents the Governmental Accounting Standards Statements 67 & 68 based on the findings of an actuarial valuation as of January 1, 2018, of the Norfolk 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, 2018.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Norfolk County Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board
- Assets as of December 31, 2017

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2018.

The valuation and forecast do not account for:

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

GASB Statements No. 67 and No. 68

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

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

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

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

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

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

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

Discount Rate

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

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

The Board selected 7.75% as the long term expectation of investment returns. The average return for the 33 years ending as of December 31, 2017 was 8.76%. The average return for the past 5 years ending December 31, 2017 was 8%.

Net Position Restricted for Pensions

The Net Position Restricted for Pensions as of December 31, 2017 is \$963,078,838. The 2017 Annual Statement of the Financial Condition contains the values for previous years and the changes in Net Position Restricted for Pensions. Investments are reported at fair value.

December 31, 2015 Net Position	836,027,536
Employer Contributions	64,009,904
Employee Contributions	29,351,605
Other Payments	3,933,503
Benefit Payments	(94,665,188)
Expenses	(1,215,601)
Investment Income	<u>125,637,079</u>
December 31, 2017 Net Position	963,078,838

Pension Liability as of December 31, 2017

The following presents the changes in the pension liability during 2017.

December 31, 2015 Liability	1,358,050,158
Service Cost	34,738,004
Interest on Liability and Service Cost	107,709,292
Change in Plan Provisions	12,205,895
Experience (Gain) and Loss	61,837,812
Change in Assumptions	36,207,214
Benefit Payments	(94,665,188)
Other	<u>0</u>
December 31, 2017 Liability	1,516,083,187

Net Pension Liability as of December 31, 2017

The following presents the net pension liability of the system calculated using the discount rate of 7.75%, as well as what the system's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75%) or 1-percentage-point higher (8.75%) than the current rate:

	1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)
Total Pension Liability	1,678,721,106	1,516,083,187	1,377,921,177
Plan Fiduciary Net Position	<u>963,078,838</u>	<u>963,078,838</u>	<u>963,078,838</u>
Net Pension Liability	715,642,268	553,004,349	414,842,339

The Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 63.5%.

	Unit	1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)
Avon Housing Auth.	AHA	234,731	181,385	136,068
Town of Avon	AVO	13,206,462	10,205,142	7,655,501
Town of Bellingham	BEL	31,910,489	24,658,464	18,497,820
Bellingham Hous. Auth.	BHA	310,589	240,004	180,042
Town of Canton	CAN	53,623,075	41,436,616	31,084,136
Canton Housing Auth.	CHA	1,029,809	795,773	596,958
Cohasset Housing Auth.	CHH	171,754	132,721	99,562
Town of Cohasset	COH	25,672,951	19,838,478	14,882,054
Charles Riv. Poll. Cont.	CRP	1,658,143	1,281,311	961,190
County of Norfolk	CTY	37,866,064	29,260,566	21,950,138
Town of Dover	DOV	13,532,795	10,457,312	7,844,669
Dover/Shearborne Schl.	DSR	7,952,217	6,144,984	4,609,728
Foxboro Housing Auth.	FHA	608,296	470,054	352,616
Franklin Housing Auth.	FHH	893,837	690,702	518,138
Town of Foxboro	FOX	44,852,164	34,658,995	25,999,829
Town of Franklin	FRA	53,345,406	41,222,050	30,923,178
Holbrook Housing Auth	HHA	522,419	403,693	302,835
Town of Holbrook	HOL	21,165,836	16,355,657	12,269,377
Massachusetts Respiratory	HOS	-	-	-
King Phillip Reg School	KPR	7,840,577	6,058,716	4,545,013
Town of Medway	MDW	25,036,029	19,346,304	14,512,844
Town of Medfield	MED	25,822,520	19,954,056	14,968,756
Medfield Housing Auth.	MHA	160,304	123,873	92,925
Medway Housing Auth.	MHH	928,904	717,800	538,465
Town of Millis	MIL	17,640,582	13,631,557	10,225,864
Millis Housing Auth.	MLH	398,613	308,023	231,067
Norfolk Housing Auth.	NHA	327,049	252,723	189,583
Norfolk Cnty Mos. Con.	NMC	2,022,405	1,562,790	1,172,344
Town of Norfolk	NOR	21,710,439	16,776,493	12,585,072
Town of Plainville	PLA	18,973,823	14,661,804	10,998,715
Town of Randolph	RAN	58,007,100	44,824,321	33,625,461
Norfolk County Ret BD	RET	-	-	-
Randolph Housing Auth	RHA	672,704	519,824	389,952
Town of Sharon	SHA	41,947,372	32,414,350	24,315,984
Sharon Housing Auth.	SHH	256,200	197,976	148,514
Stoughton Hous. Auth.	STH	755,718	583,973	438,074
Town of Stoughton	STO	55,178,881	42,638,847	31,986,004
Town of Walpole	WAL	50,874,293	39,312,526	29,490,727
Town of Westwood	WES	51,777,434	40,010,418	30,014,258
Walpole Housing Auth.	WHA	566,073	437,426	328,140
Town of Wrentham	WRE	19,841,182	15,332,046	11,501,504
Wrentham Hous. Auth.	WRH	264,788	204,612	153,492
Dedham-Westwood Water Dist	DWW	6,082,244	4,699,984	3,525,745

Employer Contributions during 2017

	<u>Unit</u>	<u>Contribution</u>	<u>Portion</u>
Avon Housing Auth.	AHA	21,023	0.000328
Town of Avon	AVO	1,181,256	0.018454
Town of Bellingham	BEL	2,854,177	0.044590
Bellingham Hous. Auth.	BHA	27,804	0.000434
Town of Canton	CAN	4,796,247	0.074932
Canton Housing Auth.	CHA	91,953	0.001437
Cohasset Housing Auth.	CHH	15,388	0.000240
Town of Cohasset	COH	2,296,320	0.035874
Charles Riv. Poll. Cont.	CRP	148,304	0.002317
County of Norfolk	CTY	3,386,923	0.052912
Town of Dover	DOV	1,210,458	0.018910
Dover/Shearborne Schl.	DSR	711,254	0.011112
Foxboro Housing Auth.	FHA	54,419	0.000850
Franklin Housing Auth.	FHH	79,918	0.001249
Town of Foxboro	FOX	4,011,736	0.062674
Town of Franklin	FRA	4,771,398	0.074542
Holbrook Housing Auth	HHA	46,729	0.000730
Town of Holbrook	HOL	1,893,166	0.029576
Massachusetts Respiratory	HOS	-	-
King Phillip Reg School	KPR	701,268	0.010956
Town of Medway	MDW	2,239,347	0.034984
Town of Medfield	MED	2,309,695	0.036083
Medfield Housing Auth.	MHA	14,325	0.000224
Medway Housing Auth.	MHH	83,099	0.001298
Town of Millis	MIL	1,577,876	0.024650
Millis Housing Auth.	MLH	35,665	0.000557
Norfolk Housing Auth.	NHA	29,265	0.000457
Norfolk Cnty Mos. Con.	NMC	180,879	0.002826
Town of Norfolk	NOR	1,941,855	0.030337
Town of Plainville	PLA	1,697,074	0.026513
Town of Randolph	RAN	5,188,401	0.081056
Norfolk County Ret BD	RET	-	-
Randolph Housing Auth	RHA	60,144	0.000940
Town of Sharon	SHA	3,751,960	0.058615
Sharon Housing Auth.	SHH	22,916	0.000358
Stoughton Hous. Auth.	STH	67,575	0.001056
Town of Stoughton	STO	4,935,424	0.077104
Town of Walpole	WAL	4,550,407	0.071089
Town of Westwood	WES	4,631,206	0.072351
Walpole Housing Auth.	WHA	50,641	0.000791
Town of Wrentham	WRE	1,774,694	0.027725
Wrentham Hous. Auth.	WRH	23,692	0.000370
Dedham-Westwood Water Dist	DWW	544,023	0.008499

Pension Expense for 2017

Service Cost	34,738,004
Interest	107,709,292
Difference in Experience - Amortization	17,304,132
Change in Assumptions - Amortization	(3,259,094)
Changes in Plan Provisions	12,205,895
Employee Contributions	(29,351,605)
Projected Earnings	(66,937,684)
Administration Expense	1,215,601
Other Changes in Fiduciary Net Position	0
Asset (Gain) / Loss Amortization	<u>6,087,415</u>
Total Expense	79,711,956

Reconciliation of Net Pension Liability for 2017

NPL Beginning	522,022,622
Expense	79,711,963
Contribution	(64,009,904)
Deferred Outflows	59,449,119
Deferred Inflows	(40,235,945)
Revenue	<u>(3,933,501)</u>
NPL Ending	553,004,354

Schedules of Required Supplementary Information

	<u>2017</u>
Total Pension Liability – Beginning	1,358,050,158
Total Pension Liability – Ending (a)	1,516,083,187
Plan Fiduciary Net Position – Beginning	836,027,536
Plan Fiduciary Net Position – Ending (b)	963,078,838
Net Pension Liability – Ending (a) – (b)	553,004,349
Plan Fiduciary Net Positions as a percentage of the Total Pension Liability	63.5%
Covered-employee payroll	\$289,125,863
Net Pension Liability as a percentage of Covered-employee Payroll	191.3%

Schedule of Net Position Restricted for Pensions Amortization Recognition

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

Investment Return

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>
2017	(58,699,395)	5	(11,739,879)	(11,739,879)	(11,739,879)	(11,739,879)	11,739,879)
2016	(7,466,805)	5	(1,493,361)	(1,493,361)	(1,493,361)	(1,493,361)	0
2015	75,186,656	5	15,037,331	15,037,331	15,037,332	0	0
2014	21,416,618	5	4,283,324	4,283,324	0	0	

Experience

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>
2017	61,837,812	4.27	14,481,923	14,481,923	14,481,923	14,481,923	3,910,120
2015	13,828,826	4.90	2,822,209	2,822,209	2,539,988	0	0

Assumptions

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>
2017	36,207,214	4.27	8,479,441	8,479,441	8,479,441	8,479,441	2,289,450
2015	(57,518,820)	4.90	(11,738,535)	(11,738,535)	(10,564,681)	0	0

	<u>Avon</u> <u>Housing</u> <u>Auth.</u>	<u>Town of</u> <u>Avon</u>	<u>Town of</u> <u>Bellingham</u>	<u>Bellingham</u> <u>Hous. Auth.</u>	<u>Town of</u> <u>Canton</u>	<u>Canton</u> <u>Housing Auth.</u>
Net Pension Liability	181,385	10,205,142	24,658,464	240,004	41,436,616	795,773
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	17,292	972,860	2,350,699	22,879	3,950,166	75,861
Net Asset Loss	11,269	634,042	1,532,023	14,911	2,574,444	49,441
Changes in Assumptions	9,095	511,688	1,236,381	12,034	2,077,642	39,900
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	0	418,337	0	218,977	0
Total Deferred Outflows	37,655	2,118,590	5,537,440	49,824	8,821,229	165,202
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	16,873	949,265	2,293,692	22,324	3,854,371	74,022
Changes in Assumptions	7,315	411,584	994,500	9,680	1,671,179	32,095
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	7,256	361,547	377,347	59,635	634,646	93,146
Total Deferred Inflows	31,444	1,722,396	3,665,539	91,639	6,160,196	199,263
Pension Expense						
Proportionate share of plan Pension Expense	26,146	1,471,004	3,554,356	34,595	5,972,817	114,706
Net Amortization from changes in Share Proportions	1,214	(82,599)	(160,916)	(1,269)	(223,968)	7,054
Total Employer Pension Expense	27,360	1,388,405	3,393,440	33,326	5,748,849	121,760
Revenue	1,290	72,589	175,395	1,707	294,737	5,660

	<u>Cohasset Housing Auth.</u>	<u>Town of Cohasset</u>	<u>Charles Riv. Poll. Cont.</u>	<u>County of Norfolk</u>	<u>Town of Dover</u>	<u>Dover/Shearb orne Schl.</u>
Net Pension Liability	132,721	19,838,478	1,281,311	29,260,566	10,457,312	6,144,984
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	12,652	1,891,209	122,148	2,789,420	996,899	585,803
Net Asset Loss	8,246	1,232,558	79,607	1,817,949	649,710	381,786
Changes in Assumptions	6,655	994,706	64,245	1,467,132	524,332	308,111
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	961,685	0	7,984,132	0	112,440
Total Deferred Outflows	27,553	5,080,158	266,000	14,058,633	2,170,941	1,388,139
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	12,344	1,845,345	119,185	2,721,773	972,721	571,596
Changes in Assumptions	5,353	800,105	51,676	1,180,107	421,754	247,834
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	7,266	303,848	35,956	466,895	275,027	93,949
Total Deferred Inflows	24,963	2,949,298	206,817	4,368,775	1,669,503	913,379
Pension Expense						
Proportionate share of plan Pension Expense	19,131	2,859,587	184,693	4,217,719	1,507,353	885,759
Net Amortization from changes in Share Proportions	562	(285,292)	(9,499)	3,069,308	(40,220)	(59,459)
Total Employer Pension Expense	19,693	2,574,295	175,194	7,287,027	1,467,133	826,300
Revenue	944	141,110	9,114	208,130	74,383	43,709

	<u>Foxboro Housing Auth.</u>	<u>Franklin Housing Auth.</u>	<u>Town of Foxboro</u>	<u>Town of Franklin</u>	<u>Holbrook Housing Auth</u>	<u>Town of Holbrook</u>
Net Pension Liability	470,054	690,702	34,658,995	41,222,050	403,693	16,355,657
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	44,811	65,845	3,304,053	3,929,712	38,484	1,559,191
Net Asset Loss	29,205	42,913	2,153,353	2,561,113	25,081	1,016,172
Changes in Assumptions	23,569	34,632	1,737,810	2,066,884	20,241	820,077
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	16,105	0	0	44,879	0
Total Deferred Outflows	97,584	159,495	7,195,216	8,557,708	128,685	3,395,439
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	43,723	64,247	3,223,926	3,834,410	37,550	1,521,379
Changes in Assumptions	18,958	27,856	1,397,832	1,662,526	16,281	659,640
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	48,692	10,460	627,582	1,132,243	400	641,744
Total Deferred Inflows	111,372	102,563	5,249,340	6,629,179	54,231	2,822,762
Pension Expense						
Proportionate share of plan Pension Expense	67,755	99,560	4,995,867	5,941,889	58,190	2,357,561
Net Amortization from changes in Share Proportions	(6,356)	(7,057)	(203,201)	(238,204)	(8,903)	(11,408)
Total Employer Pension Expense	61,399	92,503	4,792,666	5,703,685	49,287	2,346,153
Revenue	3,343	4,913	246,528	293,211	2,871	116,337

	<u>Massachusetts</u> <u>Respiratory</u>	<u>King Phillip</u> <u>Reg School</u>	<u>Town of</u> <u>Medway</u>	<u>Town of</u> <u>Medfield</u>	<u>Medfield</u> <u>Housing Auth.</u>	<u>Medway</u> <u>Housing Auth.</u>
Net Pension Liability	0	6,058,716	19,346,304	19,954,056	123,873	717,800
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	0	577,579	1,844,289	1,902,227	11,809	68,428
Net Asset Loss	0	376,426	1,201,980	1,239,739	7,696	44,596
Changes in Assumptions	0	303,785	970,028	1,000,501	6,211	35,991
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	79,722	784,104	296,574	0	0
Total Deferred Outflows	0	1,337,512	4,800,402	4,439,040	25,716	149,015
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	0	563,571	1,799,564	1,856,095	11,524	66,767
Changes in Assumptions	0	244,354	780,256	804,767	4,995	28,950
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	92,745	296,626	305,858	40,074	24,800
Total Deferred Inflows	0	900,670	2,876,446	2,966,720	56,593	120,518
Pension Expense						
Proportionate share of plan Pension Expense	0	873,324	2,788,643	2,876,247	17,855	103,466
Net Amortization from changes in Share Proportions	0	(28,532)	(66,992)	(133,039)	4,501	(3,603)
Total Employer Pension Expense	0	844,792	2,721,651	2,743,208	22,356	99,863
Revenue	0	43,095	137,610	141,933	881	5,106

	<u>Town of</u> <u>Millis</u>	<u>Millis</u> <u>Housing Auth.</u>	<u>Norfolk</u> <u>Housing Auth.</u>	<u>Norfolk Cnty</u> <u>Mos. Con.</u>	<u>Town of</u> <u>Norfolk</u>	<u>Town of</u> <u>Plainville</u>
Net Pension Liability	13,631,557	308,023	252,723	1,562,790	16,776,493	14,661,804
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	1,299,501	29,364	24,093	148,982	1,599,309	1,397,715
Net Asset Loss	846,924	19,138	15,702	97,096	1,042,319	910,933
Changes in Assumptions	683,490	15,444	12,672	78,359	841,177	735,146
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	61,332	36,004	46,583	36,060	654,654
Total Deferred Outflows	2,829,914	125,279	88,470	371,019	3,518,865	3,698,448
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	1,267,985	28,652	23,506	145,368	1,560,523	1,363,817
Changes in Assumptions	549,774	12,423	10,193	63,029	676,613	591,325
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	676,846	393	392	23,693	256,915	224,405
Total Deferred Inflows	2,494,605	41,468	34,091	232,090	2,494,051	2,179,547
Pension Expense						
Proportionate share of plan Pension Expense	1,964,900	44,400	36,428	225,266	2,418,222	2,113,403
Net Amortization from changes in Share Proportions	(34,384)	(4,515)	545	(16,063)	(65,859)	(234,282)
Total Employer Pension Expense	1,930,516	39,885	36,973	209,203	2,352,363	1,879,121
Revenue	96,961	2,191	1,798	11,116	119,331	104,289

	<u>Town of</u>	<u>Norfolk</u>	<u>Randolph</u>	<u>Town of</u>	<u>Sharon</u>	<u>Stoughton</u>
	<u>Randolph</u>	<u>County Ret</u>	<u>Housing Auth</u>	<u>Sharon</u>	<u>Housing Auth.</u>	<u>Hous. Auth.</u>
		<u>BD</u>				
Net Pension Liability	44,824,321	0	519,824	32,414,350	197,976	583,973
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	4,273,117	0	49,556	3,090,071	18,872	55,670
Net Asset Loss	2,784,921	0	32,296	2,013,893	12,300	36,282
Changes in Assumptions	2,247,502	0	26,064	1,625,263	9,927	29,281
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	182,251	0	0	0	0	0
Total Deferred Outflows	9,487,791	0	107,916	6,729,228	41,099	121,232
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	4,169,489	0	48,354	3,015,131	18,417	54,320
Changes in Assumptions	1,807,810	0	20,965	1,307,303	7,984	23,552
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	686,807	0	141,958	1,678,651	8,680	151,158
Total Deferred Inflows	6,664,106	0	211,277	6,001,085	35,081	229,030
Pension Expense						
Proportionate share of plan Pension Expense	6,461,132	0	74,929	4,672,316	28,537	84,176
Net Amortization from changes in Share Proportions	(243,819)	0	17,987	23,576	(126)	14,510
Total Employer Pension Expense	6,217,313	0	92,916	4,695,892	28,411	98,686
Revenue	318,834	0	3,697	230,562	1,408	4,154

	<u>Town of Stoughton</u>	<u>Town of Walpole</u>	<u>Town of Westwood</u>	<u>Walpole Housing Auth.</u>	<u>Town of Wrentham</u>	<u>Wrentham Hous. Auth.</u>
Net Pension Liability	42,638,847	39,312,526	40,010,418	437,426	15,332,046	204,612
Deferred Outflows of Resources						
Differences between Expected and Actual Experience	4,064,775	3,747,676	3,814,207	41,700	1,461,609	19,506
Net Asset Loss	2,649,138	2,442,475	2,485,835	27,178	952,575	12,713
Changes in Assumptions	2,137,922	1,971,140	2,006,132	21,933	768,753	10,259
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	0	0	1,500,711	0	2,533	0
Total Deferred Outflows	8,851,836	8,161,290	9,806,885	90,810	3,185,470	42,478
Deferred Inflows of Resources						
Differences between Expected and Actual Experience	0	0	0	0	0	0
Net Asset Gain	3,966,199	3,656,791	3,721,706	40,688	1,426,162	19,034
Changes in Assumptions	1,719,667	1,585,514	1,613,660	17,642	618,357	8,252
Changes in Proportion and Differences between Employer						
Contributions and proportionate share of contributions	1,143,727	1,503,433	612,938	66,204	234,812	17,296
Total Deferred Inflows	6,829,592	6,745,738	5,948,304	124,534	2,279,331	44,582
Pension Expense						
Proportionate share of plan Pension Expense	6,146,111	5,666,643	5,767,240	63,052	2,210,014	29,493
Net Amortization from changes in Share Proportions	(296,932)	(48,902)	(452,083)	(1,252)	(128,074)	(5,520)
Total Employer Pension Expense	5,849,179	5,617,741	5,315,157	61,800	2,081,940	23,973
Revenue	303,289	279,629	284,593	3,111	109,056	1,455

	<u>Dedham- Westwood Water Dist</u>	<u>Total</u>
Net Pension Liability	4,699,984	553,004,349
Deferred Outflows of Resources		
Differences between Expected and Actual Experience	448,051	52,718,085
Net Asset Loss	292,008	34,357,986
Changes in Assumptions	235,658	27,727,773
Changes in Proportion and Differences between Employer		
Contributions and proportionate share of contributions	817	13,437,899
Total Deferred Outflows	976,534	128,241,743
Deferred Inflows of Resources		
Differences between Expected and Actual Experience	0	0
Net Asset Gain	437,185	51,439,593
Changes in Assumptions	189,555	22,303,215
Changes in Proportion and Differences between Employer		
Contributions and proportionate share of contributions	71,851	13,437,901
Total Deferred Inflows	698,591	87,180,709
Pension Expense		
Proportionate share of plan Pension Expense	677,472	79,711,957
Net Amortization from changes in Share Proportions	(36,926)	6
Total Employer Pension Expense	640,546	79,711,963
Revenue	33,431	3,933,501

EXHIBITS

EXHIBIT 4 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2018, and does not take into account any subsequent changes.

1. Administration

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

2. Participation

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

There are four classes of membership as follows:

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

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

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

3. **Salary**

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

4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

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

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

5. **Average Salary**

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

6. **Creditable Service**

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

7. Service Retirement

a. Eligibility:

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

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

b. Benefit Amount:

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

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

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

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

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

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

8. Deferred Vested Retirement

a. Eligibility:

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

b. Benefit Amount:

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

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions, 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 \$871.56 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 \$17,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

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

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

EXHIBIT 5 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below. They are based on the 2015 Experience Study conducted by Sherman Actuarial Services, LLC.

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, 2018.

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. This includes a 3% inflation assumption.

5. Salary Scale

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

<u>Service</u>	<u>Rate</u>
0 - 1	5.50%
2	5.00%
3 - 4	4.50%
5	4.00%
6 +	3.50%

6. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$17,000 per year.

7. Value of Investments

Assets held by the fund are valued at market value as reported to the Public Employees' Retirement Administration Commission (PERAC).

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	0.2080	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

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	0.0144
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

10. 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	0.0072
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. 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 20% of all disabilities are ordinary (80% 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 members will be survived by a spouse and that 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 \$1,775,000 and is anticipated to increase at 4.0% per year.

CERTIFICATION:

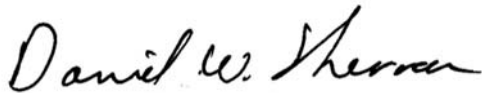
This report fairly represents the actuarial position of the Norfolk County Retirement System as of December 31, 2017, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued 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



Daniel W. Sherman, ASA, MAAA

August 2018