

**NORFOLK COUNTY  
CONTRIBUTORY RETIREMENT SYSTEM**

December 31, 2018 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, 2018

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 34 years ending as of December 31, 2018 was 8.35%. The average return for the past 5 years ending December 31, 2018 was 4.83%.

### Net Position Restricted for Pensions

The Net Position Restricted for Pensions as of December 31, 2018 is \$911,848,561. The 2018 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, 2017 Net Position	963,078,838
Employer Contributions	69,957,756
Employee Contributions	32,290,608
Other Payments	3,331,426
Benefit Payments	(102,577,621)
Expenses	(1,215,116)
Investment Income	<u>(53,017,330)</u>
December 31, 2018 Net Position	911,848,561

**Pension Liability as of December 31, 2018**

The following presents the changes in the pension liability during 2018.

December 31, 2017 Liability	1,516,083,187
Service Cost	33,120,792
Interest on Liability and Service Cost	116,162,592
Change in Plan Provisions	0
Experience (Gain) and Loss	0
Change in Assumptions	0
Benefit Payments	(102,577,621)
Other	<u>0</u>
December 31, 2018 Liability	1,562,788,950

**Net Pension Liability as of December 31, 2018**

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:

	<b>1% Decrease (6.75%)</b>	<b>Current Discount Rate (7.75%)</b>	<b>1% Increase (8.75%)</b>
Total Pension Liability	1,728,184,911	1,562,788,950	1,422,177,950
Plan Fiduciary Net Position	<u>911,848,561</u>	<u>911,848,561</u>	<u>911,848,561</u>
Net Pension Liability	816,336,350	650,940,389	510,329,389

The Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 58.3%.

	Unit	1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)
Avon Housing Auth.	AHA	268,574	214,159	167,898
Town of Avon	AVO	15,086,667	12,029,993	9,431,369
Town of Bellingham	BEL	36,450,125	29,065,052	22,786,649
Bellingham Hous. Auth.	BHA	348,575	277,951	217,910
Town of Canton	CAN	61,212,798	48,810,619	38,266,934
Canton Housing Auth.	CHA	1,171,439	934,097	732,320
Cohasset Housing Auth.	CHH	195,920	156,225	122,479
Town of Cohasset	COH	29,319,448	23,379,105	18,328,935
Charles Riv. Poll. Cont.	CRP	1,893,078	1,509,526	1,183,450
County of Norfolk	CTY	42,278,749	33,712,753	26,430,390
Town of Dover	DOV	15,469,527	12,335,283	9,670,713
Dover/Shearborne Schl.	DSR	9,089,878	7,248,199	5,682,501
Foxboro Housing Auth.	FHA	691,435	551,345	432,248
Franklin Housing Auth.	FHH	1,018,785	812,371	636,889
Town of Foxboro	FOX	51,213,524	40,837,274	32,015,929
Town of Franklin	FRA	60,957,285	48,606,875	38,107,202
Holbrook Housing Auth	HHA	592,658	472,581	370,498
Town of Holbrook	HOL	24,168,381	19,271,683	15,108,767
Massachusetts Respiratory	HOS	-	-	-
King Phillip Reg School	KPR	8,961,714	7,146,002	5,602,379
Town of Medway	MDW	28,618,218	22,819,949	17,890,564
Town of Medfield	MED	29,517,001	23,536,632	18,452,435
Medfield Housing Auth.	MHA	182,859	145,810	114,313
Medway Housing Auth.	MHH	1,062,050	846,871	663,937
Town of Millis	MIL	20,164,264	16,078,830	12,605,608
Millis Housing Auth.	MLH	453,065	361,271	283,232
Norfolk Housing Auth.	NHA	373,881	298,130	233,730
Norfolk Cnty Mos. Con.	NMC	2,308,592	1,840,854	1,443,207
Town of Norfolk	NOR	24,765,122	19,747,519	15,481,816
Town of Plainville	PLA	21,665,502	17,275,906	13,544,101
Town of Randolph	RAN	66,168,761	52,762,466	41,365,135
Norfolk County Ret BD	RET	-	-	-
Randolph Housing Auth	RHA	762,456	607,976	476,646
Town of Sharon	SHA	47,948,188	38,233,520	29,974,617
Sharon Housing Auth.	SHH	298,778	238,243	186,780
Stoughton Hous. Auth.	STH	862,049	687,391	538,906
Town of Stoughton	STO	63,014,446	50,247,240	39,393,228
Town of Walpole	WAL	58,080,524	46,312,968	36,308,806
Town of Westwood	WES	59,118,901	47,140,962	36,957,943
Walpole Housing Auth.	WHA	647,353	516,194	404,690
Town of Wrentham	WRE	22,680,205	18,085,023	14,178,439
Wrentham Hous. Auth.	WRH	302,860	241,498	189,332
Dedham-Westwood Water Dist	DWW	6,952,716	5,544,043	4,346,462

**Employer Contributions during 2018**

	<u>Unit</u>	<u>Contribution</u>	<u>Portion</u>
Avon Housing Auth.	AHA	23,024	0.000329
Town of Avon	AVO	1,292,888	0.018481
Town of Bellingham	BEL	3,123,692	0.044651
Bellingham Hous. Auth.	BHA	29,875	0.000427
Town of Canton	CAN	5,245,794	0.074985
Canton Housing Auth.	CHA	100,243	0.001433
Cohasset Housing Auth.	CHH	16,755	0.000240
Town of Cohasset	COH	2,512,622	0.035916
Charles Riv. Poll. Cont.	CRP	162,231	0.002319
County of Norfolk	CTY	3,623,165	0.051791
Town of Dover	DOV	1,325,669	0.018950
Dover/Shearborne Schl.	DSR	778,951	0.011135
Foxboro Housing Auth.	FHA	59,280	0.000847
Franklin Housing Auth.	FHH	87,287	0.001248
Town of Foxboro	FOX	4,388,893	0.062736
Town of Franklin	FRA	5,223,882	0.074672
Holbrook Housing Auth	HHA	50,793	0.000726
Town of Holbrook	HOL	2,071,187	0.029606
Massachusetts Respiratory	HOS	-	-
King Phillip Reg School	KPR	768,014	0.010978
Town of Medway	MDW	2,452,486	0.035057
Town of Medfield	MED	2,529,530	0.036158
Medfield Housing Auth.	MHA	15,688	0.000224
Medway Housing Auth.	MHH	91,009	0.001301
Town of Millis	MIL	1,728,057	0.024701
Millis Housing Auth.	MLH	38,861	0.000555
Norfolk Housing Auth.	NHA	32,050	0.000458
Norfolk Cnty Mos. Con.	NMC	197,836	0.002828
Town of Norfolk	NOR	2,122,281	0.030337
Town of Plainville	PLA	1,856,698	0.026540
Town of Randolph	RAN	5,670,468	0.081056
Norfolk County Ret BD	RET	-	-
Randolph Housing Auth	RHA	65,350	0.000934
Town of Sharon	SHA	4,109,068	0.058736
Sharon Housing Auth.	SHH	25,580	0.000366
Stoughton Hous. Auth.	STH	73,851	0.001056
Town of Stoughton	STO	5,400,160	0.077192
Town of Walpole	WAL	4,977,378	0.071148
Town of Westwood	WES	5,066,340	0.072420
Walpole Housing Auth.	WHA	55,461	0.000793
Town of Wrentham	WRE	1,943,608	0.027783
Wrentham Hous. Auth.	WRH	25,948	0.000371
Dedham-Westwood Water Dist	DWW	595,803	0.008517



**Pension Expense for 2018**

Service Cost	33,120,792
Interest	116,162,592
Difference in Experience - Amortization	17,304,132
Change in Assumptions - Amortization	(3,259,094)
Changes in Plan Provisions	0
Employee Contributions	(32,290,608)
Projected Earnings	(74,706,566)
Administration Expense	1,215,116
Other Changes in Fiduciary Net Position	0
Asset (Gain) / Loss Amortization	<u>31,632,192</u>
Total Expense	89,178,556

**Reconciliation of Net Pension Liability for 2018**

NPL Beginning	553,004,349
Expense*	89,184,898
Contribution	(69,957,756)
Deferred Outflow changes	53,193,239
Deferred Inflow changes	28,847,088
Revenue	<u>(3,331,428)</u>
NPL Ending	650,940,390

\*Due to rounding, the Town of Avon's portion was reduced by .000003 so that the sum of the Unit NPL's equaled the total. This adjustment also impacted the Expense by Unit. The selection of Avon was purely arbitrary.

**Schedules of Required Supplementary Information**

	<u>2018</u>
Total Pension Liability – Beginning	1,516,083,187
Total Pension Liability – Ending (a)	1,562,788,950
Plan Fiduciary Net Position – Beginning	963,078,838
Plan Fiduciary Net Position – Ending (b)	911,848,561
Net Pension Liability – Ending (a) – (b)	650,940,389
Plan Fiduciary Net Positions as a percentage of the Total Pension Liability	58.3%
Covered-employee payroll	299,245,268
Net Pension Liability as a percentage of Covered-employee Payroll	217.5%

**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>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
2018	127,723,896	5	25,544,779	25,544,779	25,544,779	25,544,779	25,544,780
2017	(58,699,395)	5	(11,739,879)	(11,739,879)	(11,739,879)	(11,739,879)	0
2016	(7,466,805)	5	(1,493,361)	(1,493,361)	(1,493,361)	(0)	0
2015	75,186,656	5	15,037,331	15,037,332	0	0	0
2014	21,416,618	5	4,283,322	0	0	0	

Experience

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
2017	61,837,812	4.27	14,481,923	14,481,923	14,481,923	3,910,120	0
2015	13,828,826	4.90	2,822,209	2,539,988	0	0	0

Assumptions

<u>Year</u>	<u>(Gain) / Loss</u>	<u>Period</u>	<u>Increase (Decrease) arising from (Gains) or Losses</u>				
			<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
2017	36,207,214	4.27	8,479,441	8,479,441	8,479,441	2,289,450	0
2015	(57,518,820)	4.90	(11,738,535)	(10,564,681)	0	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>
Net Pension Liability	214,159	12,028,077	29,065,139	277,952	48,810,765
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	11,651	654,379	1,581,268	15,122	2,655,515
Net Asset Loss	38,564	2,165,926	5,233,832	50,051	8,789,475
Changes in Assumptions	6,333	355,670	859,458	8,220	1,443,336
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	395	9,499	297,828	0	164,880
Total Deferred Outflows	56,943	3,185,474	7,972,386	73,393	13,053,206
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	12,570	705,977	1,705,951	16,315	2,864,905
Changes in Assumptions	3,476	195,214	471,724	4,511	792,193
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	4,769	242,983	261,950	41,808	440,565
Total Deferred Inflows	20,815	1,144,174	2,439,625	62,634	4,097,663
Pension Expense					
Proportionate share of plan Pension Expense	29,340	1,647,841	3,981,912	38,079	6,687,054
Net Amortization from changes in Share Proportions	(2,362)	(115,566)	36,348	(21,408)	(111,813)
Total Employer Pension Expense	26,978	1,532,275	4,018,260	16,671	6,575,241
Revenue	1,096	61,558	148,752	1,423	249,807

	<u>Canton</u> <u>Housing Auth.</u>	<u>Cohasset</u> <u>Housing Auth.</u>	<u>Town of</u> <u>Cohasset</u>	<u>Charles Riv.</u> <u>Poll. Cont.</u>	<u>County of</u> <u>Norfolk</u>
Net Pension Liability	934,099	156,226	23,379,175	1,509,531	33,712,854
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	50,819	8,499	1,271,928	82,126	1,834,124
Net Asset Loss	168,206	28,132	4,209,946	271,825	6,070,757
Changes in Assumptions	27,621	4,619	691,324	44,637	996,891
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	0	0	646,428	777	5,542,502
Total Deferred Outflows	246,646	41,250	6,819,627	399,365	14,444,274
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	54,827	9,170	1,372,219	88,601	1,978,746
Changes in Assumptions	15,160	2,536	379,441	24,499	547,155
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	63,139	4,802	210,928	24,325	742,149
Total Deferred Inflows	133,126	16,508	1,962,588	137,425	3,268,050
Pension Expense					
Proportionate share of plan Pension Expense	127,971	21,403	3,202,937	206,805	4,618,647
Net Amortization from changes in Share Proportions	(32,201)	(2,495)	243,855	(11,387)	2,142,977
Total Employer Pension Expense	95,770	18,908	3,446,792	195,418	6,761,624
Revenue	4,781	800	119,651	7,726	172,538

	<u>Town of Dover</u>	<u>Dover/Shearb orne Schl.</u>	<u>Foxboro Housing Auth.</u>	<u>Franklin Housing Auth.</u>	<u>Town of Foxboro</u>
Net Pension Liability	12,335,320	7,248,221	551,347	812,374	40,837,396
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	671,094	394,334	29,996	44,196	2,221,730
Net Asset Loss	2,221,251	1,305,205	99,283	146,287	7,353,691
Changes in Assumptions	364,755	214,331	16,303	24,021	1,207,563
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	15,543	82,596	0	10,552	24,145
Total Deferred Outflows	3,272,643	1,996,467	145,582	225,055	10,807,129
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	724,011	425,428	32,362	47,681	2,396,915
Changes in Assumptions	200,201	117,638	8,948	13,185	662,786
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	186,455	65,218	33,081	7,665	431,880
Total Deferred Inflows	1,110,667	608,284	74,391	68,531	3,491,581
Pension Expense					
Proportionate share of plan Pension Expense	1,689,934	993,003	75,534	111,295	5,594,706
Net Amortization from changes in Share Proportions	(83,664)	12,857	(17,118)	2,228	(188,083)
Total Employer Pension Expense	1,606,270	1,005,860	58,416	113,523	5,406,623
Revenue	63,131	37,095	2,822	4,158	209,000

	<u>Town of Franklin</u>	<u>Holbrook Housing Auth</u>	<u>Town of Holbrook</u>	<u>Massachusetts Respiratory</u>	<u>King Phillip Reg School</u>
Net Pension Liability	48,607,021	472,583	19,271,741	0	7,146,024
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	2,644,430	25,711	1,048,466	0	388,775
Net Asset Loss	8,752,787	85,099	3,470,310	0	1,286,802
Changes in Assumptions	1,437,312	13,974	569,865	0	211,308
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	50,587	29,403	11,688	0	60,806
Total Deferred Outflows	12,885,116	154,188	5,100,329	0	1,947,692
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	2,852,944	27,737	1,131,137	0	419,430
Changes in Assumptions	788,886	7,670	312,778	0	115,979
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	766,435	1,832	430,225	0	64,382
Total Deferred Inflows	4,408,265	37,239	1,874,140	0	599,791
Pension Expense					
Proportionate share of plan Pension Expense	6,659,141	64,744	2,640,220	0	979,002
Net Amortization from changes in Share Proportions	(349,846)	14,863	(207,830)	0	1,833
Total Employer Pension Expense	6,309,295	79,607	2,432,390	0	980,835
Revenue	248,764	2,419	98,630	0	36,572

	<u>Town of Medway</u>	<u>Town of Medfield</u>	<u>Medfield Housing Auth.</u>	<u>Medway Housing Auth.</u>	<u>Town of Millis</u>
Net Pension Liability	22,820,017	23,536,703	145,811	846,873	16,078,879
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	1,241,507	1,280,497	7,933	46,074	874,760
Net Asset Loss	4,109,257	4,238,313	26,256	152,499	2,895,363
Changes in Assumptions	674,789	695,982	4,311	25,043	475,454
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	542,115	223,491	13	1,162	19,870
Total Deferred Outflows	6,567,668	6,438,282	38,513	224,778	4,265,447
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	1,339,401	1,381,465	8,558	49,706	943,735
Changes in Assumptions	370,366	381,998	2,366	13,745	260,958
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	205,915	212,324	26,256	16,687	451,610
Total Deferred Inflows	1,915,682	1,975,787	37,180	80,138	1,656,303
Pension Expense					
Proportionate share of plan Pension Expense	3,126,333	3,224,518	19,976	116,021	2,202,800
Net Amortization from changes in Share Proportions	188,627	17,941	(13,815)	(7,748)	(218,966)
Total Employer Pension Expense	3,314,960	3,242,459	6,161	108,273	1,983,834
Revenue	116,790	120,458	746	4,334	82,290



	<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	361,272	298,131	1,840,859	19,747,579	17,275,958
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	19,654	16,220	100,151	1,074,353	939,887
Net Asset Loss	65,055	53,685	331,489	3,555,996	3,110,925
Changes in Assumptions	10,683	8,817	54,435	583,937	510,850
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	40,183	23,986	31,295	23,626	439,432
Total Deferred Outflows	135,575	102,708	517,369	5,237,911	5,001,094
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	21,204	17,499	108,048	1,159,067	1,013,996
Changes in Assumptions	5,863	4,839	29,877	320,501	280,387
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	1,025	272	16,447	178,369	155,779
Total Deferred Inflows	28,092	22,610	154,372	1,657,937	1,450,162
Pension Expense					
Proportionate share of plan Pension Expense	49,494	40,844	252,197	2,705,410	2,366,799
Net Amortization from changes in Share Proportions	20,791	12,421	9,061	(66,139)	160,438
Total Employer Pension Expense	70,285	53,265	261,258	2,639,271	2,527,237
Revenue	1,849	1,526	9,421	101,065	88,416

	<u>Town of</u> <u>Randolph</u>	<u>Norfolk</u> <u>County Ret</u> <u>BD</u>	<u>Randolph</u> <u>Housing Auth</u>	<u>Town of</u> <u>Sharon</u>	<u>Sharon</u> <u>Housing Auth.</u>
Net Pension Liability	52,762,624	0	607,978	38,233,635	238,244
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	2,870,514	0	33,076	2,080,074	12,961
Net Asset Loss	9,501,097	0	109,480	6,884,826	42,902
Changes in Assumptions	1,560,194	0	17,978	1,130,569	7,044
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	119,406	0	0	47,109	3,095
Total Deferred Outflows	14,051,210	0	160,534	10,142,578	66,002
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	3,096,856	0	35,685	2,244,090	13,983
Changes in Assumptions	856,331	0	9,867	620,527	3,867
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	476,795	0	95,633	1,119,179	5,812
Total Deferred Inflows	4,429,982	0	141,185	3,983,796	23,662
Pension Expense					
Proportionate share of plan Pension Expense	7,228,457	0	83,293	5,237,992	32,639
Net Amortization from changes in Share Proportions	(147,196)	0	(49,388)	(544,603)	(1,892)
Total Employer Pension Expense	7,081,261	0	33,905	4,693,389	30,747
Revenue	270,032	0	3,112	195,675	1,219

	<u>Stoughton</u> <u>Hous. Auth.</u>	<u>Town of</u> <u>Stoughton</u>	<u>Town of</u> <u>Walpole</u>	<u>Town of</u> <u>Westwood</u>	<u>Walpole</u> <u>Housing Auth.</u>
Net Pension Liability	687,393	50,247,390	46,313,107	47,141,103	516,196
Deferred Outflows of Resources					
Differences between Expected and Actual Experience	37,397	2,733,675	2,519,632	2,564,679	28,083
Net Asset Loss	123,780	9,048,172	8,339,716	8,488,816	92,953
Changes in Assumptions	20,326	1,485,817	1,369,480	1,393,964	15,264
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	0	34,231	22,978	1,010,075	767
Total Deferred Outflows	181,503	13,301,895	12,251,806	13,457,534	137,067
Deferred Inflows of Resources					
Differences between Expected and Actual Experience	0	0	0	0	0
Net Asset Gain	40,345	2,949,225	2,718,307	2,766,904	30,298
Changes in Assumptions	11,156	815,509	751,656	765,094	8,378
Changes in Proportion and Differences between Employer					
Contributions and proportionate share of contributions	99,085	774,821	1,008,501	425,495	43,641
Total Deferred Inflows	150,586	4,539,555	4,478,464	3,957,493	82,317
Pension Expense					
Proportionate share of plan Pension Expense	94,173	6,883,871	6,344,876	6,458,311	70,719
Net Amortization from changes in Share Proportions	(52,099)	(358,106)	(487,684)	338,516	(22,321)
Total Employer Pension Expense	42,074	6,525,765	5,857,192	6,796,827	48,398
Revenue	3,518	257,159	237,024	241,262	2,642

	<u>Town of Wrentham</u>	<u>Wrentham Hous. Auth.</u>	<u>Dedham- Westwood Water Dist</u>	<u>Total</u>
Net Pension Liability	18,085,077	241,499	5,544,059	650,940,389
Deferred Outflows of Resources				
Differences between Expected and Actual Experience	983,906	13,139	301,621	35,413,956
Net Asset Loss	3,256,624	43,487	998,333	117,216,453
Changes in Assumptions	534,776	7,141	163,937	19,248,332
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	24,209	384	7,519	9,562,575
Total Deferred Outflows	4,799,515	64,151	1,471,410	181,441,316
Deferred Inflows of Resources				
Differences between Expected and Actual Experience	0	0	0	0
Net Asset Gain	1,061,487	14,175	325,405	38,206,365
Changes in Assumptions	293,519	3,919	89,979	10,564,682
Changes in Proportion and Differences between Employer Contributions and proportionate share of contributions	163,004	11,457	49,878	9,562,574
Total Deferred Inflows	1,518,010	29,551	465,262	58,333,621
Pension Expense				
Proportionate share of plan Pension Expense	2,477,648	33,085	759,534	89,178,558
Net Amortization from changes in Share Proportions	(63,818)	(5,718)	(19,486)	6
Total Employer Pension Expense	2,413,830	27,367	740,048	89,178,564
Revenue	92,557	1,236	28,374	3,331,428

**EXHIBITS**

Exhibit 1 - Age/Service Distribution with Salary as of January 1, 2018

Attained Age	Average Salary	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20		1	0	0	0	0	0	0	0	0	1
		41,969	0	0	0	0	0	0	0	0	41,969
20-24		170	2	0	0	0	0	0	0	0	172
		32,515	31,239	0	0	0	0	0	0	0	32,500
25-29		339	54	0	1	0	0	0	0	0	394
		39,639	55,965	0	37,337	0	0	0	0	0	41,871
30-34		273	133	37	1	0	0	0	0	0	444
		45,730	60,366	64,133	69,699	0	0	0	0	0	51,702
35-39		182	96	114	27	0	0	0	0	0	419
		41,260	58,568	73,411	77,141	0	0	0	0	0	56,285
40-44		182	73	75	89	21	1	0	0	0	441
		36,728	57,717	65,782	77,752	75,461	74,304	0	0	0	55,352
45-49		217	120	106	112	118	33	0	0	0	706
		34,615	44,897	56,505	71,669	88,081	76,369	0	0	0	56,415
50-54		254	173	141	135	113	72	39	5	0	932
		35,653	39,597	45,328	57,243	76,407	85,466	90,136	61,524	0	52,184
55-59		159	122	170	198	106	54	61	16	2	888
		34,648	43,538	42,923	50,670	61,578	82,262	91,912	89,927	68,992	52,143
60-64		81	53	130	158	88	53	45	16	11	635
		39,093	42,002	40,729	46,008	52,964	66,414	79,680	87,617	91,497	50,601
65-69		29	29	42	68	43	30	18	5	5	269
		30,661	48,015	38,090	45,370	50,291	53,167	74,417	88,366	93,119	48,219
70+		9	9	15	18	12	15	15	7	6	106
		37,562	48,466	47,510	41,786	25,780	44,649	54,204	58,197	77,376	46,253
Total Employees		1,896	864	830	807	501	258	178	49	24	5,407
Average Salary		38,057	49,252	51,759	57,006	68,408	73,546	83,484	81,582	86,430	51,387

## Exhibit 2 - Retiree Distribution as of January 1, 2018

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	2654.76	23,587	26,242
35-39	1	1	2	5,227	6,556	11,784
40-44	0	0	0	0	0	0
45-49	3	5	8	35,140	99,829	134,968
50-54	9	17	26	87,392	417,543	504,935
55-59	50	79	129	620,259	3,038,384	3,658,643
60-64	171	180	351	2,703,911	7,559,007	10,262,918
65-69	323	287	610	6,238,840	11,430,249	17,669,089
70-74	321	280	601	6,793,683	10,208,314	17,001,996
75-79	261	205	466	5,066,237	6,509,260	11,575,498
80-84	221	130	351	3,939,353	3,624,365	7,563,718
85-89	149	87	236	2,261,790	2,025,988	4,287,778
90-94	98	45	143	1,148,756	929,078	2,077,834
95+	34	16	50	360,625	237,709	598,334
Total	1642	1333	2975	29,263,868	46,109,869	75,373,737
Average (Age/Payment)	75.01	72.49	73.88	17,822	34,591	25,336
Frequency Percent	55.2	44.8	100	38.8	61.2	100

## Exhibit 3 - Disabled Retiree Distribution as of January 1, 2018

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	1	0	1	5,663	0	5,663
30-34	0	0	0	0	0	0
35-39	0	1	1	0	33,471	33,471
40-44	2	1	3	65,081	34,233	99,313
45-49	2	18	20	85,422	707,099	792,521
50-54	6	29	35	262,554	1,192,725	1,455,279
55-59	12	31	43	279,241	1,275,757	1,554,998
60-64	11	39	50	248,267	1,701,521	1,949,788
65-69	9	54	63	220,952	2,166,481	2,387,434
70-74	9	47	56	198,555	1,638,244	1,836,799
75-79	7	45	52	197,851	1,421,258	1,619,109
80-84	4	12	16	96,274	389,937	486,211
85-89	4	9	13	55,598	204,025	259,623
90-94	1	0	1	16,963	0	16,963
95-99	0	0	0	0	0	0
Total	68	286	354	1,732,420	10,764,751	12,497,171
Average (Age/Payment)	65.94	66.29	66.22	25,477	37,639	35,303
Frequency Percent	19.2	80.8	100	13.9	86.1	100



## **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:

<b><u>Date of Hire</u></b>	<b><u>Member Contribution Rate</u></b>
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:

<b><u>Age</u></b>	<b><u>Male General Employees</u></b>	<b><u>Female General Employees</u></b>	<b><u>Male and Female Police and Fire Employees</u></b>
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:**

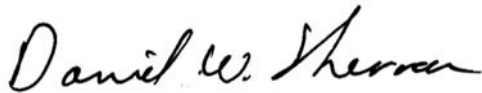
This report fairly represents the actuarial position of the Norfolk County Retirement System as of December 31, 2018, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued 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 2019