



TOWN OF BEDFORD

OTHER POSTEMPLOYMENT BENEFITS PROGRAM

ACTUARIAL VALUATION

July 1, 2016

Prepared by:

Linda L. Bournival, FSA, EA, MAAA
KMS Actuaries, LLC
Fellow, Society of Actuaries
Enrolled Actuary
Member, American Academy of Actuaries

and

Christopher E. Bean, ASA, MAAA
DBR Group, Inc.
Associate, Society of Actuaries
Member, American Academy of Actuaries



December 13, 2016

Mr. Victor Garofalo
Finance Director, Treasurer/Collector
Town of Bedford
Town Hall, 10 Mudge Way
Bedford, MA 01730-2144

Dear Victor:

Enclosed is our report summarizing the results of an actuarial valuation of the Town of Bedford's Other Postemployment Benefits (OPEB) as of July 1, 2016. Our valuation was performed in accordance with the provisions contained in the GASB Statement No. 45, Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions (GASB 45).

A summary of the valuation results is shown in Section 1. The principal results of our valuation are summarized in Section 2. The Plan Provisions and Actuarial Assumptions and Methods are shown in Sections 6 and 7, respectively. Section 8 summarizes the demographic profile of active employees and retirees.

The required disclosures under GASB 45 are presented in Section 3.

Our best estimate health care cost trend assumptions are based on recent experience and anticipated future cost increases under the Town of Bedford medical plans. Section 5 illustrates the sensitivity of actuarial accrued liability and annual required contribution to a one percentage increase and decrease in the health care cost trend assumption for each future year.

Our actuarial valuation is based on a discount rate of 5.5% compounded annually. To illustrate the impact on cost of fully prefunding the Town's benefit liabilities, our report also includes valuation results based on an alternative 7.5% discount rate. Section 5 illustrates the sensitivity of actuarial accrued liability and annual required contribution to a one percentage increase and decrease in the discount rate.

We also provide 30-year forecasts of the OPEB liability under a partial prefunding arrangement and a fully-funded arrangement as well as a 10-year forecast of the Annual OPEB Cost and the Net OPEB Obligation in Section 4.

K M S A C T U A R I E S

814 Elm Street, Suite 204 · Manchester, NH 03101 · p: (603) 792-9494 · f: (603) 792-9492 · lindab@kmsactuaries.com · kmsactuaries.com

Mr. Victor Garofalo
December 13, 2016
Page 2

Our calculations were based on participant census data and other information provided by the Town of Bedford and the benefit provisions of the medical plans as described in the benefit summaries. Our valuation is also based on medical plan rates provided by the Group Insurance Commission (GIC) in the files "Group Health Rates FY17 Handout.pdf" and "Group Health Rates FY17 Medicare Retirees.doc".

Our valuation follows generally accepted actuarial methods and we perform such tests as we consider necessary to assure the accuracy of the results. The amounts presented in this report have been appropriately determined according to the actuarial assumptions and methods stated herein.

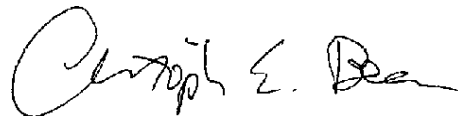
We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

We appreciate this opportunity to be of service to the Town of Bedford. We are available to answer any questions with respect to our valuation.

Respectfully submitted,



Linda L. Bournival, FSA, EA, MAAA
Member, American Academy of Actuaries
603-792-9494



Christopher E. Bean, ASA, MAAA
Member, American Academy of Actuaries
508-628-9022

TABLE OF CONTENTS

ACTUARIAL CERTIFICATION	1
SECTION 1 - SUMMARY	2
SECTION 2 - PRINCIPAL VALUATION RESULTS	6
TABLE 2.1 - OPEB TRUST ASSETS	
TABLE 2.2 - ACTUARIAL ACCRUED LIABILITY	
TABLE 2.3 - NORMAL COST	
TABLE 2.4 - ANNUAL REQUIRED CONTRIBUTION AND ANNUAL OPEB COST	
SECTION 3 - GASB 45 ACCOUNTING DISCLOSURE	10
SECTION 4 - FORECASTS	11
TABLE 4.1 - FUNDING PAY-AS-YOU-GO PLUS ANNUAL OPEB TRUST CONTRIBUTION PER FUNDING POLICY	
TABLE 4.2 - FUNDING THE ANNUAL REQUIRED CONTRIBUTION	
TABLE 4.3 - FUNDING PAY-AS-YOU-GO PLUS ANNUAL OPEB TRUST CONTRIBUTION (\$1,000,000 increasing 2.5%)	
TABLE 4.4 - FUNDING PAY-AS-YOU-GO PLUS ANNUAL OPEB TRUST CONTRIBUTION (\$750,000 increasing 2.5%)	
TABLE 4.5 - ANNUAL OPEB COST AND NET OPEB OBLIGATION	
SECTION 5 - SENSITIVITY ANALYSIS	17
TABLE 5.1 - DISCOUNT RATE ASSUMPTION	
TABLE 5.2 - HEALTH CARE COST TREND ASSUMPTION	
SECTION 6 - SUMMARY OF PLAN PROVISIONS	19
SECTION 7 - ACTUARIAL ASSUMPTIONS AND METHODS	21
SECTION 8 - PLAN MEMBER INFORMATION	26
TABLE 8.1 - ACTIVE EMPLOYEES BY AGE and YEARS OF SERVICE	
TABLE 8.2 - RETIRED EMPLOYEES, COVERED SPOUSES and SURVIVORS	
SECTION 9 - GOVERNMENTAL ACCOUNTING STANDARDS BOARD STATEMENT NO. 45 GLOSSARY OF TERMS	29
SECTION 10 - RESULTS BY SUBGROUP	31

ACTUARIAL CERTIFICATION

This report presents the results of the Actuarial Valuation for the Town of Bedford Postemployment Benefits Other Than Pensions as of July 1, 2016. The report presents the accounting and financial reporting information in accordance with Statement Number 45 of the Governmental Accounting Standards Board (GASB 45).

This valuation was performed using employee and retiree data and financial information provided to us by the Town. Although we did not audit the data used in the valuation, we believe that the information is complete and reliable.

This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions other than those explicitly applicable to the postemployment benefit plans are consistent with those used by the Middlesex Retirement System and Massachusetts Teachers Retirement System's actuaries for the Retirement System pension valuations.

Future actuarial valuation results may differ significantly from the current results presented in this report. Examples of potential sources of volatility include plan experience differing from that anticipated by the economic or demographic assumptions, the effect of new entrants, changes in economic or demographic assumptions, the effect of law changes and the delayed effect of smoothing techniques.

This report is intended for the sole use of the Town of Bedford and is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

The undersigned credentialed actuaries are Members of the American Academy of Actuaries and together meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained herein. They are available to answer any questions with regard to this report.

Respectfully submitted,



Linda L. Bournival, FSA, EA, MAAA
Member, American Academy of Actuaries
603-792-9494

Christopher E. Bean, ASA, MAAA
Member, American Academy of Actuaries
508-628-9022

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

SECTION 1 - SUMMARY

BACKGROUND

The Town of Bedford provides postemployment medical benefits to Town retirees and their covered dependents. The Town provides benefits as follows:

- ◆ Group 1 employees hired before April 2, 2012: retire after attaining age 55 with 10 or more years of service or any age with 20 or more years of service
- ◆ Group 1 employees hired after April 1, 2012: retire after attaining age 60 with 10 or more years of service
- ◆ Group 4 employees hired before April 2, 2012: retire after attaining age 55 or any age with 20 or more years of service
- ◆ Group 4 employees hired after April 1, 2012: retire after attaining age 55

Medical coverage continues to the spouse after the death of the retiree provided the spouse makes the required contributions.

GASB 45

The Governmental Accounting Standards Board (GASB) is responsible for establishing accounting standards for governmental entities. Calculations developed in accordance with GASB standards are required when providing financial statements.

GASB believes that postemployment benefits are a form of deferred compensation whose cost should be recognized while the employee actually renders services rather than when the actual benefits are paid, many years later. Ideally under the GASB standard the entire postemployment liability is recognized by the time an active participant begins to receive postemployment benefits. GASB 45's focus is on postemployment benefits other than pensions, such as medical, dental and life insurance benefits. Unlike pensions where sponsors are pre-funding for benefits due in the future, the impact of GASB 45 will be to significantly increase cash pay-as-you-go expense.

The effective date for GASB 45 is a function of the Town's total annual revenues in the first fiscal year ending after June 15, 1999. We understand that this is your fiscal year that ended June 30, 1999, and that your related revenues were greater than \$10 million and less than \$100 million. As a result, the Town was required to comply with GASB 45 for the fiscal year ending June 30, 2009.

ACTUARIAL VALUATION

As of July 1, 2016, there are 641 active employees who may be eligible for benefits in the future and 405 retired employees, covered spouses and survivors who are currently receiving benefits. Coverage is for individuals and families or individuals and spouses depending on the coverage selected.

SECTION 1 - SUMMARY

Prior to GASB 45, the annual cost recognized was the annual premiums or benefits paid plus administrative expenses less any participant contributions paid towards the coverage. Under GASB 45, an annual cost for postemployment coverage is developed for any person who is currently receiving benefits or who is currently actively employed and may be eligible to receive benefits in the future. In developing the GASB 45 cost for the Town of Bedford, the payment of future benefits is determined using the current schedule of premiums under the plans provided by the Group Insurance Commission (GIC) modified to reflect the population and the fact that actual healthcare expenses are higher as individuals age. These age-adjusted costs are increased in the future under the annual healthcare cost trend rate assumptions. The age-adjusted per capita costs utilized in this valuation are detailed in Section 7, Actuarial Assumptions and Methods.

It is important to understand that even though the Town charges participants for coverage based on the individual or family premium schedule presented in our report, in developing a liability for the Town, GASB requires that these premiums be adjusted as noted above. The plan premium represents less than 100% of the actual cost that is required to be recognized under the GASB standard.

SUMMARY OF PRINCIPAL RESULTS

A summary of the principal results for the current and prior valuations follows:

Valuation Date	<u>July 1, 2016</u>	<u>July 1, 2014</u>
Summary of Member Data		
Active Members	641	609
Average Age	44.7	45.5
Average Service	10.3	10.0
Retired Employees, Spouses and Survivors	405	394
Average Age	73.9	72.1
Discount rate	5.50%	5.50%
Actuarial Accrued Liability	\$68,894,606	\$40,975,065
Normal Cost	\$2,210,431	\$1,472,169
Assets	\$5,474,026	\$4,083,974
Unfunded Actuarial Accrued Liability	\$63,420,580	\$36,891,091
Annual Required Contribution	\$5,056,301	\$3,137,833
Expected Benefit Payments	\$1,853,604	\$1,417,624

SECTION 1 - SUMMARY

ACTUARIAL ASSUMPTIONS

The most important assumption for GASB 45 is the discount rate, which is used to discount future benefits to current age. GASB 45 requires that the discount rate accurately reflects the rate of return on assets dedicated to paying the retiree medical benefits. This means that a traditional pay-as-you-go system, which pays benefits from the Town's annual budget and not a dedicated trust, must use a discount rate close to the rate of return on cash. Full pre-funding by use of a dedicated trust with a mixture of stocks and bonds can employ a higher discount rate that accurately reflects the expected return on trust assets dedicated to pay retiree medical benefits. For the Town of Bedford, we selected a 5.5% discount rate to reflect the partial pre-funding of future payments. The development of the discount rate is shown in Section 7 - Actuarial Assumptions and Methods.

CHANGES

Some assumptions used in this valuation have changed from those used in the July 1, 2014 valuation and are detailed in Section 7. The major assumption changes are summarized below:

- ◆ the pre-retirement decrements for Teachers were updated to reflect those recently used by the Massachusetts Teachers Retirement System actuaries.
- ◆ the pre- and post-retirement mortality rates were updated to utilize a more recent mortality table adjusted for mortality improvement.
- ◆ Actuarial Standards of Practice (ASOPs) now require that the payment of future benefits be determined using the current schedule of premiums under the plans provided by the Town, modified to reflect the fact that actual healthcare expenses are higher as individuals age. In the previous valuation, the GIC plans were considered to be "community rated" and therefore did not value an "implicit subsidy" nor adjust the schedule of premiums as described above.
- ◆ the excise tax under the Patient Protection and Affordable Care Act (PPACA) was updated to reflect the tax on benefits in excess of the mandated thresholds starting in 2020 (previously, 2018).

RESULTS

We have provided results based on a discount rate of 5.5%. As shown in Table 4.3 of Section 4, the Annual OPEB Cost for the fiscal year ending June 30, 2017 under GASB 45 is \$5,317,721 and the estimated Annual OPEB Cost for the fiscal year ending June 30, 2018 under GASB 45 is \$5,613,209.

The accumulated Net OPEB Obligation as of June 30, 2017 is \$21,851,224 and the estimated Net OPEB Obligation as of June 30, 2018 is \$24,897,476.

SECTION 1 - SUMMARY

The Unfunded Actuarial Accrued Liability (UAAL) as of July 1, 2016 is \$63,420,580. The UAAL is shown below:

Actuarial Accrued Liability (AAL)	
Actives	\$41,707,130
Retirees, Beneficiaries and Surviving Spouses	27,187,476
Total Actuarial Accrued Liability	\$68,894,606
Actuarial Value of Assets	\$5,474,026
Unfunded Actuarial Accrued Liability (UAAL)	\$63,420,580

ACTUARIAL GAIN/LOSS ANALYSIS

In performing the actuarial valuation, various assumptions are made regarding future premium rates, mortality, retirement, disability and turnover rates as well as investment returns. A comparison of the results of the current valuation and the prior valuation is made to determine how closely actual experience relates to expected. Below is the development of the estimated Actuarial Gain or Loss for the current period:

Unfunded Actuarial Accrued Liability, July 1, 2014	\$36,891,091
Expected Unfunded Actuarial Accrued Liability, July 1, 2016*	40,064,667
Actual Unfunded Actuarial Accrued Liability, July 1, 2016	63,420,580
(Gain)/Loss during the current period	\$23,355,913

* from July 1, 2014 valuation

The actuarial loss of \$23,355,913 was mostly comprised of the following:

◆ loss as a result of unfavorable demographic experience from the prior valuation, including market value of assets less than expected	3,475,912
◆ gain as a result of update to premium rates as of July 1, 2016	(3,234,267)
◆ loss as a result of use of age-adjusted medical costs and valuation of implicit subsidy	14,007,558
◆ loss as a result of update to pre-retirement decrements for Teachers	1,998,706
◆ loss as a result of update to pre- and post-retirement mortality rates	7,234,243
◆ gain as a result of update to the PPACA excise tax effective date from 2018 to 2020	(126,239)
◆ Total (Gain)/Loss	23,355,913

SECTION 2 - PRINCIPAL VALUATION RESULTS

The Town of Bedford has established an OPEB trust for the purpose of prefunding OPEB liabilities. Plan assets segregated and restricted in the OPEB trust must be dedicated to providing plan benefits to retirees and beneficiaries in accordance with the terms of the plan and must be legally protected from creditors of the employer. Further, employer contributions to the trust must be irrevocable.

The Actuarial Value of Plan Assets is equal to the market value. The asset activity during the 2-year period July 1, 2014 through June 30, 2016 follows:

TABLE 2.1 - OPEB TRUST ASSETS

Market Value of Assets		
Fiscal Year Ending	<u>6/30/2016</u>	<u>6/30/2015</u>
Assets as of July 1	\$4,787,362	\$4,083,974
Paid Premiums ¹	1,328,196	1,284,000
OPEB Trust Contributions	565,368	551,578
Benefits Paid	(1,328,196)	(1,284,000)
Expenses	(29,448)	(26,359)
Investment Earnings	150,744	178,169
Assets as of June 30	\$5,474,026	\$4,787,362
Estimated rate of return	2.27%	3.27%

¹ Information relating to the asset activity and paid premiums was provided by the Town.

SECTION 2 - PRINCIPAL VALUATION RESULTS

The Actuarial Accrued Liability is the portion of the Actuarial Present Value of Future Benefits which is allocated to all periods prior to a valuation year and therefore is not provided for by future Normal Costs. Below is the Actuarial Accrued Liability assuming a discount rate of 5.5%, a blended rate for partial prefunding, and 7.5%, the rate of return on a dedicated trust if the Town were to fully pre-fund benefits:

TABLE 2.2 - ACTUARIAL ACCRUED LIABILITY

	Funding	Full Pre-Funding
Discount Rate	5.5%	7.5%
Current Active Employees		
Pre-Medicare Gross Benefit	\$17,358,029	\$13,195,411
Pre-Medicare Participant Contributions	4,127,719	3,164,748
Net Pre-Medicare Benefit	\$13,230,310	\$10,030,663
Post - Medicare Gross Benefit	\$44,903,649	\$26,637,296
Post - Medicare Participant Contributions	16,426,829	10,130,297
Net Post - Medicare Benefit	\$28,476,820	\$16,506,999
Total Current Active Employees	\$41,707,130	\$26,537,662
Current Retirees		
Pre-Medicare Gross Benefit	\$2,258,862	\$2,136,109
Pre-Medicare Participant Contributions	630,356	596,236
Net Pre-Medicare Benefit	\$1,628,506	\$1,539,873
Post - Medicare Gross Benefit	\$38,468,571	\$31,182,606
Post - Medicare Participant Contributions	12,909,601	10,616,840
Net Post - Medicare Benefit	\$25,558,970	\$20,565,766
Total Current Retirees	\$27,187,476	\$22,105,639
Total Actuarial Accrued Liability (AAL)	\$68,894,606	\$48,643,301

SECTION 2 - PRINCIPAL VALUATION RESULTS

The Normal Cost is the portion of the Actuarial Present Value of Future Benefits which is attributed to services rendered by active employees in the current year. Below is the Normal Cost assuming a discount rate of 5.5%, a blended rate for partial prefunding, and 7.5%, the rate of return on a dedicated trust if the Town were to fully pre-fund benefits:

TABLE 2.3 - NORMAL COST

	Funding	Full Pre-Funding
Discount Rate	5.5%	7.5%
Current Active Employees		
Pre-Medicare Gross Benefit	\$881,197	\$604,186
Pre-Medicare Participant Contributions	200,011	138,351
Net Pre-Medicare Benefit	\$681,186	\$465,835
Post - Medicare Gross Benefit	\$2,369,929	\$1,222,494
Post - Medicare Participant Contributions	840,684	452,357
Net Post - Medicare Benefit	\$1,529,245	\$770,137
Total Current Active Employees	\$2,210,431	\$1,235,972
 Current Retirees		
Pre-Medicare Gross Benefit	\$0	\$0
Pre-Medicare Participant Contributions	0	0
Net Pre-Medicare Benefit	\$0	\$0
Post - Medicare Gross Benefit	\$0	\$0
Post - Medicare Participant Contributions	0	0
Net Post - Medicare Benefit	\$0	\$0
Total Current Retirees	\$0	\$0
Total Normal Cost (NC)	\$2,210,431	\$1,235,972

SECTION 2 - PRINCIPAL VALUATION RESULTS

Under GASB 45, the Annual Required Contribution (ARC) of the employer equals the Normal Cost plus a provision for amortizing the Unfunded Actuarial Accrued Liability. We have assumed increasing dollar amortization over the maximum acceptable amortization period of 30 years. For the period beginning July 1, 2016, the ARC, calculated under the parameters of this actuarial valuation, would be:

TABLE 2.4 - ANNUAL REQUIRED CONTRIBUTION and ANNUAL OPEB COST

	Funding	Full Pre-Funding
Discount Rate	5.5%	7.5%
1. Normal Cost	\$2,210,431	\$1,235,972
2. Unfunded Actuarial Accrued Liability		
a. Actuarial Accrued Liability	\$68,894,606	\$48,643,301
b. Actuarial Value of Plan Assets	\$5,474,026	\$5,474,026
c. Unfunded Actuarial Accrued Liability	\$63,420,580	\$43,169,275
3. Amortization of Unfunded Actuarial Accrued Liability		
a. Unfunded Actuarial Accrued Liability	\$63,420,580	\$43,169,275
b. Amortization Period in years	30	30
c. Percent of Covered Payroll	4.0%	4.0%
d. Amortization Factor	24.56	19.34
e. Amortization Amount (3.a. / 3.d.)	\$2,582,271	\$2,232,124
4. Interest on 1. and 3.e.	\$263,599	\$260,107
5. Annual Required Contribution (1. + 3.e. + 4.)	\$5,056,301	\$3,728,203
6. Net OPEB Obligation, beginning of year	\$19,089,099	Not Applicable
7. Interest on Net OPEB Obligation at 5.5%	\$1,049,900	Not Applicable
8. Adjustment to Annual Required Contribution at 5.5%	(\$788,480)	Not Applicable
9. Annual OPEB Cost (5. + 7. + 8.)	\$5,317,721	Not Applicable

SECTION 3 - GASB 45 ACCOUNTING DISCLOSURE

GASB 45 requires disclosure of the annual OPEB cost, the Net OPEB Obligation and the Schedule of Funding Progress. In addition, a summary of the Substantive Plan Provisions and information about the Actuarial Methods and Assumptions used in the valuation are disclosed, which are provided in Section 6 and Section 7, respectively.

Annual OPEB Cost and Net OPEB Obligation¹			
Fiscal Year Ending	<u>6/30/2017</u>	<u>6/30/2016</u>	<u>6/30/2015</u>
Discount rate	5.50%	5.50%	5.50%
Annual Required Contribution	\$5,056,301	\$3,267,592	\$3,137,833
Interest on Net OPEB Obligation	1,049,900	971,846	655,680
Adjustment to annual required contribution	(788,480)	(729,861)	(546,400)
Annual OPEB Cost	\$5,317,721	\$3,509,577	\$3,247,113
Expected Benefit Payments	(1,853,604)	(1,525,033)	(1,417,624)
Employer contributions to OPEB Trust ²	(701,992)	(565,368)	(551,578)
Total employer contributions	(2,555,596)	(2,090,401)	(1,969,202)
Change in Net OPEB Obligation	\$2,762,125	\$1,419,176	\$1,277,911
Net OPEB Obligation - beginning of year	\$19,089,099	\$17,669,923	\$16,392,012
Net OPEB Obligation - end of year	\$21,851,224	\$19,089,099	\$17,669,923

¹ Entries for FY2015 are based on information provided in the Town's audited financial statements; FY2016 are based on information provided in the prior GASB 45 valuation report.

Plan History				
Fiscal Year Ended	Annual OPEB Cost	Percentage of Annual OPEB Cost Contributed	Net OPEB Obligation	
6/30/2017	5,317,721	48.1%	21,851,224	
6/30/2016	3,509,577	59.6%	19,089,099	
6/30/2015	3,247,113	60.6%	17,669,923	

Schedule of Funding Progress						
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) / c)
7/1/2016	5,474,026	68,894,606	63,420,580	7.95%	40,490,021	156.6%
7/1/2014	4,083,974	40,975,065	36,891,091	9.97%	40,752,389	90.5%
7/1/2012	0	48,839,208	48,839,208	0.00%	38,413,036	127.1%

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

SECTION 4 - FORECASTS

OVERVIEW

In Section 4, we have provided 30-year forecasts of the annual funding requirements, accrued liability, assets and unfunded actuarial accrued liability under three different pay-as-you-go scenarios and a fully funded scenario. The entries in Tables 4.1 through 4.4 are based on the assumptions stated below:

- ◆ The Normal Cost is the portion of the Actuarial Present Value of Future Benefits which is attributed to services rendered by active employees in the current year and is assumed to increase annually by 4%.
- ◆ Actuarial Accrued Liability (AAL), end of year, equals AAL, beginning of year, plus Normal Cost less Expected Benefit Payments plus interest on these items.
- ◆ Expected Benefit Payments are developed in the actuarial valuation and are based on the assumptions detailed in Section 7.
- ◆ Assets are assumed to grow annually at the selected discount rate plus OPEB Trust Contributions made at the end of each fiscal year.
- ◆ Unfunded Actuarial Accrued Liability (UAAL) equals the AAL less Assets.
- ◆ The Annual Required Contribution (ARC) is the sum of the Normal Cost, the Amortization Amount and Interest.

Tables 4.1, 4.3 and 4.4 are based on annually funding pay-as-you-go plus an OPEB trust contribution of \$593,990 (Table 4.1), \$1,000,000 (Table 4.3) and \$750,000 (Table 4.4), increasing 2.5% per year.

- ◆ The assumed discount rate is 5.5%.
- ◆ Amortization Amount is the amount necessary to amortize the Unfunded Actuarial Accrued Liability over 30 years at a discount rate of 5.5% on an open amortization basis. The open amortization period is 30 years, recalculated at each valuation date.

Table 4.2 is based on fully funding the Annual Required Contribution (ARC) each year.

- ◆ The assumed discount rate is 7.5%.
- ◆ Amortization Amount is the amount necessary to amortize the Unfunded Actuarial Accrued Liability over 30 years at a discount rate of 7.5% on a closed amortization basis. The closed amortization period is 30 years at year one declining to zero after 30 years. This method fully funds the UAL at the end of 30 years.
- ◆ Assumes OPEB Trust Contributions equal to the excess of the ARC over the Expected Benefit Payments.

SECTION 4 - FORECASTS

TABLE 4.1 - Funding Pay-As-You-Go Plus Annual OPEB Trust Contribution per Funding Policy

FYE June 30	(1) Normal Cost	(2) Actuarial Accrued Liability	(3) Expected Benefit Payments	(4) Actuarial Value of Assets	(5) Unfunded Actuarial Accrued Liability (2) - (4)	(6) Amortization Amount	(7) Interest	(8) ARC (1) + (6) + (7)	(9) OPEB Trust Contributions
2017	2,210,431	68,894,606	1,853,604	5,474,026	63,420,580	2,582,271	263,599	5,056,301	701,992
2018	2,298,848	73,111,918	1,972,967	5,864,603	67,247,315	2,738,083	277,031	5,313,962	593,990
2019	2,390,802	77,531,861	2,114,222	6,781,146	70,750,715	2,880,729	289,934	5,561,465	608,840
2020	2,486,434	82,146,825	2,195,240	7,762,949	74,383,876	3,028,659	303,330	5,818,423	624,061
2021	2,585,891	87,033,287	2,431,265	8,813,972	78,219,315	3,184,826	317,389	6,088,106	639,663
2022	2,689,327	92,051,003	2,643,908	9,938,403	82,112,600	3,343,347	331,797	6,364,471	655,655
2023	2,796,900	97,235,406	2,849,957	11,140,670	86,094,736	3,505,486	346,631	6,649,017	672,046
2024	2,908,776	102,606,801	3,058,101	12,425,453	90,181,348	3,671,879	361,936	6,942,591	688,847
2025	3,025,127	108,177,861	3,244,844	13,797,700	94,380,161	3,842,840	377,738	7,245,705	706,068
2026	3,146,132	113,986,269	3,513,394	15,262,642	98,723,627	4,019,692	394,120	7,559,944	723,720
2027	3,271,977	119,965,964	3,656,620	16,825,807	103,140,157	4,199,518	410,932	7,882,427	741,813
2028	3,402,856	126,260,197	3,907,656	18,493,039	107,767,158	4,387,914	428,492	8,219,262	760,358
2029	3,538,970	132,780,843	4,145,753	20,270,514	112,510,329	4,581,039	446,600	8,566,609	779,367
2030	3,680,529	139,559,167	4,433,838	22,164,759	117,394,408	4,779,903	465,324	8,925,756	798,851
2031	3,827,750	146,563,743	4,835,019	24,182,672	122,381,071	4,982,943	484,588	9,295,281	818,822
2032	3,980,860	153,696,823	5,100,573	26,331,541	127,365,282	5,185,883	504,171	9,670,914	839,293
2033	4,140,094	161,110,994	5,360,519	28,619,069	132,491,925	5,394,622	524,409	10,059,125	860,275
2034	4,305,698	168,833,938	5,634,954	31,053,393	137,780,545	5,609,957	545,361	10,461,016	881,782
2035	4,477,926	176,874,475	5,720,431	33,643,112	143,231,363	5,831,896	567,040	10,876,862	903,827
2036	4,657,043	185,451,146	5,711,820	36,397,310	149,053,836	6,068,967	589,931	11,315,941	926,423
2037	4,843,325	194,697,347	5,926,517	39,325,585	155,371,762	6,326,212	614,325	11,783,862	949,584
2038	5,037,058	204,428,094	6,141,641	42,438,076	161,990,018	6,595,685	639,801	12,272,544	973,324
2039	5,238,540	214,677,460	6,387,625	45,745,494	168,931,966	6,878,337	666,428	12,783,305	997,657
2040	5,448,082	225,450,446	6,732,099	49,259,153	176,191,293	7,173,913	694,210	13,316,205	1,022,598
2041	5,666,005	236,683,193	7,053,901	52,991,004	183,692,189	7,479,324	722,993	13,868,322	1,048,163
2042	5,892,645	248,433,117	7,463,364	56,953,672	191,479,445	7,796,394	752,897	14,441,936	1,074,367
2043	6,128,351	260,647,819	7,686,613	61,160,491	199,487,328	8,122,448	783,794	15,034,593	1,101,226
2044	6,373,485	273,553,694	7,822,071	65,625,544	207,928,150	8,466,130	816,179	15,655,794	1,128,757
2045	6,628,424	287,288,875	8,068,607	70,363,706	216,925,169	8,832,458	850,349	16,311,231	1,156,976
2046	6,893,561	301,795,227	8,318,484	75,390,686	226,404,541	9,218,426	886,159	16,998,146	1,185,900
2047	7,169,303	317,122,490	8,351,489	80,723,074	236,399,416	9,625,383	923,708	17,718,394	1,215,548

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

30 years open, 5.5% discount rate.

SECTION 4 - FORECASTS

TABLE 4.2 - Funding the Annual Required Contribution (ARC)

FYE June 30	(1) Normal Cost	(2) Actuarial Accrued Liability	(3) Expected Benefit Payments	(4) Actuarial Value of Assets	(5) Unfunded Actuarial Accrued Liability (2) - (4)	(6) Amortization Amount	(7) Interest	(8) ARC (1) + (6) + (7)	(9) OPEB Trust Contributions
2017	1,235,972	48,643,301	1,853,604	5,474,026	43,169,275	2,232,124	260,107	3,728,203	701,992
2018	1,285,411	51,698,361	1,972,967	5,864,603	45,833,758	2,418,668	277,806	3,981,885	2,008,918
2019	1,336,827	54,911,939	2,114,222	8,240,718	46,671,221	2,514,613	288,858	4,140,298	2,026,076
2020	1,390,300	58,275,351	2,195,240	10,806,998	47,468,353	2,615,336	300,423	4,306,059	2,110,819
2021	1,445,912	61,864,502	2,431,265	13,647,509	48,216,993	2,721,049	312,522	4,479,483	2,048,218
2022	1,503,748	65,537,906	2,643,908	16,629,766	48,908,140	2,828,695	324,933	4,657,376	2,013,468
2023	1,563,898	69,328,516	2,849,957	19,793,112	49,535,404	2,941,532	337,907	4,843,337	1,993,380
2024	1,626,454	73,254,447	3,058,101	23,166,034	50,088,413	3,059,769	351,467	5,037,690	1,979,589
2025	1,691,512	77,326,262	3,244,844	26,770,470	50,555,792	3,181,611	365,484	5,238,607	1,993,763
2026	1,759,172	81,579,781	3,513,394	30,652,536	50,927,245	3,309,113	380,121	5,448,406	1,935,012
2027	1,829,539	85,946,610	3,656,620	34,757,118	51,189,492	3,442,468	395,401	5,667,408	2,010,788
2028	1,902,721	90,568,096	3,907,656	39,240,046	51,328,050	3,579,362	411,156	5,893,239	1,985,583
2029	1,978,830	95,354,584	4,145,753	44,024,744	51,329,840	3,722,251	427,581	6,128,662	1,982,909
2030	2,057,983	100,335,012	4,433,838	49,156,854	51,178,158	3,871,268	444,694	6,373,945	1,940,107
2031	2,140,302	105,475,369	4,835,019	54,620,462	50,854,907	4,026,517	462,511	6,629,330	1,794,311
2032	2,225,914	110,673,792	5,100,573	60,333,272	50,340,520	4,188,063	481,048	6,895,025	1,794,452
2033	2,314,951	116,078,797	5,360,519	66,464,906	49,613,891	4,355,917	500,315	7,171,183	1,810,664
2034	2,407,549	121,715,375	5,634,954	73,063,053	48,652,322	4,530,011	520,317	7,457,877	1,822,923
2035	2,503,851	127,589,699	5,720,431	80,158,214	47,431,485	4,710,177	541,052	7,755,080	2,034,649
2036	2,604,005	133,919,497	5,711,820	87,994,091	45,925,406	4,901,324	562,900	8,068,229	2,356,409
2037	2,708,165	140,840,624	5,926,517	96,739,736	44,100,888	5,092,481	585,048	8,385,694	2,459,177
2038	2,816,492	148,170,205	6,141,641	106,236,167	41,934,038	5,301,395	608,842	8,726,729	2,585,088
2039	2,929,152	155,942,910	6,387,625	116,562,820	39,380,090	5,507,705	632,764	9,069,621	2,681,996
2040	3,046,318	164,164,636	6,732,099	127,751,822	36,412,814	5,734,301	658,546	9,439,165	2,707,066
2041	3,168,171	172,771,787	7,053,901	139,792,385	32,979,402	5,963,725	684,892	9,816,788	2,762,887
2042	3,294,898	181,821,815	7,463,364	152,779,962	29,041,853	6,205,524	712,532	10,212,954	2,749,590
2043	3,426,694	191,262,286	7,686,613	166,713,233	24,549,053	6,443,321	740,251	10,610,266	2,923,653
2044	3,563,762	201,321,004	7,822,071	181,857,341	19,463,663	6,711,608	770,653	11,046,023	3,223,952
2045	3,706,312	212,141,028	8,068,607	198,432,569	13,708,459	6,958,609	799,869	11,464,790	3,396,183
2046	3,854,564	223,670,181	8,318,484	216,414,092	7,256,089	7,256,089	833,299	11,943,952	3,625,468
2047	4,008,747	235,964,313	8,351,489	235,964,313	-	-	300,656	4,309,403	-

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

30 years closed, 7.5% discount rate.

SECTION 4 - FORECASTS

TABLE 4.3 - Funding Pay-As-You-Go Plus Annual OPEB Trust Contribution of \$1,000,000, Increasing 2.5% Per Year

FYE June 30	(1) Normal Cost	(2) Actuarial Accrued Liability	(3) Expected Benefit Payments	(4) Actuarial Value of Assets	(5) Unfunded Actuarial Accrued Liability (2) - (4)	(6) Amortization Amount	(7) Interest	(8) ARC (1) + (6) + (7)	(9) OPEB Trust Contributions
2017	2,210,431	68,894,606	1,853,604	5,474,026	63,420,580	2,582,271	263,599	5,056,301	701,992
2018	2,298,848	73,111,918	1,972,967	5,864,603	67,247,315	2,738,083	277,031	5,313,962	1,000,000
2019	2,390,802	77,531,861	2,114,222	7,187,156	70,344,705	2,864,198	289,025	5,544,025	1,025,000
2020	2,486,434	82,146,825	2,195,240	8,607,450	73,539,375	2,994,274	301,439	5,782,147	1,050,625
2021	2,585,891	87,033,287	2,431,265	10,131,485	76,901,802	3,131,181	314,439	6,031,511	1,076,891
2022	2,689,327	92,051,003	2,643,908	11,765,608	80,285,395	3,268,949	327,705	6,285,981	1,103,813
2023	2,796,900	97,235,406	2,849,957	13,516,529	83,718,877	3,408,749	341,311	6,546,960	1,131,408
2024	2,908,776	102,606,801	3,058,101	15,391,346	87,215,455	3,551,118	355,294	6,815,188	1,159,693
2025	3,025,127	108,177,861	3,244,844	17,397,563	90,780,298	3,696,266	369,677	7,091,070	1,188,685
2026	3,146,132	113,986,269	3,513,394	19,543,114	94,443,155	3,845,405	384,535	7,376,072	1,218,402
2027	3,271,977	119,965,964	3,656,620	21,836,387	98,129,577	3,995,504	399,711	7,667,192	1,248,862
2028	3,402,856	126,260,197	3,907,656	24,286,250	101,973,947	4,152,034	415,519	7,970,409	1,280,084
2029	3,538,970	132,780,843	4,145,753	26,902,078	105,878,765	4,311,025	431,750	8,281,745	1,312,086
2030	3,680,529	139,559,167	4,433,838	29,693,778	109,865,389	4,473,346	448,463	8,602,338	1,344,888
2031	3,827,750	146,563,743	4,835,019	32,671,824	113,891,919	4,637,293	465,577	8,930,620	1,378,510
2032	3,980,860	153,696,823	5,100,573	35,847,284	117,849,539	4,798,434	482,861	9,262,155	1,412,973
2033	4,140,094	161,110,994	5,360,519	39,231,858	121,879,136	4,962,506	500,643	9,603,243	1,448,297
2034	4,305,698	168,833,938	5,634,954	42,837,907	125,996,031	5,130,132	518,971	9,954,801	1,484,504
2035	4,477,926	176,874,475	5,720,431	46,678,496	130,195,979	5,301,139	537,849	10,316,914	1,521,617
2036	4,657,043	185,451,146	5,711,820	50,767,430	134,683,716	5,483,865	557,750	10,698,658	1,559,657
2037	4,843,325	194,697,347	5,926,517	55,119,296	139,578,051	5,683,145	578,956	11,105,426	1,598,648
2038	5,037,058	204,428,094	6,141,641	59,749,505	144,678,589	5,890,822	601,033	11,528,913	1,638,614
2039	5,238,540	214,677,460	6,387,625	64,674,342	150,003,118	6,107,619	624,039	11,970,198	1,679,579
2040	5,448,082	225,450,446	6,732,099	69,911,010	155,539,436	6,333,039	647,962	12,429,083	1,721,568
2041	5,666,005	236,683,193	7,053,901	75,477,684	161,205,509	6,563,742	672,636	12,902,383	1,764,607
2042	5,892,645	248,433,117	7,463,364	81,393,564	167,039,553	6,801,285	698,166	13,392,096	1,808,722
2043	6,128,351	260,647,819	7,686,613	87,678,932	172,968,887	7,042,707	724,408	13,895,466	1,853,940
2044	6,373,485	273,553,694	7,822,071	94,355,213	179,198,481	7,296,355	751,841	14,421,681	1,900,289
2045	6,628,424	287,288,875	8,068,607	101,445,039	185,843,836	7,566,931	780,745	14,976,100	1,947,796
2046	6,893,561	301,795,227	8,318,484	108,972,312	192,822,915	7,851,096	810,956	15,555,613	1,996,491
2047	7,169,303	317,122,490	8,351,489	116,962,280	200,160,210	8,149,846	842,553	16,161,702	2,046,403

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

30 years open, 5.5% discount rate.

SECTION 4 - FORECASTS

TABLE 4.4 - Funding Pay-As-You-Go Plus Annual OPEB Trust Contribution of \$750,000, Increasing 2.5% Per Year

FYE June 30	(1) Normal Cost	(2) Actuarial Accrued Liability	(3) Expected Benefit Payments	(4) Actuarial Value of Assets	(5) Unfunded Actuarial Accrued Liability (2) - (4)	(6) Amortization Amount	(7) Interest	(8) ARC (1) + (6) + (7)	(9) OPEB Trust Contributions
2017	2,210,431	68,894,606	1,853,604	5,474,026	63,420,580	2,582,271	263,599	5,056,301	701,992
2018	2,298,848	73,111,918	1,972,967	5,864,603	67,247,315	2,738,083	277,031	5,313,962	750,000
2019	2,390,802	77,531,861	2,114,222	6,937,156	70,594,705	2,874,377	289,585	5,554,764	768,750
2020	2,486,434	82,146,825	2,195,240	8,087,450	74,059,375	3,015,447	302,603	5,804,484	787,969
2021	2,585,891	87,033,287	2,431,265	9,320,229	77,713,058	3,164,212	316,256	6,066,359	807,668
2022	2,689,327	92,051,003	2,643,908	10,640,510	81,410,493	3,314,759	330,225	6,334,311	827,860
2023	2,796,900	97,235,406	2,849,957	12,053,598	85,181,808	3,468,315	344,587	6,609,802	848,557
2024	2,908,776	102,606,801	3,058,101	13,565,103	89,041,698	3,625,476	359,384	6,893,636	869,771
2025	3,025,127	108,177,861	3,244,844	15,180,955	92,996,906	3,786,519	374,641	7,186,287	891,515
2026	3,146,132	113,986,269	3,513,394	16,907,423	97,078,846	3,952,722	390,437	7,489,291	913,803
2027	3,271,977	119,965,964	3,656,620	18,751,134	101,214,830	4,121,125	406,621	7,799,723	936,648
2028	3,402,856	126,260,197	3,907,656	20,719,094	105,541,103	4,297,276	423,507	8,123,639	960,064
2029	3,538,970	132,780,843	4,145,753	22,818,708	109,962,135	4,477,286	440,894	8,457,150	984,066
2030	3,680,529	139,559,167	4,433,838	25,057,803	114,501,364	4,662,108	458,845	8,801,482	1,008,668
2031	3,827,750	146,563,743	4,835,019	27,444,650	119,119,093	4,850,126	477,283	9,155,159	1,033,885
2032	3,980,860	153,696,823	5,100,573	29,987,991	123,708,832	5,037,005	495,983	9,513,848	1,059,732
2033	4,140,094	161,110,994	5,360,519	32,697,063	128,413,931	5,228,580	515,277	9,883,951	1,086,225
2034	4,305,698	168,833,938	5,634,954	35,581,626	133,252,312	5,425,583	535,220	10,266,501	1,113,381
2035	4,477,926	176,874,475	5,720,431	38,651,996	138,222,479	5,627,951	555,823	10,661,700	1,141,216
2036	4,657,043	185,451,146	5,711,820	41,919,072	143,532,074	5,844,140	577,565	11,078,748	1,169,746
2037	4,843,325	194,697,347	5,926,517	45,394,367	149,302,980	6,079,112	600,734	11,523,171	1,198,990
2038	5,037,058	204,428,094	6,141,641	49,090,047	155,338,047	6,324,839	624,904	11,986,801	1,228,965
2039	5,238,540	214,677,460	6,387,625	53,018,965	161,658,495	6,582,186	650,140	12,470,866	1,259,689
2040	5,448,082	225,450,446	6,732,099	57,194,697	168,255,749	6,850,804	676,439	12,975,325	1,291,181
2041	5,666,005	236,683,193	7,053,901	61,631,586	175,051,607	7,127,508	703,643	13,497,156	1,323,461
2042	5,892,645	248,433,117	7,463,364	66,344,784	182,088,333	7,414,020	731,867	14,038,532	1,356,548
2043	6,128,351	260,647,819	7,686,613	71,350,295	189,297,524	7,707,554	760,975	14,596,880	1,390,462
2044	6,373,485	273,553,694	7,822,071	76,665,023	196,888,671	8,016,640	791,457	15,181,582	1,425,224
2045	6,628,424	287,288,875	8,068,607	82,306,823	204,982,052	8,346,175	823,603	15,798,202	1,460,855
2046	6,893,561	301,795,227	8,318,484	88,294,553	213,500,674	8,693,024	857,262	16,443,847	1,497,376
2047	7,169,303	317,122,490	8,351,489	94,648,129	222,474,361	9,058,402	892,524	17,120,229	1,534,810

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

30 years open, 5.5% discount rate.

SECTION 4 - FORECASTS

TABLE 4.5 - ANNUAL OPEB COST and NET OPEB OBLIGATION

FYE June 30	ARC	Interest on Net OPEB Obligation	ARC Adjustment	Amortization Factor	Annual OPEB Cost	Employer Contributions	Change in Net OPEB Obligation	Net OPEB Obligation Balance
								19,089,099
2017	5,056,301	1,049,900	(788,480)	24.21	5,317,721	2,555,596	2,762,125	21,851,224
2018	5,313,962	1,201,817	(902,570)	24.21	5,613,209	2,566,957	3,046,252	24,897,476
2019	5,561,465	1,369,361	(1,028,396)	24.21	5,902,430	2,723,062	3,179,368	28,076,844
2020	5,818,423	1,544,226	(1,159,721)	24.21	6,202,928	2,819,301	3,383,627	31,460,471
2021	6,088,106	1,730,326	(1,299,482)	24.21	6,518,950	3,070,928	3,448,022	34,908,493
2022	6,364,471	1,919,967	(1,441,904)	24.21	6,842,534	3,299,563	3,542,971	38,451,464
2023	6,649,017	2,114,831	(1,588,247)	24.21	7,175,601	3,522,003	3,653,598	42,105,062
2024	6,942,591	2,315,778	(1,739,160)	24.21	7,519,209	3,746,948	3,772,261	45,877,323
2025	7,245,705	2,523,253	(1,894,974)	24.21	7,873,984	3,950,912	3,923,072	49,800,395
2026	7,559,944	2,739,022	(2,057,018)	24.21	8,241,948	4,237,114	4,004,834	53,805,229

Notes:

1. ARC and Employer Contributions are from 30-Year Forecast of Annual Required Contributions (Table 4.1).
2. Interest on Net OPEB Obligation is computed on the prior year Net OPEB Obligation Balance.
3. ARC Adjustment is the prior year Net OPEB Obligation Balance amortized over 30 years.
4. OPEB Cost is the ARC plus Interest on Net OPEB Obligation plus ARC Adjustment.
5. Change in Net OPEB Obligation is the difference between the OPEB Cost and Employer Contributions.
6. Net OPEB Obligation is the prior year Net OPEB Obligation Balance plus Change in Net OPEB Obligation.
7. Year one Interest on Net OPEB Obligation and ARC Adjustment computed at prior discount rate of 5.5%.
8. Subsequent years' Interest on Net OPEB Obligation and ARC Adjustment computed at current discount rate of 5.5%.

SECTION 5 - SENSITIVITY ANALYSIS

Below we illustrate the sensitivity of the Actuarial Accrued Liability and the Annual Required Contribution to a one percentage increase and decrease in the discount rate:

TABLE 5.1 - DISCOUNT RATE ASSUMPTION

	<u>Discount Rate -1%</u>	<u>Assumed Discount Rate</u>	<u>Discount Rate +1%</u>
Discount Rate	4.5%	5.5%	6.5%
Actuarial Accrued Liability			
Current Active Employees	\$53,886,143	\$41,707,130	\$32,956,365
Current Retirees	30,501,039	27,187,476	24,426,522
Total Actuarial Accrued Liability	\$84,387,182	\$68,894,606	\$57,382,887
Change %	22.49%		-16.71%
Annual Required Contribution			
Normal Cost	\$3,052,919	\$2,210,431	\$1,636,087
Actuarial Accrued Liability	\$84,387,182	\$68,894,606	\$57,382,887
Actuarial Value of Assets	5,474,026	5,474,026	5,474,026
Unfunded Actuarial Accrued Liability	\$78,913,156	\$63,420,580	\$51,908,861
Amortization Payment	2,817,321	2,582,271	2,391,012
Interest	264,161	263,599	261,761
Annual Required Contribution	\$6,134,401	\$5,056,301	\$4,288,860
Change %	21.32%		-15.18%

SECTION 5 - SENSITIVITY ANALYSIS

Below we illustrate the sensitivity of the Actuarial Accrued Liability and the Annual Required Contribution to a one percentage increase and decrease in health care cost trend assumption for each future year:

TABLE 5.2 - HEALTH CARE COST TREND ASSUMPTION

	Trend -1% 6.5% in year 1 decreasing to 4%	Assumed Trend 7.5% in year 1 decreasing to 5%	Trend +1% 8.5% in year 1 decreasing to 6%
Discount Rate	5.5%	5.5%	5.5%
Actuarial Accrued Liability			
Current Active Employees	\$33,085,412	\$41,707,130	\$53,427,518
Current Retirees	24,530,265	27,187,476	30,309,646
Total Actuarial Accrued Liability	\$57,615,677	\$68,894,606	\$83,737,164
Change %	-16.37%		21.54%
Annual Required Contribution			
Normal Cost	\$1,641,780	\$2,210,431	\$3,024,556
Actuarial Accrued Liability	\$57,615,677	\$68,894,606	\$83,737,164
Actuarial Value of Assets	5,474,026	5,474,026	5,474,026
Unfunded Actuarial Accrued Liability	\$52,141,651	\$63,420,580	\$78,263,138
Amortization Payment	2,123,031	2,582,271	3,186,610
Interest	207,065	263,599	341,614
Annual Required Contribution	\$3,971,876	\$5,056,301	\$6,552,780
Change %	-21.45%		29.60%

SECTION 6 - SUMMARY OF PLAN PROVISIONS

Retirement Eligibility: Group 1 employees hired before April 2, 2012: retire after attaining age 55 with 10 or more years of service or any age with 20 or more years of service

Group 1 employees hired after April 1, 2012: retire after attaining age 60 with 10 or more years of service

Group 4 employees hired before April 2, 2012: retire after attaining age 55 or any age with 20 or more years of service

Group 4 employees hired after April 1, 2012: retire after attaining age 55

Ordinary Disability Eligibility: Any member who is unable to perform his or her duties due to a non-occupational disability and has ten or more years of creditable service.

Accidental Disability Eligibility: Any member who is unable to perform his or her duties due to a job-related disability.

Medical Premium Rates: The total monthly costs by plan are shown below:

<u>Non-Medicare Plans - July 1, 2016</u>	<u>Individual</u>	<u>Family</u>
Fallon Direct	\$519.74	\$1,247.40
Fallon Select	690.66	1,657.54
HP Independence	816.43	1,992.07
HP Primary Choice	610.40	1,489.38
Health New England	534.87	1,326.04
NHP Prime	512.21	1,357.32
Tufts Health Navigator	686.34	1,674.68
Tufts Health Spirit	515.32	1,240.52
UniCare Basic with CIC	1,002.41	2,346.44
UniCare Basic without CIC	959.09	2,245.96
UniCare Community Choice	487.63	1,170.35
UniCare PLUS	655.32	1,566.13
 <u>Medicare Plans - July 1, 2016</u>		
Fallon Senior*	\$311.54	
HP Medicare Enhance	439.17	
Health New England MedPlus	410.96	
Tufts Medicare Complement	398.39	
Tufts Medicare Preferred*	276.46	
UniCare OME with CIC	374.63	
UniCare OME without CIC	363.94	

* effective January 1, 2016

SECTION 6 - SUMMARY OF PLAN PROVISIONS

Participant Contributions:	Retired employees contribute 17% and 39% of the total medical premium rates for individual and family coverage, respectively, for all plans offered except the UniCare State Indemnity Plan Basic and all plans offered to retirees and spouses with Medicare. For these plans, retired employees contribute 50%.
Continuation of Coverage to Spouse After Death of Retiree:	Surviving spouse may continue coverage for lifetime by paying the required medical premium rate.
Medicare Part B Reimbursement:	The Town reimburses retirees and spouses for 50% of Medicare Part B premium. The 2016 Medicare Part B monthly premium is \$104.90.
Medicare Late-Enrollment Penalty:	The Town reimburses retirees for the late enrollment Medicare penalty for seven retirees as provided in the data.
Life Insurance Benefit:	Retirees are eligible for a \$5,000 life insurance benefit.
Life Insurance Premium:	The total monthly cost is \$8.36.
Life Insurance	Retired employees contribute 50% of the monthly life insurance premium.
PPACA Excise Tax:	The Patient Protection and Affordable Care Act (PPACA) applies a 40% excise tax, commonly referred to as the "Cadillac Tax", to the cost of plan benefits in excess of statutory thresholds beginning in 2020. The 2020 thresholds are assumed to be \$10,820 for individual and \$29,175 for family coverage and increase by the Consumer Price Index (CPI) in future years. The annual limits are increased by \$1,750 for individual and \$3,660 for family coverage for retirees not eligible for Medicare benefits.

SECTION 7 - ACTUARIAL ASSUMPTIONS AND METHODS

Valuation Date: July 1, 2016

Discount Rate: 5.5% per annum, compounded annually.

Investment returns:

Plan assets (long-term rate of return): 7.50%

Employer assets (short-term rate of return): 4.00%

The development of the discount rate used in the valuation is based on the percentage of the Annual Required Contribution (ARC) funded and is shown below:

1. ARC under fully funded plan	3,728,203
2. Pay-as-you-go (PAYG)	1,853,604
3. GAP between ARC and PAYG (1. - 2.)	1,874,599
4. OPEB Trust contribution	701,992
5. Percent of GAP funded	37%
6. Multiplied by long-term rate	2.81%
7. Percent of GAP not funded	63%
8. Multiplied by short-term rate	2.50%
9. Discount rate (6. + 8.)	5.31%

Based on the methodology above, the Town has selected a discount rate of 5.5%.

Amortization Method: Increasing at 4% per year over 30 years on an open amortization period for partial pre-funding.

Increasing at 4% per year over 30 years on a closed amortization period for full pre-funding.

Health Care Cost Trend Rates:

Year	Trend
1	7.50%
2	6.75%
3	6.00%
4	5.25%
5	5.00%
Ultimate	5.00%

Consumer Price Index (CPI): 3% per year.

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

SECTION 7 - ACTUARIAL ASSUMPTIONS AND METHODS

Medical Plan Participation: 80% of eligible retirees will elect medical coverage upon retirement.

Life Insurance Participation: 70% of eligible retirees will elect life insurance coverage upon retirement.

Dependent Status: Male spouses are assumed to be three years older and female spouses are assumed to be three years younger than the retired employee.

50% of employees are assumed to retire with a covered spouse.

For current retirees, the actual census information provided is used.

Medical Per Capita Costs: Annual per capita costs for the fiscal year beginning July 1, 2016 are as follows:

Age	Medicare-Eligible		Not Medicare-Eligible	
	Male	Female	Male	Female
Under 20	\$2,945	\$3,458	\$2,945	\$3,458
20-24	\$2,321	\$3,682	\$2,321	\$3,682
25-29	\$2,415	\$5,431	\$2,415	\$5,431
30-34	\$3,034	\$6,862	\$3,034	\$6,862
35-39	\$3,805	\$7,069	\$3,805	\$7,069
40-44	\$4,742	\$7,239	\$4,742	\$7,239
45-49	\$5,985	\$7,946	\$5,985	\$7,946
50-54	\$7,887	\$9,348	\$7,887	\$9,348
55-59	\$10,250	\$10,809	\$10,250	\$10,809
60-64	\$13,154	\$12,865	\$13,154	\$12,865
65-69	\$3,579	\$3,486	\$16,411	\$15,421
70-74	\$4,290	\$4,112	\$19,663	\$18,184
75-79	\$5,065	\$4,771	\$19,663	\$18,184
80-84	\$5,823	\$5,472	\$19,663	\$18,184
85-89	\$6,486	\$6,117	\$19,663	\$18,184
90-94	\$7,061	\$6,528	\$19,663	\$18,184
95+	\$7,505	\$6,313	\$19,663	\$18,184

SECTION 7 - ACTUARIAL ASSUMPTIONS AND METHODS

Retiree Contributions: Annual average per capita participant contributions for the fiscal year beginning July 1, 2016 are as follows:

<u>Plan</u>	Medicare Eligible	Not Medicare Eligible
Under age 65	\$3,061	\$3,061
65 and older	\$2,265	\$3,061

Excise Tax: For purposes of estimating the excise tax, per capita plan costs are developed for individual and family coverage for both Medicare and non-Medicare members. These plan costs are compared to the thresholds stipulated in the Patient Protection and Affordable Care Act (PPACA). Beginning in 2020, a 40% excise tax is applied on the excess of the plan costs over the thresholds, which increase annually by CPI.

Actuarial Cost Method: Projected Unit Credit. The costs of each employee's postemployment benefits are allocated on a pro rata basis from the employee's date of hire to the date the employee is fully eligible for benefits.

Employee Data: Employee and retiree data were submitted by the Town. We made reasonable adjustments for missing or invalid data.

SECTION 7 - ACTUARIAL ASSUMPTIONS AND METHODS

Pre-Retirement Mortality: Pre-retirement mortality rates for General and Public Safety employees are based on the RP-2000 Employees Mortality Table, base year 2009, projected with full generational mortality using Scale BB.

Post-Retirement Mortality: Post-retirement mortality rates for General and Public Safety employees are based on the RP-2000 Healthy Annuitant Mortality Table, base year 2009, projected with full generational mortality using Scale BB.

Turnover Rates: Turnover rates for General and Public Safety employees are as follows:

<u>Service</u>	<u>Group 1</u>	<u>Group 4</u>
0	15.0%	1.5%
5	7.6%	1.5%
10	5.4%	1.5%
15	3.3%	1.5%
20	2.0%	1.5%
30	0.0%	0.0%

Disability Rates: Disability rates for General and Public Safety employees are as follows:

<u>Age</u>	<u>Group 1</u>	<u>Group 4</u>
20	0.02%	0.20%
30	0.03%	0.30%
40	0.10%	0.30%
50	0.19%	1.25%

55% of the General employee disabilities are job-related.

90% of the Public Safety employee disabilities are job-related.

Retirement Rates: Retirement rates for General and Public Safety employees are as follows:

<u>Age</u>	<u>Group 1</u>		<u>Group 4</u>	
	<u>Male</u>	<u>Female</u>	<u>Age</u>	<u>All</u>
55-59	2.0%	5.5%	45-49	1.0%
60-61	12.0%	5.0%	50-54	2.0%
62-64	30.0%	15.0%	55-59	15.0%
65-68	40.0%	15.0%	60-61	20.0%
69	50.0%	20.0%	62-64	25.0%
70	100.0%	100.0%	65	100.0%

SECTION 7 - ACTUARIAL ASSUMPTIONS AND METHODS

Pre-Retirement Mortality: Pre-retirement mortality rates for Teachers are based on the RP-2014 Employees Mortality Table, base year 2014, projected with full generational mortality using Scale BB.

Post-Retirement Mortality: Post-retirement mortality rates for Teachers are based on the RP-2014 Healthy Annuitant Mortality Table, base year 2014, projected with full generational mortality using Scale BB.

Turnover Rates: Turnover rates for Teachers are as follows:

<u>Age</u>	<u>Service</u>					
	0		5		10+	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
20	13.0%	10.0%	5.5%	7.0%	1.5%	5.0%
30	15.0%	15.0%	5.4%	8.8%	1.5%	4.5%
40	13.3%	10.5%	5.2%	5.0%	1.7%	2.2%
50	16.2%	9.8%	7.0%	5.0%	2.3%	2.0%

Disability Rates: Disability rates for Teachers are as follows:

<u>Age</u>	<u>Rate</u>
20	0.004%
30	0.006%
40	0.010%
50	0.050%
60	0.070%

35% of the disabilities are job-related.

Retirement Rates: Retirement rates for Teachers are as follows:

<u>Age</u>	<u>Years of Service</u>					
	Less than 20		20-30		30+	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
45	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
50	0.0%	0.0%	1.0%	1.0%	2.0%	1.5%
55	5.0%	3.0%	3.0%	3.0%	6.0%	5.0%
60	10.0%	10.0%	25.0%	20.0%	40.0%	35.0%
62	20.0%	12.0%	35.0%	30.0%	35.0%	35.0%
65	25.0%	20.0%	40.0%	30.0%	35.0%	35.0%
69	30.0%	30.0%	30.0%	30.0%	40.0%	30.0%
70	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

SECTION 8 - PLAN MEMBER INFORMATION

TABLE 8.1 - ACTIVE EMPLOYEES BY AGE and YEARS OF SERVICE AS OF JULY 1, 2016

Age	Years of Service									Total	Percent
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	21	0	0	0	0	0	0	0	0	21	3%
25 to 29	59	4	0	0	0	0	0	0	0	63	10%
30 to 34	54	27	5	1	0	0	0	0	0	87	14%
35 to 39	24	26	25	6	0	0	0	0	0	81	13%
40 to 44	21	6	15	14	1	0	0	0	0	57	9%
45 to 49	27	17	17	25	8	3	1	0	0	98	14%
50 to 54	18	16	17	12	9	11	3	0	0	86	13%
55 to 59	10	7	15	20	9	5	6	2	0	74	12%
60 to 64	4	7	11	12	9	5	2	0	0	50	8%
65 to 69	2	1	3	9	2	2	0	0	0	19	3%
70 & up	1	0	0	2	0	2	0	0	0	5	1%
Total	241	111	108	101	38	28	12	2	0	641	
Percent	38%	17%	17%	16%	6%	4%	2%	0%	0%		100%
	Average Age:		44.7		Average Service:		10.3				

SECTION 8 - PLAN MEMBER INFORMATION

TABLE 8.2 - RETIRED EMPLOYEES, COVERED SPOUSES and SURVIVORS AS OF JULY 1, 2016

Non-Medicare Plans

Age	Fallon Direct	HP Independence	HP Primary Choice	Tufts Health Navigator	Tufts Health Spirit	UniCare Basic with CIC	UniCare Basic without CIC	UniCare Community Choice	UniCare PLUS	Total
Under 40	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	0	0	0	0
50 to 54	0	0	1	0	0	0	0	0	0	1
55 to 59	0	1	0	1	0	0	0	0	0	2
60 to 64	0	0	0	21	2	0	1	1	1	26
65 to 69	0	1	0	2	1	0	0	0	0	4
70 to 74	0	0	0	3	0	1	2	0	0	6
75 to 79	1	1	0	0	0	0	1	0	0	3
80 to 84	0	0	0	0	0	0	1	0	0	1
85 to 89	0	0	0	1	1	0	0	0	0	2
90+	0	0	0	0	0	0	0	0	0	0
Total	1	3	1	28	4	1	5	1	1	45
Covered Spouses	1	1	1	11	1	0	2	2	8	27

SECTION 8 - PLAN MEMBER INFORMATION

TABLE 8.2 - RETIRED EMPLOYEES, COVERED SPOUSES and SURVIVORS AS OF JULY 1, 2016

Medicare Plans:

Age	Fallon Senior	HP Medicare Enhance	Health New England MedPlus	Tufts Medicare Complement	Tufts Medicare Preferred	UniCare OME with CIC	Life Only	Total
Under 40	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	0	0
50 to 54	0	0	0	0	0	0	0	0
55 to 59	0	0	0	0	0	0	0	0
60 to 64	0	0	0	0	0	9	2	11
65 to 69	0	5	0	6	6	49	2	68
70 to 74	0	7	0	2	2	38	7	56
75 to 79	0	3	0	3	3	29	3	41
80 to 84	0	3	0	1	1	18	10	33
85 to 89	0	1	0	1	0	18	2	22
90+	0	1	0	0	0	9	1	11
Total	0	20	0	13	12	170	27	242
Covered Spouses	0	9	0	7	5	70		91

SECTION 9 - GASB 45 GLOSSARY OF TERMS

Actuarial Accrued Liability – The portion of the Actuarial Present Value of future benefits which is allocated to all periods prior to a valuation year and therefore is not provided by future Normal Costs.

Actuarial Assumptions – Assumptions as to the occurrence of future events affecting OPEB costs, such as mortality, withdrawal, disablement and retirement; changes in compensation and Government provided pension benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.

Actuarial Present Value of Future Benefits – The present value of the cost to finance all benefits payable in the future, discounted to reflect the probability of payment and the time value of money.

Actuarial Valuation – the determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets and related Actuarial Present Values for an OPEB plan.

Actuarial Value of Assets – The value of plan assets used in an actuarial valuation. The Actuarial Value of Assets may reflect smoothing techniques intended to dampen year-to-year fluctuations in the market value of assets.

Annual OPEB Cost - The accrual basis annual cost for the OPEB plan sponsored by the employer. In the year of implementation of GASB 45, the Annual OPEB Cost equals the ARC. In subsequent years, if an employer has a Net OPEB Obligation, Annual OPEB Cost equals the ARC plus one year's interest on the Net OPEB Obligation plus an adjustment to the ARC.

Annual Required Contribution (ARC) – Includes the employer's Normal Cost and a provision for amortizing the Unfunded Actuarial Accrued Liability.

Expected Benefit Payments – Those OPEB amounts that are expected to be paid by the employer at various future times under a particular set of Actuarial Assumptions, taking into account such times as the advancement in age and past and future service credits.

Explicit Subsidy – The difference between (a) the blended rates based on combined active and retired member experience and (b) actual cash contributions made by the employer.

Funded Ratio – The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

Health Cost Trend Rate – The rate of change in per capita health claims cost over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

SECTION 9 - GASB 45 GLOSSARY OF TERMS

Implicit Subsidy – In an experience-rated healthcare plan that includes both active employees and retirees with blended premium rates for all plan members, the difference between (a) the age-adjusted premiums approximating claim costs for retirees in the group and (b) the blended rates based on combined active and retired member experience.

Net OPEB Obligation – The cumulative excess since adoption of GASB 45 of Annual OPEB Cost over the employer's contributions to the plan.

Normal Cost – The portion of the Actuarial Present Value of Future Benefits which is allocated to a valuation year.

OPEB – Other Postemployment Benefits including medical, dental, vision, hearing and life insurance benefits.

Plan Assets – Investments segregated and restricted in a trust or similar arrangement under which:

- employer contributions to the trust are irrevocable,
- assets are dedicated to providing plan benefits, and
- assets are legally protected from creditors.

Pay-As-You-Go – A method of financing an OPEB plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.

Present Value of Future Benefits – The actuarial present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value of money and the probabilities of payment.

Projected Unit Credit Actuarial Cost Method – A method under which the projected benefits of each individual included in an Actuarial Valuation are allocated by a consistent formula to valuation years. Projected Unit Credit is one of the actuarial cost methods allowed and most often used for developing liabilities under GASB 45.

Substantive Plan – The terms of an OPEB plan as understood by the employer and plan members.

Unfunded Actuarial Accrued Liability – The excess of Actuarial Accrued Liability over the Actuarial Value of Assets.

SECTION 10 - RESULTS BY SUBGROUP

Subgroup	<u>Town</u>	<u>School (MRS)</u>	<u>School (MTRB)</u>	<u>Total</u>
Summary of Member Data				
Active Members	193	162	286	641
Average Age	46.3	48.0	41.9	44.7
Average Service	12.1	10.0	9.3	10.3
Retired Members and Survivors	123	27	137	287
Average Age	75.2	72.8	73.0	73.9
Actuarial Accrued Liability - July 1, 2016				
Active Employees	14,913,036	8,837,800	17,956,294	41,707,130
Retired Employees, Spouses and Survivors	10,055,803	2,237,482	14,894,191	27,187,476
Total	24,968,839	11,075,282	32,850,485	68,894,606
Actuarial Value of Plan Assets - July 1, 2016	1,983,901	879,987	2,610,138	5,474,026
Unfunded Actuarial Accrued Liability	22,984,938	10,195,295	30,240,347	63,420,580
Annual Required Contribution (ARC) for FYE 2017				
Normal Cost	606,861	373,316	1,230,254	2,210,431
Amortization of UAL	935,869	415,118	1,231,284	2,582,271
Interest	84,850	43,364	135,385	263,599
Total	1,627,580	831,798	2,596,923	5,056,301
Annual OPEB Cost for FYE 2017				
Annual Required Contribution	1,627,580	831,798	2,596,923	5,056,301
Interest on Net OPEB Obligation	351,471	203,688	494,741	1,049,900
Adjustment to annual required contribution	(263,957)	(152,971)	(371,552)	(788,480)
Annual OPEB cost	1,715,094	882,515	2,720,112	5,317,721
Expected Benefit Payments	(720,880)	(171,566)	(961,158)	(1,853,604)
OPEB Trust contributions	(225,965)	(115,483)	(360,544)	(701,992)
Employer contributions	(946,845)	(287,049)	(1,321,702)	(2,555,596)
Change in Net OPEB Obligation	768,249	595,466	1,398,410	2,762,125
Net OPEB Obligation, beginning of year	6,390,391	3,703,421	8,995,287	19,089,099
Net OPEB Obligation, end of year	7,158,640	4,298,887	10,393,697	21,851,224

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016

SECTION 10 - RESULTS BY SUBGROUP

Subgroup	<u>Town</u>	<u>School (MRS)</u>	<u>School (MTRB)</u>	<u>Total</u>
Actuarial Accrued Liability - July 1, 2017				
Total	26,241,925	11,902,050	34,967,943	73,111,918
Actuarial Value of Plan Assets - July 1, 2017				
	2,104,971	954,712	2,804,920	5,864,603
Unfunded Actuarial Accrued Liability				
	24,136,954	10,947,338	32,163,023	67,247,315
Annual Required Contribution (ARC) for FYE 2018				
Normal Cost	631,135	388,249	1,279,464	2,298,848
Amortization of UAL	982,775	445,739	1,309,569	2,738,083
Interest	88,765	45,869	142,397	277,031
Total	1,702,675	879,857	2,731,430	5,313,962
Annual OPEB Cost for FYE 2018				
Annual Required Contribution	1,702,675	879,857	2,731,430	5,313,962
Interest on Net OPEB Obligation	393,725	236,439	571,653	1,201,817
Adjustment to annual required contribution	(295,689)	(177,567)	(429,314)	(902,570)
Annual OPEB cost	1,800,711	938,729	2,873,769	5,613,209
Expected Employer premiums	(746,745)	(220,960)	(1,005,262)	(1,972,967)
OPEB Trust contributions	(190,324)	(98,350)	(305,317)	(593,991)
Employer contributions	(937,069)	(319,310)	(1,310,579)	(2,566,958)
Change in Net OPEB Obligation	863,642	619,419	1,563,190	3,046,251
Net OPEB Obligation, beginning of year	7,158,640	4,298,887	10,393,697	21,851,224
Net OPEB Obligation, end of year	8,022,282	4,918,306	11,956,887	24,897,475

Town of Bedford Postemployment Benefits Other Than Pensions
Actuarial Valuation as of July 1, 2016