

**Town of Boxford Other  
Postemployment Benefits Plan**

**GASB 45 Actuarial Valuation**

*as of*

July 1, 2015

For the fiscal years ending

June 30, 2016

June 30, 2017

Delivered October 2016

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October 26, 2016

*Personal and Confidential*

Ms. Kathleen Benevento  
Town Accountant / Finance Director  
Town of Boxford  
7A Spofford Road  
Boxford, MA 01921

Dear Ms. Benevento:

We have performed an actuarial valuation of the Town of Boxford Other Postemployment Benefits Plan for the fiscal year ending June 30, 2016. The figures presented in this report reflect the adoption, by the Town of Boxford, of Statement No. 45 of the Governmental Accounting Standards Board ("GASB 45") effective July 1, 2007.

The financial results of the actuarial valuation are summarized in the report. The Executive Summaries highlight the results of the valuation. Additional information summarizing census data, actuarial assumptions, claim rates and the methodology for developing them, as well as a glossary of selected terms used in this study, is also included in the report.

All costs, liabilities and other factors under the plan were determined in accordance with generally accepted actuarial principles and procedures. In our opinion, the actuarial assumptions used are reasonable, reflecting the experience of the plan and reasonable expectations and, in combination, represent our best estimate of the anticipated experience under the plan.

We refer you to Section I of this report for a detailed summary and commentary on the results of the valuation and a comparison with the prior valuation. Section II is a summary of the plan provisions, and Section III describes the actuarial cost method and assumptions. Details for cost calculations, supporting data, and disclosures are provided in Exhibits A through C.

We will be pleased to answer any questions that you may have regarding this actuarial valuation report.

Very truly yours,



Parker E. Elmore, ASA, EA, FCA, MAAA  
President, CEO & Actuary

**October 26, 2016**

### ACTUARIAL CERTIFICATION

This is to certify that Odyssey Advisors has conducted an actuarial valuation of certain benefit obligations of the Town of Boxford other postemployment benefit programs as of July 1, 2015 for the fiscal year ending June 30, 2016 in accordance with generally accepted actuarial principles and practices. The actuarial calculations presented in this report have been made on a basis consistent with our understanding of GASB Statements Number 43 and 45 for the determination of the liability for postemployment benefits other than pensions.

The actuarial data is based on the plan of benefits verified by the Town and on participant claims or premium data provided by the Town and/or vendors employed by the Town.

The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may yield results significantly different than those reported here. As such, additional determinations may be needed for other purposes including determining the benefit security at termination and/or adequacy of the funding of an ongoing plan.

To the best of our knowledge, this report is complete and accurate and in our opinion represents the information necessary to comply with GASB Statements Number 43 and 45 with respect to the benefit obligations addressed. The signing actuaries are members of the Society of Actuaries, the American Academy of Actuaries and other professional actuarial organizations and meet their "General Qualification Standards for Statements of Actuarial Opinion" to render the actuarial opinion contained herein. Further, in our opinion, the assumptions as approved by the Town are reasonably related to the experience and expectations of the postemployment benefits programs.



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Parker E. Elmore, ASA, EA, FCA, MAAA  
President, CEO & Actuary

## SECTION I

### PRINCIPAL RESULTS OF THE VALUATION

#### Town of Boxford Assuming Partial Funding - 6.00% discount rate Comparison of Plan Liabilities to Prior Valuation

	<u>July 1, 2015</u>	<u>July 1, 2013</u>
I. Present Value of Future Benefits		
A. Actives	9,059,831	11,515,660
B. Retirees/Disabled	4,823,499	5,201,898
C. Total	13,883,330	16,717,558
II. Present Value of Future Normal Cost	3,021,264	5,808,366
III. Actuarial Accrued Liability (Individual Entry Age Normal)		
A. Actives	6,038,567	5,707,294
B. Retirees/Disabled	4,823,499	5,201,898
C. Total	10,862,066	10,909,192
IV. Plan Assets	879,001	283,207
V. Unfunded Actuarial Accrued Liability ("UAAL") [III. - IV.]	9,983,065	10,625,985
VI. Funded Ratio [IV. / III.]	8.09%	2.60%
VII. Annual Covered Payroll	11,267,906	9,961,028
VIII. UAAL as % of Covered Payroll	88.60%	106.7%
IX. Net OPEB Obligation (Asset) @ Beginning of Fiscal Year	6,647,189	6,567,154
X. Number of Eligible Participants		
A. Actives	201	191
B. Retirees/Disabled	113	111
C. Total	314	302
<b>For Fiscal Year Ending June 30, 2016</b>	<b><u>June 30, 2016</u></b>	<b><u>June 30, 2014</u></b>
XI. Normal Cost	345,016	500,470
XII. Amortization of UAAL - 30 year increase 4.50% per yr	938,275	770,977
XIII. Annual Required Contribution ('ARC') [ XI. + XII.]	1,283,291	1,271,447
XIV. Interest on Net OPEB Obligation (Asset)	398,831	262,686
XV. Adjustment to Annual Required Contribution	(455,575)	(365,172)
XVI. Amortization of Actuarial (Gains) / Losses	(538,886)	(496,977)
XVII. Annual OPEB Expense [XIII. + XIV. + XV. + XVI.]	687,661	671,984
XVIII. Employer Share of Costs	488,173	416,723
XIX. Employer Payments (Withdrawals) to/from OPEB Trust	263,113	270,563
XX. Total Employer Contribution [XVIII. + XIX.]	751,286	687,286
XXI. Percentage of Annual OPEB Expense Contributed	109.3%	102.3%
XXII. Net OPEB Obligation (Asset) at Beginning of Year [IX.]	6,647,189	6,567,154
XXIII. Increase (Decrease) in Net OPEB Obligations (Asset) [XVII. - XX.]	(63,625)	(15,302)
XXIV. Net OPEB Obligation (Asset) at End of Year [XXII. + XXIII.]	6,583,564	6,551,852
XXV. Discount Rate	6.00%	4.00%

SECTION I  
PRINCIPAL RESULTS OF THE VALUATION  
(continued)

**Town of Boxford**  
**Comparison of Plan Funding vs. Partial Funding**

	<u>Partial Funding - 6.00%</u> <u>discount rate</u>	<u>Plan Funding - 7.00%</u> <u>discount rate</u>
I. Present Value of Future Benefits		
A. Actives	9,059,831	7,409,946
B. Retirees/Disabled	4,823,499	4,419,072
C. Total	13,883,330	11,829,018
II. Present Value of Future Normal Cost	3,021,264	2,221,029
III. Actuarial Accrued Liability (Individual Entry Age Normal)		
A. Actives	6,038,567	5,188,917
B. Retirees/Disabled	4,823,499	4,419,072
C. Total	10,862,066	9,607,989
IV. Plan Assets	879,001	879,001
V. Unfunded Actuarial Accrued Liability ("UAAL") [III. - IV.]	9,983,065	8,728,988
VI. Funded Ratio [IV. / III.]	8.09%	9.15%
VII. Annual Covered Payroll	11,267,906	11,267,906
VIII. UAAL as % of Covered Payroll	88.60%	77.50%
IX. Net OPEB Obligation (Asset) @ Beginning of Fiscal Year	6,647,189	6,647,189
X. Number of Eligible Participants		
A. Actives	201	201
B. Retirees/Disabled	113	113
C. Total	314	314
<b>For Fiscal Year Ending June 30, 2016</b>		
XI. Normal Cost	345,016	274,334
XII. Amortization of UAAL - 30 year increase 4.50% per yr	938,275	1,028,129
XIII. Annual Required Contribution ('ARC') [ XI. + XII.]	1,283,291	1,302,463
XIV. Interest on Net OPEB Obligation (Asset)	398,831	465,303
XV. Adjustment to Annual Required Contribution	(455,575)	(500,629)
XVI. Amortization of Actuarial (Gains) / Losses	(538,886)	(686,628)
XVII. Annual OPEB Expense [XIII. + XIV. + XV. + XVI.]	687,661	580,509
XVIII. Employer Share of Costs	488,173	488,173
XIX. Employer Payments (Withdrawals) to/from OPEB Trust	263,113	263,113
XX. Total Employer Contribution [XVIII. + XIX.]	751,286	751,286
XXI. Percentage of Annual OPEB Expense Contributed	109.3%	129.4%
XXII. Net OPEB Obligation (Asset) at Beginning of Year [IX.]	6,647,189	6,647,189
XXIII. Increase (Decrease) in Net OPEB Obligations (Asset) [XVII. - XX.]	(63,625)	(170,777)
XXIV. Net OPEB Obligation (Asset) at End of Year [XXII. + XXIII.]	6,583,564	6,476,412
XXV. Discount Rate	6.00%	7.00%

**SECTION I**  
**PRINCIPAL RESULTS OF THE VALUATION**  
(continued)

**Town of Boxford**  
**Assuming Partial Funding - 6.00% discount rate**  
**Plan Liabilities as of July 1, 2015**

	<u>Medical</u>	<u>Dental</u>	<u>Life</u>	<u>Excise Tax</u>	<u>Total</u>
I. Present Value of Future Benefits					
A. Actives	8,766,799	0	0	293,032	9,059,831
B. Retirees/Disabled	<u>4,807,804</u>	<u>0</u>	<u>0</u>	<u>15,695</u>	<u>4,823,499</u>
C. Total	13,574,603	0	0	308,727	13,883,330
II. Present Value of Future Normal Cost	2,885,989	0	0	135,275	3,021,264
III. Actuarial Accrued Liability (Individual Entry Age Normal)					
A. Actives	5,880,810	0	0	157,757	6,038,567
B. Retirees/Disabled	<u>4,807,804</u>	<u>0</u>	<u>0</u>	<u>15,695</u>	<u>4,823,499</u>
C. Total	10,688,614	0	0	173,452	10,862,066
IV. Plan Assets	864,967	0	0	14,034	879,001
V. Unfunded Actuarial Accrued Liability ("UAAL") [III. - IV.]	9,823,647	0	0	159,418	9,983,065
VI. Annual Covered Payroll	11,267,906	11,267,906	11,267,906	11,267,906	11,267,906
VII. UAAL as % of Covered Payroll	87.2%	0.0%	0.0%	1.4%	88.6%
VIII. Net OPEB Obligation (Asset) @ Beginning of Fiscal Year	6,541,043	0	0	106,146	6,647,189
IX. Number of Eligible Participants					
A. Actives	201	0	0	201	
B. Retirees/Disabled	<u>113</u>	<u>0</u>	<u>0</u>	<u>113</u>	
C. Total	314	0	0	314	
<b>For Fiscal Year Ending June 30, 2016</b>					
X. Normal Cost	332,875	0	0	12,141	345,016
XI. Amortization of UAAL - 30 year increase 4.50% per yr	923,292	0	0	14,983	938,275
XII. Annual Required Contribution ('ARC') [ X. + XI.]	1,256,167	0	0	27,124	1,283,291
XIII. Interest on Net OPEB Obligation (Asset)	392,463	0	0	6,368	398,831
XIV. Adjustment to Annual Required Contribution	(448,301)	0	0	(7,274)	(455,575)
XV. Amortization of Actuarial (Gains) / Losses	(530,281)	0	0	(8,605)	(538,886)
XVI. Annual OPEB Expense [XII. + XIII. + XIV. + XV.]	670,048	0	0	17,613	687,661
XVII. Employer Share of Costs	488,173	0	0	0	488,173
XVIII. Employer Payments (Withdrawals) to/from OPEB Trust	258,911	0	0	4,202	263,113
XIX. Total Employer Contribution [XVII. + XVIII.]	747,084	0	0	4,202	751,286
XX. Percentage of Annual OPEB Expense Contributed	111.5%	0.0%	0.0%	23.9%	109.3%
XXI. Net OPEB Obligation (Asset) at Beginning of Year [VIII.]	6,541,043	0	0	106,146	6,647,189
XXII. Increase (Decrease) in Net OPEB Obligations (Asset) [XVI. - XIX.]	(77,036)	0	0	13,411	(63,625)
XXIII. Net OPEB Obligation (Asset) at End of Year [XXI. + XXII.]	6,464,007	0	0	119,557	6,583,564

**SECTION I**  
**PRINCIPAL RESULTS OF THE VALUATION**  
(continued)

**Town of Boxford**  
**Plan Liabilities as of July 1, 2015**  
**Assuming Partial Funding Method**

	Town Employees and Retirees	School Employees	Total
I. Present Value of Future Benefits			
A. Actives	2,790,253	6,269,578	9,059,831
B. Retirees/Disabled	<u>1,606,305</u>	<u>3,217,194</u>	<u>4,823,499</u>
C. Total	4,396,558	9,486,772	13,883,330
II. Present Value of Future Normal Cost	824,586	2,196,678	3,021,264
III. Actuarial Accrued Liability (Individual Entry Age Normal)			
A. Actives	1,965,667	4,072,900	6,038,567
B. Retirees/Disabled	<u>1,606,305</u>	<u>3,217,194</u>	<u>4,823,499</u>
C. Total	3,571,972	7,290,094	10,862,066
IV. Plan Assets	288,426	590,575	879,001
V. Unfunded Actuarial Accrued Liability ("UAAL") [III. - IV.]	3,283,546	6,699,519	9,983,065
VI. Annual Covered Payroll	3,237,667	8,030,239	11,267,906
VII. UAAL as % of Covered Payroll	101.4%	83.4%	88.6%
VIII. Net OPEB Obligation (Asset) @ Beginning of Fiscal Year	2,185,917	4,461,272	6,647,189
IX. Number of Eligible Participants			
A. Actives	55	146	201
B. Retirees/Disabled	<u>43</u>	<u>70</u>	<u>113</u>
C. Total	98	216	314

**For Fiscal Year Ending June 30, 2016**

X. Normal Cost	91,716	253,300	345,016
XI. Amortization of UAAL - 30 year increase 4.50% per yr	308,551	629,724	938,275
XII. Annual Required Contribution ("ARC") [ X. + XI.]	400,267	883,024	1,283,291
XIII. Interest on Net OPEB Obligation (Asset)	131,155	267,676	398,831
XIV. Adjustment to Annual Required Contribution	(149,815)	(305,760)	(455,575)
XV. Amortization of Actuarial (Gains) / Losses	(177,212)	(361,674)	(538,886)
XVI. Annual OPEB Expense [XII. + XIII. + XIV. + XV.]	204,395	483,266	687,661
XVII. Employer Share of Costs	153,739	334,434	488,173
XVIII. Employer Payments (Withdrawals) to/from OPEB Trust	86,524	176,589	263,113
XIX. Total Employer Contribution [XVII. + XVIII.]	240,263	511,023	751,286
XX. Percentage of Annual OPEB Expense Contributed	75.2%	69.2%	71.0%
XXI. Net OPEB Obligation (Asset) at Beginning of Year [VIII.]	2,185,917	4,461,272	6,647,189
XXII. Increase (Decrease) in Net OPEB Obligations (Asset) [XVI. - XIX.]	(35,868)	(27,757)	(63,625)
XXIII. Net OPEB Obligation (Asset) at End of Year [XXI. + XXII.]	2,150,049	4,433,515	6,583,564

## SECTION I

### PRINCIPAL RESULTS OF THE VALUATION

(continued)

#### **Town of Boxford**

#### **Detail of Plan Liabilities by Group and Dependency Status**

**Assuming Partial Funding - 6.00% discount rate**

**Plan Liabilities as of July 1, 2015**

	<u>Present Value of Future Benefits</u>	<u>Actuarial Accrued Liability (Individual Entry Age Normal)</u>	<u>Normal Cost</u>
<b>Actives</b>			
Under Age 65			
A. Participants	2,438,001	1,597,428	86,517
B. Spouses	<u>865,706</u>	<u>590,541</u>	<u>29,229</u>
C. Total	3,303,707	2,187,969	115,746
Age 65 and Over			
A. Participants	3,393,538	2,266,756	135,747
B. Spouses	<u>2,362,586</u>	<u>1,583,842</u>	<u>93,523</u>
C. Total	5,756,124	3,850,598	229,270
Actives Total			
A. Participants	5,831,539	3,864,184	222,264
B. Spouses	<u>3,228,292</u>	<u>2,174,383</u>	<u>122,752</u>
C. Total	9,059,831	6,038,567	345,016
<b>Retirees/Disabled</b>			
Under Age 65			
A. Participants	920,576	920,576	0
B. Spouses	<u>172,454</u>	<u>172,454</u>	<u>0</u>
C. Total	1,093,030	1,093,030	0
Age 65 and Over			
A. Participants	3,336,072	3,336,072	<u>0</u>
B. Spouses	<u>394,397</u>	<u>394,397</u>	<u>0</u>
C. Total	3,730,469	3,730,469	0
Retirees/Disabled Total			
A. Participants	4,256,648	4,256,648	0
B. Spouses	<u>566,851</u>	<u>566,851</u>	<u>0</u>
C. Total	4,823,499	4,823,499	0
<b>Total Population</b>			
A. Participants	10,088,187	8,120,832	222,264
B. Spouses	<u>3,795,143</u>	<u>2,741,234</u>	<u>122,752</u>
C. Total	13,883,330	10,862,066	345,016

**SECTION I**  
**PRINCIPAL RESULTS OF THE VALUATION**  
(continued)

**Town of Boxford**  
**Assuming Funding over 30 years at 7.00% discount rate**  
**Plan Liabilities as of July 1, 2015**

	<u>Medical</u>	<u>Dental</u>	<u>Life</u>	<u>Excise Tax</u>	<u>Total</u>
I. Present Value of Future Benefits					
A. Actives	7,171,942	0	0	238,004	7,409,946
B. Retirees/Disabled	<u>4,405,555</u>	<u>0</u>	<u>0</u>	<u>13,517</u>	<u>4,419,072</u>
C. Total	11,577,497	0	0	251,521	11,829,018
II. Present Value of Future Normal Cost	2,121,482	0	0	99,547	2,221,029
III. Actuarial Accrued Liability (Individual Entry Age Normal)					
A. Actives	5,050,460	0	0	138,457	5,188,917
B. Retirees/Disabled	<u>4,405,555</u>	<u>0</u>	<u>0</u>	<u>13,517</u>	<u>4,419,072</u>
C. Total	9,456,015	0	0	151,974	9,607,989
IV. Plan Assets	865,097	0	0	13,904	879,001
V. Unfunded Actuarial Accrued Liability ("UAAL") [III. - IV.]	8,590,918	0	0	138,070	8,728,988
VI. Annual Covered Payroll	11,267,906	11,267,906	11,267,906	11,267,906	11,267,906
VII. UAAL as % of Covered Payroll	76.2%	0.0%	0.0%	1.2%	77.5%
VIII. Net OPEB Obligation (Asset) @ Beginning of Fiscal Year	6,541,043	0	0	106,146	6,647,189
IX. Number of Eligible Participants					
A. Actives	201	0	0	201	
B. Retirees/Disabled	<u>113</u>	<u>0</u>	<u>0</u>	<u>113</u>	
C. Total	314	0	0	314	

**For Fiscal Year Ending June 30, 2016**

X. Normal Cost	264,552	0	0	9,782	274,334
XI. Amortization of UAAL - 30 year increase 4.50% per yr	1,011,867	0	0	16,262	1,028,129
XII. Annual Required Contribution ('ARC') [ X. + XI.]	1,276,419	0	0	26,044	1,302,463
XIII. Interest on Net OPEB Obligation (Asset)	457,873	0	0	7,430	465,303
XIV. Adjustment to Annual Required Contribution	(492,635)	0	0	(7,994)	(500,629)
XV. Amortization of Actuarial (Gains) / Losses	(675,767)	0	0	(10,861)	(686,628)
XVI. Annual OPEB Expense [XII. + XIII. + XIV. + XV.]	565,890	0	0	14,619	580,509
XVII. Employer Share of Costs	488,173	0	0	0	488,173
XVIII. Employer Payments (Withdrawals) to/from OPEB Trust	258,951	0	0	4,162	263,113
XIX. Total Employer Contribution [XVII. + XVIII.]	747,124	0	0	4,162	751,286
XX. Percentage of Annual OPEB Expense Contributed	132.0%	0.0%	0.0%	28.5%	129.4%
XXI. Net OPEB Obligation (Asset) at Beginning of Year [VIII.]	6,541,043	0	0	106,146	6,647,189
XXII. Increase (Decrease) in Net OPEB Obligations (Asset) [XVI. - XIX.]	(181,234)	0	0	10,457	(170,777)
XXIII. Net OPEB Obligation (Asset) at End of Year [XXI. + XXII.]	6,359,809	0	0	116,603	6,476,412

**SECTION I**  
**PRINCIPAL RESULTS OF THE VALUATION**  
(continued)

**Town of Boxford**  
**Plan Liabilities as of July 1, 2015**  
**Assuming Funding over 30 years at 7.00% discount rate**

	Town Employees and Retirees	School Employees	Total
I. Present Value of Future Benefits			
A. Actives	2,282,120	5,127,826	7,409,946
B. Retirees/Disabled	<u>1,471,624</u>	<u>2,947,448</u>	<u>4,419,072</u>
C. Total	3,753,744	8,075,274	11,829,018
II. Present Value of Future Normal Cost	606,180	1,614,849	2,221,029
III. Actuarial Accrued Liability (Individual Entry Age Normal)			
A. Actives	1,689,090	3,499,827	5,188,917
B. Retirees/Disabled	<u>1,471,624</u>	<u>2,947,448</u>	<u>4,419,072</u>
C. Total	3,160,714	6,447,275	9,607,989
IV. Plan Assets	288,426	590,575	879,001
V. Unfunded Actuarial Accrued Liability ("UAAL") [III. - IV.]	2,872,288	5,856,700	8,728,988
VI. Annual Covered Payroll	3,237,667	8,030,239	11,267,906
VII. UAAL as % of Covered Payroll	88.7%	72.9%	77.5%
VIII. Net OPEB Obligation (Asset) @ Beginning of Fiscal Year	2,185,917	4,461,272	6,647,189
IX. Number of Eligible Participants			
A. Actives	55	146	201
B. Retirees/Disabled	<u>43</u>	<u>70</u>	<u>113</u>
C. Total	98	216	314

**For Fiscal Year Ending June 30, 2016**

X. Normal Cost	72,927	201,407	274,334
XI. Amortization of UAAL - 30 year increase 4.50% per yr	338,099	690,030	1,028,129
XII. Annual Required Contribution ("ARC") [ X. + XI.]	411,026	891,437	1,302,463
XIII. Interest on Net OPEB Obligation (Asset)	153,014	312,289	465,303
XIV. Adjustment to Annual Required Contribution	(164,631)	(335,998)	(500,629)
XV. Amortization of Actuarial (Gains) / Losses	(225,797)	(460,831)	(686,628)
XVI. Annual OPEB Expense [XII. + XIII. + XIV. + XV.]	173,612	406,897	580,509
XVII. Employer Share of Costs	153,739	334,434	488,173
XVIII. Employer Payments (Withdrawals) to/from OPEB Trust	86,556	176,557	263,113
XIX. Total Employer Contribution [XVII. + XVIII.]	240,295	510,991	751,286
XX. Percentage of Annual OPEB Expense Contributed	138.4%	125.6%	129.4%
XXI. Net OPEB Obligation (Asset) at Beginning of Year [VIII.]	2,185,917	4,461,272	6,647,189
XXII. Increase (Decrease) in Net OPEB Obligations (Asset) [XVI. - XIX.]	(66,683)	(104,094)	(170,777)
XXIII. Net OPEB Obligation (Asset) at End of Year [XXI. + XXII.]	2,119,234	4,357,178	6,476,412

## Overview of GASB 43 and 45

GASB 43 requires retiree medical plans to disclose information about asset and liability levels and show historical contribution information. GASB 43 only applies in situations where a separate trust is established to prefund these benefits. GASB 45 requires employers to perform periodic actuarial valuations to determine annual accounting costs, and to keep a running tally of the extent to which these amounts are over or under funded.

GASB 43 and 45 apply to those benefits provided after retirement except for pension benefits such as medical insurance, dental and life insurance. The philosophy behind the accounting standard is that these post-employment benefits are part of the compensation earned by employees in return for their services, and the cost of these benefits should be recognized while employees are providing those services, rather than after they have retired. This philosophy has already been applied for years to defined benefit pensions; GASB 43 and 45 extend this practice to all other post-employment benefits.

## Overview of GASB 43 and 45

(continued)

The process of determining the liability for OPEB benefits is based on many assumptions about future events. The key actuarial assumptions are:

**Turnover and retirement rates:** How likely is it that an employee will qualify for post-employment benefits and when will they start?

**Medical inflation and claims cost assumptions:** When an employee starts receiving post-employment benefits many years from now, how much will be paid each year for the benefits and how rapidly will the costs grow?

**Mortality assumption:** How long is a retiree likely to receive benefits?

**Discount rate assumption:** What is the present value of those future benefit payments in terms of today's dollars?

Since the liability is being recognized over the employee's whole career with the Town, the present value is divided into three pieces: the part that is attributed to past years (the "Accrued Liability" or "Past Service Liability"), the part that is being earned this year (the "Normal Cost"), and the part that will be earned in future years (the "Future Service Liability").

Once the Accrued Liability and the Normal Cost have been calculated, the next step is to determine an annual contribution. This consists of two pieces:

- ✓ Normal Cost – because the benefits earned each year should be paid for each year
- ✓ Past Service Cost – a catch-up payment to fund the Accrued Liability over the next 10-30 years

The final step is to keep track going forward of how much of the contribution is actually paid. There is no requirement to actually fund these benefits, but the cumulative deficiency must be disclosed on the Town's financial statements as the Net OPEB Obligation. If you decide to fully fund the OPEB obligation this will appear in the financial statement as a Net OPEB Asset. In addition, the Discount Rate used to calculate the liabilities must reflect the expected investment income of whatever funds are set aside to prefund the benefits; if there is no prefunding then the Discount Rate will be much lower and the liabilities significantly higher than if the benefits are prefunded.

## Commentary on Plan Experience and Contribution Amounts

### 1. **GASB 45 – How we got here:**

The Plan adopted and implemented GASB 45 (“Accounting and Financial Reporting by Employers for Postemployment Benefits other than Pensions”) effective for the fiscal year ending June 30, 2008. GASB 45 is designed to recognize the Other Postemployment Benefits (“OPEB”) earned by employees throughout their working career vs. when they are paid in retirement – accrual accounting vs. “pay-as-you-go” accounting. When GASB 45 was adopted, there was an Unfunded Actuarial Accrued Liability (“UAAL”) or “past service liability” which reflected all benefits earned until the date of such adoption. To smooth the impact of transitioning to GASB 45 on your financial statement, the UAAL was amortized over a 30 year period using a flat dollar amortization. Additionally, each eligible active employee earns benefits each year representing benefits to be paid in retirement or a “Normal Cost”. These amounts are reflected in your financial statement each year so that OPEB benefits for an eligible employee shall be fully charged to the financial statement when that eligible employee terminates employment.

### 2. **Summary of Results:**

During the fiscal year ending June 30, 2016, the Plan saw an experience gain of \$1,193,066 or 10.68%. Plan experience was more favorable than expected. This was mainly due to an increase in the discount rate from 4% to 6% (decreasing disclosed liabilities by \$3.4 million). This was somewhat offset by the introduction of a new Actuarial Cost Method in preparation for GASB 75 (increasing disclosed liabilities by \$1 million), a more conservative mortality table as recommended by PERAC (increasing disclosed liabilities by \$475K), and premiums increasing more than the expected 10% increase. The actuarial experience gain is amortized into the annual OPEB costs over a 30-year period. The net impact of plan experience is an increase in the annual OPEB cost.

Commentary on Plan Experience and Contribution Amounts  
(continued)

3. **Balance Sheet Items**

	July 1, 2015	July 1, 2013
Actuarial Accrued Liability	\$10,862,066	\$10,909,192
Plan Assets	\$879,001	\$283,207
Unfunded Actuarial Accrued Liability	\$9,983,065	\$10,625,985
Funded %	8.09%	2.60%
Net OPEB Obligation	\$6,647,189	\$6,567,154

4. **Income Statement Items**

	June 30, 2016	June 30, 2014
Normal Cost	\$345,016	\$500,470
Amortization of UAAL	\$938,275	\$770,977
Interest on Net OPEB Obligation	\$398,831	\$262,686
Adjustment to Annual Required Contribution	\$(455,575)	\$(365,172)
Amortization of Actuarial (Gains)/Losses	\$(538,886)	\$(496,977)
Annual OPEB Expense	\$687,661	\$671,984
Employer Share of Costs	\$488,173	\$416,723
Employer Contributions/(Withdrawals) to/from OPEB Trust	\$263,113	\$270,563
Total Employer Contribution	\$751,286	\$687,286
Discount Rate	6.00%	4.00%

Commentary on Plan Experience and Contribution Amounts  
(continued)

5. **GASB 75 – Where we’re going:**

The Governmental Accounting Standards Board (“GASB”) issued GASB 75 *“Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions”* on June 2, 2015 which will become effective for your 2018 fiscal year. This standard largely mirrors the GASB 68 standard for pension plans. The new standards require increased disclosures and will tie interest rates used in the valuation to the plan’s underlying investment and funding policy. This may increase the pressure on many entities to begin funding their OPEB liabilities. For more information, please review our white papers at [www.GASB75.com](http://www.GASB75.com) or on our website.

## SECTION II

### SUMMARY OF PLAN PROVISIONS

<u>Effective Date</u>	July 1, 2007; GASB 45 is adopted.
<u>Plan Year</u>	July 1 through June 30.
<u>Eligibility</u>	An employee hired before April 2, 2012 shall become eligible to retire under this plan upon attainment of age 55 as an active member and completion of 10 years of service or an employee shall be able to retire with 20 years of service regardless of age. Those hired on or after April 2, 2012 shall be eligible to retire upon attainment of age 60 with 10 years of creditable service.
<u>Creditable Service</u>	Elapsed time from date of hire to termination of service date.
<u>Participant Contributions</u>	Premiums for Medical insurance vary by coverage level and plan selected, ranging from 21% to 50% of underlying gross premiums.
<u>Benefits Offered</u>	Comprehensive Medical Insurance offered through Blue Cross Blue Shield of Massachusetts.
<u>Normal Retirement Date</u>	The normal retirement date is the first day of the month following a participant's 65th birthday.
<u>Early Retirement</u>	Early retirement is available for any participant who has attained benefit eligibility.

### SECTION III

#### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS

##### A. ACTUARIAL COST METHOD

The actuarial cost method used to calculate the costs and liabilities of the plan is the Individual Entry Age Normal Actuarial Cost Method. Under this method, the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement, each individual's annual normal cost is a level dollar amount. The actuarial accrued liability is the actuarial present value of the projected benefit times the ratio of past service to expected total service at retirement/termination.

Actuarial gains and losses are calculated each year and amortized over a 30 year period.

All employees who are plan participants on a valuation date are included in the actuarial valuation.

##### B. ASSET VALUATION METHOD

The actuarial value of assets is equal to the Market Value of the Plan's assets as of the valuation date.

### SECTION III

#### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS

(continued)

#### C. ACTUARIAL ASSUMPTIONS

We used the following assumptions in this year's actuarial valuation:

##### Pre- and Post-Retirement Mortality

It is assumed that both pre-retirement and post-retirement mortality are represented by the RP-2000 Mortality Table projected generationally with scale BB and a base year 2009 for males and females. Disabled employees were assumed to follow the RP-2000 Mortality Table set forward 2 years for males and females.

##### Discount Rate

6.00% per annum (previously 4.00%)

##### Employee Termination

It was assumed that employees would terminate employment in accordance with the sample rates shown in the following table:

<u>Service</u>	<u>Non Public Safety Male</u>	<u>Non Public Safety Female</u>	<u>Public Safety</u>
0	15.00%	15.00%	1.50%
5	7.60%	7.60%	1.50%
10	5.40%	5.40%	1.50%
15	3.30%	3.30%	0.00%
20	2.00%	2.00%	0.00%
25	1.00%	1.00%	0.00%
30	0.00%	0.00%	0.00%

### SECTION III

## ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS (continued)

### C. ACTUARIAL ASSUMPTIONS (continued)

#### Retirement Rates

It was assumed that the following percentage of eligible employees would retire each year:

<u>Age</u>	<u>Non Public Safety Male</u>	<u>Non Public Safety Female</u>	<u>Public Safety</u>
45	0.00%	0.00%	1.00%
46	0.00%	0.00%	1.00%
47	0.00%	0.00%	1.00%
48	0.00%	0.00%	1.00%
49	0.00%	0.00%	1.00%
50	1.00%	1.50%	2.00%
51	1.00%	1.50%	2.00%
52	1.00%	2.50%	2.00%
53	1.00%	2.50%	5.00%
54	2.00%	2.50%	7.50%
55	2.00%	5.50%	15.00%
56	2.50%	6.50%	10.00%
57	2.50%	6.50%	10.00%
58	5.00%	6.50%	10.00%
59	6.50%	6.50%	15.00%
60	12.00%	5.00%	20.00%
61	20.00%	13.00%	20.00%
62	30.00%	15.00%	25.00%
63	25.00%	12.50%	25.00%
64	22.00%	18.00%	30.00%
65	40.00%	15.00%	100.00%
66	25.00%	20.00%	100.00%
67	25.00%	20.00%	100.00%
68	30.00%	25.00%	100.00%
69	30.00%	20.00%	100.00%
70	100.00%	100.00%	100.00%
71	100.00%	100.00%	100.00%
72	100.00%	100.00%	100.00%

### SECTION III

#### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS

(continued)

#### C. ACTUARIAL ASSUMPTIONS (continued)

##### Disability rates

It was assumed that the following percentage of eligible employees would become permanently disabled each year:

<u>Age</u>	<u>Non Public Safety</u>	<u>Public Safety</u>
20	0.01%	0.01%
25	0.02%	0.02%
30	0.03%	0.03%
35	0.07%	0.17%
40	0.10%	0.30%
45	0.15%	0.78%
50	0.19%	1.25%
55	0.24%	1.20%
60	0.28%	0.85%

### SECTION III

#### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS

(continued)

#### C. ACTUARIAL ASSUMPTIONS (continued)

##### Healthcare Trend

It was assumed that healthcare costs would increase in accordance with the trend rates in the following table:

<u>Year</u>	<u>Medical</u>	<u>Dental</u>
FY 2013	6.0%	5.5%
FY 2014	5.0%	5.0%
FY 2015	5.0%	5.0%
FY 2016	5.0%	5.0%
FY 2017	5.0%	5.0%
FY 2018	5.0%	5.0%
FY 2019	5.0%	5.0%
FY 2020+	5.0%	5.0%

##### Participation Rate

It was assumed that 80% of employees eligible to receive retirement benefits would enroll in the retiree medical plans upon retirement. For life insurance plans, it was assumed that 80% of eligible employees would elect coverage upon retirement.

##### Percent Married

It was assumed that 80% of male participants and 70% of female participants who elect retiree healthcare coverage for themselves would also elect coverage for a spouse upon retirement. It was further assumed that a male spouse is three years older than a female spouse and same sex spouses are assumed to be the same age. For current retirees, the actual census information was used.

### SECTION III

#### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS

(continued)

#### C. ACTUARIAL ASSUMPTIONS (continued)

##### Compensation Increases

3.00% per year.

##### Open Group Forecast

It was assumed for projecting plan liabilities in future years that the active population would remain unchanged and that those who terminate employment or retire will be replaced with new employees with the demographics below:

##### **Open Group Forecast Population Demographics**

<u>Age</u>	<u>Male</u>	<u>Female</u>
20	8.0%	5.0%
30	7.0%	14.0%
40	20.0%	19.0%
50	10.0%	10.0%
60	<u>3.0%</u>	<u>4.0%</u>
Total	48.0%	52.0%

##### Additional Comments

The values in this report reflect a closed group and do not reflect any new entrants after the valuation date.

For purposes of this valuation, retiree contributions were assumed to increase with the same trend rate as health care claims.

### SECTION III

#### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS

(continued)

#### D. DEVELOPMENT OF REPRESENTATIVE MEDICAL PER CAPITA CLAIMS COSTS

As part of the Other Post-Employment Benefits Program, there are situations where the cost is borne partly or entirely on the retirees. In most cases, the premium that is used to split the cost is lower than the true cost of providing the medical benefits, for two reasons:

- ✓ The cost sharing program is usually a fixed amount such as a COBRA premium that does not take into account the age of the retiree and his/her dependents. Since medical costs generally increase with age, the cost sharing premium is often lower than the true cost of the medical benefits:
- ✓ The cost sharing premium is usually a blended rate that takes into account the cost of medical benefits for active employees as well as retirees. Medical costs are generally higher for retirees than for active employees of the same age. This means that, again, the cost sharing premium is often lower than the true cost of the medical benefits.

Because of these two factors, a retiree who is paying 100% of the cost sharing premium is most likely not paying 100% of the true cost of the medical benefits. This situation is known as an "implicit subsidy". GASB 43 and 45 require the plan sponsor to measure the liability for this subsidy; that is, the difference between the true cost of the medical benefits and the cost sharing premiums paid by the retiree. To do this, our valuation consists of several steps:

First, we calculate the liability for the true cost of medical benefits expected to be received by retirees and their dependents. This liability is based factors developed by actuaries that reflect how the cost of medical benefits varies by age and gender, as well as the other assumptions discussed on the prior page.

Next, we calculate the liability for the future premiums expected to be paid by the retiree for their own and their dependents' coverage. This liability is based on the current premium rates without adjustment for age or gender. It also is based on the terms of the retiree medical program – different retirees pay different percentages based on their union, date of retirement, age at retirement, and other factors.

### SECTION III

## ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS

(continued)

### D. DEVELOPMENT OF REPRESENTATIVE MEDICAL PER CAPITA CLAIMS COSTS

#### **I. CLAIMS COSTS DEVELOPMENT - Based on Active & Retiree Incurred Claims & Premiums**

	Number of Participants			
	<u>Single</u>	<u>Two-Person</u>	<u>Family</u>	<u>Total</u>
Network Blue HMO	71		77	148
Blue Care Elect PPO	2		13	15
Custom Network HMO	1		3	4
Medex II	48			48
Managed Blue for Seniors	27			27
<b>Total</b>	149	0	93	242

  

	Per Contract Costs (monthly) - FY 2017		
	<u>Single</u>	<u>Two-Person</u>	<u>Family</u>
Network Blue HMO	735.75	0.00	1,965.60
Blue Care Elect PPO	869.71	0.00	2,327.12
Custom Network HMO	684.25	0.00	1,828.00
Medex II	307.30	614.60	
Managed Blue for Seniors	274.70	549.40	

Gross Expected FY 2017 Incurred Premiums	3,167,004
Adjustment to reflect children's claims	(564,772)
<b>Total Expected FY 2017 Incurred Premiums (adults only)</b>	<b>2,602,232</b>

#### **II. PRE-65 AND POST-65 PER CAPITA RETIREE ANNUAL CLAIM COSTS**

	<b><u>Employer</u></b> <b><u>Primary</u></b>	<b><u>Medicare</u></b> <b><u>Primary</u></b>
Age 65	12,095	3,547
Average Age	11,167	3,547

## SECTION III

### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS (continued)

#### D. DEVELOPMENT OF REPRESENTATIVE MEDICAL PER CAPITA CLAIMS COSTS

##### III. BREAKDOWN OF CLAIM COSTS

2,602,232 Active and Retired Claims (No Children)

##### ALL ACTIVE EMPLOYEES AND SPOUSES

Age Bracket	Female Aging Factor	Male Aging Factor	Aged (F) Average Claims	Aged (M) Average Claims	Age Related Claims
24 & Under	1.312	0.549	7,421	3,105	3,105
25 to 29	1.312	0.591	7,421	3,343	54,555
30 to 34	1.312	0.712	7,421	4,027	75,476
35 to 39	1.312	0.850	7,421	4,808	71,179
40 to 44	1.312	1.000	7,421	5,656	179,187
45 to 49	1.456	1.193	8,235	6,748	241,215
50 to 54	1.599	1.441	9,044	8,150	312,174
55 to 59	1.740	1.753	9,841	9,915	414,802
60 to 64	1.968	2.102	11,131	11,889	469,257
65 to 69	2.168	2.316	12,262	13,099	117,054
70 & Over	2.396	2.557	13,552	14,462	<u>27,104</u>
Total					1,965,108

##### ALL RETIREES AND SPOUSES - NOT MEDICARE ELIGIBLE

Age Bracket	Female Aging Factor	Male Aging Factor	Aged (F) Average Claims	Aged (M) Average Claims	Age Related Claims
44 & Under	1.312	1.000	7,421	5,656	0
45 to 49	1.456	1.193	8,235	6,748	6,748
50 to 54	1.599	1.441	9,044	8,150	9,044
55 to 59	1.740	1.753	9,841	9,915	49,279
60 to 64	1.968	2.102	11,131	11,889	239,057
65 to 69	2.168	2.316	12,262	13,099	13,099
70 to 74	2.396	2.557	13,552	14,462	13,552
75 to 79	2.593	2.769	14,666	15,661	0
80 to 84	2.724	2.910	15,407	16,459	15,407
85 to 89	2.864	3.059	16,199	17,302	0
90 & Over	3.010	3.215	17,025	18,184	<u>0</u>
Total					346,186

##### ALL RETIREES AND SPOUSES - MEDICARE ELIGIBLE

Age Bracket	Female Aging Factor	Male Aging Factor	Aged (F) Average Claims	Aged (M) Average Claims	Age Related Claims
65 to 69	2.168	2.316	3,547	3,547	106,410
70 to 74	2.396	2.557	3,547	3,547	63,846
75 to 79	2.593	2.769	3,547	3,547	49,658
80 to 84	2.724	2.910	3,547	3,547	24,829
85 to 89	2.864	3.059	3,547	3,547	35,470
90 & Over	3.010	3.215	3,547	3,547	<u>10,641</u>
Total					290,854

Grand Totals 2,602,148

### SECTION III

#### ACTUARIAL COST METHOD, ASSET VALUATION METHOD AND ACTUARIAL ASSUMPTIONS (continued)

#### E. DEVELOPMENT OF REPRESENTATIVE DENTAL PER CAPITA CLAIMS COSTS

##### **I. CLAIMS COSTS DEVELOPMENT - with Active & Retiree Incurred Premiums**

	Per Contract Costs (monthly) - FY 2017		
	<u>Single</u>	<u>Two-Person</u>	<u>Family</u>
<b>Dental Plan</b>	N/A		N/A
FY 2017 Expected Per Person Rate		N/A	

EXHIBIT AFinancial Statement Disclosure

(As of July 1, 2015)

The GASB Standards for accounting and financial reporting for postemployment benefits other than pensions require the following disclosures in the financial statements with regard to the retiree medical and life insurance benefits;

**1. A DESCRIPTION OF THE RETIREE MEDICAL INSURANCE PROGRAM:**

- a. Plan Type: Comprehensive Medical Insurance offered through Blue Cross Blue Shield of Massachusetts.
- b. Administrator: Town of Boxford
- c. Eligibility: An employee hired before April 2, 2012 shall become eligible to retire under this plan upon attainment of age 55 as an active member and completion of 10 years of service or an employee shall be able to retire with 20 years of service regardless of age. Those hired on or after April 2, 2012 shall be eligible to retire upon attainment of age 60 with 10 years of creditable service.
- d. Cost Sharing: Employees will pay 21%-50% of premiums in retirement depending on the plan and coverage level elected.

**2. A DESCRIPTION OF THE DENTAL INSURANCE PROGRAM:**

- a. Plan Type: Not offered
- b. Administrator: N/A
- c. Eligibility: N/A
- d. Cost sharing: N/A

**3. A DESCRIPTION OF THE RETIREE LIFE INSURANCE PROGRAM:**

- a. Plan Type: Not offered
- b. Administrator: N/A
- c. Eligibility: N/A
- d. Cost sharing: N/A

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2015)

(continued)

#### 4. RETIREE MEDICAL AND LIFE INSURANCE CONTRIBUTIONS:

Group	Individual	Family
Medical	Varies by coverage level & plan – ranges from 21% to 50% of premiums	Retirees will pay 34% of premiums for Family coverage
Dental	N/A	N/A
Life	N/A	N/A

#### 5. FUNDING POLICY

The contribution requirements of plan members and the Town are established and may be amended through Town ordinances. The Town expects to contribute \$263,113 beyond the pay-as-you-go. For the 2016 fiscal year, total Town premiums plus implicit costs for the retiree medical program are \$488,173. The Town is also projected to make a contribution to an OPEB Trust of \$263,113 for the 2016 fiscal year for a total contribution of \$751,286 .

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2015)

(continued)

#### 6. ANNUAL OPEB COST AND NET OPEB OBLIGATION

The Town's annual other postemployment benefit ("OPEB") cost (expense) is calculated based on the annual required contribution of the employer ("ARC"), an amount actuarially determined in accordance with the parameters of GASB Statement No. 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities (or funding excess) over a period not to exceed thirty (30) years. The following table shows the components of the Town's annual OPEB costs for the fiscal year, the amount actually contributed to the plan and changes in the Town's net OPEB obligation to the plan:

Annual Required Contribution	\$1,283,291
Interest on net OPEB Obligation (Asset)	\$398,831
Adjustment to annual required contribution	(\$455,575)
Amortization of Actuarial (Gains) / Losses	(\$538,886)
Annual OPEB expense	\$687,661
Contributions made to pay benefits	\$488,173
Contributions made to OPEB Trust	\$263,113
Increase (Decrease) in net OPEB Obligation (Asset)	(\$63,625)
Net OPEB Obligation (Asset) – beginning of year	\$6,647,189
Net OPEB Obligation (Asset) – end of year	\$6,583,564

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2015)

(continued)

The Town's annual OPEB cost, the percentage of the annual OPEB cost contributed to the plan, and the net OPEB obligation for the 2016 fiscal year and the three preceding years were as follows:

<b>Fiscal Year Ended</b>	<b>Annual OPEB Cost</b>	<b>Expected Employer Payments</b>	<b>Percentage of OPEB Cost Contributed</b>	<b>Increase (Decrease) in Net OPEB Obligation (Asset)</b>	<b>Net OPEB Obligation (Asset)</b>
06/30/2018 (est.)	\$811,596	\$703,655	86.7%	\$107,941	\$6,645,799
06/30/2017 (est.)	\$751,347	\$797,053	106.1%	(\$45,706)	\$6,537,858
06/30/2016	\$687,661	\$751,286	109.3%	(\$63,625)	\$6,583,564
06/30/2015	\$732,516	\$637,179	87.0%	\$95,337	\$6,647,189
06/30/2014	\$671,984	\$687,286	102.3%	(\$15,302)	\$6,551,852
06/30/2013	\$1,660,693	\$506,084	30.5%	\$1,154,609	\$6,567,154

### **Schedule of Funding Progress:**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets</b>	<b>Actuarial Accrued Liability</b>	<b>Unfunded Actuarial Accrued Liability</b>	<b>Funded Ratio</b>	<b>Covered Payroll</b>	<b>UAAL as a % of Covered Payroll</b>
07/01/2017 (est.)	\$1,550,701	\$11,909,404	\$10,358,703	13.0%	\$11,954,121	86.7%
07/01/2016 (est.)	\$1,171,540	\$11,362,043	\$10,190,503	10.3%	\$11,605,943	87.8%
07/01/2015	\$879,001	\$10,862,066	\$9,983,065	8.1%	\$11,267,906	88.6%
07/01/2014	\$648,064	\$11,432,656	\$10,784,592	5.7%	\$10,259,859	105.1%
07/01/2013	\$283,207	\$10,909,192	\$10,625,985	2.6%	\$9,961,028	106.7%
07/01/2012	\$0	\$17,284,082	\$17,284,082	0.0%	N/A	N/A

## EXHIBIT A

### Financial Statement Disclosure (As of July 1, 2015) (continued)

	Fiscal Year Ending June 30, 2016		
	Town Employees and Retirees	School Employees	Total
OPEB Obligation (Asset) at beginning of year	2,185,917	4,461,272	6,647,189
Annual Required Contribution	400,267	883,024	1,283,291
Interest on Net OPEB Obligation	131,155	267,676	398,831
Adjustment to the ARC	(149,815)	(305,760)	(455,575)
Amortization of Actuarial (Gains)/Losses	(177,212)	(361,674)	(538,886)
Annual OPEB Cost	204,395	483,266	687,661
Expected Employer Contribution	153,739	334,434	488,173
Contribution (Withdrawal) to/from Trust Fund over 30 Years	86,524	176,589	263,113
Total Expected Employer Payments	240,263	511,023	751,286
Increase (Decrease) in OPEB Obligation (Asset)	(35,868)	(27,757)	(63,625)
OPEB Obligation (Asset) at end of year	2,150,049	4,433,515	6,583,564
AAL as of July 1, 2015	3,571,972	7,290,094	10,862,066
Plan Assets as of July 1, 2015	288,426	590,575	879,001
Unfunded Actuarial Liability as of July 1, 2015	3,283,546	6,699,519	9,983,065

	Fiscal Year Ending June 30, 2017		
	Town Employees and Retirees	School Employees	Total
OPEB Obligation (Asset) at beginning of year	2,150,049	4,433,515	6,583,564
Annual Required Contribution	421,322	929,473	1,350,795
Interest on Net OPEB Obligation	129,899	265,114	395,013
Adjustment to the ARC	(148,382)	(302,834)	(451,216)
Amortization of Actuarial (Gains)/Losses	(179,514)	(363,731)	(543,245)
Annual OPEB Cost	223,325	528,022	751,347
Expected Employer Contribution	156,245	340,808	497,053
Contribution (Withdrawal) to/from Trust Fund over 30 Years	98,654	201,346	300,000
Total Expected Employer Payments	254,899	542,154	797,053
Increase (Decrease) in OPEB Obligation (Asset)	(31,574)	(14,132)	(45,706)
OPEB Obligation (Asset) at end of year	2,118,475	4,419,383	6,537,858
AAL as of July 1, 2016	3,736,389	7,625,654	11,362,043
Plan Assets as of July 1, 2016	363,721	807,819	1,171,540
Unfunded Actuarial Liability as of July 1, 2016	3,372,668	6,817,835	10,190,503

EXHIBIT AFinancial Statement Disclosure

(As of July 1, 2015)

(continued)

**7. FUNDED STATUS AND FUNDING PROGRESS**

As of July 1, 2015, the most recent valuation date, the plan was 8.09% funded. The actuarial liability for benefits was \$10,862,066, and the actuarial value of assets was \$879,001, resulting in an unfunded actuarial accrued liability (UAAL) of \$9,983,065. The covered payroll (annual payroll of active employees covered by the plan) was \$ 11,267,906 and the ratio of the UAAL to the covered payroll was 88.6%.

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and the healthcare cost trend. Amounts determined regarding the funded status of the plan and the annual required contribution of the employer are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented in the required supplementary information following the financial statements, presents multiyear trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liabilities for benefits.

**8. EFFECT OF 1% CHANGE IN HEALTHCARE TREND RATES**

In the event that healthcare trend rates were 1% higher than forecast and employee contributions were to increase at the forecast rates, the Actuarial Accrued Liability would increase to \$13,962,471 or by 28.5% and the corresponding Normal Cost would increase to \$507,194 or by 47.0%. If such healthcare trend rates were 1% less than forecast and employee contributions were to increase at the forecast rate, the Actuarial Accrued Liability would decrease to \$8,412,439 or by 22.6% and the corresponding Normal Cost would decrease to \$226,366 or by 34.4%.

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2015)

(continued)

#### 9. ACTUARIAL METHODS AND ASSUMPTIONS

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and plan members to that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations.

Actuarial Cost Method:	Individual Entry Age Normal
Investment Rate of Return:	6.00% per annum (previously 4.00%)
Healthcare Trend Rates	

<u>Year</u>	<u>Medical</u>	<u>Dental</u>
FY 2013	6.0%	5.5%
FY 2014	5.0%	5.0%
FY 2015	5.0%	5.0%
FY 2016	5.0%	5.0%
FY 2017	5.0%	5.0%
FY 2018	5.0%	5.0%
FY 2019	5.0%	5.0%
FY 2020+	5.0%	5.0%

General Inflation Assumption:	2.75% per annum
Annual Compensation Increases:	3.00% per annum
Actuarial Value of Assets:	Market Value
Amortization of UAAL:	Amortized increasing at 4.50% per year over 30 years at transition
Remaining Amortization Period:	22 years at July 1, 2015

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2015)

(continued)

#### 10. Remaining Amortization Bases

The initial Actuarial Accrued Liability as of the date GASB 45 was adopted is amortized as a component of the Annual Required Contribution ("ARC"). The Unfunded Actuarial Accrued Liability was amortized beginning in 2007 over a 30 year period with amortization payments increasing at 4.50% per year. For years subsequent to the initial adoption of GASB 45, cumulative gains/losses are amortized on a level dollar basis over a 30 year period. Gains and losses arise from experience and contribution deficiencies and excess contributions in relation to each year's ARC under GASB 45.

<b>Changes in Unfunded Actuarial Liability Since Prior Valuation</b>
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#### *Expected Unfunded Actuarial Liability*

1. Actuarial Accrued Liability at prior valuation date	10,909,192
2. Actuarial Value of Assets at prior valuation date	<u>283,207</u>
3. Unfunded Actuarial Accrued Liability at prior valuation date [1. - 2.]	10,625,985
4. Normal Cost for prior periods	1,000,940
5. Employer Contributions for prior periods	<span style="color: red;">(1,324,465)</span>
6. Interest to current valuation date	<u>873,671</u>
7. Expected Unfunded Actuarial Accrued Liability [3. + 4. + 5. + 6.]	11,176,131

#### *Actual Unfunded Actuarial Liability*

8. Actuarial Accrued Liability at current valuation date	10,862,066
9. Actuarial Value of Assets at current valuation date	<u>879,001</u>
10. Unfunded Actuarial Accrued Liability at current valuation date [8. - 9.]	9,983,065

<b><i>Net Actuarial (Gain) / Loss from Plan Experience [10. - 7.]</i></b>	<b><i>(1,193,066)</i></b>
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11. Unfunded Actuarial Accrued Liability at current valuation date [10.]	9,983,065
12. Remaining Initial Unfunded to be amortized	<u>17,845,804</u>
13. Actuarial (Gain) / Loss to be amortized: [11. - 12.]	<b><i>(7,862,739)</i></b>

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2015)

(continued)

Amortization of Initial Unfunded and Plan Experience under GASB 45						
Date Established	Description	Initial Amount	Initial Amortization Period	Remaining Balance at Valuation Date	Remaining Amortization Period	Annual Amortization Payment
July 1, 2007	GASB 45 Liability	16,187,619	30	17,845,804	22	938,275
July 1, 2015	Cumulative (Gain) / Loss	(7,862,739)	30	(7,862,739)	30	(538,886)
July 1, 2015	Adjustment to ARC	(6,647,189)	30	(6,647,189)	30	(455,576)
Total				3,335,876		(56,187)

## 11. Recognition of OPEB trust assets

The State of Massachusetts has recently passed legislation allowing municipal entities to establish a trust for Other Postemployment Benefits ("OPEB") under M.G.L. Chapter 32B, Section 20 for purposes of accumulating assets to pre-fund the liabilities under GASB 45. To the best of our knowledge, Town of Boxford has established an irrevocable trust for the purposes of prefunding liabilities under GASB 45.

EXHIBIT AFinancial Statement Disclosure

(As of July 1, 2015)

(continued)

**12. Impact of Patient Protection and Affordable Care Act ("PPACA") Excise Tax**

Under the Patient Protection and Affordable Care Act ("PPACA"), an excise tax will be imposed for tax years beginning after December 31, 2019 (formerly December 31, 2017, but amended by Consolidated Appropriations Act) for high cost employer sponsored health coverage. The law specifies a 40% excise tax, to be paid by the provider of such coverage, of the excess value beyond a basic dollar amount plus an additional "kicker" for qualified retirees or those engaged in a high risk profession. The threshold amounts for 2018 (original legislation) were \$10,200 for single coverage and \$27,500 for family coverage and a "kicker" amount of \$1,650 for single coverage and \$3,450 for family coverage. These threshold and kicker amounts are expected to be updated because of the Consolidated Appropriations Act before the tax takes effect in 2020, but currently the updated amounts have not been released.

The excise tax liability will vary significantly over time as it is highly leveraged with the basic threshold amount increased with general CPI and medical costs increasing with medical trend (generally higher). For purposes of the fiscal year ending June 30, 2016, the AAL for the excise tax is \$173,452 and the increase in annual OPEB Cost is \$17,613. Given your premiums through the 2017 fiscal year and the excise tax threshold, your average single premiums are \$4,012 below the excise tax threshold and your average family premiums are \$3,360 below the excise tax threshold. As more regulatory guidance becomes available, the calculation of the excise tax liability will evolve.

EXHIBIT AFinancial Statement Disclosure

(As of July 1, 2015)

(continued)

**13. Impact of Section 9A 1/2 of M.G.L. Chapter 32B**

For employees who retire on or after January 1, 2011 whenever a retired employee or beneficiary receives a healthcare premium contribution from a governmental unit in a case where a portion of the retiree's creditable service is attributable to service in 1 or more other governmental units, the first governmental unit shall be reimbursed in full, in accordance with this paragraph, by the other governmental units for the portion of the premium contributions that corresponds to the percentage of the retiree's creditable service that is attributable to each governmental unit. The other governmental units shall be charged based on their own contribution rate or the contribution rate of the first employer, whichever is lower.

For purposes of the valuation we have not attempted to value the impact of prior governmental service at other entities in the State of Massachusetts for current employees of the Town of Boxford nor have we attempted to value the impact of prior Town of Boxford employees currently working at other governmental entities in the State of Massachusetts.

## EXHIBIT B

### Reconciliation of Plan Participation (As of July 1, 2015)

#### ACTIVE EMPLOYEES

	<u><b>July 1, 2015</b></u>	<u><b>July 1, 2013</b></u>
<b>A. Average Age at Hire</b>	37.83	38.03
<b>B. Average Service</b>	10.39	10.32
<b>C. Average Current Age</b>	48.22	48.35

#### RETIRED EMPLOYEES & DEPENDENTS

	<u><b>July 1, 2015</b></u>	<u><b>July 1, 2013</b></u>
<b>I. Retirees</b>		
<b>A. Under Age 65</b>	29	30
<b>B. Age 65 &amp; Over</b>	<u>72</u>	<u>71</u>
<b>C. Total Retirees</b>	101	101
<b>II. Dependents of Retirees</b>		
<b>A. Under Age 65</b>	6	10
<b>B. Age 65 &amp; Over</b>	<u>6</u>	<u>0</u>
<b>C. Total Retirees</b>	12	10
<b>III. Retirees &amp; Dependents</b>		
<b>A. Under Age 65</b>	35	40
<b>B. Age 65 &amp; Over</b>	<u>78</u>	<u>71</u>
<b>C. Total Retirees</b>	113	111

## EXHIBIT C

### Projected Cash Flows (Open Group) – Partial Funding Approach

Total Medical & Life Insurance - Partial Funding - 6.00% discount rate										
Fiscal Year	I. Total Actuarial Accrued Liability ("AAL") as of July 1	II. Plan Assets as of July 1	III. Unfunded Accrued Actuarial Liability ("UAAL") [I. - II.]	IV. Funded Ratio [II. / I.]	V. OPEB Obligation (Asset) as of June 30	VI. Normal Cost	VII. Expected Annual OPEB Expense	VII. Employer Share of Premiums / Claims	IX. Excess Employer Payments (beyond claims)	X. Total Employer Contribution [VIII. + IX.]
					6,647,189					
2016	10,862,066	879,001	9,983,065	8.09%	6,583,564	345,016	687,661	488,173	263,113	751,286
2017	11,362,043	1,171,540	10,190,503	10.31%	6,537,858	370,298	751,347	497,053	300,000	797,053
2018	11,909,404	1,550,701	10,358,703	13.02%	6,645,799	389,166	811,596	503,655	200,000	703,655
2019	12,502,610	1,849,656	10,652,954	14.79%	6,824,028	408,884	883,899	505,670	200,000	705,670
2020	13,150,172	2,166,548	10,983,624	16.48%	7,063,184	428,778	962,669	523,513	200,000	723,513
2021	13,838,764	2,502,453	11,336,311	18.08%	7,341,656	450,241	1,048,832	570,360	200,000	770,360
2022	14,541,763	2,858,513	11,683,250	19.66%	7,678,884	476,898	1,144,814	607,586	200,000	807,586
2023	15,275,741	3,235,936	12,039,805	21.18%	8,066,915	500,431	1,243,566	655,535	200,000	855,535
2024	16,027,874	3,636,005	12,391,869	22.69%	8,512,321	529,193	1,353,069	707,663	200,000	907,663
2025	16,800,368	4,060,078	12,740,290	24.17%	9,020,846	555,514	1,466,159	757,634	200,000	957,634
2026	17,594,143	4,509,595	13,084,548	25.63%	9,635,484	585,397	1,589,301	774,663	200,000	974,663
2027	18,449,169	4,986,083	13,463,086	27.03%	10,301,128	614,822	1,721,174	855,530	200,000	1,055,530
2028	19,300,968	5,491,161	13,809,807	28.45%	11,071,133	645,572	1,860,384	890,379	200,000	1,090,379
2029	20,199,531	6,026,543	14,172,988	29.84%	11,965,946	678,864	2,011,480	916,667	200,000	1,116,667
2030	21,159,432	6,594,048	14,565,384	31.16%	12,970,347	713,816	2,174,948	970,547	200,000	1,170,547
2031	22,156,864	7,195,603	14,961,261	32.48%	14,077,732	746,831	2,346,421	1,039,036	200,000	1,239,036
2032	23,176,538	7,833,252	15,343,286	33.80%	15,341,518	785,030	2,532,776	1,068,990	200,000	1,268,990
2033	24,266,131	8,509,160	15,756,971	35.07%	16,745,899	821,878	2,730,841	1,126,460	200,000	1,326,460
2034	25,399,243	9,225,622	16,173,621	36.32%	18,301,118	863,606	2,946,064	1,190,845	200,000	1,390,845
2035	26,576,323	9,985,072	16,591,251	37.57%	20,042,913	906,196	3,175,214	1,233,419	200,000	1,433,419
2036	27,824,047	10,790,089	17,033,958	38.78%	22,024,234	952,099	3,423,068	1,241,747	200,000	1,441,747
2037	29,186,465	11,643,407	17,543,058	39.89%	24,212,621	996,517	3,688,193	1,299,806	200,000	1,499,806
2038	30,616,166	12,547,924	18,068,242	40.98%	24,196,631	1,045,560	3,938,856	1,319,846	200,000	1,519,846
2039	32,162,394	13,506,712	18,655,682	42.00%	24,141,397	1,096,011	4,153,348	1,408,582	200,000	1,608,582
2040	33,760,811	14,523,027	19,237,784	43.02%	24,023,253	1,151,415	4,405,438	1,523,582	200,000	1,723,582
2041	35,391,964	15,600,321	19,791,643	44.08%	23,869,539	1,209,080	4,656,014	1,609,728	200,000	1,809,728
2042	37,090,795	16,742,253	20,348,542	45.14%	23,706,861	1,270,535	4,908,246	1,670,924	200,000	1,870,924
2043	38,891,831	17,952,701	20,939,130	46.16%	23,507,867	1,333,249	5,161,199	1,760,193	200,000	1,960,193
2044	40,772,781	19,235,776	21,537,005	47.18%	23,303,518	1,400,083	5,416,094	1,820,443	200,000	2,020,443
2045	42,773,566	20,595,835	22,177,731	48.15%	23,085,531	1,468,983	5,672,733	1,890,720	200,000	2,090,720
2046	44,892,938	22,037,498	22,855,440	49.09%	23,832,071	1,540,953	5,926,085	1,979,545	200,000	2,179,545
2047	47,121,607	23,565,660	23,555,947	50.01%	24,610,373	1,616,951	6,186,876	2,068,574	200,000	2,268,574

## EXHIBIT D

### Projected Cash Flows (Open Group) – Funded Approach

Total Medical & Life Insurance - Funding over 30 years at 7.00% discount rate 0.00% per year										
Fiscal Year	I. Total Actuarial Accrued Liability ("AAL") as of July 1	II. Plan Assets as of July 1	III. Unfunded Accrued Actuarial Liability ("UAAL") [I. - II.]	IV. Funded Ratio [II. / I.]	V. OPEB Obligation (Asset) as of June 30	VI. Normal Cost	VII. Expected Annual OPEB Expense	VII. Employer Share of Premiums / Claims	IX. Excess Employer Payments (beyond claims)	X. Total Employer Contribution [VIII. + IX.]
2016	9,607,989	879,001	8,728,988	9.15%	6,647,189	274,334	580,509	488,173	263,113	751,286
2017	10,051,741	1,171,540	8,880,201	11.66%	6,258,413	294,367	634,854	497,053	355,800	852,853
2018	10,538,489	1,621,590	8,916,899	15.39%	6,081,632	309,099	682,674	503,655	355,800	859,455
2019	11,068,008	2,103,144	8,964,864	19.00%	5,956,424	324,539	736,262	505,670	355,800	861,470
2020	11,648,958	2,618,406	9,030,552	22.48%	5,872,877	340,011	795,766	523,513	355,800	879,313
2021	12,268,039	3,169,737	9,098,302	25.84%	5,808,426	356,629	861,709	570,360	355,800	926,160
2022	12,898,109	3,759,661	9,138,448	29.15%	5,780,736	377,471	935,696	607,586	355,800	963,386
2023	13,554,753	4,390,880	9,163,873	32.39%	5,781,669	395,732	1,012,268	655,535	355,800	1,011,335
2024	14,225,597	5,066,284	9,159,313	35.61%	5,815,930	418,161	1,097,724	707,663	355,800	1,063,463
2025	14,911,621	5,788,966	9,122,655	38.82%	5,888,779	438,527	1,186,283	757,634	355,800	1,113,434
2026	15,613,991	6,562,236	9,051,755	42.03%	6,041,705	461,778	1,283,389	774,663	355,800	1,130,463
2027	16,372,183	7,389,635	8,982,548	45.14%	6,219,127	484,586	1,388,752	855,530	355,800	1,211,330
2028	17,121,326	8,274,952	8,846,374	48.33%	6,473,048	508,431	1,500,100	890,379	355,800	1,246,179
2029	17,911,135	9,222,241	8,688,894	51.49%	6,822,777	534,292	1,622,196	916,667	355,800	1,272,467
2030	18,755,774	10,235,840	8,519,934	54.57%	7,252,342	561,535	1,755,912	970,547	355,800	1,326,347
2031	19,631,036	11,320,391	8,310,645	57.67%	7,754,751	587,117	1,897,245	1,039,036	355,800	1,394,836
2032	20,521,655	12,480,861	8,040,794	60.82%	8,381,638	616,843	2,051,677	1,068,990	355,800	1,424,790
2033	21,474,373	13,722,564	7,751,809	63.90%	9,117,150	645,490	2,217,772	1,126,460	355,800	1,482,260
2034	22,462,940	15,051,186	7,411,754	67.00%	9,969,990	677,940	2,399,485	1,190,845	355,800	1,546,645
2035	23,486,537	16,472,811	7,013,726	70.14%	10,975,255	711,062	2,594,484	1,233,419	355,800	1,589,219
2036	24,571,672	17,993,950	6,577,722	73.23%	12,185,088	746,815	2,807,380	1,241,747	355,800	1,597,547
2037	25,762,112	19,621,569	6,140,543	76.16%	13,567,559	781,244	3,038,077	1,299,806	355,800	1,655,606
2038	27,010,599	21,363,121	5,647,478	79.09%	12,473,670	819,285	581,757	1,319,846	355,800	1,675,646
2039	28,365,740	23,226,582	5,139,158	81.88%	11,253,629	858,441	544,341	1,408,582	355,800	1,764,382
2040	29,762,691	25,220,485	4,542,206	84.74%	9,876,250	901,506	502,003	1,523,582	355,800	1,879,382
2041	31,180,457	27,353,961	3,826,496	87.73%	8,361,157	946,355	450,435	1,609,728	355,800	1,965,528
2042	32,653,280	29,636,781	3,016,499	90.76%	6,726,531	994,074	392,098	1,670,924	355,800	2,026,724
2043	34,214,780	32,079,398	2,135,382	93.76%	4,939,432	1,042,752	328,894	1,760,193	355,800	2,115,993
2044	35,842,152	34,692,998	1,149,154	96.79%	3,024,327	1,094,560	261,138	1,820,443	355,800	2,176,243
2045	37,574,406	37,489,550	84,856	99.77%	1,234,007	1,147,955	185,256	1,890,720	84,856	1,975,576
2046	39,409,856	40,201,594	(791,738)	102.01%	1,354,102	1,203,732	1,307,902	1,979,545	(791,738)	1,187,807
2047	41,338,426	42,196,725	(858,299)	102.08%	1,521,792	1,262,612	1,377,965	2,068,574	(858,299)	1,210,275

## EXHIBIT D

### Projected Cash Flows (Open Group) – Funded Approach

Total Medical & Life Insurance - Funding over 30 years at 7.00% discount rate increasing at 2.75% per year										
Fiscal Year	I. Total Actuarial Accrued Liability ("AAL") as of July 1	II. Plan Assets as of July 1	III. Unfunded Accrued Actuarial Liability ("UAAL") [I. - II.]	IV. Funded Ratio [II. / I.]	V. OPEB Obligation (Asset) as of June 30	VI. Normal Cost	VII. Expected Annual OPEB Expense	VII. Employer Share of Premiums / Claims	IX. Excess Employer Payments (beyond claims)	X. Total Employer Contribution [VIII. + IX.]
2016	9,607,989	879,001	8,728,988	9.15%	6,647,189	274,334	580,509	488,173	263,113	751,286
2017	10,051,741	1,171,540	8,880,201	11.66%	6,345,613	294,367	634,854	497,053	268,600	765,653
2018	10,538,489	1,531,390	9,007,099	14.53%	6,248,645	309,099	682,674	503,655	275,987	779,642
2019	11,068,008	1,924,070	9,143,938	17.38%	6,195,660	324,539	736,262	505,670	283,577	789,247
2020	11,648,958	2,352,089	9,296,869	20.19%	6,176,538	340,011	795,766	523,513	291,375	814,888
2021	12,268,039	2,818,136	9,449,903	22.97%	6,168,499	356,629	861,709	570,360	299,388	869,748
2022	12,898,109	3,325,095	9,573,014	25.78%	6,188,988	377,471	935,696	607,586	307,621	915,207
2023	13,554,753	3,876,057	9,678,696	28.60%	6,229,640	395,732	1,012,268	655,535	316,081	971,616
2024	14,225,597	4,474,338	9,751,259	31.45%	6,294,928	418,161	1,097,724	707,663	324,773	1,032,436
2025	14,911,621	5,123,489	9,788,132	34.36%	6,389,873	438,527	1,186,283	757,634	333,704	1,091,338
2026	15,613,991	5,827,319	9,786,672	37.32%	6,555,718	461,778	1,283,389	774,663	342,881	1,117,544
2027	16,372,183	6,589,910	9,782,273	40.25%	6,736,630	484,586	1,388,752	855,530	352,310	1,207,840
2028	17,121,326	7,415,636	9,705,690	43.31%	6,984,352	508,431	1,500,100	890,379	361,999	1,252,378
2029	17,911,135	8,309,185	9,601,950	46.39%	7,317,927	534,292	1,622,196	916,667	371,954	1,288,621
2030	18,755,774	9,275,580	9,480,194	49.45%	7,721,109	561,535	1,755,912	970,547	382,183	1,352,730
2031	19,631,036	10,320,204	9,310,832	52.57%	8,186,625	587,117	1,897,245	1,039,036	392,693	1,431,729
2032	20,521,655	11,448,823	9,072,832	55.79%	8,765,820	616,843	2,051,677	1,068,990	403,492	1,472,482
2033	21,474,373	12,667,616	8,806,757	58.99%	9,442,544	645,490	2,217,772	1,126,460	414,588	1,541,048
2034	22,462,940	13,983,202	8,479,738	62.25%	10,225,195	677,940	2,399,485	1,190,845	425,989	1,616,834
2035	23,486,537	15,402,673	8,083,864	65.58%	11,148,556	711,062	2,594,484	1,233,419	437,704	1,671,123
2036	24,571,672	16,933,625	7,638,047	68.92%	12,264,448	746,815	2,807,380	1,241,747	449,741	1,691,488
2037	25,762,112	18,584,194	7,177,918	72.14%	13,540,610	781,244	3,038,077	1,299,806	462,109	1,761,915
2038	27,010,599	20,363,097	6,647,502	75.39%	12,327,704	819,285	581,757	1,319,846	474,817	1,794,663
2039	28,365,740	22,279,668	6,086,072	78.54%	10,975,589	858,441	544,341	1,408,582	487,874	1,896,456
2040	29,762,691	24,343,906	5,418,785	81.79%	9,452,719	901,506	502,003	1,523,582	501,291	2,024,873
2041	31,180,457	26,566,519	4,613,938	85.20%	7,778,349	946,355	450,435	1,609,728	515,077	2,124,805
2042	32,653,280	28,958,975	3,694,305	88.69%	5,970,281	994,074	392,098	1,670,924	529,242	2,200,166
2043	34,214,780	31,533,555	2,681,225	92.16%	3,995,186	1,042,752	328,894	1,760,193	543,796	2,303,989
2044	35,842,152	34,303,411	1,538,741	95.71%	1,877,131	1,094,560	261,138	1,820,443	558,750	2,379,193
2045	37,574,406	37,282,625	291,781	99.22%	(120,114)	1,147,955	185,256	1,890,720	291,781	2,182,501
2046	39,409,856	40,194,229	(784,373)	101.99%	(7,384)	1,203,732	1,307,902	1,979,545	(784,373)	1,195,172
2047	41,338,426	42,196,463	(858,037)	102.08%	160,044	1,262,612	1,377,965	2,068,574	(858,037)	1,210,537

## EXHIBIT D

### Projected Cash Flows (Open Group) – Funded Approach

Total Medical, Dental & Life Insurance - Funding Annual Normal Cost - 6.00% discount rate											
Fiscal Year	I. Total Actuarial Accrued Liability ("AAL")	II. Normal Cost	III. Employer Share of Premiums / Claims including "implicit cost"	IV. Funding Normal Cost beyond claims	V. Total Funding Costs [III. + IV.]	VI. Present Value at 2.75% of Employer Share of Premiums / Claims including "implicit cost"	VII. Present Value at 2.75% of Funding Normal Cost beyond claims	VIII. Present Value at 2.75% of Total Funding Costs + VII.]	IX. Plan Assets at Beginning of year	X. Unfunded Accrued Actuarial Liability ("UAAL") - IX.]	XI. Present Value at 2.75% of Unfunded Accrued Actuarial Liability ("UAAL")
2016	10,862,066	345,016	488,173	(143,157)	345,016	488,173	(143,157)	345,016	879,001	9,983,065	9,983,065
2017	11,362,043	370,298	497,053	(126,755)	370,298	483,750	(123,363)	360,387	788,584	10,573,459	10,290,471
2018	11,909,404	389,166	503,655	(114,489)	389,166	477,056	(108,443)	368,613	709,144	11,200,260	10,608,756
2019	12,502,610	408,884	505,670	(96,786)	408,884	466,146	(89,221)	376,925	637,204	11,865,406	10,937,980
2020	13,150,172	428,778	523,513	(94,735)	428,778	469,678	(84,993)	384,685	578,650	12,571,522	11,278,739
2021	13,838,764	450,241	570,360	(120,119)	450,241	498,012	(104,882)	393,130	518,634	13,320,130	11,630,525
2022	14,541,763	476,898	607,586	(130,688)	476,898	516,317	(111,057)	405,260	429,633	14,112,130	11,992,275
2023	15,275,741	500,431	655,535	(155,104)	500,431	542,155	(128,277)	413,878	324,723	14,951,018	12,365,109
2024	16,027,874	529,193	707,663	(178,470)	529,193	569,602	(143,652)	425,950	189,102	15,838,772	12,748,728
2025	16,800,368	555,514	757,634	(202,120)	555,514	593,503	(158,334)	435,169	21,978	16,778,390	13,143,584
2026	17,594,143	585,397	774,663	(189,266)	585,397	590,601	(144,296)	446,305	(178,823)	17,772,966	13,550,072
2027	18,449,169	614,822	855,530	(240,708)	614,822	634,797	(178,604)	456,193	(378,818)	18,827,987	13,970,236
2028	19,300,968	645,572	890,379	(244,807)	645,572	642,973	(176,784)	466,189	(642,255)	19,943,223	14,401,687
2029	20,199,531	678,864	916,667	(237,803)	678,864	644,240	(167,130)	477,110	(925,597)	21,125,128	14,846,892
2030	21,159,432	713,816	970,547	(256,731)	713,816	663,852	(175,603)	488,249	(1,218,936)	22,378,368	15,306,743
2031	22,156,864	746,831	1,039,036	(292,205)	746,831	691,677	(194,518)	497,159	(1,548,803)	23,705,667	15,780,644
2032	23,176,538	785,030	1,068,990	(283,960)	785,030	692,571	(183,970)	508,601	(1,933,936)	25,110,474	16,268,429
2033	24,266,131	821,878	1,126,460	(304,582)	821,878	710,272	(192,049)	518,223	(2,333,932)	26,600,063	16,772,258
2034	25,399,243	863,606	1,190,845	(327,239)	863,606	730,773	(200,813)	529,960	(2,778,550)	28,177,793	17,291,554
2035	26,576,323	906,196	1,233,419	(327,223)	906,196	736,641	(195,429)	541,212	(3,272,502)	29,848,825	17,826,762
2036	27,824,047	952,099	1,241,747	(289,648)	952,099	721,766	(168,358)	553,408	(3,796,075)	31,620,122	18,379,214
2037	29,186,465	996,517	1,299,806	(303,289)	996,517	735,292	(171,569)	563,723	(4,313,488)	33,499,953	18,950,722
2038	30,616,166	1,045,560	1,319,846	(274,286)	1,045,560	726,646	(151,009)	575,637	(4,875,586)	35,491,752	19,540,117
2039	32,162,394	1,096,011	1,408,582	(312,571)	1,096,011	754,745	(167,481)	587,264	(5,442,407)	37,604,801	20,149,357
2040	33,760,811	1,151,415	1,523,582	(372,167)	1,151,415	794,515	(194,077)	600,438	(6,081,522)	39,842,333	20,776,904
2041	35,391,964	1,209,080	1,609,728	(400,648)	1,209,080	816,971	(203,337)	613,634	(6,818,580)	42,210,544	21,422,748
2042	37,090,795	1,270,535	1,670,924	(400,389)	1,270,535	825,333	(197,767)	627,566	(7,628,343)	44,719,138	22,088,480
2043	38,891,831	1,333,249	1,760,193	(426,944)	1,333,249	846,157	(205,240)	640,917	(8,486,433)	47,378,264	22,775,594
2044	40,772,781	1,400,083	1,820,443	(420,360)	1,400,083	851,698	(196,666)	655,032	(9,422,563)	50,195,344	23,484,006
2045	42,773,566	1,468,983	1,890,720	(421,737)	1,468,983	860,903	(192,030)	668,873	(10,408,277)	53,181,843	24,215,325
2046	44,892,938	1,540,953	1,979,545	(438,592)	1,540,953	877,224	(194,360)	682,864	(11,454,511)	56,347,449	24,970,046

## EXHIBIT D

### Projected Cash Flows (Open Group) – Funded Approach

<b>Total Medical, Dental &amp; Life Insurance - Partial Funding</b>					
<b>Fiscal Year</b>	<b>Number of Retirees, Spouses &amp; Surviving Spouses</b>	<b>Total Actuarial Accrued Liability ("AAL")</b>	<b>Present Value at 2.75% of Total Actuarial Accrued Liability ("AAL")</b>	<b>Employer Share of Premiums / Claims including "implicit cost"</b>	<b>Present Value at 2.75% of Employer Share of Premiums / Claims including "implicit cost"</b>
2016	113	10,862,066	10,862,066	488,173	488,173
2017	119	11,362,043	11,057,949	497,053	483,750
2018	123	11,909,404	11,280,448	503,655	477,056
2019	126	12,502,610	11,525,378	505,670	466,146
2020	130	13,150,172	11,797,884	523,513	469,678
2021	136	13,838,764	12,083,372	570,360	498,012
2022	142	14,541,763	12,357,371	607,586	516,317
2023	147	15,275,741	12,633,668	655,535	542,155
2024	152	16,027,874	12,900,938	707,663	569,602
2025	157	16,800,368	13,160,801	757,634	593,503
2026	162	17,594,143	13,413,738	774,663	590,601
2027	167	18,449,169	13,689,156	855,530	634,797
2028	171	19,300,968	13,937,893	890,379	642,973
2029	175	20,199,531	14,196,376	916,667	644,240
2030	178	21,159,432	14,472,994	970,547	663,852
2031	179	22,156,864	14,749,620	1,039,036	691,677
2032	181	23,176,538	15,015,482	1,068,990	692,571
2033	183	24,266,131	15,300,634	1,126,460	710,272
2034	184	25,399,243	15,586,472	1,190,845	730,773
2035	185	26,576,323	15,872,309	1,233,419	736,641
2036	186	27,824,047	16,172,743	1,241,747	721,766
2037	186	29,186,465	16,510,608	1,299,806	735,292
2038	186	30,616,166	16,855,845	1,319,846	726,646
2039	186	32,162,394	17,233,213	1,408,582	754,745
2040	186	33,760,811	17,605,523	1,523,582	794,515
2041	186	35,391,964	17,962,174	1,609,728	816,971
2042	186	37,090,795	18,320,552	1,670,924	825,333
2043	185	38,891,831	18,696,011	1,760,193	846,157
2044	185	40,772,781	19,075,638	1,820,443	851,698
2045	184	42,773,566	19,476,117	1,890,720	860,903
2046	183	44,892,938	19,894,046	1,979,545	877,224
2047	181	47,121,607	20,322,791	2,068,574	892,143
2048	180	49,470,184	20,764,666	2,114,045	887,351
2049	179	51,996,453	21,240,919	2,162,297	883,314
2050	178	54,712,190	21,752,134	2,249,803	894,463
2051	177	57,593,132	22,284,692	2,375,850	919,295
2052	177	60,612,676	22,825,356	2,496,162	939,998
2053	176	63,791,447	23,379,473	2,583,488	946,845
2054	176	67,179,186	23,962,117	2,714,038	968,069
2055	175	70,751,028	24,560,735	2,848,269	988,757

EXHIBIT E**GLOSSARY**

**AAL** – Actuarial Accrued Liability. That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

**Accrual Accounting** - A system of accounting in which revenues are recorded when earned and outlays are recorded when goods are received or services performed, even though the actual receipt of revenues and payment for goods or services may occur, in whole or in part, at a different time.

**Actuarial Value of Assets** – The value of cash, investments, other assets and property belonging to an OPEB trust, pension fund or similar entity, as used by the actuary for the purpose of actuarial valuation. Some funds may be restricted for other purposes, and “smoothing” of investment gains and losses often make the actuarial value of assets different from the market value of assets.

**Annual Required Contribution** – Normal Cost plus an amortization of the funding shortfall over a period of no more than 30 years.

**Cash Basis Accounting** - A system of accounting in which revenues are recorded when actually received and outlays are recorded when payment is made.

**Discount Rate** – The interest rate used to calculate present value of a series of future cash flows. Under GASB 45, the rate should be “long term expected yield on the investments that are expected to be used to pay benefits as they come due. These would be plan investments for a funded plan, the employer’s investments for a pay as you go plan [e.g. short term county investment pool], or a weighted average of expected plan and employer investments for a plan that is partially funded”.

**FASB – Financial Accounting Standards Board.** “Since 1973, the Financial Accounting Standards Board (FASB) has been the designated organization in the private sector for establishing standards of financial accounting and reporting”.

**GASB - Government Accounting Standards Board.** “The Governmental Accounting Standards Board (GASB) was organized in 1984 by the Financial Accounting Foundation (FAF) to establish standards of financial accounting and reporting for state and local governmental entities. Its standards guide the preparation of external financial reports of those entities.”

EXHIBIT E**GLOSSARY***(continued)*

**GFOA – Government Finance Officers Association.** “GFOA is the professional association of state/provincial and local finance officers in the United States and Canada, and has served the public finance profession since 1906. Approximately 16,000 GFOA members are dedicated to the sound management of government financial resources.”

**Implicit Subsidy** – “The difference between a premium rate charged to retirees for a particular benefit and the estimated rate that would have been applicable to those retirees if that benefit was acquired for them as a separate group.”

**Irrevocable Contribution** – “Irrevocably transferred assets to a qualifying trust, or equivalent arrangement, in which plan assets are dedicated to providing benefits to retirees and their beneficiaries in accordance with the terms of the plan and are legally protected from creditors of the employer(s) or plan administrator. The preceding criteria preclude counting as [irrevocable] contributions (a) designations of net assets of a governmental or proprietary fund to be used for OPEB or (b) internal transfers of assets to a separate governmental or proprietary fund for the same purpose. Rather, such actions should be regarded as earmarking of employer assets.”

**Level Dollar Amortization** – Funding a shortfall in OPEB assets with equal dollar payments over a designated number of years (no more than 30 years). The present value of the level payments equals the present value of unfunded liabilities, the UAAL.

**Level Percent of Payroll Amortization** – Funding a shortfall in OPEB assets as a level percent of payroll over a designated number of years (no more than 30 years). The present value of the payments equals the present value of unfunded liabilities, the UAAL. Level percent of payroll typically has lower payments in the early years than level dollar amortization. When using level payroll amortization, employee count is assumed to be constant, and the payroll differences arise from overall wage trends.

EXHIBIT E**GLOSSARY***(continued)*

**Normal Cost** - The actuarially determined present value contribution needed to fund benefits which are earned for employee service rendered during the current year. Normal cost depends on many factors, including the interest rate used to discount future cashflows, and expected inflation.

**NOA** – Net OPEB Asset. The amount recognized by an employer for contributions to an OPEB plan greater than OPEB expenses.

**NOO** – Net OPEB Obligation. The cumulative difference since the effective date of GASB Statement number 45 between annual OPEB cost and the employer's contributions to the plan, including the OPEB liability (asset) at transition, if any, and excluding (a) short-term differences and (b) unpaid contributions that have been converted to OPEB-related debt.

**OPEB** – Other Post Employment Benefits

**OPEB Trust** – An entity other than a pension or retirement system which manages OPEB assets. In many respects it is similar to a pension fund for OPEB. For reasons detailed in GASB 45, contributions to an OPEB trust should be irrevocable in order to obtain the most favorable accounting treatment.

**Pay-as-you-go funding** – Paying benefits (such as pensions or OPEB) on a cash basis, with no money set aside for future liabilities which are already incurred.

**POB** – Pension Obligation Bond. Generally yielding taxable interest, POBs are issued to help fund a previously unfunded or underfunded pension liability.

**UAAL** – Unfunded Accrued Actuarial Liability. Actuarial Accrued Liability minus the Actuarial Value of Assets.