

**Town of Boxford Other  
Postemployment Benefits Plan**

**GASB 45 Actuarial Valuation**

*as of*

July 1, 2011

For the fiscal years ending

June 30, 2012

June 30, 2013

Delivered November 2012

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November 16, 2012

*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, 2012. 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, taking into account 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, A.S.A., E.A., M.A.A.A.  
President & CEO

Enclosure

SECTION I  
PRINCIPAL RESULTS OF THE VALUATION

**Town of Boxford**  
**Assuming Pay-as-you-go funding - 4.00% discount rate**  
**Comparison of Plan Liabilities to Prior Valuation**

	<u>July 1, 2011</u>	<u>July 1, 2009</u>
I. Present Value of Future Benefits		
A. Actives	17,531,761	19,391,261
B. Retirees/Disabled	7,893,424	6,094,281
C. Total	25,425,185	25,485,542
II. Present Value of Future Normal Cost	9,107,132	9,646,893
III. Actuarial Accrued Liability (Projected Unit Credit)		
A. Actives	8,424,629	9,744,368
B. Retirees/Disabled	7,893,424	6,094,281
C. Total	16,318,053	15,838,649
IV. Plan Assets	0	0
V. Unfunded Actuarial Accrued Liability ("UAAL")	16,318,053	15,838,649
VI. Funded Ratio	0.00%	0.00%
VII. Annual Covered Payroll	34,392,073	N/A
VIII. UAAL as % of Covered Payroll	47.40%	N/A
IX. Net OPEB Obligation	4,339,762	2,070,434
X. Number of Covered Participants		
A. Actives	199	198
B. Retirees/Disabled	88	59
C. Total	287	257
<b>For the Fiscal Year Ending:</b>	<u>June 30, 2012</u>	<u>June 30, 2010</u>
XI. Normal Cost	775,413	844,809
XII. Amortization of UAAL - 30 year increase 4.50% per yr	706,007	646,512
XIII. Annual Required Contribution ('ARC') [ XI. + XII.]	1,481,420	1,491,321
XIV. Interest on Net OPEB Obligation	173,591	82,818
XV. Adjustment to Annual Required Contribution	(241,316)	(119,473)
XVI. Amortization of Actuarial (Gains) / Losses	133,242	0
XVII. Annual OPEB Cost [XIII. + XIV. + XV. + XVI.]	1,546,937	1,454,666
XVIII. Expected Employer Contribution	474,154	305,466
XIX. Percentage of Annual OPEB Cost Contributed	30.7%	21.0%
XX. Net OPEB Obligation at Beginning of Year (IX.)	4,339,762	2,070,434
XXI. Increase in Net OPEB Obligations (XVII. - XVIII.)	1,072,783	1,149,200
XXII. Net OPEB Obligation at End of Year (XX. + XXI.)	5,412,545	3,219,634
XXIII. Discount Rate	4.00%	4.00%

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

**Town of Boxford**  
**Assuming Pay-as-you-go funding - 4.00% discount rate**  
**Plan Liabilities as of July 1, 2011**

	<u>Medical</u>	<u>Dental</u>	<u>Life</u>	<u>Total</u>
I. Present Value of Future Benefits				
A. Actives	17,531,761	0	0	17,531,761
B. Retirees/Disabled	<u>7,893,424</u>	<u>0</u>	<u>0</u>	<u>7,893,424</u>
C. Total	25,425,185	0	0	25,425,185
II. Present Value of Future Normal Cost	9,107,132	0	0	9,107,132
III. Actuarial Accrued Liability (Projected Unit Credit)				
A. Actives	8,424,629	0	0	8,424,629
B. Retirees/Disabled	<u>7,893,424</u>	<u>0</u>	<u>0</u>	<u>7,893,424</u>
C. Total	16,318,053	0	0	16,318,053
IV. Plan Assets	0	0	0	0
V. Unfunded Actuarial Accrued Liability ("UAAL")	16,318,053	0	0	16,318,053
VI. Annual Covered Payroll	34,392,073	34,392,073	34,392,073	34,392,073
VII. UAAL as % of Covered Payroll	47.4%	0.0%	0.0%	47.4%
VIII. Net OPEB Obligation	4,339,762	0	0	4,339,762
IX. Number of Covered Participants				
A. Actives	199	0	0	
B. Retirees/Disabled	<u>88</u>	<u>0</u>	<u>0</u>	
C. Total	287	0	0	

**For Fiscal Year Ending June 30, 2012**

X. Normal Cost	775,413	0	0	775,413
XI. Amortization of UAAL - 30 year increase 4.50% per yr	706,007	0	0	706,007
XII. Annual Required Contribution ('ARC') [ X. + XI.]	1,481,420	0	0	1,481,420
XIII. Interest on Net OPEB Obligation	173,591	0	0	173,591
XIV. Adjustment to Annual Required Contribution	(241,316)	0	0	(241,316)
XV. Amortization of Actuarial (Gains) / Losses	133,242	0	0	133,242
XVI. Annual OPEB Cost [XII. + XIII. + XIV. + XV.]	1,546,937	0	0	1,546,937
XVII. Expected Employer Contribution	474,154	0	0	474,154
XVIII. Contribution to Trust Fund over 30 Years	0	0	0	0
XIX. Total Employer Contribution	474,154	0	0	474,154
XVIII. Percentage of Annual OPEB Cost Contributed	30.7%	0.0%	0.0%	30.7%
XIX. Net OPEB Obligation at Beginning of Year (VIII.)	4,339,762	0	0	4,339,762
XX. Increase in Net OPEB Obligations (XVI. - XVII.)	1,072,783	0	0	1,072,783
XXI. Net OPEB Obligation at End of Year (XIX. + XX.)	5,412,545	0	0	5,412,545

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

**Town of Boxford**  
**Plan Liabilities as of July 1, 2011**  
**Assuming maintain pay-as-you-go funding method**

	Town Employees and Retirees	School Employees and Retirees	Total
I. Present Value of Future Benefits			
A. Actives	5,234,606	12,297,155	17,531,761
B. Retirees/Disabled	<u>2,485,103</u>	<u>5,408,321</u>	<u>7,893,424</u>
C. Total	7,719,709	17,705,476	25,425,185
II. Present Value of Future Normal Cost	2,688,312	6,418,820	9,107,132
III. Actuarial Accrued Liability (Projected Unit Credit)			
A. Actives	2,546,294	5,878,335	8,424,629
B. Retirees/Disabled	<u>2,485,103</u>	<u>5,408,321</u>	<u>7,893,424</u>
C. Total	5,031,397	11,286,656	16,318,053
IV. Plan Assets	0	0	0
V. Unfunded Actuarial Accrued Liability ("UAAL")	5,031,397	11,286,656	16,318,053
VI. Annual Covered Payroll	6,361,368	28,030,705	34,392,073
VII. UAAL as % of Covered Payroll	79.1%	40.3%	47.4%
VIII. Net OPEB Obligation	1,338,093	3,001,669	4,339,762
IX. Number of Covered Participants			
A. Actives	56	143	199
B. Retirees/Disabled	<u>33</u>	<u>55</u>	<u>88</u>
C. Total	89	198	287
<b>For Fiscal Year Ending June 30, 2012</b>			
X. Normal Cost	205,990	569,423	775,413
XI. Amortization of UAAL - 30 year increase 4.50% per yr	217,685	488,322	706,007
XII. Annual Required Contribution ("ARC") [ X. + XI.]	423,675	1,057,745	1,481,420
XIII. Interest on Net OPEB Obligation	53,524	120,067	173,591
XIV. Adjustment to Annual Required Contribution	(74,406)	(166,910)	(241,316)
XV. Amortization of Actuarial (Gains) / Losses	41,083	92,159	133,242
XVI. Annual OPEB Cost [XII. + XIII. + XIV. + XV.]	443,876	1,103,061	1,546,937
XVII. Expected Employer Contribution	153,604	320,550	474,154
XVIII. Contribution to Trust Fund over 30 Years	0	0	0
XIX. Total Employer Contribution	153,604	320,550	474,154
XX. Percentage of Annual OPEB Cost Contributed	34.6%	29.1%	30.7%
XXI. Net OPEB Obligation at Beginning of Year (VIII.)	1,338,093	3,001,669	4,339,762
XXII. Increase in Net OPEB Obligations (XVI. - XVII.)	290,272	782,511	1,072,783
XXIII. Net OPEB Obligation at End of Year (XXI. + XXII.)	1,628,365	3,784,180	5,412,545

SECTION I  
PRINCIPAL RESULTS OF THE VALUATION  
(continued)

**Town of Boxford**  
**Detail of Plan Liabilities by Group and Dependency Status**  
**Assuming Pay-as-you-go funding - 4.00% discount rate**  
**Plan Liabilities as of July 1, 2011**

	<u>Present Value of Future Benefits</u>	<u>Actuarial Accrued Liability (Projected Unit Credit)</u>	<u>Normal Cost</u>
<b>Actives</b>			
Under Age 65			
A. Participants	2,142,592	1,090,444	95,662
B. Spouses	<u>888,301</u>	<u>435,263</u>	<u>36,767</u>
C. Total	3,030,893	1,525,707	132,429
Age 65 and Over			
A. Participants	8,458,844	4,030,804	376,473
B. Spouses	<u>6,042,024</u>	<u>2,868,118</u>	<u>266,511</u>
C. Total	14,500,868	6,898,922	642,984
Actives Total			
A. Participants	10,601,436	5,121,248	472,135
B. Spouses	<u>6,930,325</u>	<u>3,303,381</u>	<u>303,278</u>
C. Total	17,531,761	8,424,629	775,413
<b>Retirees/Disabled</b>			
Under Age 65			
A. Participants	1,065,756	1,065,756	0
B. Spouses	<u>277,256</u>	<u>277,256</u>	<u>0</u>
C. Total	1,343,012	1,343,012	0
Age 65 and Over			
A. Participants	5,663,836	5,663,836	<u>0</u>
B. Spouses	<u>886,576</u>	<u>886,576</u>	<u>0</u>
C. Total	6,550,412	6,550,412	0
Retirees/Disabled Total			
A. Participants	6,729,592	6,729,592	0
B. Spouses	<u>1,163,832</u>	<u>1,163,832</u>	<u>0</u>
C. Total	7,893,424	7,893,424	0
<b>Total Population</b>			
A. Participants	17,331,028	11,850,840	472,135
B. Spouses	<u>8,094,157</u>	<u>4,467,213</u>	<u>303,278</u>
C. Total	25,425,185	16,318,053	775,413

**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, 2011**

	<u>Medical</u>	<u>Dental</u>	<u>Life</u>	<u>Total</u>
I. Present Value of Future Benefits				
A. Actives	9,000,601	0	0	9,000,601
B. Retirees/Disabled	<u>5,844,575</u>	<u>0</u>	<u>0</u>	<u>5,844,575</u>
C. Total	14,845,176	0	0	14,845,176
II. Present Value of Future Normal Cost	4,235,660	0	0	4,235,660
III. Actuarial Accrued Liability (Projected Unit Credit)				
A. Actives	4,764,941	0	0	4,764,941
B. Retirees/Disabled	<u>5,844,575</u>	<u>0</u>	<u>0</u>	<u>5,844,575</u>
C. Total	10,609,516	0	0	10,609,516
IV. Plan Assets	0	0	0	0
V. Unfunded Actuarial Accrued Liability ("UAAL")	10,609,516	0	0	10,609,516
VI. Annual Covered Payroll	34,392,073	34,392,073	34,392,073	34,392,073
VII. UAAL as % of Covered Payroll	30.8%	0.0%	0.0%	30.8%
VIII. Net OPEB Obligation	4,339,762	0	0	4,339,762
IX. Number of Covered Participants				
A. Actives	199	0	0	
B. Retirees/Disabled	<u>88</u>	<u>0</u>	<u>0</u>	
C. Total	287	0	0	

**For Fiscal Year Ending June 30, 2012**

X. Normal Cost	416,151	0	0	416,151
XI. Amortization of UAAL - 30 year increase 4.50% per yr	992,350	0	0	992,350
XII. Annual Required Contribution ('ARC') [ X. + XI.]	1,408,501	0	0	1,408,501
XIII. Interest on Net OPEB Obligation	303,783	0	0	303,783
XIV. Adjustment to Annual Required Contribution	(326,847)	0	0	(326,847)
XV. Amortization of Actuarial (Gains) / Losses	(249,468)	0	0	(249,468)
XVI. Annual OPEB Cost [XII. + XIII. + XIV. + XV.]	1,135,969	0	0	1,135,969
XVII. Expected Employer Contribution	474,154	0	0	474,154
XVIII. Contribution to Trust Fund over 30 Years	910,485	0	0	910,485
XIX. Total Employer Contribution	1,384,639	0	0	1,384,639
XX. Percentage of Annual OPEB Cost Contributed	121.9%	0.0%	0.0%	121.9%
XXI. Net OPEB Obligation at Beginning of Year (VIII.)	4,339,762	0	0	4,339,762
XXII. Increase in Net OPEB Obligations (XVI. - XVII.)	(248,670)	0	0	(248,670)
XXIII. Net OPEB Obligation at End of Year (XXI. + XXII.)	4,091,092	0	0	4,091,092



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

**Town of Boxford**  
**Plan Liabilities as of July 1, 2011**  
**Assuming Funding over 30 years at 7.00% discount rate**

	Town Employees and Retirees	School Employees and Retirees	Total
I. Present Value of Future Benefits			
A. Actives	2,687,385	6,313,216	9,000,601
B. Retirees/Disabled	<u>1,840,060</u>	<u>4,004,515</u>	<u>5,844,575</u>
C. Total	4,527,445	10,317,731	14,845,176
II. Present Value of Future Normal Cost	1,250,314	2,985,346	4,235,660
III. Actuarial Accrued Liability (Projected Unit Credit)			
A. Actives	1,440,175	3,324,766	4,764,941
B. Retirees/Disabled	<u>1,840,060</u>	<u>4,004,515</u>	<u>5,844,575</u>
C. Total	3,280,235	7,329,281	10,609,516
IV. Plan Assets	0	0	0
V. Unfunded Actuarial Accrued Liability ("UAAL")	3,280,235	7,329,281	10,609,516
VI. Annual Covered Payroll	6,361,368	28,030,705	34,392,073
VII. UAAL as % of Covered Payroll	51.6%	26.1%	30.8%
VIII. Net OPEB Obligation	1,338,093	3,001,669	4,339,762
IX. Number of Covered Participants			
A. Actives	56	143	199
B. Retirees/Disabled	<u>33</u>	<u>55</u>	<u>88</u>
C. Total	89	198	287
<b>For Fiscal Year Ending June 30, 2012</b>			
X. Normal Cost	110,551	305,600	416,151
XI. Amortization of UAAL - 30 year increase 4.50% per yr	305,974	686,376	992,350
XII. Annual Required Contribution ("ARC") [ X. + XI.]	416,525	991,976	1,408,501
XIII. Interest on Net OPEB Obligation	93,667	210,116	303,783
XIV. Adjustment to Annual Required Contribution	(100,778)	(226,069)	(326,847)
XV. Amortization of Actuarial (Gains) / Losses	(76,919)	(172,549)	(249,468)
XVI. Annual OPEB Cost [XII. + XIII. + XIV. + XV.]	332,495	803,474	1,135,969
XVII. Expected Employer Contribution	153,604	320,550	474,154
XVIII. Contribution to Trust Fund over 30 Years	281,502	628,983	910,485
XIX. Total Employer Contribution	435,106	949,533	1,384,639
XX. Percentage of Annual OPEB Cost Contributed	130.9%	118.2%	121.9%
XXI. Net OPEB Obligation at Beginning of Year (VIII.)	1,338,093	3,001,669	4,339,762
XXII. Increase in Net OPEB Obligations (XVI. - XIX.)	(102,611)	(146,059)	(248,670)
XXIII. Net OPEB Obligation at End of Year (XXI. + XXII.)	1,235,482	2,855,610	4,091,092

## 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 OPEB liability. 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. Transition to GASB 45:**

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. As part of this implementation, the Employer must recognize the Actuarial Accrued Liability for past service. Under GASB 45, this amount may be amortized over a period not to exceed thirty (30) years. The Unfunded Actuarial Accrued Liability at transition was amortized over a 30 year period with amortization payments increasing at 4.50% per year. This approach yields an amortization charge of \$706,007. Additionally the Employer must recognize a "normal cost" which represents the annual accrual of benefits for current active employees toward their ultimate postemployment benefits. The normal cost for the 2012 fiscal year is \$775,413. The combined amortization charge and normal cost represent the Annual Required Contribution ("ARC") for the plan for the 2012 fiscal year. As the Employer has chosen to continue their "pay-as-you-go" funding policy, this valuation must utilize a discount rate which represents earnings on short term investments. For this discount rate, we have used 4.00% per annum. The incremental cost of GASB 45 for the 2012 fiscal year beyond the "pay-as-you-go" costs is \$1,072,783 reduced by contributions to an OPEB Trust of \$0 for a net change in the OPEB liability of \$1,072,783.

### **2. Plan Experience:**

Plan experience was more favorable than expected. This is mainly due to lower than expected increases in health premiums. The actuarial experience gain is amortized into the annual OPEB costs over a 30-year period (the segment of the actuarial loss reflecting OPEB costs in excess of employer contributions is offset by the ARC Adjustment). The net impact of the plan experience is an increase in the annual OPEB cost.

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 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.
<u>Credited 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 Projected Unit Credit Actuarial Cost Method. Under this method, the normal cost and actuarial accrued liability are both based on an accrual of projected benefits over the period for which benefits are accrued. The normal cost is the actuarial present value of one year's benefit accrual on this basis. 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.

### 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 for males and females.

##### Discount Rate

4.00% 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	10.20%	10.20%	1.50%
10	5.40%	5.40%	1.50%
15	3.70%	3.70%	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)

###### 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 2008	11.0%	8.0%
FY 2009	10.0%	7.5%
FY 2010	9.0%	7.0%
FY 2011	8.0%	6.5%
FY 2012	7.0%	6.0%
FY 2013	6.0%	5.5%
FY 2014	5.0%	5.0%
FY 2015	5.0%	5.0%

###### Participation Rate

It was assumed that 80% of the employees eligible to receive retirement benefits would enroll in the retiree medical and dental 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 the participants who elect retiree healthcare coverage for themselves would also elect coverage for a spouse upon retirement. It was further assumed that husbands are three years older than their wives. 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.

###### 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>
HMO Blue New England	64		88	152
Blue Care Elect PPO	8		6	14
Medex 3	17			17
Managed Blue Senior	43			43
Total	132	0	94	226

	Per Contract Costs (monthly) - FY 2013		
	<u>Single</u>	<u>Two-Person</u>	<u>Family</u>
HMO Blue New England	591.57	0.00	1,580.43
Blue Care Elect PPO	698.07	0.00	1,868.10
Medex 3	706.98	1,413.96	
Managed Blue Senior	402.51	805.02	

Gross Expected FY 2013 Incurred Premiums	2,676,697
Adjustment to reflect children's claims	(453,519)
Total Expected FY 2013 Incurred Premiums (adults only)	2,223,177

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

	<u>Employer</u> <u>Primary</u>	<u>Medicare</u> <u>Primary</u>
Age 65	9,692	5,865
Average Age	8,814	5,865

## 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

2,223,177 Active and Retired Claims (No Children) - Including Administrative fees & trend

4,532 Average Per-Capita Claim (including Retention & Pooling)

##### ALL ACTIVE EMPLOYEES AND SPOUSES

Age Bracket	Number of Females	Number of Males	Female Aging Factor	Male Aging Factor	Aged (F) Average Claims	Aged (M) Average Claims	Age Related Claims
24 & Under	0	0	1.312	0.549	5,946	2,488	0
25 to 29	7	3	1.312	0.591	5,946	2,678	49,656
30 to 34	8	3	1.312	0.712	5,946	3,227	57,249
35 to 39	9	7	1.312	0.850	5,946	3,852	80,478
40 to 44	16	14	1.312	1.000	5,946	4,532	158,584
45 to 49	15	12	1.456	1.193	6,599	5,407	163,869
50 to 54	20	19	1.599	1.441	7,247	6,531	269,029
55 to 59	28	23	1.740	1.753	7,886	7,945	403,543
60 to 64	14	13	1.968	2.102	8,919	9,526	248,704
65 to 69	3	3	2.168	2.316	9,825	10,496	60,963
70 & Over	3	0	2.396	2.557	10,859	11,588	32,577
Total	123	97					1,524,652

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

Age Bracket	Number of Females	Number of Males	Female Aging Factor	Male Aging Factor	Aged (F) Average Claims	Aged (M) Average Claims	Age Related Claims
44 & Under	0	0	1.312	1.000	5,946	4,532	0
45 to 49	1	0	1.456	1.193	6,599	5,407	6,599
50 to 54	1	1	1.599	1.441	7,247	6,531	13,778
55 to 59	5	4	1.740	1.753	7,886	7,945	71,210
60 to 64	13	11	1.968	2.102	8,919	9,526	220,733
65 to 69	0	0	2.168	2.316	9,825	10,496	0
70 to 74	1	0	2.396	2.557	10,859	11,588	10,859
75 to 79	1	0	2.593	2.769	11,751	12,549	11,751
Total	22	16					334,930

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

Age Bracket	Number of Females	Number of Males	Female Aging Factor	Male Aging Factor	Aged (F) Average Claims	Aged (M) Average Claims	Age Related Claims
65 to 69	15	9	2.168	2.316	5,865	5,865	140,760
70 to 74	8	7	2.396	2.557	5,865	5,865	87,975
75 to 79	7	2	2.593	2.769	5,865	5,865	52,785
80 to 84	7	3	2.724	2.910	5,865	5,865	58,650
85 to 89	1	2	2.864	3.059	5,865	5,865	17,595
90 & Over	1	0	3.010	3.215	5,865	5,865	5,865
Total	39	23					363,630

Grand Totals	184	136					2,223,212
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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 2013		
	<u>Single</u>	<u>Two-Person</u>	<u>Family</u>
Dental Plan	N/A		N/A

FY 2013 Expected Per Person Rate

N/A

## EXHIBIT A

### Financial Statement Disclosure (As of July 1, 2011)

The GASB Standards for accounting and financial reporting for postemployment benefits other than pensions requires 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 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.
- d. Cost Sharing: Varies by coverage level & plan – ranges from 21% to 50% of premiums

#### **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, 2011) (continued)

#### **4. RETIREE MEDICAL, DENTAL AND LIFE INSURANCE CONTRIBUTIONS:**

Group	Individual	Family
Medical	Varies by coverage level & plan – ranges from 21% to 50% of premiums	Varies by coverage level & plan – ranges from 21% to 50% of premiums
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 required contribution is based on the projected pay-as-you-go financing requirements. For the 2012 fiscal year, total Town premiums plus implicit costs for the retiree medical program are \$474,154. The Town is also projected to make a contribution to an OPEB Trust of \$0 for the 2012 fiscal year for a total contribution of \$474,154 .



EXHIBIT A

Financial Statement Disclosure  
(As of July 1, 2011)  
(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	\$1,481,420
Interest on net OPEB obligation	\$173,591
Adjustment to annual required contribution	(\$241,316)
Amortization of Actuarial (Gains) / Losses	\$133,242
Annual OPEB cost (expense)	\$1,546,937
Contributions made to pay benefits	\$474,154
Contributions made to OPEB Trust	\$0
Increase in net OPEB obligation	\$1,072,783
Net OPEB Obligation – beginning of year	\$4,339,762
Net OPEB Obligation – end of year	\$5,412,545

EXHIBIT A

Financial Statement Disclosure

(As of July 1, 2011)

(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 2012 fiscal year and the three preceding years were as follows:

Fiscal Year Ended	Annual OPEB Cost	Expected Employer Payments	Increase in OPEB Obligation
06/30/2009	\$1,382,868	\$347,651	\$1,035,217
06/30/2010	\$1,464,772	\$305,466	\$1,159,306
06/30/2011	\$1,464,772	\$344,644	\$1,120,128
06/30/2012	\$1,546,937	\$474,153	\$1,072,784
06/30/2013 (est.)	\$1,660,693	\$506,085	\$1,154,608
06/30/2014 (est.)	\$1,776,811	\$552,004	\$1,224,807

**Schedule of Funding Progress:**

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
07/01/2008	\$0	\$17,451,131	\$17,451,131	0.0%	N/A	N/A
07/01/2009	\$0	\$15,838,649	\$15,838,649	0.0%	N/A	N/A
07/01/2010	\$0	\$17,033,111	\$17,033,111	0.0%	N/A	N/A
07/01/2011	\$0	\$16,318,054	\$16,318,054	0.0%	\$34,392,073	47.40%
07/01/2012 (est.)	\$0	\$17,284,082	\$17,284,082	0.0%	\$35,423,835	48.79%
07/01/2013 (est.)	\$0	\$18,296,185	\$18,296,185	0.0%	\$36,486,550	50.15%

# EXHIBIT A

## Financial Statement Disclosure (As of July 1, 2011) (continued)

	Fiscal Year Ending June 30, 2012		
	<u>Town Employees and Retirees</u>	<u>School Employees and Retirees</u>	<u>Total</u>
OPEB obligation at beginning of year	1,338,093	3,001,669	4,339,762
Annual Required Contribution	423,675	1,057,745	1,481,420
Interest on Net OPEB Obligation	53,524	120,067	173,591
Adjustment to the ARC	(74,406)	(166,910)	(241,316)
Amortization of Actuarial (Gains)/Losses	41,083	92,159	133,242
Annual OPEB Cost	443,876	1,103,061	1,546,937
Total Expected Employer Payments	153,604	320,550	474,154
Increase in OPEB Obligation	290,272	782,511	1,072,783
OPEB obligation at end of year	1,628,365	3,784,180	5,412,545
APBO at beginning of year	5,031,397	11,286,656	16,318,053

  

	Fiscal Year Ending June 30, 2013		
	<u>Town Employees and Retirees</u>	<u>School Employees and Retirees</u>	<u>Total</u>
OPEB obligation at beginning of year	1,628,365	3,784,180	5,412,545
Annual Required Contribution	368,089	1,108,329	1,476,418
Interest on Net OPEB Obligation	66,755	149,747	216,502
Adjustment to the ARC	(92,799)	(208,170)	(300,969)
Amortization of Actuarial (Gains)/Losses	58,625	134,270	192,895
Annual OPEB Cost	476,517	1,184,176	1,660,693
Total Expected Employer Payments	163,948	342,137	506,085
Increase in OPEB Obligation	312,569	842,039	1,154,608
OPEB obligation at end of year	1,940,934	4,626,219	6,567,153
APBO at beginning of year	5,329,256	11,954,826	17,284,082

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2011)

(continued)

#### **7. FUNDED STATUS AND FUNDING PROGRESS**

As of July 1, 2011, the most recent valuation date, the plan was 0.00% funded. The actuarial liability for benefits was \$16,318,053, and the actuarial value of assets was \$ 0, resulting in an unfunded actuarial accrued liability (UAAL) of \$16,318,053. The covered payroll (annual payroll of active employees covered by the plan) was \$ 34,392,073 and the ratio of the UAAL to the covered payroll was 47.4%.

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 \$21,231,483 or by 30.1% and the corresponding Normal Cost would increase to \$1,111,790 or by 43.4%. 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 \$12,421,363 or by 23.9% and the corresponding Normal Cost would decrease to \$520,587 or by 32.9%.

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2011)

(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:	Projected Unit Credit
Investment Rate of Return:	4.00% per annum (previously 4.00%)
Healthcare Trend Rates	

<u>Year</u>	<u>Medical</u>	<u>Dental</u>
FY 2008	11.0%	8.0%
FY 2009	10.0%	7.5%
FY 2010	9.0%	7.0%
FY 2011	8.0%	6.5%
FY 2012	7.0%	6.0%
FY 2013	6.0%	5.5%
FY 2014	5.0%	5.0%
FY 2015	5.0%	5.0%

General Inflation Assumption:	2.50% 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:	26 years at July 1, 2011

EXHIBIT A

Financial Statement Disclosure

(As of July 1, 2011)

(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 at transition was amortized 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>
--

***Expected Unfunded Actuarial Liability***

1. Actuarial Accrued Liability at prior valuation date	15,838,649
2. Actuarial Value of Assets at prior valuation date	0
3. Unfunded Actuarial Accrued Liability at prior valuation date [1. - 2.]	15,838,649
4. Normal Cost for prior periods	1,689,618
5. Employer Contributions for prior periods	(650,110)
6. Interest to current valuation date	1,383,477
7. Expected Actuarial Accrued Liability [3. + 4. + 5. + 6.]	18,261,634

***Actual Unfunded Actuarial Liability***

8. Actuarial Accrued Liability at current valuation date	16,318,053
9. Actuarial Value of Assets at current valuation date	0
10. Unfunded Actuarial Accrued Liability at current valuation date [8. - 9.]	16,318,053

<b><i>Net Actuarial (Gain) / Loss from Plan Experience [10. - 7.]</i></b>	<b>(1,943,581)</b>
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<b><i>Contribution Deficiency or (Excess Contributions) since last valuation</i></b>	<b>4,339,762</b>
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<b><i>Total (Gain) or Loss to be amortized</i></b>	<b>2,396,181</b>
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## EXHIBIT A

### Financial Statement Disclosure (As of July 1, 2011) (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	19,502,944	26	706,007
July 1, 2011	Adjustment to ARC	(4,339,762)	30	(4,339,762)	30	(241,316)
July 1, 2011	Cumulative (Gain) / Loss	2,396,181	30	2,396,181	30	133,242
Total				17,559,363		597,932

#### **11. Recognition of OPEB trust assets**

The State of Massachusetts has recently passed legislation allowing municipal entities to establish a trust for Other Than 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 not established an irrevocable trust for the purposes of prefunding liabilities under GASB 45.

## EXHIBIT A

### Financial Statement Disclosure

(As of July 1, 2011)

(continued)

#### **12. Impact of Section 9A1/2 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, 2011)

**ACTIVE EMPLOYEES**

	<u>July 1, 2011</u>	<u>July 1, 2009</u>
<b>A. Average Age at Hire</b>	38.75	38.52
<b>B. Average Service</b>	10.48	9.57
<b>C. Average Current Age</b>	49.23	48.09

## EXHIBIT C

### Projected Cash Flows (Open Group) – Pay-as-you-go Approach

#### Total Medical, Dental & Life Insurance - pay-as-you-go funding - 4.00% discount rate

Fiscal Year	Total APBO	Normal Cost	Expected Amortization	Interest on Net OPEB Obligation	Adjustment to ARC	Amortization of Actuarial (Gain) / Loss	Expected Annual OPEB Cost	OPEB Obligation as of June 30	Employer Share of Premiums / Claims	Excess Employer Payments (beyond claims)	Plan Assets at Beginning of year	Unfunded Accrued Actuarial Liability ("UAAL")
								4,339,762				
2012	16,318,054	775,413	706,007	173,591	(241,316)	133,242	1,546,937	5,412,546	474,153	0	0	16,318,054
2013	17,284,082	814,488	737,777	216,502	(300,969)	192,895	1,660,693	6,567,154	506,085	0	0	17,284,082
2014	18,296,185	851,222	770,977	262,686	(365,172)	257,098	1,776,811	7,791,961	552,004	0	0	18,296,185
2015	19,339,219	883,098	805,671	311,678	(433,279)	325,205	1,892,373	9,089,052	595,282	0	0	19,339,219
2016	20,412,116	909,512	841,926	363,562	(505,405)	397,331	2,006,926	10,453,321	642,657	0	0	20,412,116
2017	21,506,131	925,101	879,813	418,133	(581,266)	473,192	2,114,973	11,882,812	685,482	0	0	21,506,131
2018	22,615,580	953,228	919,405	475,312	(660,754)	552,680	2,239,871	13,407,952	714,731	0	0	22,615,580
2019	23,768,663	977,376	960,778	536,318	(745,561)	637,487	2,366,398	15,012,410	761,940	0	0	23,768,663
2020	24,943,463	990,761	1,004,013	600,496	(834,778)	726,704	2,487,196	16,680,956	818,650	0	0	24,943,463
2021	26,120,197	1,022,911	1,049,194	667,238	(927,559)	819,485	2,631,269	18,422,086	890,139	0	0	26,120,197
2022	27,303,088	1,055,756	1,096,408	736,883	(1,024,376)	916,302	2,780,973	20,241,878	961,181	0	0	27,303,088
2023	28,493,986	1,089,936	1,145,746	809,675	(1,125,567)	1,017,493	2,937,283	22,147,649	1,031,512	0	0	28,493,986
2024	29,694,508	1,132,352	1,197,305	885,906	(1,231,539)	1,123,465	3,107,489	24,140,633	1,114,505	0	0	29,694,508
2025	30,900,848	1,177,213	1,251,184	965,625	(1,342,361)	1,234,287	3,285,948	26,229,530	1,197,051	0	0	30,900,848
2026	32,116,251	1,230,387	1,307,487	1,049,181	(1,458,516)	1,350,442	3,478,981	28,440,641	1,267,870	0	0	32,116,251
2027	33,361,919	1,289,514	1,366,324	1,137,626	(1,581,466)	1,473,392	3,685,390	30,769,380	1,356,651	0	0	33,361,919
2028	34,626,573	1,351,512	1,427,809	1,230,775	(1,710,958)	1,602,884	3,902,022	33,251,722	1,419,680	0	0	34,626,573
2029	35,940,742	1,423,461	1,492,060	1,330,069	(1,848,991)	1,740,917	4,137,516	35,913,547	1,475,691	0	0	35,940,742
2030	37,324,334	1,500,059	1,559,203	1,436,542	(1,997,004)	1,888,930	4,387,730	38,756,824	1,544,453	0	0	37,324,334
2031	38,771,431	1,576,870	1,629,367	1,550,273	(2,155,107)	2,047,033	4,648,436	41,789,561	1,615,699	0	0	38,771,431
2032	40,281,906	1,660,842	1,702,689	1,671,582	(2,323,745)	2,215,671	4,927,039	45,042,202	1,674,398	0	0	40,281,906
2033	41,879,585	1,743,018	1,779,310	1,801,688	(2,504,611)	2,396,537	5,215,942	48,494,540	1,763,604	0	0	41,879,585
2034	43,533,358	1,832,527	1,859,379	1,939,782	(2,696,581)	2,588,507	5,523,614	52,176,504	1,841,650	0	0	43,533,358
2035	45,265,285	1,923,015	1,943,051	2,087,060	(2,901,320)	2,793,246	5,845,052	56,099,511	1,922,045	0	0	45,265,285
2036	47,076,905	2,021,221	2,030,488	2,243,980	(3,119,462)	3,011,388	6,187,615	60,303,193	1,983,933	0	0	47,076,905
2037	48,998,761	2,120,808	2,121,860	2,412,128	(3,353,211)	3,245,137	6,546,722	64,784,405	2,065,510	0	0	48,998,761
2038	51,016,306	2,225,092	0	2,591,376	(3,602,393)	3,494,319	4,708,394	67,369,403	2,123,396	0	0	51,016,306
2039	53,162,722	2,329,608	0	2,694,776	(3,746,134)	3,638,060	4,916,310	70,075,300	2,210,413	0	0	53,162,722
2040	55,413,468	2,444,302	0	2,803,012	(3,896,598)	3,788,524	5,139,240	72,906,451	2,308,089	0	0	55,413,468
2041	57,771,766	2,562,994	0	2,916,258	(4,054,026)	3,945,952	5,371,178	75,887,022	2,390,607	0	0	57,771,766
2042	60,261,919	2,690,056	0	3,035,481	(4,219,763)	4,219,763	5,725,537	79,142,237	2,470,322	0	0	60,261,919
2043	62,900,919	2,822,711	0	3,165,689	(4,400,772)	4,400,772	5,988,400	82,567,389	2,563,248	0	0	62,900,919

## EXHIBIT D

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

<b>Total Medical, Dental &amp; Life Insurance - Funding over 30 years at 7.00% discount rate</b>
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Fiscal Year	Total APBO	Normal Cost	Expected Amortization	Interest on Net OPEB Obligation	Adjustment to ARC	Amortization of Actuarial (Gain) / Loss	Expected Annual OPEB Cost	OPEB Obligation as of June 30	Employer Share of Premiums / Claims	Excess Employer Payments (beyond claims)	Plan Assets at Beginning of year	Unfunded Accrued Actuarial Liability ("UAAL")
								4,339,762				
2012	10,609,516	416,151	992,350	303,783	(326,847)	(249,468)	1,135,969	4,091,092	474,153	910,486	0	10,609,516
2013	11,290,119	440,702	1,037,006	286,376	(308,118)	(268,197)	1,187,769	3,821,318	506,085	951,458	910,486	10,379,633
2014	12,010,468	464,212	1,083,671	267,492	(287,800)	(288,515)	1,239,060	3,514,100	552,004	994,274	1,925,678	10,084,790
2015	12,757,263	484,312	1,132,436	245,987	(264,662)	(311,653)	1,286,420	3,166,222	595,282	1,039,016	3,054,749	9,702,514
2016	13,531,534	500,028	1,183,396	221,636	(238,462)	(337,853)	1,328,745	2,766,538	642,657	1,085,772	4,307,597	9,223,937
2017	14,326,129	507,354	1,236,649	193,658	(208,360)	(367,955)	1,361,346	2,307,770	685,482	1,134,632	5,694,901	8,631,228
2018	15,138,362	522,636	1,292,298	161,544	(173,808)	(402,507)	1,400,163	1,807,512	714,731	1,185,690	7,228,176	7,910,186
2019	15,992,835	534,686	1,350,451	126,526	(136,132)	(440,183)	1,435,348	1,241,874	761,940	1,239,046	8,919,838	7,072,997
2020	16,869,172	537,146	1,411,221	86,931	(93,531)	(482,784)	1,458,983	587,404	818,650	1,294,803	10,783,273	6,085,899
2021	17,748,805	552,038	1,474,726	41,118	(44,240)	(532,075)	1,491,567	(164,237)	890,139	1,353,069	12,832,905	4,915,900
2022	18,629,453	566,713	1,541,089	(11,497)	12,369	(576,315)	1,532,359	(1,007,016)	961,181	1,413,957	15,084,277	3,545,176
2023	19,511,760	581,120	1,610,438	(70,491)	75,843	(576,315)	1,620,595	(1,895,518)	1,031,512	1,477,585	17,554,133	1,957,627
2024	20,395,664	600,163	1,682,908	(132,686)	142,760	(576,315)	1,716,830	(1,428,350)	1,114,505	135,157	20,260,507	135,157
2025	21,273,014	620,375	1,758,639	(99,985)	107,575	(576,315)	1,810,289	(815,112)	1,197,051	0	21,813,899	(540,885)
2026	22,145,081	645,365	1,837,778	(57,058)	61,390	(576,315)	1,911,160	(171,822)	1,267,870	0	22,073,002	72,079
2027	23,029,156	674,017	1,920,478	(12,028)	12,941	(576,315)	2,019,093	490,620	1,356,651	0	23,618,112	(588,956)
2028	23,910,779	703,916	2,006,900	34,343	(36,951)	(539,364)	2,168,844	1,239,784	1,419,680	0	23,851,700	59,079
2029	24,818,666	740,490	2,097,211	86,785	(93,374)	(482,941)	2,348,171	2,112,264	1,475,691	0	25,521,319	(702,653)
2030	25,769,528	780,546	2,191,585	147,858	(159,084)	(417,231)	2,543,674	3,111,485	1,544,453	0	25,763,358	6,170
2031	26,756,242	820,391	2,290,206	217,804	(234,340)	(341,975)	2,752,086	4,247,872	1,615,699	0	27,566,793	(810,551)
2032	27,778,199	864,522	2,393,265	297,351	(319,926)	(256,389)	2,978,823	5,552,297	1,674,398	0	27,822,071	(43,872)
2033	28,856,497	906,971	2,500,962	388,661	(418,168)	(158,147)	3,220,279	7,008,972	1,763,604	0	28,006,012	850,485
2034	29,959,854	953,439	2,613,505	490,628	(527,876)	(48,439)	3,481,257	8,648,579	1,841,650	0	29,966,433	(6,579)
2035	31,106,720	1,000,381	2,731,113	605,401	(651,363)	75,048	3,760,580	10,487,114	1,922,045	0	30,142,038	964,682
2036	32,298,010	1,051,676	2,854,013	734,098	(789,831)	213,516	4,063,472	12,566,653	1,983,933	0	32,251,981	46,029
2037	33,561,355	1,103,481	2,982,444	879,666	(946,450)	370,135	4,389,276	14,890,419	2,065,510	0	34,509,620	(948,265)
2038	34,881,343	1,157,759	0	1,042,329	(1,121,463)	545,148	1,623,773	14,390,796	2,123,396	0	34,801,897	79,446
2039	36,289,805	1,211,241	0	1,007,356	(1,083,834)	507,519	1,642,282	13,822,665	2,210,413	0	37,238,030	(948,225)
2040	37,761,192	1,270,343	0	967,587	(1,041,046)	464,731	1,661,615	13,176,191	2,308,089	0	37,536,603	224,589
2041	39,294,162	1,331,527	0	922,333	(992,357)	416,042	1,677,545	12,463,129	2,390,607	0	40,164,165	(870,003)
2042	40,911,537	1,397,126	0	872,419	(938,653)	938,653	2,269,545	12,262,352	2,470,322	0	40,505,335	406,202
2043	42,627,025	1,465,823	0	858,365	(923,532)	923,532	2,324,188	12,023,292	2,563,248	0	43,340,708	(713,683)

## EXHIBIT E

### **GLOSSARY**

**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."

**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."

## EXHIBIT E

### **GLOSSARY**

*(continued)*

**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.

**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.

**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.

## EXHIBIT E

### **GLOSSARY**

*(continued)*

**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.