

# City of Boston

**Actuarial Valuation and Review of Other  
Postemployment Benefits (OPEB) as of  
June 30, 2013 in accordance with  
GASB Statements No. 43 and No. 45**





116 Huntington Avenue 8th Floor Boston, MA 02116-5744  
T 617.424.7300 www.segalco.com

*August 26, 2014*

*Ms. Sally D. Glora, City Auditor  
City of Boston  
City Hall Room M-4  
Boston, MA 02201*

*Dear Ms. Glora:*


*We are pleased to submit this revised report on our actuarial valuation of postemployment welfare benefits as of June 30, 2013 under Governmental Accounting Standards Board (GASB) Statements Number 43 and 45. This report replaces the report dated February 13, 2014. It establishes the liabilities of the postemployment welfare benefit plan in accordance with GASB Statements Number 43 and 45 for the current year and summarizes the actuarial data.*

*This report is based on information received from the City. The actuarial projections were based on the assumptions and methods described in Exhibit II and on the plan of benefits as summarized in Exhibit III.*

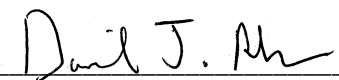
*We look forward to discussing this with you at your convenience.*

*Sincerely,*

*Segal Consulting, a Member of The Segal Group, Inc.*

By:   
*Kathleen A. Riley, FSA, MAAA, EA  
Senior Vice President and Actuary*

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*Daniel J. Rhodes, FSA, MAAA  
Vice President and Consulting Actuary*

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## SECTION 1: Executive Summary for City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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### PURPOSE

This report presents the results of our actuarial valuation of the City of Boston and the Public Health Commission (PHC) (the “Employer”) postemployment welfare benefit plan as of June 30, 2013. The results are in accordance with the Governmental Accounting Standards, which prescribe an accrual methodology for accumulating the value of other postemployment benefits (OPEB) over participants’ active working lifetimes. The accounting standard supplements cash accounting, under which the expense for postemployment benefits is equal to benefit and administrative costs paid on behalf of retirees and their dependents (*i.e.*, a pay-as-you-go basis).

### HIGHLIGHTS OF THE VALUATION

During the fiscal year ending June 30, 2014, we project the City and Public Health Commission will pay benefits (net of retiree contributions) on behalf of retired employees of about \$115 million. This amount is less than the annual “cost” (the “Annual Required Contribution,” or ARC) of approximately \$163 million.

The GASB statements provide the method for selecting the investment return assumption (discount rate). If the benefits are fully funded, the discount rate should be based on the estimated long-term investment yield on the investments expected to be used to finance the payment of benefits. If financing is on a pay-as-you-go basis, the discount rate should be based on the expected yield on the assets of the employer. If the benefits are partially funded, a blended discount rate can be used that reflects the proportionate amounts of plan and employer assets expected to be used.

Based on the City’s and the Public Health Commission’s funding policies, we have determined a blended rate of 7.50% for the City and 5.75% for the Public Health Commission. The blending is based on a funded discount rate of 7.50% and a pay-as-you-go discount rate of 4.50%. In the prior valuation, the blended discount rate was 7.25% for the City and 5.75% for the Public Health Commission, based on a funded discount rate of 7.75% and a pay-as-you-go discount rate of 4.50%.

This report reflects a change in the Projected Unit Credit cost method to allocate benefits to an employee’s retirement age. In prior valuations, the allocation was to an employee’s first eligibility age. This change to the cost method lowered the June 30, 2013 actuarial accrued liability for the City by \$311 million and increased the normal cost by \$17 million. For the Public Health Commission, the change lowered the actuarial accrued liability by \$33 million and increased the normal cost by \$1 million.

Prior liabilities were recalculated as shown in Chart 2 of Section 3 of this revised report. The impact on the Annual OPEB Cost and Net OPEB Obligation (NOO) were also determined. Chart 3 of this revised report reflects the net impact, which was an increase in the City’s June 30, 2013 NOO of \$7.7 million from \$632.0 million to \$639.7 million and a decrease in the Public Health Commission’s NOO of \$7.8 million from \$73.2 million to \$65.4 million.

To determine the amortization payment on the unfunded actuarial accrued liability (UAAL), an amortization period and amortization method must be selected. We have used a 30-year open amortization of the UAAL (the maximum permitted by the GASB statements) for the accounting disclosures, with payments increasing at 4.5% year. The GASB statements allow for either an open or closed

## SECTION 1: Executive Summary for City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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amortization period. In open amortization, the period is reset to the initial value every year and the UAAL is reamortized, while under a closed amortization, the remaining period decreases and the UAAL is eventually “paid off.”

Assets set aside to fund OPEB liabilities must be held in a trust or equivalent arrangement, through which assets are accumulated and benefits are paid as they come due. Employer contributions to the plan are irrevocable, plan assets are dedicated to providing benefits to retirees and their spouses in accordance with the terms of the plan, and plan assets are legally protected from creditors of the employer.

Chapter 68 of the Acts of 2011 permits municipalities, authorities and certain other government entities of the Commonwealth to establish a liability trust fund for funding retiree benefits (other than pension), also known as Other Post-Employment Benefits (OPEB). The legislation also ensures that these entities have access to the state’s investment trust, the State Retiree Benefits Trust Fund (SRBTF) for purposes of investment OPEB funds.

The City of Boston and the Public Health Commission have funded \$209,778,813 as of June 30, 2013 in an OPEB Trust Fund. Page 11 shows a reconciliation of the OPEB balance from July 1, 2011 to June 30, 2013.

Pages 8 through 10 show funding schedules and ARC projections based on the funding policies for both the City and the Public Health Commission.

GASB guidelines prohibit the offset of OPEB obligations by the future value of Medicare Part D subsidies. Therefore, these calculations do not include an estimate for retiree prescription drug plan federal subsidies that the Employer may be eligible to receive for plan years beginning in 2006.

Employer decisions regarding plan design, cost sharing between the Employer and its retirees, actuarial cost method, amortization techniques, and integration with Medicare are just some of the decisions that affect the magnitude of OPEB obligations. We are available to assist you with any investigation of such options you may wish to undertake.

This valuation does not include the potential impact of any future changes due to the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 other than the excise tax on high cost health plans beginning in 2018 (reflected in this valuation) and those previously adopted as of the valuation date.

## SECTION 1: Executive Summary for City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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### KEY VALUATION RESULTS

- The **unfunded actuarial accrued liability (UAAL)** as of June 30, 2013 is \$2.142 billion. Going forward, net unfunded plan obligations will be expected to change due to normal plan operations, which consist of continuing accruals for active members, plus interest on the unfunded actuarial accrued liability, less contributions. Future valuations will analyze the difference between actual and expected unfunded actuarial accrued liabilities.

- As of June 30, 2013, the ratio of assets to the AAL (the funded ratio) is 9.06% for the City (excluding Public Health Commission) and 5.52% for the Public Health Commission.

- The **Annual Required Contribution (ARC)** is \$163 million. The ARC is expected to remain relatively level as a percentage of payroll, as long as the ARC is fully funded each year. If the ARC is not fully funded, it may be expected to increase as a percentage of payroll over time.

The unfunded liability of \$2.142 billion as of June 30, 2013 represents a decrease of \$919 million from \$3.061 billion as shown in the June 30, 2011 Valuation Report.

The unfunded liability had been expected to increase \$183 million due to normal plan operations, which consist of continuing accruals for active members, plus interest on the total obligation, less expected employer contributions. The decrease was the net effect of the following:

- An **actuarial experience loss** increased obligations by \$37 million. This was the net result of gains and losses due to demographic changes, employer contributions higher than expected and an investment loss.

- **Valuation assumption and method changes** decreased obligations by \$1.139 billion. This was the net result of *decreases* in obligations due to 1) lowering the valuation-year per capita health costs, 2) revising the discount rate from 7.25% to 7.50% for the City, 3) changing the allocation methodology used in the Projected Unit Credit cost method, 4) new eligibility requirements for members hired on or after April 2, 2012 (under M.G.L. Chapter 32), 5) revising the cost sharing charged to surviving spouses who do not receive a monthly pension from the State-Boston Retirement System, 6) revising the non-Medicare and Medicare enrollment assumptions for future retirees and current retirees under the age of 65, and 7) changing the future trend on per capita health care costs, based on our projections of what is likely to occur in the marketplace, partially offset by increases in obligations due to 8) changing the demographic assumptions as described beginning on page 31 and 9) reflecting the excise tax on high cost health plans beginning in 2018. The addition of the excise tax to the valuation resulted in a 0.91% increase in the actuarial accrued liability and a 2.29% increase in the normal cost. The complete set of assumptions is shown in Exhibit II.

We have calculated liabilities separately for employees and retirees identified as Boston Public Schools, All Other City Departments, and Public Health Commission.

## SECTION 1: Executive Summary for City of Boston June 30, 2013 Measurement Under GASB 43 and 45

### ACCOUNTING REQUIREMENTS

The Governmental Accounting Standards Board (GASB) issued Statement Number 43 -- *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, and Statement Number 45 – *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. Under these statements, all state and local governmental entities that provide other post employment benefits (OPEB) are required to report the cost of these benefits on their financial statements.

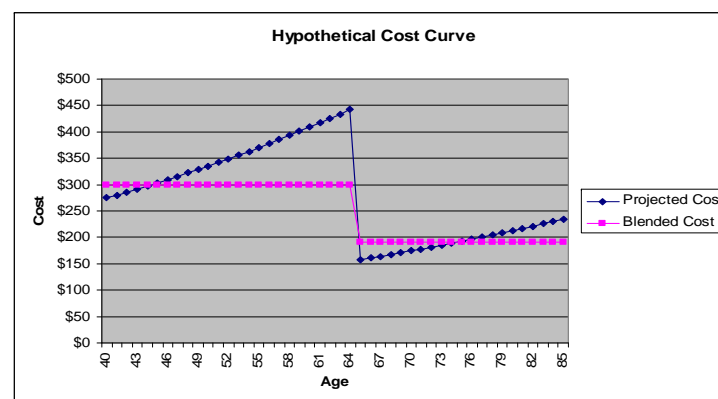
The statements cover postemployment benefits of health, prescription drug, dental, vision and life insurance coverage for retirees; long-term care coverage, life insurance and death benefits that are *not* offered as part of a pension plan; and long-term disability insurance for employees. These benefits, referred to as OPEB, are typically financed on a pay-as-you-go basis. The new standard introduces an accrual-basis accounting requirement; thereby recognizing the employer cost of postemployment benefits over an employee's career. The standards also introduce a consistent accounting requirement for both pension and non-pension benefits.

The total cost of providing postemployment benefits is projected, taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions. This amount is then discounted to determine the actuarial present value of the total projected benefits (APB). The actuarial accrued liability (AAL) is the portion of the present value of the total projected benefits allocated to years of employment prior to the measurement date. The unfunded actuarial accrued liability (UAAL) is the difference between the AAL and actuarial value of assets in the Plan.

Once the UAAL is determined, the Annual Required Contribution (ARC) is determined as the normal cost (the APB allocated to the current year of service) and the amortization of the UAAL. This ARC is compared to actual contributions made and any difference is reported as the net OPEB obligation (NOO). In addition, required supplementary information (RSI) must be reported, including historical information about the UAAL and the progress in funding the Plan.

The benefits valued in this report are limited to those described in Exhibit III of Section 4.

The following graph illustrates why a significant accounting obligation may exist even though the retiree contributes most or all of the blended premium cost of the plan. The average cost for retirees is likely to exceed the average cost for the whole group, leading to an implicit subsidy for these retirees. The accounting standard requires the employer to identify and account for this implicit subsidy as well as any explicit subsidies the employer may provide.



## SECTION 1: Executive Summary for City of Boston June 30, 2013 Measurement Under GASB 43 and 45

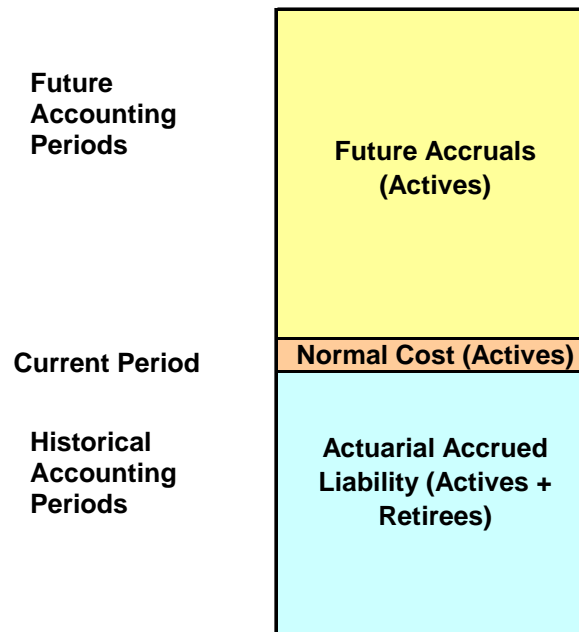
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This graph shows how the actuarial present value of the total projected benefits (APB) is broken down and allocated to various accounting periods.

The exact breakdown depends on the actuarial cost method and amortization methods selected by the employer.

### GASB 43/45 Measurement

Present Value  
of Future Benefits



Normal Cost  
+  
30 Years Amortization  
of Unfunded Actuarial Accrued Liability  
Annual Required Contribution (ARC)

$$\begin{aligned} \text{Net OPEB Obligation} &= \text{ARC}_1 + \text{ARC}_2 + \text{ARC}_3 + \dots \\ &- \text{Contribution}_1 - \text{Contribution}_2 - \text{Contribution}_3 - \dots \end{aligned}$$



## **SECTION 1: Executive Summary for City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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Actuarial computations under GASB statements are for purposes of fulfilling certain welfare plan accounting requirements. The calculations shown in this report have been made on a basis consistent with our understanding of GASB. Determinations for purposes other than meeting the financial accounting requirements of GASB may differ significantly from the results reported here.

Calculations are based on the benefits provided under the terms of the substantive plan in effect at the time of the valuation and on the pattern of sharing costs between the employer and plan members. The projection of benefits does not incorporate the potential effect of legal or contractual funding limitations on the pattern of cost sharing between the employer and plan members in the future.

Actuarial calculations reflect a long-term perspective, and the methods and assumptions use techniques designed to reduce short term volatility in accrued liabilities and the actuarial value of assets, if any.

The calculation of an accounting obligation does not, in and of itself, imply that there is any legal liability to provide the benefits valued, nor is there any implication that the Employer is required to implement a funding policy to satisfy the projected expense.

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future, and the actuarially determined amounts are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future.

**SECTION 2: Valuation Results for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45****SUMMARY OF VALUATION RESULTS****Actuarial Accrued Liability (AAL) and Annual Required Contribution –  
7.50% for City and 5.75% for Public Health Commission**

	<b>Boston Public Schools (A)</b>	<b>All Other Departments (City) (B)</b>	<b>Total City (A) + (B)</b>	<b>Public Health Commission (C)</b>	<b>All Departments Total (A) + (B) + (C)</b>
<b>Actuarial Accrued Liability by Participant Category</b>					
1. Current retirees, beneficiaries and dependents	\$616,412,596	\$713,854,911	\$1,330,267,507	\$24,380,325	\$1,354,647,832
2. Current active members	<u>437,280,581</u>	<u>490,150,981</u>	<u>\$927,431,562</u>	<u>70,021,834</u>	<u>997,453,396</u>
3. Total as of June 30, 2013: (1) + (2)	\$1,053,693,177	\$1,204,005,892	\$2,257,699,069	\$94,402,159	\$2,352,101,228
4. Actuarial value of assets as of June 30, 2013	<u>95,471,352</u>	<u>109,095,505</u>	<u>\$204,566,857</u>	<u>5,211,956</u>	<u>209,778,813</u>
5. Unfunded actuarial accrued liability (UAAL) as of June 30, 2013	\$958,221,825	\$1,094,910,387	\$2,053,132,212	\$89,190,203	\$2,142,322,415
<b>Annual Required Contribution for Fiscal Year Ending June 30, 2014</b>					
6. Normal cost as of June 30, 2013	\$26,259,283	\$27,076,542	\$53,335,825	\$5,815,241	\$59,151,066
7. 30-year increasing amortization (increasing 4.50% per year) of the unfunded actuarial accrued liability (UAAL) as of June 30, 2013	<u>46,733,307</u>	<u>53,399,726</u>	<u>100,133,033</u>	<u>3,513,803</u>	<u>103,646,836</u>
8. Total Annual Required Contribution (ARC): (6) + (7)	\$72,992,590	\$80,476,268	\$153,468,858	\$9,329,044	\$162,797,902
9. Projected net benefit payments for fiscal year ending June 30, 2014	51,502,525	62,136,171	113,638,696	1,695,421	115,334,117

*Note: Assumes payment at the beginning of the fiscal year.*

## SECTION 2: Valuation Results for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

### PROJECTION OF ARC

30 Years Open (7.50% discount rate)

Total City (Boston Public Schools and All Other City Departments)

Fiscal Year Ended June 30	(1) Projected Benefit Payments	(2) Normal Cost	(3) Amortization of UAAL	(4) ARC (3) + (2)	(5) Additional Funding	(6) Assets at End of Year	(7) AAL at End of Year	(8) UAAL at End of Year (7) – (6)
2014	\$113,638,696	\$53,335,825	\$100,133,033	\$153,468,858	\$40,000,000	\$262,909,371	\$2,362,200,913	\$2,099,291,542
2015	122,057,607	56,002,616	102,384,264	158,386,880	40,000,000	325,627,574	2,468,356,866	2,142,729,292
2016	130,234,440	58,802,747	104,502,760	163,305,507	40,000,000	393,049,642	2,576,694,561	2,183,644,919
2017	138,894,654	61,742,884	106,498,251	168,241,135	40,000,000	465,528,365	2,687,008,501	2,221,480,136
2018	147,477,515	64,830,029	108,343,507	173,173,536	40,000,000	543,442,993	2,799,688,091	2,256,245,098
2019	156,640,282	68,071,530	110,039,024	178,110,554	40,000,000	627,201,217	2,914,453,289	2,287,252,072
2020	165,865,357	71,475,107	111,551,261	183,026,368	40,000,000	717,241,308	3,031,567,767	2,314,326,458
2021	174,703,140	75,048,862	112,871,703	187,920,565	40,000,000	814,034,407	3,151,807,000	2,337,772,594
2022	183,937,312	78,801,305	114,015,191	192,816,496	40,000,000	918,086,987	3,275,171,318	2,357,084,331
2023	193,360,886	82,741,370	114,957,041	197,698,411	40,000,000	1,029,943,511	3,401,893,187	2,371,949,676
2024	202,674,722	86,878,439	115,682,037	202,560,476	40,000,000	1,150,189,274	3,532,554,172	2,382,364,897
2025	212,808,458	91,222,361	116,189,996	207,412,357	40,000,000	1,279,453,470	3,666,790,680	2,387,337,210
2026	223,448,881	95,783,479	116,432,500	212,215,979	40,000,000	1,418,412,480	3,804,559,674	2,386,147,193
2027	234,621,325	100,572,653	116,374,462	216,947,115	40,000,000	1,567,793,416	3,945,799,326	2,378,005,910
2028	246,352,391	105,601,285	115,977,404	221,578,689	40,000,000	1,728,377,923	4,090,426,837	2,362,048,914
2029	258,670,011	110,881,350	115,199,168	226,080,518	40,000,000	1,901,006,267	4,238,336,039	2,337,329,772
2030	271,603,511	116,425,417	113,993,594	230,419,011	40,000,000	2,086,581,737	4,389,394,790	2,302,813,053
2031	285,183,687	122,246,688	112,310,184	234,556,872	40,000,000	2,286,075,367	4,543,442,125	2,257,366,758
2032	299,442,871	128,359,022	110,093,729	238,452,751	40,000,000	2,500,531,020	4,700,285,147	2,199,754,127
2033	314,415,015	134,776,973	107,283,911	242,060,884	40,000,000	2,731,070,846	4,859,695,638	2,128,624,792
2034	330,135,766	141,515,822	103,814,872	245,330,694	40,000,000	2,978,901,160	5,021,406,372	2,042,505,212
2035	346,642,554	148,591,613	99,614,745	248,206,358	40,000,000	3,245,318,746	5,185,107,089	1,939,788,342
2036	363,974,682	156,021,194	94,605,155	250,626,349	40,000,000	3,531,717,652	5,350,440,121	1,818,722,468
2037	382,173,416	163,822,254	88,700,667	252,522,921	40,000,000	3,839,596,476	5,516,995,631	1,677,399,154
2038	401,282,086	172,013,366	81,808,207	253,821,573	40,000,000	4,170,566,212	5,684,306,429	1,513,740,216
2039	421,346,191	180,614,035	73,826,419	254,440,454	40,000,000	4,526,358,678	5,851,842,343	1,325,483,665
2040	442,413,500	189,644,736	64,644,984	254,289,720	40,000,000	4,908,835,579	6,019,004,097	1,110,168,518
2041	464,534,175	199,126,973	54,143,879	253,270,852	40,000,000	5,319,998,247	6,185,116,662	865,118,414
2042	487,760,884	209,083,322	42,192,573	251,275,895	40,000,000	5,761,998,116	6,349,422,032	587,423,916
2043	512,148,928	219,537,488	28,649,172	248,186,660	40,000,000	6,237,147,975	6,511,071,385	273,923,411

Notes: Assumes payment at the beginning of the fiscal year.

Amortization payments calculated to increase 4.5% per year.

**SECTION 2: Valuation Results for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

**PROJECTION OF ARC CONTINUED**

**30 Years Open (5.75% discount rate)**

**Public Health Commission**

<b>Fiscal Year Ended June 30</b>	<b>(1) Projected Benefit Payments</b>	<b>(2) Normal Cost</b>	<b>(3) Amortization of UAAL</b>	<b>(4) ARC (3) + (2)</b>	<b>(5) Additional Funding</b>	<b>(6) Assets at End of Year</b>	<b>(7) AAL at End of Year</b>	<b>(8) UAAL at End of Year (7) – (6)</b>
2014	\$1,695,421	\$5,815,241	\$3,513,803	\$9,329,044	\$2,250,000	\$8,021,603	\$104,186,993	\$96,165,390
2015	2,009,766	6,106,003	3,788,603	9,894,606	2,250,000	11,041,973	114,509,516	103,467,543
2016	2,428,729	6,411,303	4,076,284	10,487,587	2,250,000	14,288,871	125,305,385	111,016,514
2017	2,903,103	6,731,868	4,373,689	11,105,557	2,250,000	17,779,286	136,559,364	118,780,078
2018	3,410,537	7,068,462	4,679,548	11,748,010	2,250,000	21,531,483	148,279,783	126,748,300
2019	3,978,429	7,421,885	4,993,470	12,415,355	2,250,000	25,565,094	160,447,325	134,882,231
2020	4,489,200	7,792,979	5,313,920	13,106,899	2,250,000	29,901,226	173,166,792	143,265,567
2021	5,056,024	8,182,628	5,644,196	13,826,824	2,250,000	34,562,568	186,430,267	151,867,699
2022	5,647,254	8,591,759	5,983,092	14,574,851	2,250,000	39,573,510	200,263,822	160,690,311
2023	6,214,622	9,021,347	6,330,675	15,352,022	2,250,000	44,960,274	214,747,104	169,786,830
2024	6,840,623	9,472,415	6,689,048	16,161,463	2,250,000	50,751,044	229,878,182	179,127,138
2025	7,182,654	9,946,036	7,057,026	17,003,062	2,250,000	56,976,123	246,018,453	189,042,331
2026	7,541,787	10,443,337	7,447,652	17,890,989	2,250,000	63,668,082	263,232,904	199,564,822
2027	7,918,876	10,965,504	7,862,204	18,827,708	2,250,000	70,861,938	281,590,605	210,728,667
2028	8,314,820	11,513,779	8,302,023	19,815,802	2,250,000	78,595,333	301,164,964	222,569,631
2029	8,730,561	12,089,468	8,768,518	20,857,986	2,250,000	86,908,733	322,033,994	235,125,261
2030	9,167,089	12,693,942	9,263,169	21,957,111	2,250,000	95,845,638	344,280,596	248,434,958
2031	9,625,444	13,328,639	9,787,528	23,116,167	2,250,000	105,452,811	367,992,859	262,540,048
2032	10,106,716	13,995,071	10,343,222	24,338,293	2,250,000	115,780,522	393,264,384	277,483,862
2033	10,612,051	14,694,824	10,931,960	25,626,784	2,250,000	126,882,811	420,194,619	293,311,808
2034	11,142,654	15,429,566	11,555,529	26,985,095	2,250,000	138,817,772	448,889,218	310,071,446
2035	11,699,787	16,201,044	12,215,805	28,416,849	2,250,000	151,647,855	479,460,428	327,812,573
2036	12,284,776	17,011,096	12,914,747	29,925,843	2,250,000	165,440,194	512,027,486	346,587,292
2037	12,899,015	17,861,651	13,654,410	31,516,061	2,250,000	180,266,958	546,717,054	366,450,095
2038	13,543,966	18,754,733	14,436,940	33,191,673	2,250,000	196,205,730	583,663,671	387,457,941
2039	14,221,164	19,692,470	15,264,580	34,957,050	2,250,000	213,339,910	623,010,239	409,670,328
2040	14,932,222	20,677,094	16,139,676	36,816,770	2,250,000	231,759,153	664,908,529	433,149,376
2041	15,678,833	21,710,948	17,064,674	38,775,622	2,250,000	251,559,840	709,519,731	457,959,891
2042	16,462,775	22,796,496	18,042,127	40,838,623	2,250,000	272,845,578	757,015,025	484,169,447
2043	17,285,914	23,936,320	19,074,698	43,011,018	2,250,000	295,727,746	807,576,194	511,848,448

*Notes: Assumes payment at the beginning of the fiscal year.*

*Amortization payments calculated to increase 4.5% per year.*

## SECTION 2: Valuation Results for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

### PROJECTION OF ARC CONTINUED

30 Years Open (7.50% discount rate for City and 5.75% discount rate of Public Health Commission)

All Departments Including Public Health Commission

Fiscal Year Ended June 30	(1) Projected Benefit Payments	(2) Normal Cost	(3) Amortization of UAAL	(4) ARC (3) + (2)	(5) Additional Funding	(6) Assets at End of Year	(7) AAL at End of Year	(8) UAAL at End of Year (7) – (6)
2014	\$115,334,117	\$59,151,066	\$103,646,836	\$162,797,902	\$42,250,000	\$270,930,974	\$2,466,387,906	\$2,195,456,932
2015	124,067,373	62,108,619	106,172,867	168,281,486	42,250,000	336,669,547	2,582,866,382	2,246,196,835
2016	132,663,169	65,214,050	108,579,044	173,793,094	42,250,000	407,338,513	2,701,999,946	2,294,661,433
2017	141,797,757	68,474,753	110,871,940	179,346,693	42,250,000	483,307,652	2,823,567,865	2,340,260,214
2018	150,888,052	71,898,490	113,023,055	184,921,545	42,250,000	564,974,475	2,947,967,874	2,382,993,398
2019	160,618,711	75,493,415	115,032,494	190,525,909	42,250,000	652,766,311	3,074,900,614	2,422,134,303
2020	170,354,557	79,268,086	116,865,181	196,133,267	42,250,000	747,142,534	3,204,734,559	2,457,592,025
2021	179,759,164	83,231,490	118,515,899	201,747,389	42,250,000	848,596,974	3,338,237,267	2,489,640,293
2022	189,584,566	87,393,064	119,998,283	207,391,347	42,250,000	957,660,498	3,475,435,140	2,517,774,642
2023	199,575,508	91,762,718	121,287,716	213,050,434	42,250,000	1,074,903,785	3,616,640,291	2,541,736,506
2024	209,515,345	96,350,854	122,371,085	218,721,939	42,250,000	1,200,940,319	3,762,432,354	2,561,492,035
2025	219,991,112	101,168,396	123,247,022	224,415,418	42,250,000	1,336,429,593	3,912,809,133	2,576,379,541
2026	230,990,668	106,226,816	123,880,152	230,106,968	42,250,000	1,482,080,562	4,067,792,578	2,585,712,015
2027	242,540,201	111,538,157	124,236,666	235,774,823	42,250,000	1,638,655,354	4,227,389,931	2,588,734,577
2028	254,667,211	117,115,065	124,279,427	241,394,492	42,250,000	1,806,973,256	4,391,591,801	2,584,618,545
2029	267,400,572	122,970,818	123,967,686	246,938,504	42,250,000	1,987,915,000	4,560,370,033	2,572,455,033
2030	280,770,600	129,119,359	123,256,763	252,376,122	42,250,000	2,182,427,375	4,733,675,386	2,551,248,011
2031	294,809,131	135,575,327	122,097,712	257,673,039	42,250,000	2,391,528,178	4,911,434,985	2,519,906,806
2032	309,549,587	142,354,093	120,436,951	262,791,044	42,250,000	2,616,311,541	5,093,549,531	2,477,237,990
2033	325,027,066	149,471,798	118,215,871	267,687,669	42,250,000	2,857,953,657	5,279,890,257	2,421,936,600
2034	341,278,420	156,945,388	115,370,401	272,315,789	42,250,000	3,117,718,931	5,470,295,590	2,352,576,659
2035	358,342,341	164,792,657	111,830,550	276,623,207	42,250,000	3,396,966,601	5,664,567,516	2,267,600,915
2036	376,259,458	173,032,290	107,519,902	280,552,192	42,250,000	3,697,157,846	5,862,467,606	2,165,309,760
2037	395,072,431	181,683,904	102,355,077	284,038,981	42,250,000	4,019,863,435	6,063,712,684	2,043,849,249
2038	414,826,052	190,768,100	96,245,147	287,013,247	42,250,000	4,366,771,942	6,267,970,100	1,901,198,157
2039	435,567,355	200,306,505	89,090,999	289,397,504	42,250,000	4,739,698,588	6,474,852,581	1,735,153,993
2040	457,345,722	210,321,830	80,784,660	291,106,490	42,250,000	5,140,594,732	6,683,912,626	1,543,317,894
2041	480,213,009	220,837,921	71,208,553	292,046,474	42,250,000	5,571,558,087	6,894,636,393	1,323,078,306
2042	504,223,659	231,879,817	60,234,700	292,114,517	42,250,000	6,034,843,694	7,106,437,057	1,071,593,363
2043	529,434,842	243,473,808	47,723,870	291,197,678	42,250,000	6,532,875,721	7,318,647,580	785,771,859

Notes: Assumes payment at the beginning of the fiscal year.

Amortization payments calculated to increase 4.5% per year.

**SECTION 2: Valuation Results for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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**RECONCILIATION OF OPEB BALANCE FROM JULY 1, 2011 THROUGH JUNE 30, 2013**

	<b>City</b>	<b>PHC</b>	<b>Total</b>
Balance as of July 1, 2011	\$109,735,953	\$1,302,422	\$111,038,375
Contributions	35,000,000	0	35,000,000
Net investment income	<u>3,548,037</u>	<u>31,927</u>	<u>3,579,964</u>
Balance as of June 30, 2012	\$148,283,990	\$1,334,349	\$149,618,339
Contributions	\$40,000,000	\$3,500,000	\$43,500,000
Net investment income	<u>16,282,867</u>	<u>377,607</u>	<u>16,660,474</u>
Balance as of June 30, 2013	\$204,566,857	\$5,211,956	\$209,778,813

## SECTION 2: Valuation Results for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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August 26, 2014

### ACTUARIAL CERTIFICATION

This is to certify that Segal Consulting, a Member of The Segal Group, Inc. has conducted an actuarial valuation of certain benefit obligations of the City of Boston other postemployment benefit programs as of June 30, 2013, 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.

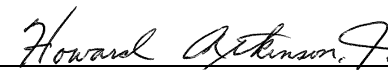
The actuarial valuation is based on the plan of benefits verified by the City and on participant, claims, premium rates and administrative fees provided by the City or from vendors employed by the City. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security at termination or adequacy of funding an ongoing plan.

To the best of our knowledge, this report is complete and accurate and in our opinion presents 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 collectively 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 City are reasonably related to the experience and expectations of the postemployment benefit programs.



Kathleen A. Riley, FSA, MAAA, EA  
Senior Vice President and Actuary



Howard Atkinson, Jr., ASA, MAAA, FCA  
Vice President and Health Actuary

**SECTION 3: Valuation Details for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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**CHART 1**

**Required Supplementary Information – Schedule of Employer Contributions**

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**Total City (Boston Public Schools and All Other City Departments)**

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<b>Fiscal Year Ended June 30,</b>	<b>Annual OPEB Cost</b>	<b>Actual Contribution</b>	<b>Percentage Contributed</b>
2008	\$327,751,953	\$114,929,005	35.1%
2009	346,425,114	128,454,226	37.1%
2010	258,991,410	153,433,928	59.2%
2011	270,750,128	229,808,409	84.9%
2012	196,237,927	180,509,108	92.0%
2013	201,830,098	162,845,023	80.7%
2014	170,248,496	153,638,696	90.2%

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*Note: The fiscal year ended June 30, 2014 actual contribution includes additional funding payment of \$40 million.*



**SECTION 3: Valuation Details for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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**CHART 1**

**Required Supplementary Information – Schedule of Employer Contributions**

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**Public Health Commission**

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<b>Fiscal Year Ended June 30,</b>	<b>Annual OPEB Cost</b>	<b>Actual Contribution</b>	<b>Percentage Contributed</b>
2008	\$16,559,975	\$990,398	6.0%
2009	17,877,834	1,268,223	7.1%
2010	11,890,916	1,323,269	11.1%
2011	12,828,317	2,860,172	22.3%
2012	13,267,324	2,946,099	22.2%
2013	14,253,076	4,059,415	28.5%
2014	10,513,336	3,945,421	37.5%

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*Note: The fiscal year ended June 30, 2014 actual contribution includes additional funding payment of \$2,250,000.*

### SECTION 3: Valuation Details for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

This schedule of funding progress presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

#### CHART 2

#### Required Supplementary Information – Schedule of Funding Progress

#### Total City (Boston Public Schools and All Other City Departments)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
6/30/2007	\$0	\$4,406,624,374	\$4,406,624,374	0.00%	\$919,662,197	479.2%
6/30/2009	0	3,854,997,685	3,854,997,685	0.00%	1,008,003,640	382.4%
6/30/2011	109,735,953	2,595,942,424	2,486,206,471	4.23%	1,045,487,800	237.8%
6/30/2013	204,566,857	2,257,699,069	2,053,132,212	9.06%	1,021,081,093	201.1%

*Note: 2011 and earlier valuations have been revised to reflect the change in cost method described in this report.*

**SECTION 3: Valuation Details for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

**CHART 2**

**Required Supplementary Information – Schedule of Funding Progress**

**Public Health Commission**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded AAL (UAAL) (b) - (a)</b>	<b>Funded Ratio (a) / (b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)</b>
6/30/2007	\$0	\$112,703,444	\$112,703,444	0.00%	\$47,922,000	235.2%
6/30/2009	0	95,703,046	95,703,046	0.00%	52,914,849	180.9%
6/30/2011	1,302,422	108,257,905	106,955,483	1.20%	56,913,569	187.9%
6/30/2013	5,211,956	94,402,159	89,190,203	5.52%	59,756,065	149.3%

*Note: 2011 and earlier valuations have been revised to reflect the change in cost method described in this report.*

**SECTION 3: Valuation Details for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

**CHART 3**

**Required Supplementary Information – Net OPEB Obligation/(Asset) (NOO/NOA)**

**Total City (Boston Public Schools and All Other City Departments)**

<b>Fiscal Year Ended June 30,</b>	<b>Annual Required Contribution (a)</b>	<b>Interest on Existing NOO (b)</b>	<b>ARC Adjustment (c)</b>	<b>Annual OPEB Cost (a) + (b) + (c) (d)</b>	<b>Actual Contribution Amount (e)</b>	<b>Net Increase in NOO (d) - (e) (f)</b>	<b>NOO as of Following Date (g)</b>
2008	\$327,751,953	\$0	\$0	\$327,751,953	\$114,929,005	\$212,822,948	\$212,822,948
2009	344,100,040	9,577,033	(7,251,959)	346,425,114	128,454,226	217,970,888	430,793,836
2010	252,685,033	22,616,676	(16,310,299)	258,991,410	153,433,928	105,557,482	536,351,318
2011	262,898,498	28,158,444	(20,306,814)	270,750,128	229,808,409	40,941,719	577,293,037
2012	181,732,359	41,853,745	(27,348,177)	196,237,927	180,509,108	15,728,819	593,021,855
2013	186,929,314	42,994,085	(28,093,301)	201,830,098	162,845,023	38,985,075	632,006,930
Adjustment to reflect change in cost method for prior years	--	--	--	--	--	7,725,868	639,732,798
2014	153,468,858	47,979,960	(31,200,322)	170,248,496	153,638,696	16,407,158	648,414,088

*Note: The fiscal year ended June 30, 2014 actual contribution includes additional funding payment of \$40 million.*

**SECTION 3: Valuation Details for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

**CHART 3**

**Required Supplementary Information – Net OPEB Obligation/(Asset) (NOO/NOA)**

**Public Health Commission**

<b>Fiscal Year Ended June 30,</b>	<b>Annual Required Contribution (a)</b>	<b>Interest on Existing NOO (b)</b>	<b>ARC Adjustment (c)</b>	<b>Annual OPEB Cost (a) + (b) + (c) (d)</b>	<b>Actual Contribution Amount (e)</b>	<b>Net Increase in NOO (d) - (e) (f)</b>	<b>NOO as of Following Date (g)</b>
2008	\$16,559,975	\$0	\$0	\$16,559,975	\$990,398	\$15,569,577	\$15,569,577
2009	17,707,738	700,631	(530,535)	17,877,834	1,268,223	16,609,611	32,179,188
2010	11,419,846	1,689,407	(1,218,337)	11,890,916	1,323,269	10,567,647	42,746,835
2011	12,202,547	2,244,209	(1,618,439)	12,828,317	2,860,172	9,968,145	52,714,980
2012	12,313,011	3,031,111	(2,076,798)	13,267,324	2,946,099	10,321,225	63,036,205
2013	13,111,915	3,624,582	(2,483,421)	14,253,076	4,059,415	10,193,661	73,229,866
Adjustment to reflect change in cost method for prior years	--	--	--	--	--	(7,811,133)	65,418,733
2014	9,329,044	3,761,577	(2,577,285)	10,513,336	3,945,421	6,567,915	71,986,648

*Note: The fiscal year ended June 30, 2014 actual contribution includes additional funding payment of \$2,250,000.*

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**SECTION 3: Valuation Details for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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**CHART 4**  
**Summary of Required Supplementary Information**

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<b>Valuation date</b>	June 30, 2013
<b>Actuarial cost method</b>	Projected Unit Credit
<b>Amortization method</b>	Payments increasing at 4.50% per year
<b>Remaining amortization period</b>	30 years open
<b>Asset valuation method</b>	Market value

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**Actuarial assumptions:**

Discount rate	7.50% City of Boston, 5.75% Public Health Commission
Inflation rate	4.50%
Asset rate of return	7.50%
Trend on non-Medicare plans	7.50% decreasing by 0.50% to an ultimate level of 5.00%
Trend on Medicare plans	6.00% decreasing by 0.25% to an ultimate level of 5.00%
Trend on Medicare Part B premium	6.00%
Trend on administrative expense	3.00%

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**Plan membership:**

	Total City (Boston Public Schools and All Other City Departments)	Public Health Commission
Current retirees, beneficiaries, and dependents	14,742	181
Current active members	<u>14,386</u>	<u>960</u>
Total	29,128	1,141

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#### SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

*This exhibit summarizes the participant data used for the current and prior valuations.*

##### EXHIBIT I Summary of Participant Data as of June 30, 2013

	Boston Public Schools (A)	All Other Departments (City) (B)	Total City (A) + (B)	Public Health Commission (C)	All Departments Total (A) + (B) + (C)
<b>Retirees, Beneficiaries, and Dependents</b>					
Number	6,352	8,390	14,742	181	14,923
Average age	71.7	72.3	72.0	63.4	71.9
<b>Active Employees</b>					
Number	7,636	6,750	14,386	960	15,346
Average age	44.87	46.35	45.56	44.43	45.49
Average years of service	13.52	16.87	15.09	11.63	14.87
Average age at hire	31.35	29.48	30.47	32.80	30.62

##### Summary of Participant Data as of June 30, 2011

	Boston Public Schools (A)	All Other Departments (City) (B)	Total City (A) + (B)	Public Health Commission (C)	All Departments Total (A) + (B) + (C)
<b>Retirees, Beneficiaries, and Dependents</b>					
Number	6,024	8,082	14,106	128	14,234
Average age	71.2	71.9	71.6	62.7	71.5
<b>Active Employees</b>					
Number	7,198	7,341	14,539	998	15,537
Average age	44.91	45.90	45.41	44.05	45.32
Average years of service	13.55	16.39	14.98	11.11	14.73
Average age at hire	31.36	29.52	30.43	32.94	30.59

## SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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### EXHIBIT II Actuarial Assumptions and Actuarial Cost Method

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**Data:** Detailed census data, claims, premium rates, administrative fees and summary plan descriptions for postemployment welfare benefits were provided by the City.

**Actuarial Cost Method:** Projected Unit Credit – Benefits allocated from date of hire to date of retirement (previously, benefits allocated from date of hire to first eligibility date)

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#### Per Capita Cost Development:

*Insured plans (Neighborhood Health Plan, Blue Cross Blue Shield Managed Blue for Seniors and Medicare HMO Blue, Tufts Medicare Prime Supplement, Tufts Medicare Preferred HMO, Harvard Pilgrim Health Care Medicare Enhance)*

Per capita costs were based on the fully-insured premium rates effective July 1, 2013 (January 1, 2013 and January 1, 2014 for Medicare Advantage plans and Tufts Medicare Preferred Supplement and Harvard Pilgrim Medicare Enhance), trended to the midpoint of the valuation year at assumed trend rates. For plans that are not community rated, actuarial factors were applied to the premium to estimate individual retiree and spouse costs by age and by gender.

*Self-Funded plans (Blue Cross Blue Shield Master Medical, Blue Choice, Blue Care Elect Preferred and Harvard Pilgrim Health Care)*

Per capita claims costs were based on the monthly paid claims experience by participant group for the period July 1, 2011 through June 30, 2013 (August 1, 2012 – July 31, 2013 for the Harvard Pilgrim Health Care HMO and POS plans). Claims were separated into two 12-month periods and adjusted as follows:

- paid claims were multiplied by a factor to yield an estimate of incurred claims,
- total claims were divided by the number of adult members to yield a per capita claim cost, and
- the per capita claim cost was trended to the midpoint of the valuation year at assumed trend rates.

Taking a weighted average, per capita claims for the two periods were combined. The weights used in this average account for a number of factors including each plan year's volatility of claims experience and distance to the valuation year. Actuarial factors were then applied to the weighted average cost to estimate individual retiree and spouse costs by age and by gender.



**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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<b>Measurement Date:</b>	June 30, 2013
<b>Discount Rate:</b>	7.50% City of Boston and 5.75% Public Health Commission (the blending is based on a funded discount rate of 7.50% and a pay-as-you-go discount rate of 4.50%) (previously, 7.25% City of Boston, based on a funded discount rate of 7.75% and a pay-as-you-go discount rate of 4.50%)
<b>Expected Return on Assets:</b>	7.50%
<b>Mortality Rates:</b>	
<i>Pre-Retirement (Non-Teachers)</i>	RP-2000 Employee Mortality Table projected 20 years using Scale AA (previously, RP-2000 Combined Healthy Mortality Table projected 11 years using Scale AA)
<i>Healthy (Non-Teachers)</i>	RP-2000 Combined Healthy Mortality Table projected 15 years using Scale AA (previously, RP-2000 Combined Healthy Mortality Table projected 11 years using Scale AA)
<i>Disabled (Non-Teachers)</i>	RP-2000 Healthy Annuitant Mortality Table projected 5 years using Scale AA with a three-year set forward for males (previously, RP-2000 Combined Healthy Mortality Table projected three years using Scale AA (gender distinct) set forward five years )
<i>Pre-Retirement (Teachers)</i>	RP-2000 Combined Healthy White Collar Mortality Table projected 20 years using Scale AA (previously, RP-2000 Combined Healthy Mortality Table projected 11 years using Scale AA)
<i>Healthy and Disabled (Teachers)</i>	RP-2000 Healthy Annuitant with Large Benefit Amount Adjustment Mortality Table projected 15 years with Scale AA (previously, RP-2000 Combined Healthy Mortality Table projected 11 years using Scale AA)
	The mortality assumptions were determined to contain provisions appropriate to reflect future mortality improvements.

**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

**Termination Rates before Retirement:**

**Groups 1 and 2 (excluding Teachers) – Rate per year (%)**

Age	Mortality						
	Current		Previously		Disability		Withdrawal
	Male	Female	Male	Female	Current	Previously	
20	0.02	0.01	0.03	0.02	0.03	0.06	6.58
25	0.03	0.02	0.03	0.02	0.04	0.09	5.27
30	0.04	0.02	0.04	0.02	0.06	0.11	4.83
35	0.07	0.04	0.07	0.04	0.07	0.15	4.47
40	0.09	0.05	0.10	0.06	0.11	0.22	3.84
45	0.12	0.08	0.13	0.09	0.18	0.36	3.21
50	0.15	0.12	0.18	0.14	0.30	0.61	1.52
55	0.21	0.22	0.29	0.25	0.50	1.01	0.33
60	0.35	0.36	0.56	0.48	0.81	1.63	0.00

*Notes: 50% of the disability rates shown represent accidental disability.  
20% of the death rates shown represent accidental death.*

**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

Group 4 – Rate per year (%)							
Mortality							
Age	Current		Previously		Disability		Withdrawal
	Male	Female	Male	Female	Current	Previously	
20	0.02	0.01	0.03	0.02	0.15	0.12	0.00
25	0.03	0.02	0.03	0.02	0.21	0.17	0.00
30	0.04	0.02	0.04	0.02	0.28	0.22	0.00
35	0.07	0.04	0.07	0.04	0.37	0.29	0.00
40	0.09	0.05	0.10	0.06	0.55	0.44	0.00
45	0.12	0.08	0.13	0.09	0.90	0.72	0.00
50	0.15	0.12	0.18	0.14	1.51	1.21	0.00
55	0.21	0.22	0.29	0.25	2.52	2.02	0.00
60	0.35	0.36	0.56	0.48	4.07	3.25	0.00

*Notes: 90% of the disability rates shown represent accidental disability.  
50% of the death rates shown represent accidental death.*

Teachers – Rate per year (%)						
Mortality						
Age	Current		Previously		Disability	
	Male	Female	Male	Female	Current	Previously
20	0.02	0.01	0.03	0.02	0.00	0.06
25	0.03	0.02	0.03	0.02	0.01	0.09
30	0.03	0.02	0.04	0.02	0.01	0.11
35	0.05	0.04	0.07	0.04	0.01	0.15
40	0.08	0.05	0.10	0.06	0.01	0.22
45	0.10	0.07	0.13	0.09	0.03	0.36
50	0.14	0.11	0.18	0.14	0.05	0.61
55	0.23	0.22	0.29	0.25	0.07	1.01
60	0.40	0.42	0.56	0.48	0.07	1.63

*Notes: 35% of the rates shown represent accidental disability.  
55% of the death rates shown represent accidental death.*

**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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**Withdrawal Rates:**

Age	Teachers - Rate per year (%)					
	0 - 4 Years of Service		5 - 9 Years of Service		10+ Years of Service	
	Male	Female	Male	Female	Male	Female
20	13.0	10.0	5.5	7.0	1.5	5.0
30	15.0	15.0	5.4	8.8	1.5	4.5
40	13.3	10.5	5.2	5.0	1.7	2.2
50	16.2	9.8	7.0	5.0	2.3	2.0

(Previously, withdrawal rates for teachers were the same as for Groups 1 and 2 shown on page 20.)

**Retirement Rates:**

Rate (%)			
Age	Groups 1 and 2	Age	Group 4
55	3.0	50	1.0
56	3.0	51	1.0
57	3.0	52	1.0
58	3.0	53	1.0
59	3.0	54	1.0
60	8.0	55	10.0
61	8.0	56	5.0
62	15.0	57	5.0
63	10.0	58	5.0
64	10.0	59	5.0
65	35.0	60	10.0
66	20.0	61	15.0
67	20.0	62	15.0
68	20.0	63	15.0
69	20.0	64	25.0
70	100.00	65	100.00

**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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Non-TARP Teachers - Rate per year (%)						
Years of Service						
Age	Less than 20		20 or more		Previously	
	Male	Female	Male	Female	Age	
50	0.0	0.0	2.0	1.0	50	0.0
51	0.0	0.0	2.0	1.0	51	0.0
52	0.0	0.0	2.0	1.5	52	0.0
53	0.0	0.0	2.0	2.0	53	0.0
54	0.0	0.0	3.0	2.0	54	0.0
55	3.5	3.5	3.0	4.0	55	3.0
56	3.5	3.5	3.5	4.0	56	3.0
57	5.0	3.5	4.0	4.0	57	3.0
58	5.5	5.0	5.0	6.0	58	3.0
59	6.0	6.5	6.0	8.0	59	3.0
60	7.5	8.5	15.0	15.0	60	8.0
61	12.0	10.0	25.0	20.0	61	8.0
62	14.0	12.0	30.0	20.0	62	15.0
63	14.0	12.0	30.0	25.0	63	10.0
64	14.0	20.0	30.0	30.0	64	10.0
65	30.0	30.0	30.0	40.0	65	35.0
66	30.0	30.0	25.0	30.0	66	20.0
67	30.0	30.0	25.0	30.0	67	20.0
68	30.0	30.0	25.0	30.0	68	20.0
69	30.0	30.0	25.0	30.0	69	20.0
70	100.0	100.0	100.0	100.0	70	100.00

**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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TARP Teachers - Rate per year (%)								
Years of Service								
Age	Less than 20		20 – 29		30 or more		Previously	
	Male	Female	Male	Female	Male	Female	Age	
50	0.0	0.0	1.0	1.0	2.0	1.5	50	0.0
51	0.0	0.0	1.0	1.0	2.0	1.5	51	0.0
52	0.0	0.0	1.0	1.0	2.0	1.5	52	0.0
53	0.0	0.0	1.5	1.0	2.0	1.5	53	0.0
54	0.0	0.0	2.5	1.0	2.0	2.0	54	0.0
55	5.0	3.0	3.0	3.0	6.0	5.0	55	3.0
56	5.0	3.0	6.0	5.0	20.0	15.0	56	7.5
57	5.0	4.0	10.0	8.0	40.0	35.0	57	25.0
58	5.0	8.0	15.0	10.0	50.0	35.0	58	25.0
59	10.0	8.0	20.0	15.0	50.0	35.0	59	25.0
60	10.0	10.0	25.0	20.0	40.0	35.0	60	18.0
61	20.0	12.0	30.0	25.0	40.0	35.0	61	18.0
62	20.0	12.0	35.0	30.0	35.0	35.0	62	25.0
63	25.0	15.0	40.0	30.0	35.0	35.0	63	20.0
64	25.0	20.0	40.0	30.0	35.0	35.0	64	20.0
65	25.0	25.0	40.0	40.0	35.0	35.0	65	35.0
66	30.0	25.0	30.0	30.0	40.0	35.0	66	20.0
67	30.0	30.0	30.0	30.0	40.0	30.0	67	20.0
68	30.0	30.0	30.0	30.0	40.0	30.0	68	20.0
69	30.0	30.0	30.0	30.0	40.0	30.0	69	20.0
70	100.0	100.0	100.0	100.0	100.0	100.0	70	100.0

**Dependents:**

Demographic data was available for spouses of current retirees. For current future retirees, husbands were assumed to be three years older than their wives. For future retirees who elect to continue their health coverage at retirement, 60% were assumed to have an eligible spouse who also opts for health coverage at that time.

**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

**Per Capita Health Costs:**

2013-2014 medical and prescription drug claims costs are shown in the table below for retirees and for spouses at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.

Age	HPHC/NHP*				Blue Choice and Blue Care Elect Preferred			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
45	\$7,452	\$9,348	\$4,622	\$6,978	\$9,354	\$11,734	\$5,802	\$8,759
50	8,845	10,074	6,178	8,089	11,102	12,645	7,755	10,153
55	10,504	10,845	8,267	9,363	13,185	13,612	10,377	11,753
60	12,474	11,689	11,067	10,859	15,658	14,672	13,891	13,631
64	14,311	12,400	13,971	12,222	17,964	15,565	17,536	15,342
65	14,815	12,593	14,815	12,593	18,596	15,807	18,596	15,807
70	17,171	13,571	17,171	13,571	21,553	17,034	21,553	17,034
75	18,504	14,608	18,504	14,608	23,226	18,336	23,226	18,336
80	19,926	15,748	19,926	15,748	25,012	19,768	25,012	19,768
Age	Master Medical Indemnity Medicare Carveout				Insured Medicare Supplement Plans			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
65	\$4,560	\$3,876	\$4,560	\$3,876	\$4,352	\$3,699	\$4,352	\$3,699
70	5,285	4,177	5,285	4,177	5,044	3,986	5,044	3,986
75	5,695	4,496	5,695	4,496	5,436	4,291	5,436	4,291
80	6,133	4,847	6,133	4,847	5,853	4,626	5,853	4,626

\* Includes BMC Advantage HMO plan.

**SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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**Medicare Advantage Plans:** \$2,998

**Medicare Part B Premium for Current Retirees:** \$1,259

**Weighted Average Annual Retiree Contribution Amounts:**

	<b>Retiree</b>	<b>Spouse</b>
HPHC/NHP	\$1,470	\$2,469
Blue Choice/Blue Care Elect Preferred	3,389	4,462
Medicare Supplement Plans	456	456
Medicare Advantage Plans	300	300
Blue Cross Blue Shield Master Medical Carveout A&B	1,309	1,309

**Health Care Cost Trend Rates:**

Health care trend measures the anticipated overall rate at which health plan costs are expected to increase in future years. The rates shown below are “net” and are applied to the net per capita costs shown above. The trend shown for a particular plan year is the rate that must be applied to that year’s cost to yield the next year’s projected cost.

<b>Year Ending June 30,</b>	<b>Non-Medicare</b>	<b>Medicare</b>	<b>Medicare Part B</b>
2014	7.50%	6.00%	6.00%
2015	7.00%	5.75%	6.00%
2016	6.50%	5.50%	6.00%
2017	6.00%	5.25%	6.00%
2018	5.50%	5.00%	6.00%
2019 and later	5.00%	5.00%	6.00%

**Retiree Contribution Increase Rate:**

Retiree contributions for medical and prescription drug coverage are expected to increase with medical trend.



#### SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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<b>Administrative Expenses:</b>	Administrative expense loads of \$446 per participant for non-Medicare BCBS plans, \$380 per participant for non-Medicare HPHC plans and \$295 per participant for the Master Medical Indemnity Medicare Carveout plan were added to projected incurred self-funded claim costs in developing the benefit obligations. Administrative expenses are assumed to increase at 3.0% per year and are not added to fully-insured premium rates as administrative expenses are a component of the rate.
<b>Participation and Coverage Election:</b>	<p>100% of active employees with coverage are assumed to elect retiree coverage.</p> <p>100% of retirees over age 65 enrolled in a Medicare plan are assumed to remain in their current medical plan for life. For future retirees hired prior to 1986 and current retirees under age 65, 85% are assumed to be Medicare eligible and to enroll in a Medicare plan (35% in the Blue Cross Master Medical Carveout Plan, 35% in one of the insured Medicare Supplement plans, and 15% in one of the insured Medicare Advantage plans). (Previously, 80% (65%, 10% and 5%, respectively.)) 15% are assumed to be ineligible for Medicare and are assumed to either remain in their current or pre-65 plan (10% in the insured non-Medicare Plans and 5% in the Blue Choice and Blue Care Elect Preferred Plans). (Previously, 20% (15% and 5%, respectively.))</p> <p>For all future retirees hired after 1986, 45% are assumed to enroll in the Blue Cross Master Medical Carveout Plan upon reaching age 65, 40% are assumed to enroll in one of the insured Medicare Supplement plans, and 15% are assumed to enroll in one of the insured Medicare Advantage plans. (Previously, 80%, 10% and 5%, respectively.)</p>
<b>Plan Design:</b>	Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit III.
<b>Annual Maximum Benefits:</b>	No increase in the annual maximum benefit levels was assumed.
<b>Lifetime Maximum Benefits:</b>	No information was available regarding accumulations toward lifetime maximum benefits and no such accumulations were assumed.
<b>Missing Participant Data:</b>	A missing census item for a given participant was assumed to equal the average value of that item over all other participants of the same status for whom the item is known.

#### SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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**Health Care Reform Assumption:** This valuation does not include the potential impact of any future changes due to the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 other than the excise tax on high cost health plans beginning in 2018 (reflected with this valuation) and those previously adopted as of the valuation date. The addition of the excise tax in this valuation increased the actuarial accrued liability by 0.91% and normal cost by 2.29%.

**Assumption and Method Changes  
Since Prior Valuation:**

The pre-retirement mortality assumption was changed from the RP-2000 Combined Healthy Mortality Table projected 11 years using Scale AA to the RP-2000 Employee Mortality Table projected 20 years using Scale AA for Non-Teachers and to the RP-2000 Combined Healthy White Collar Mortality Table projected 20 years using Scale AA for Teachers.

The mortality assumption for non-disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table projected 11 years using Scale AA to the RP-2000 Healthy Annuitant Mortality Table projected 15 years using Scale AA for Non-Teachers and to the RP-2000 Healthy Annuitant with Large Benefit Amount Adjustment Mortality Table projected 15 years with Scale AA for Teachers.

The mortality assumption for disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table projected 3 years set forward five years to the RP-2000 Healthy Annuitant Mortality Table projected five years using Scale AA using a three year set forward for males for Non-Teachers and to the RP-2000 Healthy Annuitant Mortality Table projected 15 years using Scale AA for Teachers.

The assumed rates of disability have been decreased by 50% for Group 1 and 2 employees and increased by 25% for Group 4 employees to better reflect past experience and future expectations for Non-Teachers.

The retirement, turnover and disability assumptions for Teachers have been changed to reflect the assumptions being used in the January 1, 2013 Commonwealth Actuarial Valuation Report of the Massachusetts Teachers' Retirement System dated October 31, 2013.

The future over-65 enrollment assumption was revised as a result of the revisions to Section 18A of Chapter 32B.

#### **SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45**

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The per capita health care costs were updated to reflect current experience.

The trend assumption was revised.

The excise tax on high cost health plans beginning in 2018 was included in this valuation.

The discount rate was increased from 7.25% to 7.50% for the City based on the City's funding policy and the funded discount rate was lowered from 7.75% to 7.50%.

The Projected Unit Credit cost method was changed to allocate benefits from date of hire to date of retirement. Previously, benefits were allocation from date of hire to date of first eligibility.

## SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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### EXHIBIT III Summary of Plan

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This exhibit summarizes the major benefit provisions as included in the valuation. To the best of our knowledge, the summary represents the substantive plans as of the measurement date. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

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#### **Eligibility:**

Retired and receiving a pension from the State Boston Retirement System or Massachusetts State Teachers Retirement System.

*Members hired before  
April 2, 2012*

#### **Group 1 and Group 2 (including Teachers):**

- Retirees with at least 10 years of creditable service are eligible at age 55;
- Retirees with at least 20 years of creditable service are eligible at any age.

#### **Group 4**

- Retirees are eligible at age 55;
- Retirees with at least 20 years of creditable service are eligible at any age.

*Members hired on or  
after April 2, 2012*

#### **Group 1 (including Teachers):**

- Retirees with at least 10 years of creditable service are eligible at age 60.

#### **Group 2**

- Retirees with at least 10 years of creditable service are eligible at age 55.

#### **Group 4**

- Retirees are eligible at age 55;
- Retirees with at least 10 years of creditable service are eligible at age 50.

**Disability:** Accidental (job-related) Disability has no age or service requirement. Ordinary (non-job related) Disability has no age requirement but requires 10 years of creditable service.

#### SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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**Pre-Retirement Death:** Surviving spouses of members who die in active service on Accidental (job-related) Death are eligible at any age. Surviving spouses of members who die in active service on Ordinary (non-job related) Death are eligible after two years of service.

**Post-Retirement Death:** Surviving spouse is eligible.

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**Benefit Types:**

Medical and prescription drug benefits are provided to all eligible retirees not enrolled in Medicare through a variety of plans offered by Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim HealthCare (including the BMC Advantage HMO), and Neighborhood Health Plan. Medical and prescription drug benefits are provided to retirees enrolled in Medicare through supplemental and Medicare Advantage plans offered by Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim HealthCare, and Tufts Health Plan. The City of Boston also pays 50% of the retiree life insurance premium and reimburses retirees 50% of their Medicare Part B premium.

**Medicare Part B Penalty:**

Penalty is estimated for the retirees assumed to be effected by the revised Section 18A of Chapter 32B. Number of penalties is estimated to be 2,463.

**Duration of Coverage:**

Lifetime.

**Dependent Benefits:**

Medical and Prescription Drugs.

**Dependent Coverage:**

Benefits are payable to a spouse for their lifetime, regardless of when the retirees dies.

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### Retiree Contributions:

Premium rates and retiree contributions as of July 1, 2013 are summarized below:

	Subscribers			<i>Retirees 65 and over</i>	Monthly Premium (Effective 7/1/2013)	City cost (\$)	Retiree cost (\$)	Retiree cost (%)
	Active	Retiree	Total					
<b><u>Non-Medicare Actives and Retirees</u></b>								
Harvard Pilgrim HMO								
Individual	4,730	1,065	5,795	394	\$683.11	\$563.57	\$119.54	17.50%
Family	6,670	976	7,646	215	\$1,837.45	\$1,515.90	\$321.55	17.50%
Neighborhood Health Plan HMO								
Individual	832	80	912	42	\$599.13	\$494.28	\$104.85	17.50%
Family	924	58	982	17	\$1,587.70	\$1,309.85	\$277.85	17.50%
BMC Advantage HMO								
Individual	56	0	56	0	\$683.11	\$563.57	\$119.54	17.50%
Family	12	2	14	0	\$1,837.45	\$1,515.90	\$321.55	17.50%
BCBS Blue Choice POS								
Individual	334	136	470	74	\$777.28	\$563.53	\$213.75	27.50%
Family	295	89	384	31	\$2,005.38	\$1,453.90	\$551.48	27.50%
Harvard Pilgrim POS								
Individual	612	116	728	41	\$728.45	\$564.55	\$163.90	22.50%
Family	542	78	620	17	\$1,959.49	\$1,518.60	\$440.89	22.50%
BCBS Blue Care Elect Preferred PPO								
Individual	183	666	849	440	\$1,080.99	\$783.72	\$297.27	27.50%
Family	154	150	304	44	\$2,507.90	\$1,818.23	\$689.67	27.50%
<b><u>Non-Medicare Total</u></b>	<b>15,344</b>	<b>3,416</b>	<b>18,760</b>	<b>1,315</b>				

## SECTION 4: Supporting Information for the City of Boston June 30, 2013 Measurement Under GASB 43 and 45

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				Monthly Premium (Effective 7/1/2013)	City cost (\$)	Retiree cost (\$)	Retiree cost (%)
<b><u>Medicare*</u></b>							
BCBS Master Medical Part A&B Carveout	1	2,451	2,452	\$436.32	\$327.24	\$109.08	25.0%
<b><u>Medicare Supplement Plans</u></b>							
BCBS Managed Blue for Seniors	0	238	238	\$352.83	\$317.55	\$35.28	10.0%
Tufts Medicare Preferred Supplement**	0	814	814	\$352.00	\$316.80	\$35.20	10.0%
Harvard Pilgrim Medicare Enhance**	1	2,071	2,072	\$378.62	\$340.76	\$37.86	10.0%
<b><u>Medicare Advantage Plans</u></b>							
Medicare HMO Blue**	0	38	38	\$237.97	\$214.17	\$23.80	10.0%
Tufts Medicare Preferred HMO**	0	146	146	\$252.00	\$226.80	\$25.20	10.0%
<b><u>Total***</u></b>		<b>15,346</b>	<b>9,174</b>				

\* Effective July 1, 2015, retirees will pay an additional 1% of the premium cost for all Medicare plans.

\*\* Monthly premium rate is effective January 1, 2014.

\*\*\* In addition, there are 5,749 spouses of retirees covered under an individual or family policy.

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### Plan Changes

Since the Prior Valuation: None

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