

# City of Cambridge Contributory Retirement System

Actuarial Valuation and Review as of  
January 1, 2014





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*September 10, 2014*

*Retirement Board*

*City of Cambridge Contributory Retirement System*

*100 CambridgePark Drive, Suite 101*

*Cambridge, MA 02140*

*Dear Board Members:*

*We are pleased to submit this Actuarial Valuation and Review as of January 1, 2014. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2015 and later years and analyzes the preceding two years' experience.*

*This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census information and financial information on which our calculations were based was prepared by the staff of the Cambridge Retirement System. That assistance is gratefully acknowledged.*

*The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.*

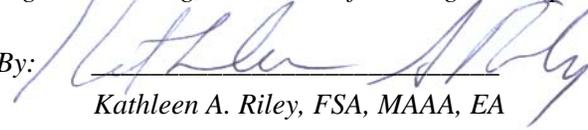
*The actuarial calculations were directed under my supervision. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in my opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.*

*We look forward to reviewing this report at your next meeting and to answering any questions.*

*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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## SECTION 1: Valuation Summary for the City of Cambridge Contributory Retirement System

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### Purpose

This report has been prepared by Segal Consulting to present a valuation of the City of Cambridge Contributory Retirement System as of January 1, 2014. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of M.G.L., Chapter 32;
- The characteristics of covered active participants, inactive participants, and retired participants and beneficiaries as of January 1, 2014;
- The assets of the Plan as of December 31, 2013;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

### Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

1. The actuarial valuation report as of January 1, 2014 is based on financial information as of that date. Changes in the value of assets subsequent to that date, to the extent that they exist, are not reflected.
2. During the plan years ended 2012 and 2013, the market value rates of return were 14.59% and 20.14%, respectively. Because the actuarial value of assets gradually recognizes market value fluctuations over a five-year period, the actuarial rates of return for the plan years ended 2012 and 2013 were 2.32% and 12.82%, respectively. The actuarial value of assets as of December 31, 2013 was \$949.7 million, or 90.8% of the market value of assets of \$1.0 billion (as reported in the Annual Statement). As of December 31, 2011, the actuarial value of assets was 108.3% of market value.
3. As indicated in Section 2, Subsection B of this report, the total unrecognized investment gain as of December 31, 2013 was \$96.1 million. This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of investment losses derived from future experience. This implies that earning the assumed rate of investment return (net of investment expenses) per year on a **market value** basis will result in investment gains on the actuarial value of assets in the next few years. The unrecognized investment gains are not reflected in the funding schedule.

## SECTION 1: Valuation Summary for the City of Cambridge Contributory Retirement System

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4. This valuation reflects the following changes in actuarial assumptions and methods:
  - The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.
  - The investment return assumption was lowered from 8.00% to 7.875%.
  - The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 17 years with Scale AA.
  - The mortality assumption for disabled participants was changed from the RP-2000 Combined Healthy Mortality Table set forward five years projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table set forward five years projected 17 years with Scale AA.
  - Rates of disability were revised to more accurately reflect recent experience.
  - The assumed retirement age for inactive vested participants was changed from age 65 to age 60 for Group 1 and 2 members and remained the same at age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, the assumption is 60 for Group 1, 55 for Group 2, and 50 for Group 4.
  - The administrative expense assumption was increased from \$925,000 for calendar 2012 to \$1,100,000 for calendar 2014.

Changing these assumptions increased the unfunded liability by \$33.8 million and the normal cost by \$65,000.

5. The following plan changes are included in this valuation:
  - Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.
  - As permitted by Section 63 of Chapter 139 of the Acts of 2012, the Board has increased the Section 101 annual allowance from \$6,000 to \$9,000.
6. The unfunded actuarial accrued liability has increased by \$12.4 million from \$237.8 million as of January 1, 2012 to \$250.2 million as of January 1, 2014. The increase is due to the investment loss on an actuarial basis and the assumption changes and plan changes described above, partially offset by an experience gain detailed in Chart 13 of the report.

## SECTION 1: Valuation Summary for the City of Cambridge Contributory Retirement System

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7. The recommended contribution for fiscal 2015 was set at the City's previously budgeted amount of \$35,475,814, plus an additional contribution of \$300,000, for a total amount of \$35,775,814. In fiscal 2016 and later years, the recommended contribution will be the prior year's budgeted amount increased 5.85% plus an additional contribution of \$300,000. This will result in a total fiscal 2016 appropriation of \$37,851,149 and a total fiscal 2017 appropriation of \$40,047,891. Under this funding schedule, the System will be fully funded by 2026, three years earlier than the funding schedule adopted with the prior valuation. Chart 16 in Section 2 shows the detail of the funding schedule.

As noted above, unrecognized investment gains are not reflected in the funding schedule this year. The funding schedule approved by the Board with the prior valuation reflected unrecognized investment losses of \$64.1 million.

8. The funded ratio has increased from 77.8% as of January 1, 2012 to 79.1% as of January 1, 2014 on an actuarial value basis. On a market value basis, the funded ratio increased from 71.8% to 87.2%.
9. Section 4 includes the disclosure information required by Governmental Accounting Standards Board (GASB) Statements No. 25 and 27. Section 5 shows the format of the disclosure information required by GASB Statements No. 67 and 68. The exhibits in Section 5 will be completed at the end of the year when December 31, 2014 financial information is available. At that time, the liabilities will be projected to the end of the year and the allocations to each employer will be determined.

**SECTION 1: Valuation Summary for the City of Cambridge Contributory Retirement System**

**Summary of Key Valuation Results**

	<b>2014</b>	<b>2012</b>
<b>Contributions for fiscal year beginning July 1:</b>		
Recommended for fiscal 2015 and 2013	\$35,775,814	\$31,962,897
Recommended for fiscal 2016 and 2014	37,851,149	33,815,176
Recommended for fiscal 2017 and 2015	40,047,891	35,775,814
<b>Funding elements for plan year beginning January 1:</b>		
Normal cost, including administrative expenses	\$30,891,673	\$30,579,850
Market value of assets	1,045,733,743	768,229,036
Actuarial value of assets	949,671,604	832,296,715
Actuarial accrued liability	1,199,887,878	1,070,070,414
Unfunded actuarial accrued liability	250,216,274	237,773,699
Funded ratio based on the market value of assets	87.15%	71.79%
Funded ratio based on the actuarial value of assets	79.15%	77.78%
<b>Demographic data for plan year beginning January 1:</b>		
Number of retired participants and beneficiaries	1,966	1,893
Number of inactive participants entitled to a return of their employee contributions	812	1,041
Number of inactive participants with a vested right to a deferred or immediate benefit	130	113
Number of active participants	3,145	3,332
Total payroll*	\$208,967,363	\$208,898,481
Average payroll*	66,444	62,695

\* Payroll figures are for the prior calendar year.

**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

**A. PARTICIPANT DATA**

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, inactive participants, retired participants and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A and B.

*A historical perspective of how the participant population has changed over the past nine valuations can be seen in this chart.*

**CHART 1**  
**Participant Population: 1997 – 2013**

<b>Year Ended December 31</b>	<b>Active Participants</b>	<b>Inactive Participants*</b>	<b>Retired Participants and Beneficiaries</b>	<b>Ratio of Non-Actives to Actives</b>
1997	3,400	380	1,606	0.58
1999	3,655	392	1,629	0.55
2001	3,870	675	1,662	0.60
2003	3,825	822	1,746	0.67
2005	3,739	1,070	1,739	0.75
2007	4,119	918	1,756	0.65
2009	3,614	1,174	1,809	0.83
2011	3,332	1,154	1,893	0.91
2013	3,145	942	1,966	0.92

*\*Excludes terminated participants due a refund of employee contributions prior to 2001*

**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

**Active Participants**

Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 3,145 active participants with an average age of 47.8, average years of service of 14.3 years and average payroll of \$66,444. The 3,332 active participants in the prior valuation had an average age of 47.3, average service of 13.5 years and average payroll of \$62,695.

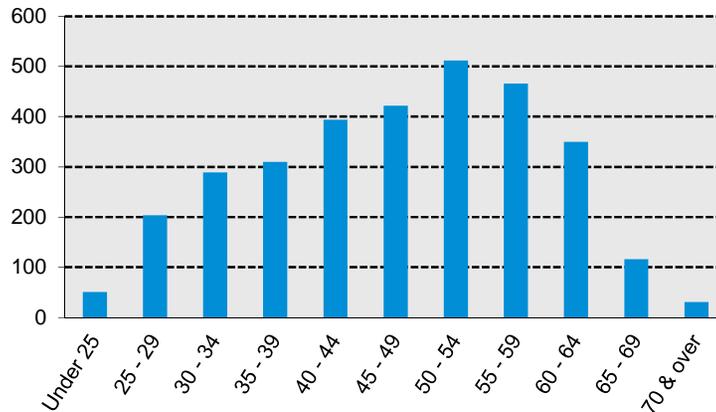
Among the active participants, there were no participants with unknown age and/or service information.

**Inactive Participants**

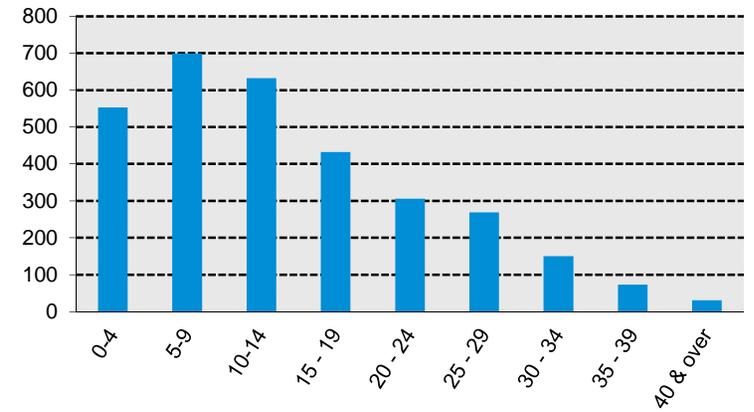
In this year's valuation, there were 130 participants with a vested right to a deferred or immediate vested benefit and 812 participants entitled to a return of their employee contributions.

*These graphs show a distribution of active participants by age and by years of service.*

**CHART 2**  
**Distribution of Active Participants by Age as of December 31, 2013**



**CHART 3**  
**Distribution of Active Participants by Years of Service as of December 31, 2013**



**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

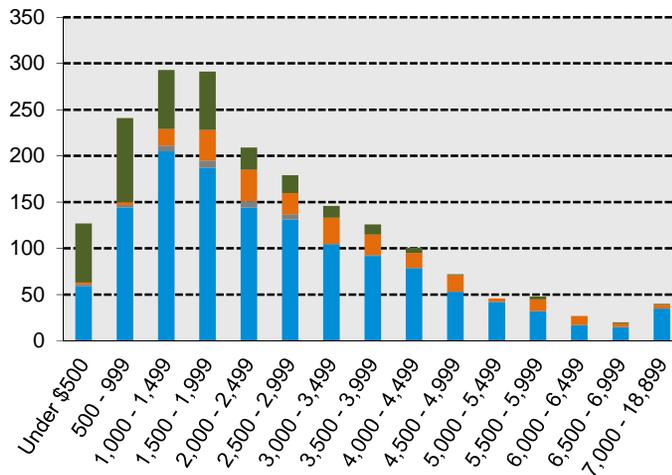
**Retired Participants and Beneficiaries**

As of December 31, 2013, 1,605 retired participants and 361 beneficiaries were receiving total monthly benefits of \$4,923,131, excluding COLAs reimbursed by the Commonwealth. For comparison, in the previous valuation, there were 1,523 retired participants and 367 beneficiaries receiving monthly benefits of \$4,348,113, excluding COLAs reimbursed by the Commonwealth. There were no retired participants in suspended status this year and 3 retired participants in the prior valuation.

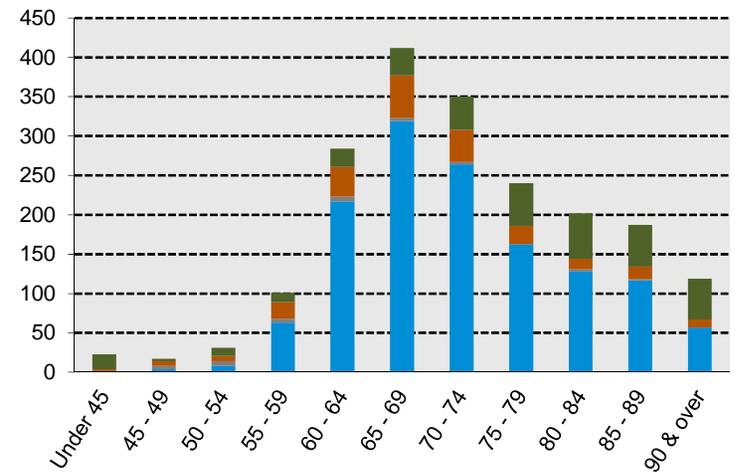
*These graphs show a distribution of the current retired participants and beneficiaries based on their monthly amount and age, by type of pension.*

- Beneficiaries
- Accidental Disability
- Ordinary Disability
- Superannuation

**CHART 4**  
**Distribution of Retired Participants and Beneficiaries by Type and by Monthly Amount as of December 31, 2013**



**CHART 5**  
**Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2013**



**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

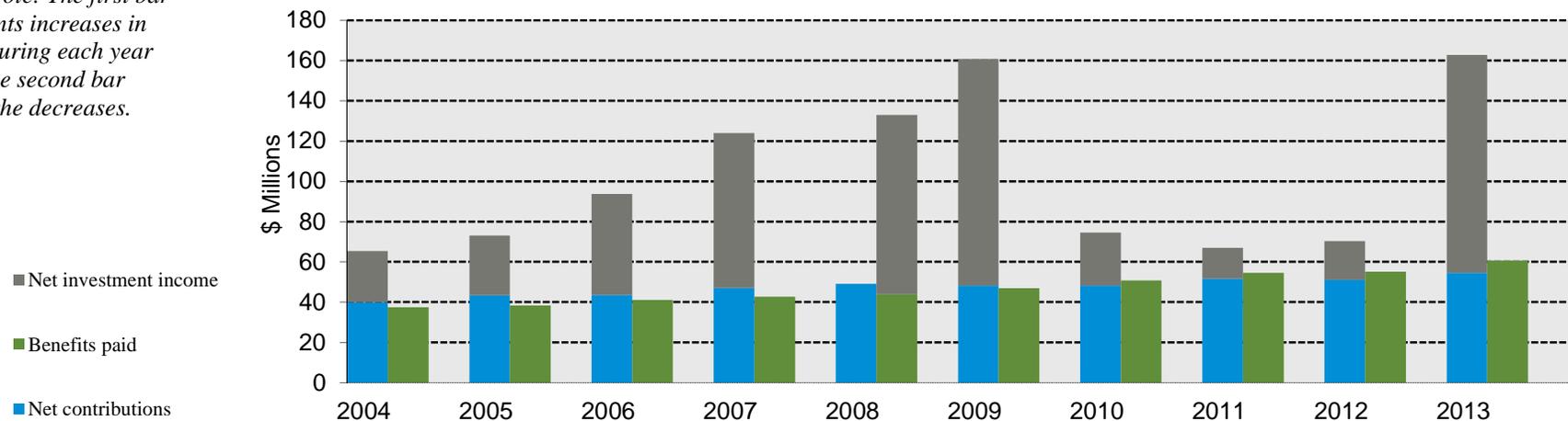
**B. FINANCIAL INFORMATION**

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

Retirement plan assets change as a result of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits C and D.

*The chart depicts the components of changes in the actuarial value of assets over the last ten years. Note: The first bar represents increases in assets during each year while the second bar details the decreases.*

**CHART 6**  
**Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2004 – 2013**



## SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

*The chart shows the determination of the actuarial value of assets as of the valuation date.*

### CHART 7 Determination of Actuarial Value of Assets

	Year Ended	
	December 31, 2013	December 31, 2012
1. Market value of assets, December 31, 2013	\$1,045,733,743	\$876,084,795
2. Calculation of unrecognized return*	Original Amount	Unrecognized Return
(a) Year ended December 31, 2013	\$105,973,263	\$84,778,610
(b) Year ended December 31, 2012	50,523,226	30,313,936
(c) Year ended December 31, 2011	-67,530,762	-27,012,305
(d) Year ended December 31, 2010	39,909,491	7,981,898
(e) Year ended December 31, 2009	63,324,242	0
(f) Total unrecognized return		96,062,139
3. Preliminary actuarial value: (1) - (2f)		949,671,604
4. Adjustment to be within 20% corridor		0
5. Final actuarial value of assets as of December 31, 2013: (3) + (4)		<u>\$949,671,604</u>
6. Actuarial value as a percentage of market value: (5) ÷ (1)		90.8%
7. Amount deferred for future recognition: (1) - (5)		\$96,062,139

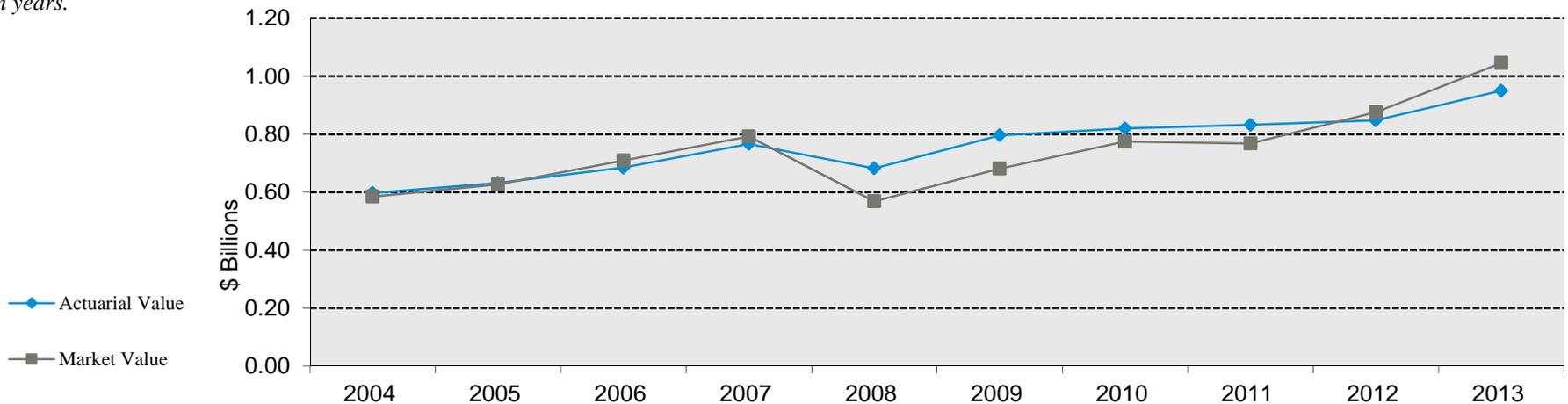
\* Unrecognized return is the difference between total return and the expected return on a market value basis and is recognized over a five-year period.

## SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System

Both the actuarial value and market value of assets are representations of the Cambridge Retirement System's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Cambridge Retirement System's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

*This chart shows the change in the actuarial value of assets versus the market value over the past ten years.*

**CHART 8**  
**Actuarial Value of Assets vs. Market Value of Assets as of December 31, 2004 – 2013**



**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

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**C. ACTUARIAL EXPERIENCE**

To calculate the required contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term

development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total experience gain for the two-year period ended December 31, 2013 is \$14,406,786. A discussion of the major components of the actuarial experience is on the following pages.

*This chart provides a summary of the actuarial experience over the past two years.*

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**CHART 9**  
**Actuarial Experience for Two-Year Period Ended December 31, 2013**

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1. Net loss from investments*	-\$10,252,333
2. Net loss from administrative expenses	-37,939
3. Net gain from other experience**	<u>24,697,058</u>
4. Net experience gain: (1) + (2) + (3)	\$14,406,786

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\* Details in Chart 10

\*\* Details in Chart 13

**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

**Investment Rate of Return**

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Cambridge Retirement System’s investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets was 8.00% for 2013 and 2012. The actual rates of return on an actuarial basis for the 2013 and 2012 plan years were 12.82% and 2.32%, respectively.

Since the actual return for the two-year period was less than the assumed return, the Cambridge Retirement System experienced an actuarial loss of \$10,252,333 (including an adjustment for interest) during the two-year period ending December 31, 2013 with regard to its investments.

*This chart shows the gain/(loss) due to investment experience.*

**CHART 10  
Actuarial Value Investment Experience**

	Year Ended	
	December 31, 2013	December 31, 2012
1. Actual return	\$108,280,095	\$19,226,418
2. Average value of assets	844,473,768	830,313,162
3. Actual rate of return: (1) ÷ (2)	12.82%	2.32%
4. Assumed rate of return	8.00%	8.00%
5. Expected return: (2) x (4)	\$67,557,902	\$66,425,053
6. Actuarial gain/(loss): (1) – (5)	<u>\$40,722,193</u>	<u>-\$47,198,635</u>

## SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the market value investment return for the last ten years, including five-year and ten-year averages.

Based upon this experience and future expectations, we have decreased the assumed rate of return from 8.00% to 7.875%.

### CHART 11

#### Investment Return – Actuarial Value vs. Market Value: 2004 - 2013

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2004	\$25,462,238	4.46%	\$49,379,640	9.25%
2005	29,628,112	4.94	37,534,023	6.39
2006	50,222,320	7.93	79,521,825	12.66
2007	77,029,039	11.21	78,925,558	11.10
2008	-89,051,383	-11.59	-229,027,048	-28.81
2009	112,693,653	16.51	111,691,775	19.63
2010	26,347,460	3.32	96,012,756	14.12
2011	15,318,165	1.87	-3,728,564	-0.48
2012	19,226,418	2.32	111,822,865	14.59
2013	<u>108,280,095</u>	12.82	<u>175,813,466</u>	20.14
Total	\$375,156,117		\$507,946,296	
	Five-year average return	7.10%		13.43%
	Ten-year average return	5.19%		7.34%

*Note: Each year's yield is weighted by the average asset value in that year.*

## SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

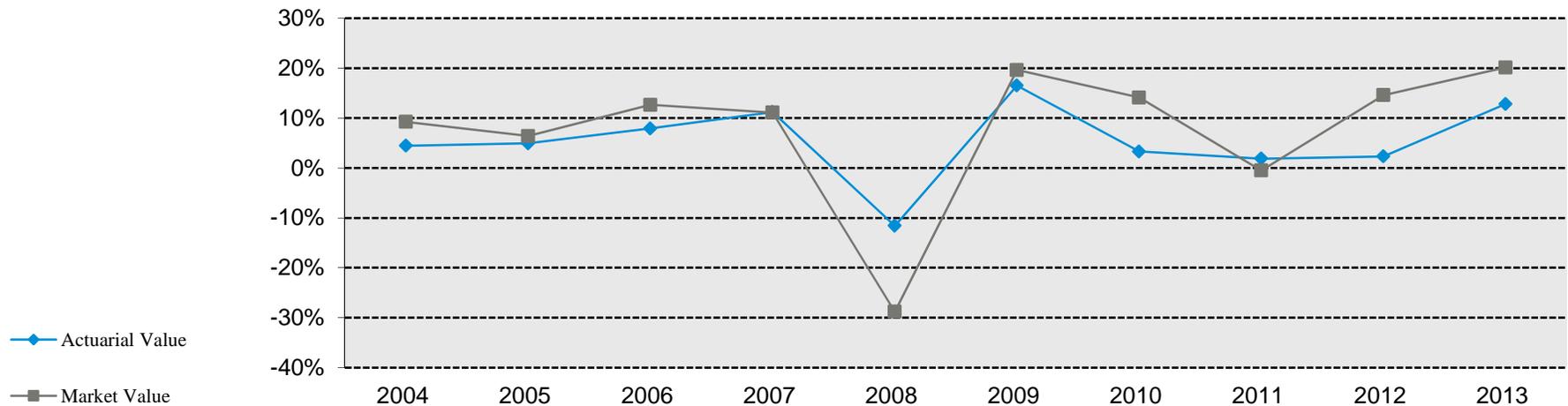
### Administrative Expenses

Administrative expenses for the years ended December 31, 2012 and 2013 were \$1,001,639 and \$986,283, respectively, compared to the assumption of \$925,000 for calendar 2012 and \$959,688 for calendar year 2013. This resulted in a loss of \$37,939 for the year. Based on budgeted expenses, we have increased the assumption to \$1,100,000 for calendar 2014.

*This chart illustrates how this leveling effect has actually worked over the years 2004 - 2013.*

**CHART 12**

**Market and Actuarial Rates of Return for Years Ended December 31, 2004 - 2013**



## SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System

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### Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net gain from this other experience for the two-year period ending December 31, 2013 amounted to \$24,697,058, which is 2.1% of the actuarial accrued liability.

A summary of the demographic gain/(loss) experience of the Cambridge Retirement System for the two-year period ending December 31, 2013 is shown in the chart below.

*The chart shows elements of the experience gain/(loss) for the most recent years.*

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### CHART 13

#### Experience Gain/(Loss) for the Two-Year Period Ended December 31, 2013

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1. Salary increase less than expected for continuing actives	\$7,687,966
2. More deaths than expected amongst retired members and beneficiaries	6,557,357
3. Miscellaneous experience	<u>10,451,735</u>
4. Total gain	\$24,697,058

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## SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System

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This valuation reflects the following changes in actuarial assumptions and methods:

- The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.
- The investment return assumption was lowered from 8.00% to 7.875%.
- The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 17 years using Scale AA.
- The mortality assumption for disabled participants was changed from the RP-2000 Combined Health Mortality Table set forward five years projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table set forward five years projected 17 years with Scale AA.
- The assumed retirement age for inactive vested participants hired prior to April 2, 2012 was changed from age 65 to age 60 for Group 1 and 2 members and remained the same at age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, the assumption is 60 for Group 1, 55 for Group 2, and 50 for Group 4.
- Rates of disability were revised to more accurately reflect recent experience.

- The administrative expense assumption was increased from \$925,000 for calendar 2012 to \$1,100,000 for calendar 2014.

Changing these assumptions resulted in a net increase in the unfunded actuarial accrued liability of \$33.8 million and a net increase in the employer normal cost of \$65,000

The following plan changes were included this valuation:

- Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.
- As permitted by Section 63 of Chapter 139 of the Acts of 2012, the Board has increased the Section 101 annual allowance from \$6,000 to \$9,000.

## SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System

The unfunded liability was expected to decrease from \$237.8 million as of January 1, 2012 to \$230.8 million as of January 1, 2014. The actuarial unfunded liability as of January 1, 2014 of \$250.2 million is \$19.4 million higher than expected as detailed in Chart 14 below.

### CHART 14

#### Development of Unfunded Actuarial Accrued Liability and (Gain)/Loss

	Year Ended	
	December 31, 2013	December 31, 2012
1. Unfunded actuarial accrued liability at beginning of year	\$235,629,315	\$237,773,699
2. Normal cost at beginning of year	31,497,246	30,579,850
3. Total contributions	-55,456,031	-52,108,190
4. Interest		
(a) For whole year on (1) + (2)	\$21,370,125	\$21,468,284
(b) For half year on (3)	<u>-2,218,241</u>	<u>-2,084,328</u>
(c) Total interest	<u>19,151,884</u>	<u>19,383,956</u>
5. Expected unfunded actuarial accrued liability	\$230,822,414	\$235,629,315
6. Changes due to:		
(a) Experience gain	-\$14,406,786	--
(b) Assumption and cost method changes	<u>33,800,646</u>	--
(c) Total changes	<u>19,393,860</u>	--
7. Unfunded actuarial accrued liability at end of year	<u>\$250,216,274</u>	--

**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

**D. RECOMMENDED CONTRIBUTION**

The amount of annual contribution required to fund the Plan is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability.

The recommended contribution for fiscal 2015 was set at the City’s previously budgeted amount of \$35,475,814, plus an additional contribution of \$300,000, for a total amount of \$35,775,814. In fiscal 2016 and later years, the recommended contribution will be the prior year’s budgeted amount increased 5.85% plus an additional

contribution of \$300,000. This will result in a total fiscal 2016 appropriation of \$37,851,149 and a total fiscal 2017 appropriation of \$40,047,891. Under this funding schedule, the System will be fully funded by 2026, three years earlier than the funding schedule adopted with the prior valuation. Chart 16 on the following page shows the detail of the funding schedule.

*The chart compares this valuation’s recommended contribution with the prior valuation.*

**CHART 15**  
**Recommended Contribution**

	Year Beginning January 1			
	2014		2012	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	\$29,791,673	13.63%	\$29,654,850	13.66%
2. Administrative expenses	1,100,000	0.50%	925,000	0.43%
3. Expected employee contributions	<u>-20,923,041</u>	<u>-9.57%</u>	<u>-20,461,630</u>	<u>-9.43%</u>
4. Employer normal cost: (1) + (2) + (3)	\$9,968,632	4.56%	\$10,118,220	4.66%
5. Actuarial accrued liability	1,199,887,878		1,070,070,414	
6. Actuarial value of assets	<u>949,671,604</u>		<u>832,296,715</u>	
7. Unfunded actuarial accrued liability: (5) - (6)	\$250,216,274		\$237,773,699	
8. Employer normal cost projected to July 1, 2014 and 2012, adjusted for timing	10,546,055	4.74%	10,671,725	4.85%
9. Projected unfunded actuarial accrued liability	259,881,854		247,101,676	
10. Payment on projected unfunded actuarial accrued liability including additional \$300,000, adjusted for timing	25,229,759	11.33%	21,291,172	9.66%
11. Total recommended contribution: (8) + (10), adjusted for timing	<u>\$35,775,814</u>	<u>16.07%</u>	<u>\$31,962,897</u>	<u>14.51%</u>
12. Projected payroll	\$222,689,083		\$220,318,531	

*Note: Recommended contributions are assumed to be paid in the middle of the fiscal year.*

**SECTION 2: Valuation Results for the City of Cambridge Contributory Retirement System**

**CHART 16**  
**Funding Schedule**

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Liability	(4) Total Plan Cost: (2) + (3)	(5) Additional Payment	(6) Total Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(7) Percent Change in Total Plan Cost
2015	\$10,546,055	\$24,929,759	\$35,475,814	\$300,000	\$259,881,854	5.85%
2016	10,941,532	26,609,617	37,551,149	300,000	254,143,193	5.85%
2017	11,351,839	28,396,052	39,747,891	300,000	246,207,863	5.85%
2018	11,777,533	30,295,610	42,073,143	300,000	235,792,184	5.85%
2019	12,219,191	32,315,231	44,534,422	300,000	222,583,333	5.85%
2020	12,677,410	34,462,276	47,139,686	300,000	206,236,649	5.85%
2021	13,152,813	36,744,545	49,897,358	300,000	186,372,681	5.85%
2022	13,646,044	39,170,309	52,816,353	300,000	162,573,995	5.85%
2023	14,157,770	41,748,340	55,906,110	300,000	134,381,693	5.85%
2024	14,688,687	44,487,930	59,176,617	300,000	101,291,630	5.85%
2025	15,239,513	47,398,936	62,638,449	300,000	62,750,307	5.85%
2026	15,810,994	18,551,529	34,362,524	300,000	18,150,399	-45.14%
2027	16,403,907	--	16,403,907	--	--	-52.26%

*Notes: Recommended contributions are assumed to be paid in the middle of the fiscal year  
Item (2) is assumed to increase 3.75% per year.  
Does not reflect deferred investment gains.  
Projected normal cost does not reflect the future impact of pension reform for new hires.  
Assumes contribution of budgeted amount for fiscal year 2015.*

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT A**

**Table of Plan Coverage**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2013</b>	<b>2011</b>	
<b>Active participants in valuation:</b>			
Number	3,145	3,332	-5.6%
Average age	47.8	47.3	N/A
Average service	14.3	13.5	N/A
Total payroll*	\$208,967,363	\$208,898,481	0.0%
Average payroll*	66,444	62,695	6.0%
Member contributions	219,143,024	206,284,187	6.2%
<b>Inactive participants entitled to a return of their employee contributions</b>			
	812	1,041	-22.0%
<b>Inactive participants with a vested right to a deferred or immediate benefit</b>			
	130	113	15.0%
<b>Retired participants:</b>			
Number in pay status	1,339	1,259	6.4%
Average age	72.0	72.3	N/A
Average monthly benefit	\$2,667	\$2,452	8.8%
Number in suspended status	0	3	-100.0%
<b>Disabled participants:</b>			
Number in pay status	266	264	0.8%
Average age	68.1	67.6	N/A
Average monthly benefit	\$3,104	\$2,902	7.0%
<b>Beneficiaries in pay status:</b>			
Number in pay status	361	367	-1.6%
Average age	75.0	74.4	N/A
Average monthly benefit	\$1,459	1,349	8.2%

\* Payroll figures are for the prior calendar year.

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT B**

**Participants in Active Service as of December 31, 2013  
By Age, Years of Service, and Average Payroll**

Age	Years of Service									
	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & over
Under 25	51	51	--	--	--	--	--	--	--	--
	\$37,990	\$37,990	--	--	--	--	--	--	--	--
25 - 29	204	149	55	--	--	--	--	--	--	--
	45,266	42,604	\$52,477	--	--	--	--	--	--	--
30 - 34	289	109	135	44	1	--	--	--	--	--
	55,139	45,600	61,306	\$60,160	\$41,378	--	--	--	--	--
35 - 39	310	67	112	97	33	1	--	--	--	--
	60,331	46,865	57,944	69,167	69,767	\$61,260	--	--	--	--
40 - 44	394	60	86	121	96	29	2	--	--	--
	68,536	47,801	65,376	66,366	81,635	87,731	\$50,644	--	--	--
45 - 49	422	33	94	88	108	62	37	--	--	--
	70,620	43,536	60,284	69,054	78,773	86,743	73,948	--	--	--
50 - 54	512	36	89	102	71	84	86	37	7	--
	70,188	41,926	60,910	63,168	69,957	81,041	84,467	\$82,831	\$65,646	--
55 - 59	466	26	63	93	57	69	73	57	23	5
	74,911	51,358	69,431	66,706	70,600	73,318	84,931	90,313	96,338	\$69,738
60 - 64	350	15	47	59	41	45	53	40	36	14
	74,434	60,065	63,390	67,786	66,721	77,237	80,913	83,901	87,475	83,385
65 - 69	116	7	13	20	21	15	16	12	5	7
	66,278	36,153	48,710	67,240	59,215	67,921	68,637	79,463	76,921	108,345
70 & over	31	--	5	8	4	1	2	4	2	5
	57,048	--	44,890	60,089	64,882	53,488	48,943	52,937	32,963	74,947
Total	3,145	553	699	632	432	306	269	150	73	31
	\$66,444	\$44,664	\$60,906	\$66,353	\$73,884	\$79,732	\$80,989	\$84,893	\$85,958	\$85,459

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT C**

**Summary Statement of Income and Expenses on an Actuarial Value Basis**

	Year Ended December 31, 2013	Year Ended December 31, 2012
<b>Net assets at actuarial value at the beginning of the year</b>	\$847,556,027	\$832,296,715
<b>Contribution income:</b>		
Employer contributions	\$33,815,176	\$31,962,897
Employee contributions	21,640,855	20,145,293
Less administrative expenses	<u>-986,283</u>	<u>-1,001,639</u>
Net contribution income	54,469,748	51,106,551
<b>Net investment income</b>	<u>108,280,094</u>	<u>19,226,418</u>
<b>Total income available for benefits</b>	\$162,749,842	\$70,332,969
<b>Less benefit payments:</b>		
Pensions and annuities	-\$57,346,856	-\$53,152,454
Net (8)(c) reimbursements	182,553	746,524
Refunds to members	-3,495,624	-2,694,727
Workers Compensation Settlements	25,662	27,000
Net benefit payments	-\$60,634,265	-\$55,073,657
<b>Change in reserve for future benefits</b>	\$102,115,577	\$15,259,312
<b>Net assets at actuarial value at the end of the year</b>	\$949,671,604	\$847,556,027

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT D**

**Development of the Fund Through December 31, 2013**

<b>Year Ended December 31</b>	<b>Employer Contributions</b>	<b>Employee Contributions</b>	<b>Other Contributions</b>	<b>Net Investment Return*</b>	<b>Administrative Expenses</b>	<b>Benefit Payments</b>	<b>Actuarial Value of Assets at End of Year</b>
2004	\$23,977,875	\$16,696,190	\$0	\$25,462,238	\$708,462	\$37,512,633	\$597,415,263
2005	24,577,322	19,558,281	0	29,628,112	768,175	38,351,476	632,059,327
2006	25,220,175	19,077,798	3,917	50,222,320	794,692	41,076,592	684,712,253
2007	28,066,908	19,725,429	0	77,029,038	830,697	42,672,369	766,030,562
2008	26,891,503	22,966,497	4,430	-89,051,384	859,128	43,876,275	682,106,205
2009	27,727,711	21,199,168	0	112,693,653	805,680	46,905,287	796,015,770
2010	28,553,542	20,501,312	0	26,347,460	891,447	50,743,313	819,783,324
2011	32,212,987	20,322,105	0	15,318,166	859,734	54,480,133	832,296,715
2012	31,962,897	20,145,293	0	19,226,418	1,001,639	55,073,657	847,556,027
2013	33,815,176	21,640,855	0	108,280,094	986,283	60,634,265	949,671,604

\* Net of investment expenses.

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT E**

**Department Statistics as of December 31, 2013**

<b>Category</b>	<b>Fire</b>	<b>Police</b>	<b>Water</b>	<b>Sewer</b>	<b>Housing Redevel.</b>	<b>PHC</b>	<b>School</b>	<b>Other</b>	<b>Total</b>	
<b>Active participants in valuation</b>										
Number	272	274	49	205	161	1	918	540	725	3,145
Average age	45.5	44.9	46.1	50.7	47.4	44.3	49.9	47.0	47.0	47.8
Average service	18.3	18.3	14.3	14.1	12.1	2.0	14.4	11.4	13.9	14.3
Total payroll	\$25,051,814	\$24,473,249	\$3,319,924	\$11,453,732	\$10,097,751	\$81,513	\$67,362,138	\$22,464,893	\$44,662,349	\$208,967,363
Average payroll	92,102	89,318	67,754	55,872	62,719	81,513	73,379	41,602	61,603	66,444
<b>Inactive participants entitled to a return of their employee contributions</b>										
	1	6	5	12	27	0	420	232	109	812
<b>Inactive participants with a vested right to a deferred or immediate benefit</b>										
	1	1	2	5	7	0	68	20	26	130
<b>Retired participants and beneficiaries in pay status</b>										
Retired participants	101	138	27	78	52	10	458	231	244	1,339
Disabled participants	90	53	7	24	14	0	34	31	13	266
Beneficiaries	66	72	20	58	22	4	42	39	38	361
Total number in pay status	257	263	54	160	88	14	534	301	295	1,966
Total monthly benefits	\$922,211	\$921,912	\$120,457	\$293,567	\$198,765	\$30,566	\$1,268,177	\$492,246	\$675,229	\$4,923,130
Average monthly benefit	3,588	3,505	2,231	1,835	2,259	2,183	2,375	1,635	2,289	2,504

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT F**

**Department Results as of January 1, 2014  
– Estimated Payroll Allocation for Fiscal 2015 – 2017**

<b>Category</b>	<b>Fire</b>	<b>Police</b>	<b>Water</b>	<b>Sewer</b>	<b>Housing</b>	<b>Redevel.</b>	<b>PHC</b>	<b>School</b>	<b>Other</b>	<b>Total</b>
1. Total normal cost	\$5,174,949	\$4,948,313	\$371,524	\$1,516,814	\$1,297,467	\$12,990	\$8,351,540	\$2,886,152	\$5,231,924	\$29,791,673
2. Administrative expenses	191,075	182,707	13,718	56,005	47,906	480	308,364	106,566	193,179	1,100,000
3. Expected employee contributions	<u>-2,504,358</u>	<u>-2,466,706</u>	<u>-331,824</u>	<u>-1,111,799</u>	<u>-1,025,493</u>	<u>-8,792</u>	<u>-6,896,832</u>	<u>-2,167,315</u>	<u>-4,409,922</u>	<u>-20,923,041</u>
4. Employer normal cost: (1) + (2) + (3)	\$2,861,666	\$2,664,314	\$53,418	\$461,020	\$319,880	\$4,678	\$1,763,072	\$825,403	\$1,015,181	\$9,968,632
5. Employer normal cost as a percent of payroll	10.91%	10.39%	1.54%	3.85%	3.03%	5.48%	2.50%	3.52%	2.17%	4.56%
6. Actuarial accrued liability	\$194,578,499	\$193,452,033	\$22,265,179	\$63,859,438	\$45,671,507	\$3,163,580	\$360,890,978	\$112,516,490	\$203,490,174	\$1,199,887,878
7. Actuarial value of assets	<u>154,002,452</u>	<u>153,110,891</u>	<u>17,622,153</u>	<u>50,542,635</u>	<u>36,147,489</u>	<u>2,503,869</u>	<u>285,633,284</u>	<u>89,053,084</u>	<u>161,055,747</u>	<u>949,671,604</u>
8. Unfunded actuarial accrued liability: (6) – (7)	\$40,576,047	\$40,341,142	\$4,643,026	\$13,316,803	\$9,524,018	\$659,711	\$75,257,694	\$23,463,406	\$42,434,427	\$250,216,274
9. Projected calendar year payroll	26,227,202	25,631,739	3,465,758	11,968,223	10,543,063	85,385	70,546,790	23,452,440	46,706,943	218,627,543
10. Approximate payroll allocation of fiscal 2015	4,255,783	4,159,159	562,375	1,942,036	1,710,781	13,855	11,447,343	3,805,533	7,578,948	35,475,814
11. Approximate payroll allocation of fiscal 2016	4,504,746	4,402,470	595,274	2,055,645	1,810,861	14,666	12,117,013	4,028,157	8,022,317	37,551,149
12. Approximate payroll allocation of fiscal 2017	4,768,274	4,660,015	630,097	2,175,900	1,916,797	15,524	12,825,860	4,263,804	8,491,622	39,747,891

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT F (continued)**

**Department Results as of January 1, 2014 – Allocation of Fiscal 2015 – 2017 Appropriation by Actuarial Cost**

<b>Category</b>	<b>Fire</b>	<b>Police</b>	<b>Water</b>	<b>Sewer</b>	<b>Housing</b>	<b>Redevel.</b>	<b>PHC</b>	<b>School</b>	<b>Other</b>	<b>Total</b>
1. Total normal cost	\$5,174,949	\$4,948,313	\$371,524	\$1,516,814	\$1,297,467	\$12,990	\$8,351,540	\$2,886,152	\$5,231,924	\$29,791,673
2. Administrative expenses	191,075	182,707	13,718	56,005	47,906	480	308,364	106,566	193,179	1,100,000
3. Expected employee contributions	<u>-2,504,358</u>	<u>-2,466,706</u>	<u>-331,824</u>	<u>-1,111,799</u>	<u>-1,025,493</u>	<u>-8,792</u>	<u>-6,896,832</u>	<u>-2,167,315</u>	<u>-4,409,922</u>	<u>-20,923,041</u>
4. Employer normal cost: (1) + (2) + (3)	\$2,861,666	\$2,664,314	\$53,418	\$461,020	\$319,880	\$4,678	\$1,763,072	\$825,403	\$1,015,181	\$9,968,632
5. Employer normal cost as a percent of payroll	10.91%	10.39%	1.54%	3.85%	3.03%	5.48%	2.50%	3.52%	2.17%	4.56%
6. Actuarial accrued liability	\$194,578,499	\$193,452,033	\$22,265,179	\$63,859,438	\$45,671,507	\$3,163,580	\$360,890,978	\$112,516,490	\$203,490,174	\$1,199,887,878
7. Actuarial value of assets	<u>154,002,452</u>	<u>153,110,891</u>	<u>17,622,153</u>	<u>50,542,635</u>	<u>36,147,489</u>	<u>2,503,869</u>	<u>285,633,284</u>	<u>89,053,084</u>	<u>161,055,747</u>	<u>949,671,604</u>
8. Unfunded actuarial accrued liability: (6) – (7)	\$40,576,047	\$40,341,142	\$4,643,026	\$13,316,803	\$9,524,018	\$659,711	\$75,257,694	\$23,463,406	\$42,434,427	\$250,216,274
9. Projected calendar payroll	26,227,202	25,631,739	3,465,758	11,968,223	10,543,063	85,385	70,546,790	23,452,440	46,706,943	218,627,543
10. Employer normal cost, projected to July 1, 2012, adjusted for timing	3,027,425	2,818,642	56,512	487,724	338,409	4,949	1,865,196	873,214	1,073,984	10,546,055
11. Projected unfunded accrued liability	42,143,455	41,899,476	4,822,381	13,831,217	9,891,920	685,195	78,164,815	24,369,772	44,073,621	259,881,852
12. Payment on remaining unfunded accrued liability	4,042,707	4,019,303	462,598	1,326,791	948,905	65,729	7,498,138	2,337,726	4,227,863	24,929,759
13. Fiscal 2015 appropriation: (10) + (12)	7,070,132	6,837,945	519,110	1,814,515	1,287,314	70,678	9,363,334	3,210,940	5,301,846	35,475,814
14. Fiscal 2016 appropriation	7,456,072	7,214,479	552,400	1,922,209	1,363,945	75,293	9,938,533	3,401,210	5,627,008	37,551,149
15. Fiscal 2017 appropriation	7,863,554	7,612,160	587,749	2,036,261	1,445,108	80,196	10,548,405	3,602,703	5,971,755	39,747,891

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT F (continued)**

**Unit Results as of January 1, 2014**

<b>Category</b>	<b>Housing</b>	<b>Redevelopment</b>	<b>PHC</b>	<b>City</b>	<b>Total</b>
1. Total normal cost	\$1,297,467	\$12,990	\$8,351,540	\$20,129,676	\$29,791,673
2. Administrative expenses	47,906	480	308,364	743,250	1,100,000
3. Expected employee contributions	<u>-1,025,493</u>	<u>-8,792</u>	<u>-6,896,832</u>	<u>-12,991,924</u>	<u>-20,923,041</u>
4. Employer normal cost: (1) + (2) + (3)	\$319,880	\$4,678	\$1,763,072	\$7,881,002	\$9,968,632
5. Employer normal cost as a percent of payroll	3.03%	5.48%	2.50%	5.73%	4.56%
6. Actuarial accrued liability	\$45,671,507	\$3,163,580	\$360,890,978	\$790,161,813	\$1,199,887,878
7. Actuarial value of assets	<u>36,147,489</u>	<u>2,503,869</u>	<u>285,633,284</u>	<u>625,386,962</u>	<u>949,671,604</u>
8. Unfunded actuarial accrued liability: (6) – (7)	\$9,524,018	\$659,711	\$75,257,694	\$164,774,851	\$250,216,274
9. Projected calendar year payroll	10,543,063	85,385	70,546,790	137,452,305	218,627,543
10. Payroll allocation - fiscal 2015	1,710,781	13,855	11,447,343	22,303,835	35,475,814
11. Payroll allocation - fiscal 2016	1,810,861	14,666	12,117,013	23,608,608	37,551,149
12. Payroll allocation - fiscal 2017	1,916,797	15,524	12,825,860	24,989,711	39,747,891
13. Actuarial allocation - fiscal 2015 appropriation	1,287,314	70,678	9,363,334	24,754,487	35,475,814
14. Actuarial allocation - fiscal 2016 appropriation	1,363,945	75,293	9,938,533	26,173,378	37,551,149
15. Actuarial allocation - fiscal 2017 appropriation	1,445,108	80,196	10,548,405	27,674,182	39,747,891

**SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System**

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**EXHIBIT G**

**Definitions of Pension Terms**

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The following list defines certain technical terms for the convenience of the reader:

**Assumptions or actuarial assumptions:**

The estimates on which the cost of the Plan is calculated including:

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age;
- (d) Withdrawal rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

**Normal cost:**

The amount of contributions required to fund the benefit allocated to the current year of service.

**Actuarial accrued liability for actives:**

The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

**Actuarial accrued liability for pensioners:**

The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

**Unfunded actuarial accrued liability:**

The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There are many approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

### SECTION 3: Supplemental Information for the City of Cambridge Contributory Retirement System

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**Amortization of the unfunded  
actuarial accrued liability:**

Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.

**Investment return:**

The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

## SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System

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### EXHIBIT I

#### Summary of Actuarial Valuation Results

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The valuation was made with respect to the following data supplied to us:

1. Retired participants as of the valuation date (including 361 beneficiaries in pay status)	1,966
2. Participants active during the year ended December 31, 2013 (with total accumulated contributions of \$219,143,024 and projected 2014 payroll as of January 1, 2014 of \$218,627,543)	3,145
3. Inactive participants entitled to a return of their contributions as of December 31, 2013	812
4. Inactive participants with a vested right to deferred or immediate benefit as of December 31, 2013	130

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The actuarial factors as of the valuation date are as follows:

1. Normal cost	\$29,791,673
2. Administrative expenses	1,100,000
3. Expected employee contributions	<u>-20,923,041</u>
4. Employer normal cost: (1) + (2) + (3)	\$9,968,632
5. Actuarial accrued liability	1,199,887,878
Retired participants and beneficiaries	\$554,064,734
Active participants	620,682,118
Inactive participants	25,141,026
6. Actuarial value of assets (\$1,045,733,743 at market value as reported in the Annual Statement)	949,671,604
7. Unfunded actuarial accrued liability: (5) – (6)	250,216,274

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**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

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**EXHIBIT I (continued)**

**Summary of Actuarial Valuation Results**

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The actuarial factors projected to July 1, 2014 are as follows:

1. Employer normal cost projected to July 1, 2014, adjusted for timing	\$10,546,055
2. Projected unfunded actuarial accrued liability	259,881,854
3. Payment on projected unfunded actuarial accrued liability, including additional \$300,000 contribution, adjusted for timing	25,229,759
4. Recommended contribution: (1) + (3), adjusted for timing	<u>\$35,775,814</u>
5. Projected payroll	\$222,689,083

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*Note: Recommended contributions are assumed to be paid in the middle of the fiscal year.*

**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

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**EXHIBIT II**

**Supplementary Information Required by the GASB - History of Employer Contributions**

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<b>Plan Year Ended December 31</b>	<b>Annual Required Contributions</b>	<b>Actual Contributions</b>	<b>Percentage Contributed</b>
2003	\$23,761,798	\$23,761,798	100.0%
2004	23,977,875	23,977,875	100.0%
2005	24,577,322	24,577,322	100.0%
2006	25,220,175	25,220,175	100.0%
2007	28,066,908	28,066,908	100.0%
2008	26,891,503	26,891,503	100.0%
2009	27,727,711	27,727,711	100.0%
2010	28,553,542	28,553,542	100.0%
2011	32,212,987	32,212,987	100.0%
2012	31,962,897	31,962,897	100.0%
2013	33,815,176	33,815,176	100.0%

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**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT III**

**Supplementary Information Required by the GASB - Schedule of Funding Progress**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded/ (Overfunded) 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>
01/01/1996	\$233,883,060	\$361,884,553	\$128,001,493	64.63%	\$114,484,265	111.81%
01/01/1998	342,787,664	436,216,298	93,428,634	78.58%	132,439,810	70.54%
01/01/2000*	424,606,168	510,972,656	86,366,488	83.10%	140,488,609	61.48%
01/01/2002	516,947,036	578,049,645	61,102,609	89.43%	167,302,844	36.52%
01/01/2004	569,500,055	655,106,691	85,606,636	86.93%	184,254,181	46.46%
01/01/2006	632,059,327	740,320,358	108,261,031	85.38%	201,087,686	53.84%
01/01/2008	766,030,562	833,034,229	67,003,667	91.96%	231,770,736	28.91%
01/01/2010	796,015,770	949,907,739	153,891,969	83.80%	232,842,117	66.09%
01/01/2012	832,296,715	1,070,070,414	237,773,699	77.78%	217,086,299	109.53%
01/01/2014	949,671,604	1,199,887,878	250,216,274	79.15%	218,627,543	114.45%

\* Reflects changes in asset method

## SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System

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### EXHIBIT IV

#### Supplementary Information Required by the GASB

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<b>Valuation date</b>	January 1, 2014
<b>Actuarial cost method</b>	Entry Age Normal Cost Method
<b>Amortization method</b>	Prior year's contribution increased 5.85% plus an additional contribution of \$300,000
<b>Remaining amortization period</b>	12 years from July 1, 2014
<b>Asset valuation method</b>	The difference between the expected return and the actual investment return on a market value basis is recognized over a five-year period.
<b>Actuarial assumptions:</b>	
Investment rate of return	7.875% (previously, 8.00%)
Projected salary increases	4.75%
Cost of living adjustments	3.00% of first \$14,000 of retirement income
<b>Plan membership:</b>	
Retired participants and beneficiaries receiving benefits	1,966
Inactive participants entitled to a return of their employee contributions	812
Inactive participants with a vested right to a deferred or immediate benefit	130
Active participants	<u>3,145</u>
Total	6,053

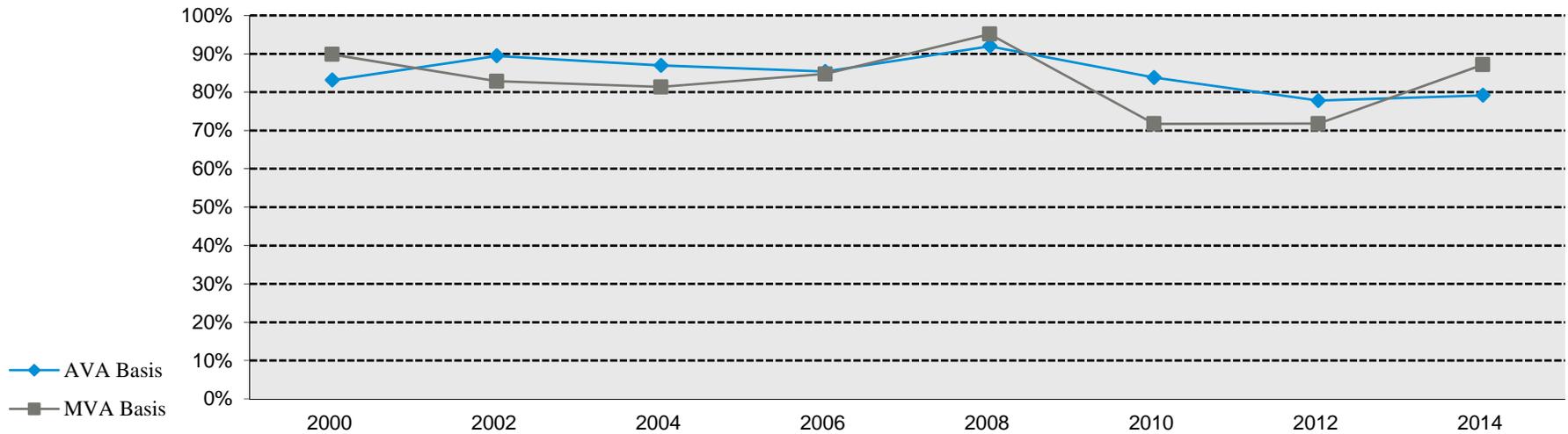
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**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT V  
Funded Ratio**

A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for this plan. On a market value basis, the funded ratio has increased from 71.79% as of January 1, 2012 to 87.15% as of January 1, 2014. On an actuarial basis, the funded ratio has increased from 77.78% as of January 1, 2012 to 79.15% as of January 1, 2014.



**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT VI**

**Actuarial Assumptions and Actuarial Cost Method**

**Mortality Rates:**

*Healthy:* RP-2000 Combined Healthy Mortality Table projected 17 years with Scale AA (Previously, RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA)

*Disabled Retiree:* RP-2000 Combined Healthy Mortality Table set forward five years projected 17 years with Scale AA (Previously, RP-2000 Combined Healthy Mortality Table set forward five years projected 12 years with Scale AA)

The mortality tables were determined to contain provisions appropriate to reasonably reflect future mortality improvement, based on a review of the mortality experience of the plan.

**Termination Rates before Retirement:**

Age	Mortality				Groups 1 and 2 - Rate (%)		Withdrawal	
	Current Male	Current Female	Previous Male	Previous Female	Disability		PHC	All Other Departments
					Current	Previous		
20	0.02	0.01	0.03	0.02	0.02	0.06	9.94	7.94
25	0.03	0.02	0.03	0.02	0.04	0.09	9.67	7.72
30	0.04	0.02	0.04	0.02	0.06	0.11	9.30	7.22
35	0.07	0.04	0.07	0.04	0.11	0.15	8.71	6.28
40	0.09	0.05	0.10	0.06	0.20	0.22	7.75	5.15
45	0.12	0.09	0.13	0.09	0.29	0.36	6.35	3.98
50	0.16	0.13	0.17	0.14	0.38	0.61	4.22	2.56
55	0.26	0.24	0.29	0.25	0.48	1.01	1.55	0.00
60	0.51	0.46	0.56	0.48	0.56	1.63	0.15	0.00

*Notes:* 50% of the disability rates shown represent accidental disability.  
 20% of the accidental disabilities will die from the same cause as the disability  
 50% of the death rates shown represent accidental death.

**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

Age	Mortality				Group 4 - Rate (%)		Withdrawal
	Current Male	Current Female	Previous Male	Previous Female	Disability		
					Current	Previous	
20	0.02	0.01	0.03	0.02	0.20	0.12	0.00
25	0.03	0.02	0.03	0.02	0.40	0.17	0.00
30	0.04	0.02	0.04	0.02	0.60	0.22	0.00
35	0.07	0.04	0.07	0.04	0.60	0.29	0.00
40	0.09	0.05	0.10	0.06	0.60	0.44	0.00
45	0.12	0.09	0.13	0.09	2.00	0.72	0.00
50	0.16	0.13	0.17	0.14	2.50	1.21	0.00
55	0.26	0.24	0.29	0.25	2.40	2.02	0.00
60	0.51	0.46	0.56	0.48	1.70	3.25	0.00

*Notes: 90% of the disability rates shown represent accidental disability.  
60% of the accidental disabilities will die from the same cause as the disability  
90% of the death rates shown represent accidental death.*

**Retirement Rates:**

Groups 1 and 2		Group 4	
Age	Rate (%)	Age	Rate (%)
55	5.0	50	5.0
56	2.0	51	2.0
57	2.0	52	2.0
58	2.0	53	2.0
59	2.0	54	2.0
60	5.0	55	25.0
61	2.0	56	2.0
62	25.0	57	2.0
63	5.0	58	2.0
64	5.0	59	2.0
65	10.0	60	25.0
66	10.0	61	10.0
67	100.0	62	10.0

**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

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<b>Retirement Rates:</b>	<b>Groups 1 and 2</b>		<b>Group 4</b>	
	<b>Age</b>	<b>Rate (%)</b>	<b>Age</b>	<b>Rate (%)</b>
	68	100.0	63	10.0
	69	100.0	64	10.0
	70	100.0	65	100.0

**Retirement Age for Inactive Vested Participants:** For participants hired prior to April 2, 2012, 60 (previously, 65) for Groups 1 and 2 and 55 for Group 4. For participants hired April 2, 2012 or later, 60 for Group 1, 55 for Group 2, and 50 for Group 4.

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**Unknown Data for Participants:** Same as those exhibited by participants with similar known characteristics.

**Family Composition:** 75% of participants are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their spouses.

**Benefit Election:** All participants are assumed to elect Option A.

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**Net Investment Return:** 7.875% (previously, 8.00%)

**Salary Increases:** 4.75%

**Interest on Employee Contributions:** 3.5%

**Administrative Expenses:** \$1,100,000 for calendar 2014, increasing 3.75% per year (previously, \$925,000 for calendar 2012, increasing 3.75% per year).

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**Total Service:** Total creditable service reported in the data.

**2013 Salary:** 2013 salaries are equal to salaries provided in the data except for new hires where salaries were annualized based on date of hire.

**Net 3(8)(c) Liability:** No liability is valued for benefits paid to or received from other municipal retirement systems.

## SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System

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<b>Actuarial Value of Assets:</b>	Market value of assets as reported in the System's Annual Statement less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected market return and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.
<b>Actuarial Cost Method:</b>	Entry Age Normal Actuarial Cost Method. Entry Age is the attained age of the participant minus total creditable service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary. Normal Cost is determined using the plan of benefits applicable to each participant. (Previously, Normal Cost was determined as if the current plan of benefits had always been in effect.)
<b>Changes in Assumptions:</b>	<p>This valuation reflects the following changes in actuarial assumptions:</p> <ul style="list-style-type: none"><li>➤ The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.</li><li>➤ The investment return assumption was lowered from 8.00% to 7.875%.</li><li>➤ The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 17 years using Scale AA.</li><li>➤ The mortality assumption for disabled participants was changed from the RP-2000 Combined Healthy Mortality Table set forward five years projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table set forward five years projected 17 years with Scale AA.</li><li>➤ The assumed retirement age for inactive vested participants hired prior to April 2, 2012 was changed from age 65 to age 60 for Group 1 and 2 members.</li><li>➤ Rates of disability were revised to more accurately reflect recent experience.</li><li>➤ The administrative expense assumption was increased from \$925,000 for calendar 2012 to \$1,100,000 for calendar 2014.</li></ul>

**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

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**EXHIBIT VII**  
**Summary of Plan Provisions**

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This exhibit summarizes the major provisions of Chapter 32 of the Laws of Massachusetts.

**Plan Year:** January 1 – December 31

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**Retirement Benefits**

Employees covered by the Contributory Retirement Law are classified into one of four groups depending on job classification. Group 1 comprises most positions in state and local government. It is the general category of public employees. Group 4 comprises mainly police and firefighters. Group 2 is for other specified hazardous occupations. (Officers and inspectors of the State Police are classified as Group 3.)

For employees hired prior to April 2, 2012, the annual amount of the retirement allowance is based on the member’s final three-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following table based on the age of the member at retirement:

<b>Age Last Birthday at Date of Retirement</b>			
<b>Percent</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 4</b>
2.5	65 or over	60 or over	55 or over
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	--	49
1.8	58	--	48
1.7	57	--	47
1.6	56	--	46
1.5	55	--	45

**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

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A member’s final three-year average salary is defined as the greater of the highest consecutive three-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last three years of creditable service prior to retirement.

For employees hired on April 2, 2012 or later, the annual amount of the retirement allowance is based on the member’s final five-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following tables based on the age and years of creditable service of the member at retirement:

**For members with less than 30 years of creditable service:**

**Age Last Birthday at Date of Retirement**

<b>Percent</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 4</b>
2.50	67 or over	62 or over	57 or over
2.35	66	61	56
2.20	65	60	55
2.05	64	59	54
1.90	63	58	53
1.75	62	57	52
1.60	61	56	51
1.45	60	55	50

**For members with 30 years of creditable service or greater:**

**Age Last Birthday at Date of Retirement**

<b>Percent</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 4</b>
2.500	67 or over	62 or over	57 or over
2.375	66	61	56
2.250	65	60	55
2.125	64	59	54
2.000	63	58	53
1.875	62	57	52
1.750	61	56	51
1.625	60	55	50

**SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System**

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A member’s final five-year average salary is defined as the greater of the highest consecutive five-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last five years of creditable service prior to retirement.

For employees who became members after January 1, 2011, regular compensation is limited to 64% of the federal limit found in 26 U.S.C. 401(a)(17). In addition, regular compensation for members who retire after April 2, 2012 will be limited to prohibit “spiking” of a member’s salary to increase the retirement benefit.

For all employees, the maximum annual amount of the retirement allowance is 80 percent of the member’s final average salary. Any member who is a veteran also receives an additional yearly retirement allowance of \$15 per year of creditable service, not exceeding \$300. The veteran allowance is paid in addition to the 80 percent maximum.

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**Employee Contributions**

<u>Date of Hire</u>	<u>Contribution Rate</u>
Prior to January 1, 1975	5%
January 1, 1975 – December 31, 1983	7%
January 1, 1984 – June 30, 1996	8%
July 1, 1996 onward	9%

In addition, employees hired after December 31, 1978 contribute an additional 2 percent of salary in excess of \$30,000.

Employees hired after 1983 who voluntarily withdraw their contributions with less than 10 ten years of credited service receive 3% interest on their contributions.

Employees in Group 1 hired on or after April 2, 2012 with 30 years of creditable service or greater will pay a base contribution rate of 6%.

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**Retirement Benefits (Superannuation)**

Members of Group 1, 2 or 4 hired prior to April 2, 2012 may retire upon the attainment of age 55. For retirement at ages below 55, twenty years of creditable service is required.

## SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System

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Members hired prior to April 2, 2012 who terminate before age 55 with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System).

Members of Group 1 hired April 2, 2012 or later may retire upon the attainment of age 60. Members of Group 2 or 4 hired April 2, 2012 or later may retire upon the attainment of age 55. Members of Group 4 may retire upon attainment of age 50 with ten years of creditable service.

Members hired April 2, 2012 or later who terminate before age 55 (60 for members of Group 1) with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (60 for members of Group 1) provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System.

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### Ordinary Disability Benefits

A member who is unable to perform his or her job due to a non-occupational disability will receive a retirement allowance if he or she has ten or more years of creditable service and has not reached age 55. The annual amount of such allowance shall be determined as if the member retired for superannuation at age 55 (age 60 for Group 1 members hired on or after April 2, 2012), based on the amount of creditable service at the date of disability. For veterans, there is a minimum benefit of 50 percent of the member's most recent year's pay plus an annuity based on his or her own contributions.

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### Accidental Disability Benefit

For a job-connected disability, the benefit is 72 percent of the member's most recent annual pay plus an annuity based on his or her own contributions, plus additional amounts for surviving children. Benefits are capped at 75 percent of annual rate of regular compensation for employees who become members after January 1, 1988.

## SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System

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### Death Benefits

In general, the beneficiary of an employee who dies in active service will receive a refund of the employee's own contributions. Alternatively, if the employee were eligible to retire on the date of death, a spouse's benefit will be paid equal to the amount the employee would have received under Option C. The surviving spouse of a member who dies with two or more years of credited service has the option of a refund of the employee's contributions or a monthly benefit regardless of eligibility to retire, if they were married for at least one year. There is also a minimum widow's pension of \$500 per month, and there are additional amounts for surviving children.

If an employee's death is job-connected, the spouse will receive 72 percent of the member's most recent annual pay, in addition to a refund of the member's accumulated deductions, plus additional amounts for surviving children. However, in accordance with Section 100 of Chapter 32, the surviving spouse of a police officer, firefighter or corrections officer is killed in the line of duty will be eligible to receive an annual benefit equal to the maximum salary held by the member at the time of death.

Upon the death of a job-connected disability retiree who retired prior to November 7, 1996 and could not elect an Option C benefit, a surviving spouse will receive an allowance of \$9,000 per year (previously, \$6,000) if the member dies for a reason unrelated to cause of disability.

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### "Heart And Lung Law" And Cancer Presumption

Any case of hypertension or heart disease resulting in total or partial disability or death to a uniformed fireman, permanent member of a police department, or certain employees of a county correctional facility is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. Any case of disease of the lungs or respiratory tract resulting in total disability or death to a uniformed fireman is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. There is an additional presumption for uniformed firemen that certain types of cancer are job-related if onset occurs while actively employed or within five years of retirement.

## SECTION 4: Reporting Information for the City of Cambridge Contributory Retirement System

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### Options

Members may elect to receive a full retirement allowance payable for life under Option A. Under Option B a member may elect to receive a lower monthly allowance in exchange for a guarantee that at the time of death any contributions not expended for annuity payments will be refunded to the beneficiary. Option C allows the member to take a lesser retirement allowance in exchange for providing a survivor with two-thirds of the lesser amount. Option C pensioners will have benefits converted from a reduced to a full retirement if the beneficiary predeceases the retiree.

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### Post-Retirement Benefits

The Board has adopted the provisions of Section 51 of Chapter 127 of the Acts of 1999, which provide that the Retirement Board may approve an annual COLA in excess of the Consumer Price Index but not to exceed a 3% COLA on the first \$14,000 of a retirement allowance. Cost-of-living increases granted prior to July 1, 1998 are reimbursed by the Commonwealth and not reflected in this report.

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### Changes in Plan Provisions

Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by of Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.

As permitted by Section 63 of Chapter 139 of the Acts of 2012, the Board has increased the Section 101 annual allowance from \$6,000 to \$9,000.

**SECTION 5: GASB 67/68 Information for the City of Cambridge Contributory Retirement System**

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**EXHIBIT 1**

**Net Pension Liability**

The components of the net pension liability of the City of Cambridge Retirement System at December 31, 2013 were as follows:

Total pension liability	\$1,199,887,878
Plan fiduciary net position	1,045,733,743
System's net pension liability	154,154,135
Plan fiduciary net position as a percentage of the total pension liability	87.15%

*Actuarial assumptions.* The total pension liability was determined by an actuarial valuation as of December 31, 2013, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.75%
Salary increases	4.75%
Investment rate of return	7.875%, net of pension plan investment expense, including inflation
Cost of Living Adjustments	3% of first \$14,000
Pre-retirement:	RP-2000 Combined Healthy Mortality Table projected 17 years with Scale AA
Healthy Retiree:	RP-2000 Combined Healthy Mortality Table projected 17 years with Scale AA
Disabled Retiree:	RP-2000 Combined Healthy Mortality Table set forward five years projected 17 years with Scale AA

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2013 are summarized in the following table:

**SECTION 5: GASB 67/68 Information for the City of Cambridge Contributory Retirement System**

<b>Asset Class</b>	<b>Long-Term Expected Real Rate of Return</b>
Domestic equity	6.60%
International developed markets equity	7.10%
Emerging markets equity	9.40%
Core fixed income	2.20%
High-yield fixed income	4.70%
Real estate	4.40%
Hedge fund, GTAA, Risk parity	3.90%
Private equity	11.70%

*Discount rate:* The discount rate used to measure the total pension liability was 7.875%. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that City of Cambridge Contributory Retirement System contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

*Sensitivity of the net pension liability to changes in the discount rate.* The following presents the net pension liability of the City of Cambridge Retirement System, calculated using the discount rate of 7.875%, as well as what the City of Cambridge Contributory Retirement System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.875%) or 1-percentage-point higher (8.875%) than the current rate:

	<b>1% Decrease (6.875%)</b>	<b>Current Discount (7.875%)</b>	<b>1% Increase (8.875%)</b>
City of Cambridge Contributory Retirement System's net pension liability as of December 31, 2013	\$287,690,610	\$154,154,135	\$40,704,719

**SECTION 5: GASB 67/68 Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT 2**

**Pension Expense and Deferred Outflows/Inflows of Resources Related to Pensions**

**A. Pension expense for the year ended June 30, 2015**

Service cost	\$29,791,673
Interest	--
Recognized portion of current-period difference between expected and actual experience	--
Contributions – employee	--
Projected earnings on pension plan investments	--
Recognized portion of current-period difference between projected and actual earnings on pension plan investments	--
Recognition of deferred outflows of resources	--
Recognition of deferred inflows of resources	--
Pension expense for fiscal year ended June 30, 2015	To be determined

**B. Deferred outflows/inflows of resources related to pensions**

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	--	--
Changes of assumptions	--	--
Changes of benefit terms	--	--
Net difference between projected and actual earnings on pension plan investments	--	--
Total	To be determined	To be determined

**C. Projected recognition of deferred outflows/(inflows)**

	Year Ended June 30,	Recognition
	2016	--
	2017	--
	2018	--
	2019	--
	2020	--
	Thereafter	--

*Note: Entry Age Normal liabilities calculated using ages and service amounts as of January 1, 2014 are used to measure the pension expense for fiscal year ended June 30, 2015.*

**SECTION 5: GASB 67/68 Information for the City of Cambridge Contributory Retirement System**

**EXHIBIT 3**

**Schedule of Changes in the Net Pension Liability – Last Ten Years**

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
<b>Total pension liability</b>										
Service cost	\$29,791,673									
Interest	--									
Differences between expected and actual experience	--									
Changes of assumptions	--									
Changes of benefit terms	--									
Benefit payments, including refunds of employee contributions	--									
<b>Net change in total pension liability</b>	TBD									
<b>Total pension liability - beginning</b>	1,199,887,878									
<b>Total pension liability - ending (a)</b>	TBD									
<b>Plan fiduciary net position</b>										
Contributions - employer	--									
Contributions - employee	--									
Net investment income	--									
Benefit payments, including refunds of employee contributions	--									
Other	--									
<b>Net change in fiduciary net position</b>	TBD									
<b>Plan fiduciary net position - beginning</b>	1,045,733,743									
<b>Plan fiduciary net position - ending (b)</b>	TBD									
<b>Net pension liability – ending: (a)-(b)</b>	TBD									
<b>Plan's fiduciary net position as a percentage of the total pension liability</b>	TBD									
<b>Covered-employee payroll</b>	\$218,627,543									
<b>Net pension liability as a percentage of covered-employee payroll</b>	TBD									

\*Covered-employee payroll as reported in the January 1, 2014 funding valuation report

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**EXHIBIT 4**

**Schedule of Contributions – Last Ten Years**

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Actuarially determined contribution*	\$35,775,814									
Contributions in relation to the actuarially determined contribution	TBD									
Contribution deficiency (excess)	TBD									
Covered-employee payroll	\$218,627,543									
Contributions as a percentage of covered-employee payroll	16.36%									

(Historical information prior to implementation of GASB 67/68 is not required)

\* Based on the results of the January 1, 2012 actuarial valuation (including assumptions and methods) which determined budgeted appropriation for fiscal 2015.

**SECTION 5: GASB 67/68 Information for the City of Cambridge Contributory Retirement System**

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**EXHIBIT 5**

**Notes to Required Supplementary Information**

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<b>Valuation date</b>	Actuarial determined contribution rates are calculated as of January 1 two years prior to the end of the employer's fiscal year in which contributions are reported.
<b>Actuarial cost method</b>	Entry Age Normal Cost Method
<b>Amortization method</b>	Prior year's contributions increased 5.85% plus an additional contribution of \$300,000
<b>Remaining amortization period</b>	12 years from July 1, 2014
<b>Asset valuation method</b>	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual and expected return on a market value basis, and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.

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**Actuarial assumptions:**

Investment rate of return	7.875% (previously, 8.00%)
Discount rate	7.875% (previously, 8.00%)
Inflation rate	3.75%
Projected salary increases	4.75%
Cost of living adjustments	3.00% of first \$14,000 of retirement income

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**Plan membership:**

Retired participants and beneficiaries receiving benefits	1,966
Inactive participants entitled to a return of their employee contributions	812
Inactive participants with a vested right to a deferred or immediate benefit	130
Active participants	<u>3,145</u>
Total	6,053

## SECTION 5: GASB 67/68 Information for the City of Cambridge Contributory Retirement System

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### Changes in Assumptions:

The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.

The investment return assumption was lowered from 8.00% to 7.875%.

The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 17 years using Scale AA.

The mortality assumption for disabled participants was changed from the RP-2000 Combined Healthy Mortality Table set forward five years projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table set forward five years projected 17 years with Scale AA.

The assumed retirement age for inactive vested participants hired prior to April 2, 2012 was changed from age 65 to age 60 for Group 1 and 2 members and remained the same at age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, the assumption is 60 for Group 1, 55 for Group 2, and 50 for Group 4.

Rates of disability were revised to more accurately reflect recent experience.

The administrative expense assumption was increased from \$925,000 for calendar 2012 to \$1,100,000 for calendar 2014.

### Changes in Plan Provisions:

Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.

As permitted by Section 63 of Chapter 139 of the Acts of 2012, the Board has increased the Section 101 annual allowance from \$6,000 to \$9,000.

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