

**Town of Brookline Contributory Retirement
System**

*Actuarial Valuation and Review
as of January 1, 2010*

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October 20, 2010

*Town of Brookline Contributory Retirement System
Public Health Building, 11 Pierce Street
Brookline, MA 02445*

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of January 1, 2010. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2011 and later and analyzes the preceding two years' experience.

The census information and financial information on which our calculations were based was prepared by the staff of the Brookline Retirement. That assistance is gratefully acknowledged. The actuarial calculations were completed under my supervision.

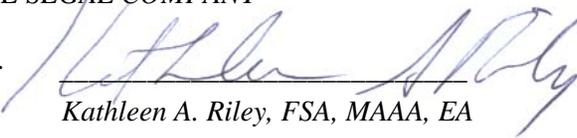
This actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably 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,

THE SEGAL COMPANY

By:


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

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SECTION 1

VALUATION SUMMARY

Purpose	i
Significant Issues in Valuation Year.....	i
Summary of Key Valuation Results.....	iii

SECTION 2

VALUATION RESULTS

A. Participant Data.....	1
B. Financial Information.....	4
C. Actuarial Experience.....	7
D. Recommended Contribution .	12
E. Information Required by the GASB.....	13

SECTION 3

SUPPLEMENTAL INFORMATION

EXHIBIT A Table of Plan Coverage.....	14
EXHIBIT B Participants in Active Service as of December 31, 2009	15
EXHIBIT C Summary Statement of Income and Expenses on an Actuarial Value Basis.....	16
EXHIBIT D Development of the Fund Through December 31, 2009	17
EXHIBIT E Development of Unfunded Actuarial Accrued Liability	18
EXHIBIT F Table of Amortization Bases as of July 1, 2010	19
EXHIBIT G Funding Schedule.....	20
EXHIBIT H Definitions of Pension Terms.....	21

SECTION 4

REPORTING INFORMATION

EXHIBIT I Summary of Actuarial Valuation Results.....	23
EXHIBIT II Supplementary Information Required by the GASB – Schedule of Employer Contributions.....	24
EXHIBIT III Supplementary Information Required by the GASB – Schedule of Funding Progress....	25
EXHIBIT IV Supplementary Information Required by the GASB.....	26
EXHIBIT V Actuarial Assumptions and Actuarial Cost Method	27
EXHIBIT VI Summary of Plan Provisions	31

SECTION 1: Valuation Summary for the Town of Brookline Contributory Retirement System

Purpose

This report has been prepared by The Segal Company to present a valuation of the Town of Brookline Contributory Retirement System as of January 1, 2010. 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, 2010;
- The assets of the Plan as of December 31, 2009;
- 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:

- The actuarial valuation report as of January 1, 2010 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. We are prepared to work with the Board to model the effects of these and any other subsequent developments.
- With this valuation we have changed the asset valuation method to reflect a 20% corridor around market value, compared to a 10% corridor used in the prior valuation. During the plan years ended 2008 and 2009, the market value rates of return were -28.34% and 22.31%, 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 2008 and 2009 were -13.01% and 18.22%, respectively. The actuarial value of assets as of December 31, 2009 was \$220.6 million, or 116.5% of the market value of assets of \$189.3 million reported in the Annual Statement. As of December 31, 2007, the actuarial value of assets of \$223.6 million was 98.7% of the market value of \$226.6 million.
- As indicated in Section 2, Subsection B of this report, the total unrecognized investment loss as of December 31, 2009 is \$31,249,386. This investment loss 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 gains derived from future experience. This implies that earning the assumed rate of investment return of 8.15% per year (net of expenses) on a

SECTION 1: Valuation Summary for the Town of Brookline Contributory Retirement System

market value basis will result in investment losses on the actuarial value of assets in the next few years. The funding schedule shown in Section 3, Exhibit G reflects the deferred investment losses in accordance with the asset valuation method adopted by the Board.

- The following actuarial assumptions were changed with this valuation:
 - The net investment return assumption was lowered from 8.25% to 8.15%.
 - The administrative expense assumption was increased from \$325,000 to \$370,000 for calendar 2010.
 - The actuarial value of assets was changed to reflect a 20% corridor around market value, compared to a 10% corridor used in the prior valuation.
- The unfunded liability has increased from \$108.6 million as of January 1, 2008 to \$137.4 million as of January 1, 2010 compared to the expected unfunded liability of \$107.9 million. The increase is primarily due to the investment loss on an actuarial basis and the change in the investment return assumption, partially offset by demographic gains.
- The recommended contributions for fiscal 2011 and 2012 are set at the Town's budgeted amounts of \$14,356,336 and \$15,025,000, respectively. These amounts reflect additional funding by the Town of \$1,538,138 in 2011 and \$1,629,983 in 2012 when compared to the funding schedule included in the 2008 actuarial valuation. These additional funding payments by the Town have helped to lower the expected increases in the appropriation due to the recent investment losses.

In projecting the unfunded actuarial accrued liability for future fiscal years, the deferred investment losses have been reflected in accordance with the asset valuation method approved by the Board. As shown in the funding schedule in Section 3, Exhibit G, the unfunded liability increases significantly for the next three fiscal years. The fiscal 2013 and 2014 appropriations are set at the prior year's amount increased by 5.75%. Thereafter the appropriation increases by 4.5% per year and the System is projected to be fully funded by June 30, 2028. The prior funding schedule fully funded the System by June 30, 2025.

SECTION 1: Valuation Summary for the Town of Brookline Contributory Retirement System

Summary of Key Valuation Results

	2010	2008
Contributions for fiscal year beginning July 1:		
Recommended for fiscal 2011 and 2009	\$14,356,336	\$11,878,412
Recommended for fiscal 2012 and 2010	15,025,000	12,266,217
Recommended for fiscal 2013 and 2011	15,888,938	14,356,336
Funding elements for plan year beginning January 1:		
Normal cost, including administrative expenses	\$8,118,667	\$7,987,489
Market value of assets as reported in the Annual Statement	189,327,596	226,589,330
Actuarial value of assets	220,576,982	223,598,975
Actuarial accrued liability	357,980,915	332,222,063
Unfunded actuarial accrued liability	137,403,933	108,623,088
GASB 25/27:		
Annual required contributions	\$14,356,336	\$11,878,412
Actual contributions	--	11,878,412
Percentage contributed	--	100.00%
Funded ratio	61.62%	67.30%
Demographic data for plan year beginning January 1:		
Number of retired participants and beneficiaries	853	835
Number of inactive participants entitled to a return of their employee contributions	1,235	978
Number of inactive participants with a vested right to a deferred or immediate benefit	49	16
Number of active participants	1,272	1,413
Total payroll*	\$55,940,856	\$57,109,225
Average payroll*	43,979	40,417

* Calendar year 2007 payroll figures were increased 4% for firefighters to reflect unsettled bargaining contracts and were increased 1% for participants specified by the Town to reflect unsettled bargaining contracts.

SECTION 2: Valuation Results for the Town of Brookline 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 six valuations can be seen in this chart.

CHART 1
Participant Population: 1999 – 2009

Year Ended December 31	Active Participants	Inactive Participants	Retired Participants and Beneficiaries
1999	1,158	507	790
2001	1,278	504	789
2003	1,420	626	811
2005	1,440	924	817
2007	1,413	994	835
2009	1,272	1,284	853

SECTION 2: Valuation Results for the Town of Brookline 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 1,272 active participants with an average age of 42.3, average years of service of 10.6 years and average payroll of \$43,979. The 1,413 active participants in the prior valuation had an average age of 41.7, average service of 10.5 years and average payroll of \$40,417.

Among the active participants, there were none with unknown age and/or service information.

Inactive Participants

In this year's valuation, there were 49 participants with a vested right to a deferred or immediate vested benefit and 1,235 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, 2009

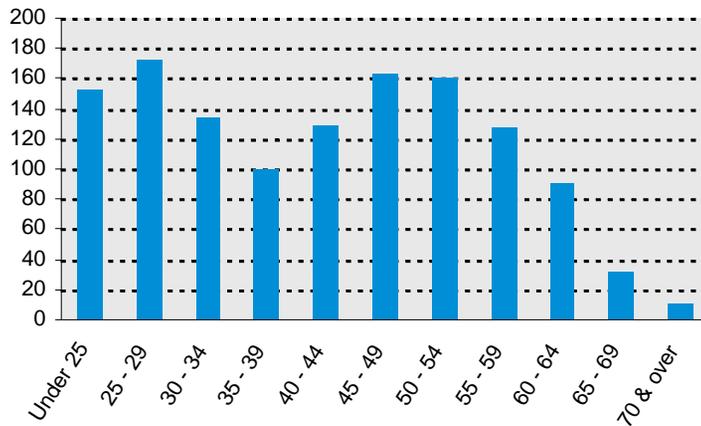
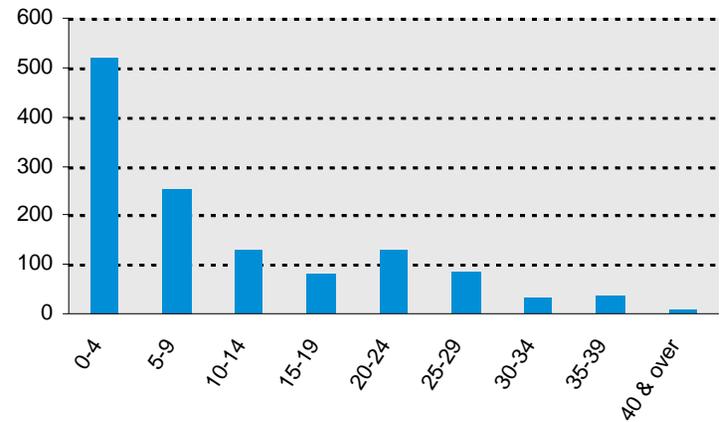


CHART 3
Distribution of Active Participants by Years of Service as of December 31, 2009



SECTION 2: Valuation Results for the Town of Brookline Contributory Retirement System

Retired Participants and Beneficiaries

As of December 31, 2009, 853 retired participants and beneficiaries were receiving total monthly benefits of \$1,835,136. For comparison, in the previous valuation, there were 835 retired participants and beneficiaries receiving monthly benefits of \$1,606,793.

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

CHART 4
Distribution of Retired Participants and Beneficiaries by Type and by Monthly Amount as of December 31, 2009

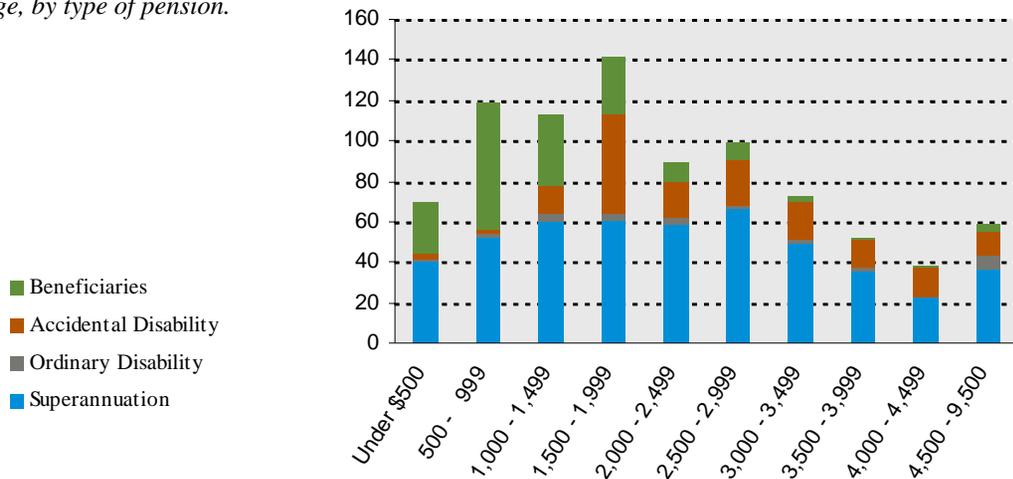
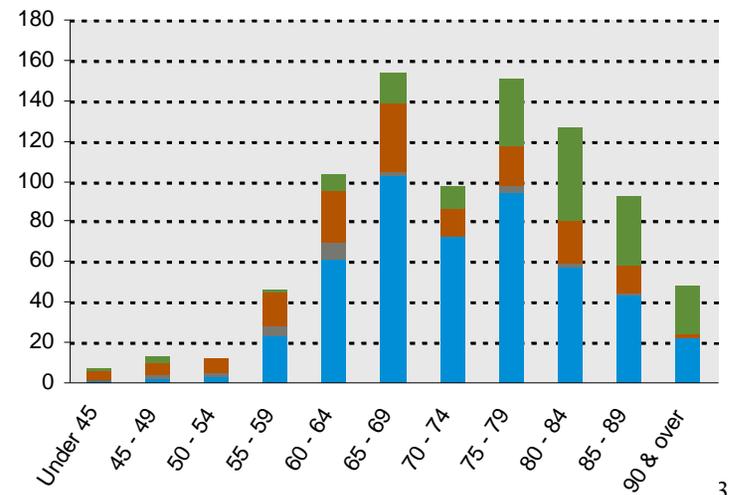


CHART 5
Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2009



SECTION 2: Valuation Results for the Town of Brookline Contributory Retirement System

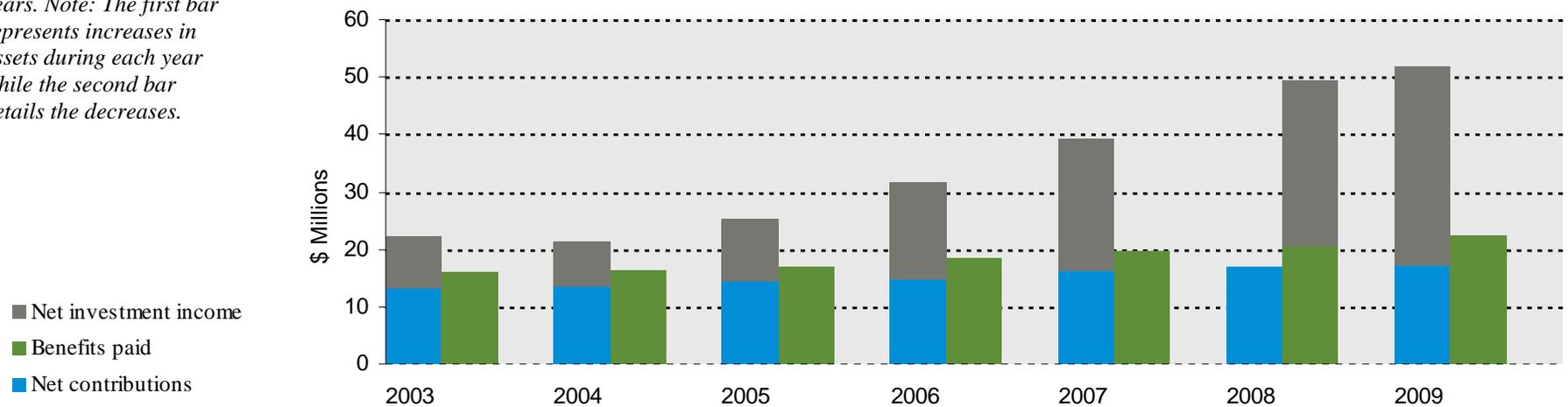
B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both net 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 seven 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, 2003 – 2009



SECTION 2: Valuation Results for the Town of Brookline 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, 2009	December 31, 2008
1. Market value of assets	\$189,327,596	\$159,296,767
2. Calculation of unrecognized return*	Original Amount	Unrecognized Return
(a) Year ended December 31, 2009	\$22,048,404	\$17,638,724
(b) Year ended December 31, 2008	-82,257,994	-49,354,796
(c) Year ended December 31, 2007	-4,081,650	-1,632,660
(d) Year ended December 31, 2006	10,496,737	2,099,347
(e) Year ended December 31, 2005	-2,272,900	0
(f) Total unrecognized return		-31,249,386
3. Preliminary actuarial value: (1) - (2f)	220,576,982	223,808,039
4. Adjustment to be within 20% corridor	0	-32,651,918
5. Final actuarial value of assets: (3) + (4)	<u>\$220,576,982</u>	<u>\$191,156,121</u>
6. Actuarial value as a percentage of market value: (5) ÷ (1)	116.5%	120.0%

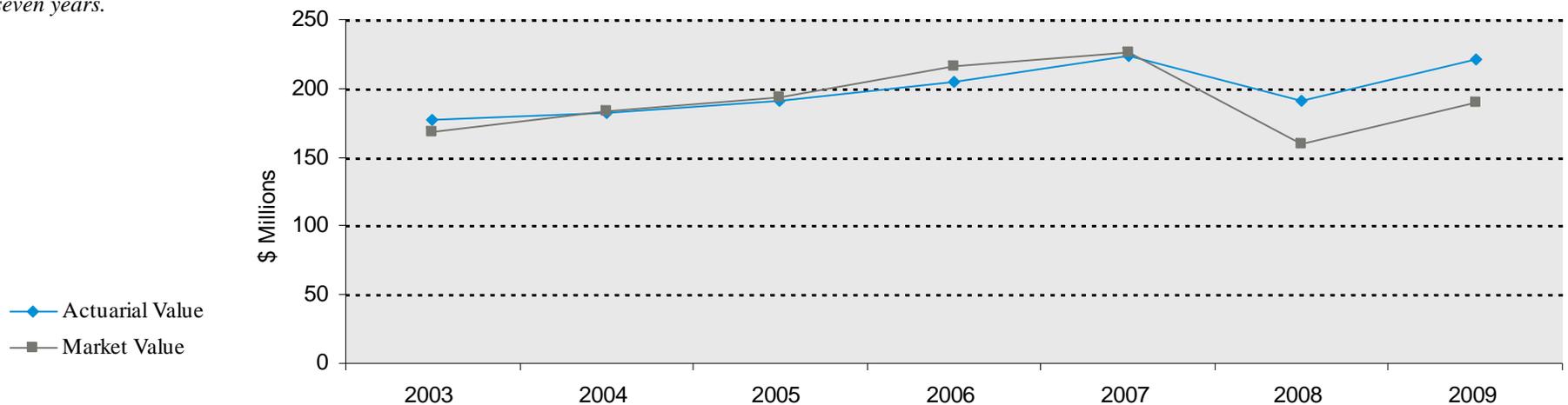
* Unrecognized return is the difference between the total return and the expected return on a market value basis and is recognized over a five-year period.

SECTION 2: Valuation Results for the Town of Brookline Contributory Retirement System

Both the actuarial value and market value of assets are representations of the Brookline 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 Brookline 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 seven years.

CHART 8
Actuarial Value of Assets vs. Market Value of Assets as of December 31, 2003 – 2009



SECTION 2: Valuation Results for the Town of Brookline Contributory Retirement System

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 loss over the two-year period is \$26,102,370, a \$32,242,370 loss from investments and a \$6,140,000 gain from all other sources. 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.

CHART 9
Actuarial Experience for Two-Year Period Ended December 31, 2009

1. Net loss from investments*	-\$32,242,370
2. Net loss from administrative expenses	-34,402
3. Net gain from other experience**	<u>6,174,402</u>
4. Net experience loss: (1) + (2) + (3)	-\$26,102,370

* Details in Chart 10

** Details in Chart 13

SECTION 2: Valuation Results for the Town of Brookline 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 Brookline Retirement System’s investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets is 8.25%. The actual rate of return on an actuarial basis for the 2009 and 2008 plan years were 18.22% and -13.01%, respectively.

The Brookline Retirement System experienced an actuarial loss during the two-year period ending December 31, 2009 with regard to its investments of \$32,242,370 (including an adjustment for interest).

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

**CHART 10
Actuarial Value Investment Experience**

	Year Ended	
	December 31, 2009	December 31, 2008
1. Actual return	\$34,376,020	-\$28,862,361
2. Average value of assets	188,678,541	221,808,727
3. Actual rate of return: (1) ÷ (2)	18.22%	-13.01%
4. Assumed rate of return	8.25%	8.25%
5. Expected return: (2) x (4)	\$15,565,980	\$18,299,219
6. Actuarial gain(loss): (1) – (5)	<u>\$18,810,040</u>	<u>-\$47,161,580</u>

SECTION 2: Valuation Results for the Town of Brookline 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 seven years, including five-year and seven-year averages.

Based upon this experience and future expectations, we have changed the assumed rate of return from 8.25% to 8.15%.

CHART 11

Investment Return – Actuarial Value vs. Market Value: 2003 - 2009

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2003	\$8,763,601	5.16%	\$28,068,228	19.88%
2004	7,673,916	4.36	18,082,401	10.85
2005	11,103,381	6.14	12,756,431	7.00
2006	17,054,407	9.02	26,325,161	13.72
2007	22,781,177	11.25	13,627,588	6.35
2008	-28,862,361	-13.01	-63,712,070	-28.34
2009	<u>34,376,020</u>	18.22	<u>34,985,988</u>	22.31
Total	\$72,890,141		\$70,133,727	
	Five-year average return	5.74%		2.47%
	Seven-year average return	5.49%		5.49%

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

SECTION 2: Valuation Results for the Town of Brookline Contributory Retirement System

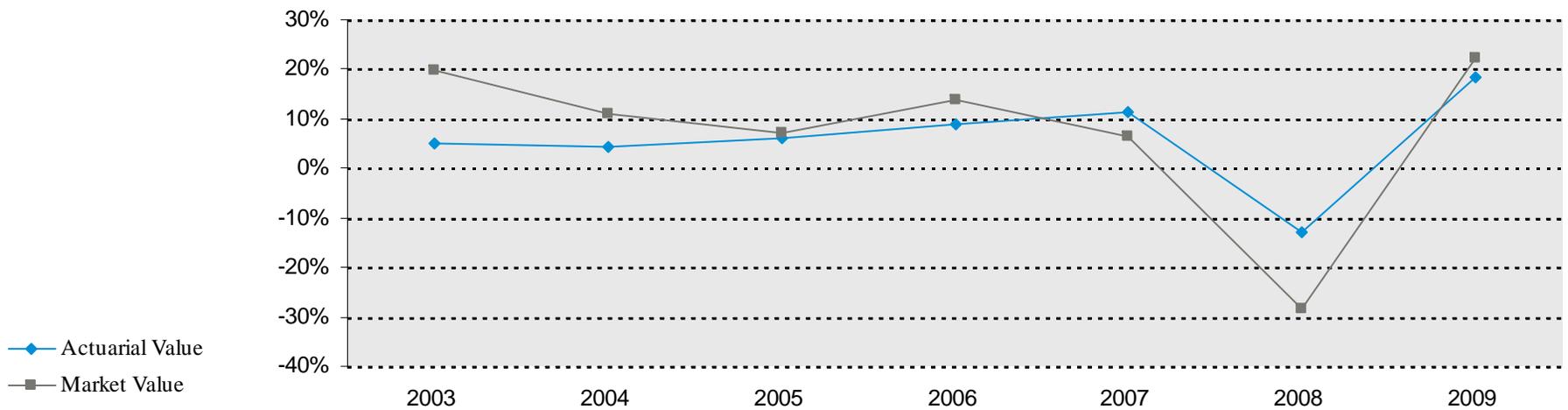
Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

Administrative Expenses

Administrative expenses for the years ended December 31, 2008 and 2009 were \$340,020 and \$370,324, respectively, compared to the assumption of \$325,000 in 2008 and \$339,625 in 2009. This resulted in a loss of \$34,402 for the two-year period, including an adjustment for interest. We have increased the administrative expense assumption from \$325,000 to \$370,000 for calendar 2010.

This chart illustrates how this leveling effect has actually worked over the years 2003 - 2009.

CHART 12
Market and Actuarial Rates of Return for Years Ended December 31, 2003 - 2009



SECTION 2: Valuation Results for the Town of Brookline Contributory Retirement System

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, 2009 amounted to \$6,174,402.

A brief summary of the demographic gain/(loss) experience of the Brookline Retirement System for the two-year period ending December 31, 2009 is shown in the chart below.

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

CHART 13

Experience Due to Changes in Demographics for Two-Year Period Ended December 31, 2009

1. Salary increases less than expected for continuing actives	\$3,508,541
2. More death than expected amongst retired members and beneficiaries and changes in benefit payments	2,360,462
3. Miscellaneous experience gain	<u>305,399</u>
4. Net gain	\$6,174,402

SECTION 2: Valuation Results for the Town of Brookline 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 contributions for fiscal 2011 and 2012 are set at the Town’s budgeted amounts of \$14,356,336 and \$15,025,000, respectively. These amounts reflect an additional funding by the Town of \$1,538,138 in 2011 and \$1,629,983 in 2012 when compared to the funding schedule included in the 2008 actuarial valuation. These additional funding payments by the Town have helped to lower the expected increases in funding due to the recent investment losses.

In projecting the unfunded actuarial accrued liability for future fiscal years, the deferred investment losses have been reflected in accordance with the asset valuation method approved by the Board. As shown in the funding schedule in Section 3, Exhibit G, the unfunded liability increases significantly for the next three fiscal years. The fiscal 2013 and 2014 appropriations are set at the prior year’s amount increased by 5.75%. Thereafter the appropriation increases by 4.5% per year and the System is projected to be fully funded by June 30, 2028. The prior funding schedule fully funded the System by June 30, 2025.

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

**CHART 14
Recommended Contribution**

	Year Beginning January 1			
	2010		2008	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	\$7,748,667	13.22%	\$7,662,489	12.82%
2. Administrative expenses	370,000	0.63%	325,000	0.54%
3. Expected employee contributions	<u>-5,294,667</u>	<u>-9.03%</u>	<u>-5,214,970</u>	<u>-8.72%</u>
4. Employer normal cost: (1) + (2) + (3)	\$2,824,000	4.82%	\$2,772,519	4.64%
5. Actuarial accrued liability	357,980,915		332,222,063	
6. Actuarial value of assets	<u>220,576,982</u>		<u>223,598,975</u>	
7. Unfunded actuarial accrued liability: (5) - (6)	\$137,403,933		\$108,623,088	
8. Employer normal cost projected to July 1, 2010 and 2008, adjusted for timing*	\$2,943,944	4.91%	2,890,944	4.73%
9. Projected unfunded actuarial accrued liability	142,893,484		113,015,002	
10. Payment on projected unfunded actuarial accrued liability, adjusted for timing*	10,668,812	17.81%	9,179,025	15.02%
11. Preliminary recommended contribution: (8) + (10), adjusted for timing*	<u>\$13,612,756</u>	<u>22.72%</u>	<u>\$12,069,969</u>	<u>19.75%</u>
12. Budgeted appropriation	<u>\$14,356,336</u>	<u>23.96%</u>	<u>\$11,878,412</u>	<u>19.43%</u>
13. Projected payroll	\$59,926,985		\$61,119,457	

*Recommended contributions are paid semimonthly from July through December.

SECTION 2: Valuation Results for the Town of Brookline Contributory Retirement System

E. INFORMATION REQUIRED BY THE GASB

Governmental Accounting Standards Board (GASB) reporting information provides standardized information for comparative purposes of governmental pension plans. This information allows a reader of the financial statements to compare the funding status of one governmental plan to another on relatively equal terms.

Critical information to the GASB is the historical comparison of the GASB required contribution to the actual contributions. This comparison demonstrates whether a plan is being funded within the range of the GASB reporting requirements. Chart 16 below presents a graphical representation of this information for the Plan.

The other 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 under the GASB. High ratios indicate a well-funded plan with assets sufficient to pay most benefits. 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.

Although the GASB requires that the actuarial value of assets be used to determine the funded ratio, Chart 17 shows the funded ratio calculated using both the actuarial value of assets (61.62%) and the market value of assets (52.89%).

The details regarding the calculations of these values and other GASB numbers may be found in Section 4, Exhibits II, III, and IV.

These graphs show key GASB factors.

CHART 14
Required Versus Actual Contributions

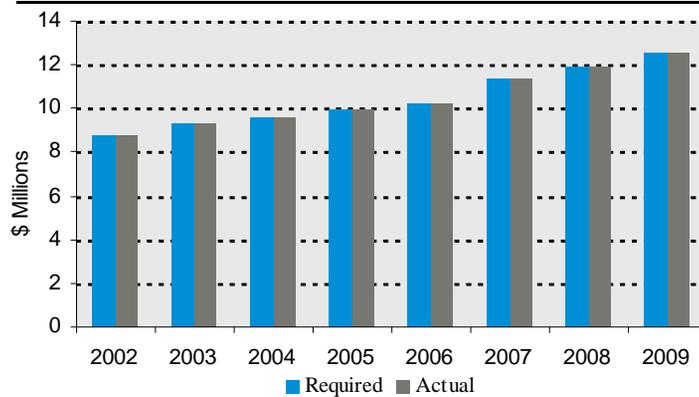
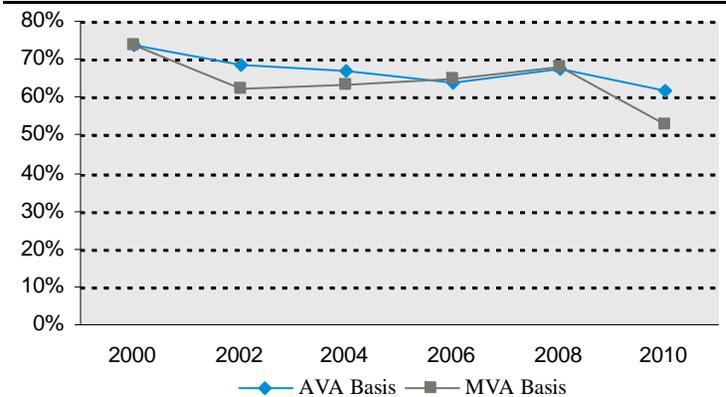


CHART 15
Funded Ratio



SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT A

Table of Plan Coverage

Category	Year Ended December 31		Change From Prior Valuation
	2009	2007	
Active participants in valuation:			
Number	1,272	1,413	-10.0%
Average age	42.3	41.7	N/A
Average service	10.6	10.5	N/A
Total payroll*	\$55,940,856	\$57,109,225	-2.0%
Average payroll*	43,979	40,417	8.8%
Member contributions	50,034,994	51,122,651	-2.1%
Inactive participants with a vested right to a deferred or immediate benefit	49	16	206.3%
Inactive participants entitled to a return of their contributions	1,235	978	26.3%
Retired participants:			
Number in pay status	482	467	3.2%
Average age	73.2	73.9	N/A
Average monthly benefit	\$2,350	\$2,106	11.6%
Disabled participants:			
Number in pay status	192	188	2.1%
Average age	67.9	67.9	N/A
Average monthly benefit	\$2,590	\$2,298	12.7%
Beneficiaries in pay status	179	180	-0.6%

* Calendar year 2007 payroll figures were increased 4% for firefighters to reflect unsettled bargaining contracts and were increased 1% for participants specified by the Town to reflect unsettled bargaining contracts.

SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT B

**Participants in Active Service as of December 31, 2009
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	153	145	8	--	--	--	--	--	--	--
	\$16,767	\$16,959	\$13,280	--	--	--	--	--	--	--
25 - 29	173	152	20	1	--	--	--	--	--	--
	\$27,823	\$24,719	\$50,107	\$53,926	--	--	--	--	--	--
30 - 34	134	67	53	14	--	--	--	--	--	--
	\$45,193	\$33,049	\$56,960	\$58,763	--	--	--	--	--	--
35 - 39	100	31	40	24	5	--	--	--	--	--
	\$53,289	\$36,502	\$53,595	\$69,853	\$75,421	--	--	--	--	--
40 - 44	129	34	32	28	15	20	--	--	--	--
	\$52,843	\$30,838	\$48,971	\$64,711	\$70,747	\$66,402	--	--	--	--
45 - 49	163	36	30	26	16	39	16	--	--	--
	\$51,102	\$28,945	\$43,477	\$52,210	\$60,303	\$63,561	\$73,880	--	--	--
50 - 54	160	31	27	17	12	27	40	5	1	--
	\$53,274	\$30,974	\$40,414	\$50,617	\$60,379	\$54,721	\$75,991	\$64,849	\$46,113	--
55 - 59	128	14	20	8	15	15	18	17	20	1
	\$54,848	\$28,412	\$32,548	\$39,308	\$51,530	\$54,713	\$69,869	\$81,141	\$68,737	\$51,918
60 - 64	91	8	15	7	10	20	8	7	12	4
	\$51,786	\$37,375	\$46,958	\$34,995	\$53,416	\$43,963	\$48,347	\$75,981	\$70,436	\$71,733
65 - 69	31	2	7	5	4	8	1	3	--	1
	\$42,220	\$9,969	\$23,741	\$49,267	\$49,492	\$41,945	\$30,010	\$84,616	--	\$58,966
70 & over	10	1	--	--	2	1	1	1	2	2
	\$46,529	\$12,673	--	--	\$30,136	\$43,872	\$71,468	\$45,775	\$47,641	\$67,974
Total	1,272	521	252	130	79	130	84	33	35	8
	\$43,979	\$25,609	\$46,647	\$56,836	\$59,406	\$56,645	\$71,043	\$76,822	\$67,468	\$66,720

SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT C

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2009	Year Ended December 31, 2008
Contribution income:		
Employer contributions	\$12,568,346	\$11,878,412
Employee contributions	5,091,010	5,407,366
Other contributions	42,957	30,190
Less administrative expenses	<u>-370,324</u>	<u>-340,020</u>
Net contribution income	\$17,331,989	\$16,975,948
Net investment income	<u>34,376,020</u>	<u>-28,862,361</u>
Total income available for benefits	\$51,708,009	-\$11,886,413
Less benefit payments:		
Pensions	-\$21,689,142	-\$19,979,876
Net 3(8)(c) reimbursements	-172,765	-144,853
Refunds, annuities, & Option B refunds	<u>-425,242</u>	<u>-431,712</u>
Net benefit payments	-\$22,287,148	-\$20,556,441
Change in reserve for future benefits	\$29,420,861	-\$32,442,854

SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT D

Development of the Fund Through December 31, 2009

Year Ended December 31	Employer Contributions	Employee Contributions	Other Contributions	Net Investment Return*	Administrative Expenses	Benefit Payments	Actuarial Value of Assets at End of Year
2003	\$9,310,000	\$4,289,561	\$28,933	\$8,763,601	\$229,298	\$15,967,163	\$177,153,465
2004	9,533,000	4,398,536	34,350	7,673,916	263,603	16,337,355	182,192,309
2005	9,937,000	4,660,864	34,078	11,103,381	269,410	16,840,017	190,818,205
2006	10,239,000	4,764,538	35,279	17,054,407	322,510	18,379,716	204,209,203
2007	11,367,567	5,171,789	53,424	22,781,177	311,228	19,672,957	223,598,975
2008	11,878,412	5,407,366	30,190	-28,862,361	340,020	20,556,441	191,156,121
2009	12,568,346	5,091,010	42,957	34,376,020	370,324	22,287,148	220,576,982

* *Net of investment fees*

SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT E

Development of Unfunded Actuarial Accrued Liability

	Year Ended	
	December 31, 2009	December 31, 2008
1. Unfunded actuarial accrued liability at beginning of year	\$108,269,593	\$108,623,088
2. Normal cost at beginning of year	8,346,926	7,987,489
3. Total contributions	-17,702,313	-17,315,968
4. Interest		
(a) For whole year on (1) + (2)	\$9,620,863	\$9,620,373
(b) For half year on (3)	<u>-659,789</u>	<u>-645,389</u>
(c) Total interest	<u>8,961,074</u>	<u>8,974,984</u>
5. Expected unfunded/(overfunded) actuarial accrued liability	\$107,875,280	\$108,269,593
6. Changes due to:		
(a) Investment loss	\$32,242,370	
(b) Administrative expense loss	34,402	
(c) Continuing active salary gain	-3,508,541	
(d) More death than expected amongst retired members and beneficiaries	-2,360,462	
(e) Miscellaneous gain	-305,399	
(f) Assumption changes	<u>3,426,283</u>	
(g) Total changes	<u>\$29,528,653</u>	
7. Unfunded actuarial accrued liability at end of year	<u>\$137,403,933</u>	

SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT F

Table of Amortization Bases as of July 1, 2010

Type	Annual Payment	Years Remaining	Outstanding Balance
2003 ERI	\$4,183	18.00	\$56,030
Remaining unfunded liability	<u>10,664,629</u>	18.00	<u>142,837,454</u>
Total	\$10,668,812		\$142,893,484

*Notes: Payments are adjusted for timing.
2003 ERI and remaining unfunded liability payment increasing at 4.50%.
Does not reflect adjustment to set fiscal 2011 appropriation to budgeted amount.
Refer to Exhibit G for information on payments in fiscal year 2011 and later.*

SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT G

Funding Schedule

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of 2003 ERI Liability	(4) Amortization of Remaining Liability	(5) Total Plan Cost: (2) + (3) + (4)	(6) Total Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(7) Total Plan Cost: % Increase
2011	\$2,943,944	\$4,183	\$11,408,209	\$14,356,336	\$142,893,484	17.04%
2012	3,076,421	4,372	11,944,207	15,025,000	150,946,773	4.66%
2013	3,214,860	4,569	12,669,509	15,888,938	160,008,983	5.75%
2014	3,359,529	4,775	13,438,248	16,802,551	166,738,494	5.75%
2015	3,510,708	4,990	14,042,968	17,558,666	154,694,424	4.50%
2016	3,668,690	5,214	14,674,902	18,348,806	152,403,843	4.50%
2017	3,833,781	5,449	15,335,273	19,174,502	149,256,163	4.50%
2018	4,006,301	5,693	16,025,360	20,037,354	145,151,360	4.50%
2019	4,186,585	5,949	16,746,501	20,939,035	139,979,903	4.50%
2020	4,374,981	6,218	17,500,094	21,881,292	133,621,914	4.50%
2021	4,571,855	6,497	18,287,598	22,865,950	125,946,263	4.50%
2022	4,777,588	6,790	19,110,540	23,894,917	116,809,584	4.50%
2023	4,992,579	7,096	19,970,514	24,970,189	106,055,207	4.50%
2024	5,217,245	7,415	20,869,187	26,093,847	93,512,002	4.50%
2025	5,452,021	7,748	21,808,301	27,268,070	78,993,124	4.50%
2026	5,697,362	8,097	22,789,674	28,495,133	62,294,653	4.50%
2027	5,953,743	8,461	23,815,209	29,777,414	43,194,118	4.50%
2028	6,221,661	8,841	21,864,325	28,094,827	21,448,900	-5.99%

*Notes: Contributions are assumed to be paid on July 1 and December 31.
Amortization payments increase 4.50% per year beginning in fiscal 2015.
Assumes contribution of budgeted amount for fiscal year 2011 and 2012.*

SECTION 3: Supplemental Information for the Town of Brookline Contributory Retirement System

EXHIBIT H

Definitions of Pension Terms

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) Turnover 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 equivalent of the accumulated normal costs allocated to the years before the valuation date.

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 Town of Brookline Contributory Retirement System

**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 Town of Brookline Contributory Retirement System

EXHIBIT I

Summary of Actuarial Valuation Results

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

1. Retired participants as of the valuation date (including 179 beneficiaries in pay status)	853
2. Participants active during the year ended December 31, 2009 with total accumulated contributions of \$50,034,994 and projected payroll of \$58,622,493	1,272
3. Inactive participants entitled to a return of their employee contributions as of December 31, 2009	1,235
4. Inactive participants with a vested right to a deferred or immediate benefit as of December 31, 2009	49

The actuarial factors as of January 1, 2010 are as follows:

1. Normal cost, including administrative expenses	\$8,118,667
2. Expected employee contributions	-5,294,667
3. Employer normal contributions: (1) + (2)	2,824,000
4. Actuarial accrued liability	357,980,915
Retired participants and beneficiaries	\$202,068,372
Active participants	146,010,638
Inactive participants	9,901,905
5. Actuarial value of assets (\$189,327,596 at market value as reported in the Annual Statement)	220,576,982
6. Unfunded actuarial accrued liability	137,403,933

The actuarial factors projected to July 1, 2010 are as follows:

1. Employer normal cost projected to July 1, 2010, adjusted for timing ¹	\$2,943,944
2. Projected unfunded actuarial accrued liability	142,893,484
3. Payment on projected unfunded actuarial accrued liability, adjusted for timing ¹	10,668,812
4. Preliminary recommended contribution: (1) + (3), adjusted for timing ¹	<u>\$13,612,756</u>
5. Budgeted appropriation for fiscal 2011	<u>\$14,356,336</u>
6. Projected payroll	\$59,926,985
7. Total recommended contribution as a percentage of projected payroll: (5) ÷ (6)	23.96%

¹ Recommended contributions are assumed to be paid July 1 and December 31.

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

EXHIBIT II

Supplementary Information Required by the GASB – Schedule of Employer Contributions

Plan Year Ended December 31	Annual Required Contributions	Actual Contributions	Percentage Contributed
2002	\$8,743,000	\$8,743,000	100.0%
2003	9,310,000	9,310,000	100.0%
2004	9,533,000	9,533,000	100.0%
2005	9,937,000	9,937,000	100.0%
2006	10,239,000	10,239,000	100.0%
2007	11,367,567	11,367,567	100.0%
2008	11,878,412	11,878,412	100.0%
2009	12,568,346	12,568,346	100.0%

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

EXHIBIT III

Supplementary Information Required by the GASB – Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
01/01/1996	\$93,285,890	\$156,258,190	\$62,972,300	59.70%	\$36,686,332	171.65%
01/01/1998	121,604,190	192,305,540	70,701,350	63.23%	40,150,666	176.09%
01/01/2000	160,983,529	217,964,030	56,980,501	73.86%	43,028,894	132.42%
01/01/2002	171,285,347	250,478,343	79,192,996	68.38%	45,109,610	175.56%
01/01/2004	177,153,465	265,441,629	88,288,164	66.74%	52,378,086	168.56%
01/01/2006	190,818,205	299,355,769	108,537,564	63.74%	57,008,822	190.39%
01/01/2008	223,598,975	332,222,063	108,623,088	67.30%	59,789,007	181.68%
01/01/2010	220,576,982	357,980,915	137,403,933	61.62%	58,622,493	234.39%

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

EXHIBIT IV

Supplementary Information Required by the GASB

Valuation date	January 1, 2010
Actuarial cost method	Entry Age Normal Cost Method
Amortization method	Payments increasing at 4.50% per year
Remaining amortization period	18 years
Asset valuation method	The difference between the expected return and actual investment return on a market value basis is recognized over a five-year period.

Actuarial assumptions:

Investment rate of return	8.15% (previously, 8.25%)
Projected salary increases	5.00%
Cost of living adjustments	3.00% of first \$12,000 of retirement income

Plan membership:

Retired participants and beneficiaries receiving benefits	853
Terminated employees entitled to a return of their employee contributions	1,235
Terminated employees with a vested right to a deferred or immediate benefit	49
Active participants	<u>1,272</u>
Total	3,409

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

EXHIBIT V

Actuarial Assumptions and Actuarial Cost Method

Mortality Rates:

Healthy:

Pre-Retirement: RP-2000 Employees Mortality Table projected 10 years with Scale AA (gender distinct)

Post-Retirement: RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct)

Disabled: RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) set forward 2 years

Termination Rates before Retirement:

Groups 1 and 2 – Rate (%)

Mortality

Age	Male	Female	Disability
20	0.03	0.02	0.01
25	0.03	0.02	0.02
30	0.04	0.02	0.03
35	0.07	0.04	0.06
40	0.10	0.06	0.20
45	0.13	0.10	0.29
50	0.18	0.14	0.58
55	0.25	0.23	0.71
60	0.42	0.37	0.84

*Notes: 55% of the disability rates shown represent accidental disability.
 20% of the accidental disabilities will die from the same cause as the disability.
 55% of the death rates shown represent accidental death.*

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

Termination Rates before Retirement (continued):

Age	Group 4 – Rate (%)		
	Mortality		Disability
	Male	Female	
20	0.03	0.02	0.10
25	0.03	0.02	0.20
30	0.04	0.02	0.30
35	0.07	0.04	0.30
40	0.10	0.06	0.60
45	0.13	0.10	2.00
50	0.18	0.14	3.75
55	0.25	0.23	3.60
60	0.42	0.37	2.55

*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.*

Withdrawal Rates:

Years of Service	Rate per year (%)		
	Groups 1 and 2	Years of Service	Group 4
0	15.0	0 – 10	1.5
1	12.0	11+	0.0
2	10.0		
3	9.0		
4	8.0		
5 – 9	7.6		
10 – 14	5.4		
15 – 19	3.3		
20 – 24	2.0		
25 - 29	1.0		
30+	0.0		

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

Retirement Rates:	Rate per year (%)		
	Age	Groups 1 and 2	Group 4
	55	5.0	15.0
	56 – 58	2.5	10.0
	59	2.5	15.0
	60	10.0	20.0
	61	15.0	20.0
	62 - 63	10.0	25.0
	64	10.0	30.0
	65	40.0	100.0
	66 - 67	25.0	--
	68 - 69	30.0	--
	70	100.0	--

Unknown Data for Participants: Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.

Age of Spouse: Females 3 years younger than their spouses.

Percent Married: 80%

Net Investment Return: 8.15% (previously, 8.25%)

Interest on Employee Contributions: 3.50%

Administrative Expenses: \$370,000 for calendar 2010 (previously, \$325,000)

Salary Increases: 5.00%

2009 Salary: Salary reported in the data for employees hired in 2008 or earlier. Salary estimated from contributions, then annualized, for employees hired in 2009.

Total Service: Total creditable service reported in the data.

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

Actuarial Value of Assets: Market value of assets less unrecognized return in each of the last five years. Unrecognized return is equal to the difference between the actual market value return and the expected market value return and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value (previously, adjusted to be within 10% of market value).

Market value of assets as reported in the Annual Statement.

Actuarial Cost Method: Entry Age Normal Actuarial Cost Method. Entry Age is the age of the participant less service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary.

Changes in Assumptions: The following actuarial assumptions were changed with this valuation:

- The net investment return assumption was lowered from 8.25% to 8.15%.
- The administrative expense assumption was increased from \$325,000 to \$370,000 for calendar 2010.
- The actuarial value of assets was changed to reflect a 20% corridor around market value, compared to a 10% corridor used in the prior valuation.

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

EXHIBIT VI

Summary of Plan Provisions

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

Plan Year: January 1 – December 31

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.)

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:

Age Last Birthday at Date of Retirement			
Percent	Group 1	Group 2	Group 4
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

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

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

annual rate of regular compensation received during the last three years of creditable service prior to retirement. The \$30,000 cap on salary used in a benefit determination for any employee hired after January 1, 1979 has been removed.

The maximum annual amount of the retirement allowance is 80 percent of the member's final three-year 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.

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 leave with less than five years of credited service receive no interest on their contributions and employees who leave with five but less than ten years receive one-half the rate of regular interest otherwise payable.

Retirement Benefits (Superannuation)

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

Members 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).

Ordinary Disability Benefits

A member who is unable to perform his/her job due to a non-occupational disability will receive a retirement allowance if he/she has ten or more years of creditable service and has not reached age 55. The annual amount of such allowance shall be

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

determined as if the member retired for superannuation at age 55, 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/her own contributions.

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/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.

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 the full amount the employee would have received under Option C (previously, two-thirds of the amount). 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.

"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

SECTION 4: Reporting Information for the Town of Brookline Contributory Retirement System

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.

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 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 the 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.

Post-Retirement Benefits

The Board has adopted the provisions of Section 51 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 \$12,000 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.

Changes in Plan Provisions:

There have been no changes in plan provisions since the last valuation.
