

**Barnstable County Retirement System**

*Actuarial Valuation and Review  
as of January 1, 2009*

**Copyright © 2009**

**THE SEGAL GROUP, INC.,  
THE PARENT OF THE SEGAL COMPANY  
ALL RIGHTS RESERVED**



The Segal Company  
116 Huntington Ave., 8th Floor Boston, MA 02116  
T 617.424.7300 F 617.424.7390 www.segalco.com

*September 4, 2009*

*Retirement Board  
Barnstable County Retirement System  
750 Attucks Lane  
Hyannis, MA 02601*

*Dear Board Members:*

*We are pleased to submit this Actuarial Valuation and Review as of January 1, 2009. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2010 and later years and analyzes the past two years' experience.*


*The census and financial information on which our calculations were based was prepared by the staff of the Barnstable County Retirement System. 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*

7152531v2/04446.012

## 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 .	13
E. Information Required by the GASB.....	14

## SECTION 3

### SUPPLEMENTAL INFORMATION

EXHIBIT A Table of Plan Coverage .....	15
EXHIBIT B Participants in Active Service as of December 31, 2008 .....	16
EXHIBIT C Summary Statement of Income and Expenses.....	17
EXHIBIT D Development of the Fund Through December 31, 2008 .....	18
EXHIBIT E Development of Unfunded Actuarial Accrued Liability and (Gain)/Loss.....	19
EXHIBIT F Table of Amortization Bases as of July 1, 2009 .....	20
EXHIBIT G Funding Schedule Fully Funded by 2028.....	21
EXHIBIT H Funding Schedule Fully Funded by 2028 with Three-Year Phase-In...22	
EXHIBIT I Funding Schedule Fully Funded by 2030.....	23
EXHIBIT J Unit Results.....	24
EXHIBIT K Unit Allocation of ERI Amortizations for Fiscal 2010 .....	26
EXHIBIT L Definitions of Pension Terms.....	27

## SECTION 4

### REPORTING INFORMATION

EXHIBIT I Summary of Actuarial Valuation Results.....	29
EXHIBIT II Supplementary Information Required by the GASB – Schedule of Employer Contributions.....	30
EXHIBIT III Supplementary Information Required by the GASB – Schedule of Funding Progress .....	31
EXHIBIT IV Supplementary Information Required by the GASB .....	32
EXHIBIT V Actuarial Assumptions and Actuarial Cost Method.....	33
EXHIBIT VI Summary of Plan Provisions.....	38

## **SECTION 1: Valuation Summary for the Barnstable County Retirement System**

---

### **Purpose**

This report has been prepared by The Segal Company to present a valuation of the Barnstable County Retirement System as of January 1, 2009. 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, 2009;
- The assets of the Plan as of December 31, 2008;
- 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, 2009 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected.
- During the plan years ended 2007 and 2008, the market value rate of return was 8.78% and -29.39%, respectively. Because the actuarial value of assets gradually recognizes market value fluctuations over a five-year period, the actuarial rate of return for the plan years ended 2007 and 2008 was 8.73% and -13.47%, respectively. The actuarial value of assets as of December 31, 2008 was \$520.1 million, or 120.0% of the market value of assets as reported in the December 31, 2008 Annual Statement. As of December 31, 2006, the actuarial value was 98.3% of the market value of \$526,487,863.
- The following actuarial assumptions were changed with this valuation:
  - The mortality table for healthy lives was changed from the 1994 Group Annuity Mortality Table to RP-2000 Employees Mortality Table projected 10 years with Scale AA (gender distinct) for pre-retirement mortality and from the 1994 Group Annuity Mortality Table to the RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) for post-retirement mortality.

## SECTION 1: Valuation Summary for the Barnstable County Retirement System

---

- The mortality table for disabled participants was changed from the 1994 Group Annuity Mortality Table with 5 year set forward to the RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) set forward 2 years.
- The assumed rates of disability, withdrawal and the salary scale were revised to more accurately reflect recent experience. The new rates of withdrawal, disability and the new salary scale were taken from PERAC's 2002 Local Experiences Study.
- Changing the assumptions resulted in a net increase in the unfunded liability of \$9,023,457 and a decrease in the total normal cost of \$2,333,773.
- The Plan's asset valuation method requires that the actuarial value of assets be no more than 120% or no less than 80% of the market value of assets. Since the preliminary calculation of the actuarial value exceeds 120% of market value of assets, the actuarial value of assets has been set equal to 120% of the market value of assets for this valuation. Typically, when this happens, the actuarial asset smoothing method is less effective at smoothing, and the actuarial cost results may be more volatile.
- As indicated in Section 2, Subsection B of this report, the total unrecognized investment loss as of December 31, 2008 is \$86,681,643. 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 8.25% per year (net of expenses) on a **market value** basis will result in investment losses on the actuarial value of assets in the next few years. Therefore, if the actual market return is equal to the assumed 8.25% rate and all other actuarial assumptions are met, the contribution requirements would still increase in each of the next few years.
- The unfunded liability has increased from \$308.5 million as of January 1, 2007 to \$446.5 million as of January 1, 2009. The increase is due primarily to the investment loss on an actuarial basis plus a small loss from salary experience and the additional liability attributable to the changes in assumptions.
- The Board has approved a funding schedule that fully amortizes the unfunded liability through 2028, with a three-year phase-in. Because the fiscal 2010 appropriation has already been budgeted at \$39,899,322, the results of this valuation will first be reflected in the fiscal year 2011 appropriation of \$43,893,051. The fiscal 2012 and fiscal 2013 appropriations will be \$48,286,450 and \$53,120,880, respectively, with payments increasing by 4.5% in fiscal 2014 and later years. If the schedule did not phase-in the appropriation increase, the fiscal 2011 appropriation would be \$48,120,601. If the schedule were extended through 2030 with no phase-in, the fiscal year 2011 appropriation would be \$45,581,718.

**SECTION 1: Valuation Summary for the Barnstable County Retirement System**

**Summary of Key Valuation Results**

	<b>2009</b>	<b>2007</b>
<b>Contributions for fiscal year beginning July 1:</b>		
Recommended for fiscal 2010 and 2008	\$39,899,322	\$34,360,912
Recommended for fiscal 2011 and 2009	43,893,051	36,943,817
Recommended for fiscal 2012 and 2010	48,286,450	38,606,290
<b>Funding elements for plan year beginning January 1:</b>		
Normal cost, including administrative expenses	\$34,487,162	\$33,433,194
Market value of assets	433,408,212	526,487,863
Actuarial value of assets	520,089,855	517,396,087
Actuarial accrued liability	966,564,614	825,863,068
Unfunded actuarial accrued liability	446,474,759	308,466,981
<b>GASB 25/27 for fiscal year beginning July 1:</b>		
Annual required contributions	\$39,899,322	\$36,738,676
Actual contributions	--	36,738,676
Percentage contributed	--	100.00%
Funded ratio – actuarial value of assets	53.81%	62.65%
Funded ratio – market value of assets	44.84%	63.75%
<b>Demographic data for plan year beginning January 1:</b>		
Number of retired participants and beneficiaries	2,368	2,267
Number of inactive participants entitled to a return of their employee contributions	635	670
Number of inactive participants with a vested right to a deferred or immediate benefit	113	117
Number of active participants	5,290	5,314
Total payroll	\$237,426,860	\$216,027,771
Average payroll	44,882	40,653

**SECTION 2: Valuation Results for the Barnstable County 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 seven valuations can be seen in this chart.*

---

**CHART 1**  
**Participant Population: 1997 – 2008**

---

<b>Year Ended December 31</b>	<b>Active Participants</b>	<b>Inactive Participants</b>	<b>Retired Participants and Beneficiaries</b>
1997	4,229	501	1,730
1999	4,713	664	1,816
2001	4,970	899	1,952
2003	5,031	834	2,125
2005	5,269	765	2,201
2006	5,314	787	2,267
2008	5,290	748	2,368

---

**SECTION 2: Valuation Results for the Barnstable County 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 5,290 active participants with an average age of 47.3, average years of service of 10.6 years and average payroll of \$44,882. The 5,314 active participants in the prior valuation had an average age of 46.2, average service of 9.8 years and average payroll of \$40,653.

Among the active participants, there were 6 participants with unknown age information. The actuarial calculations were adjusted for the missing information by assuming that it was the same as

information provided for other active participants with similar known characteristics.

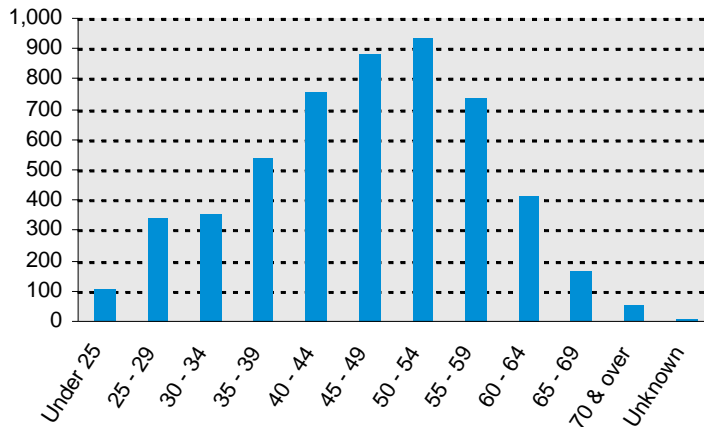
**Inactive Participants**

In this year's valuation, there were 113 participants with a vested right to a deferred or immediate vested benefit.

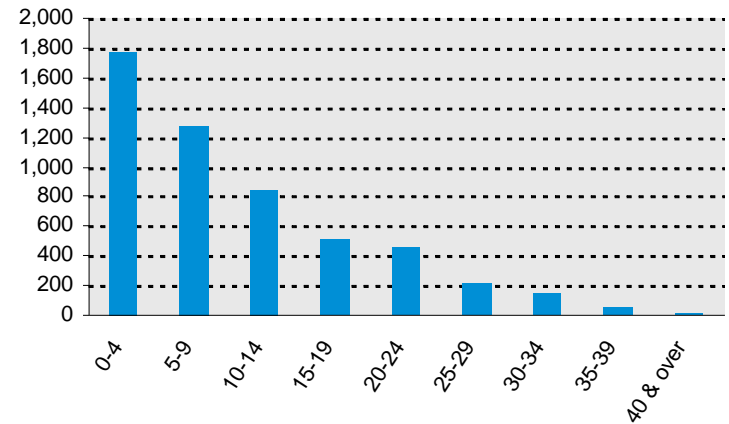
In addition, there were 635 participants entitled to a return of their employee contributions.

*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, 2008**



**CHART 3**  
**Distribution of Active Participants by Years of Service as of December 31, 2008**



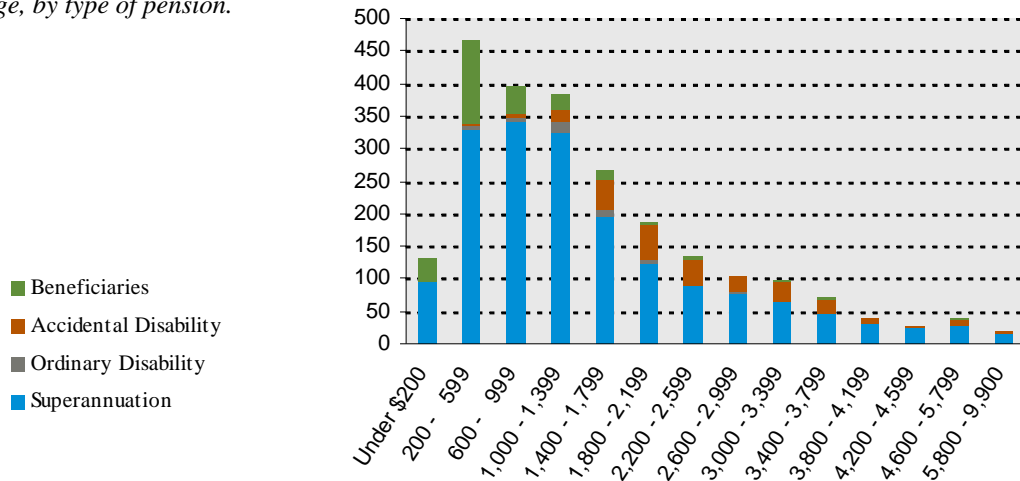
**SECTION 2: Valuation Results for the Barnstable County Retirement System**

**Retired Participants and Beneficiaries**

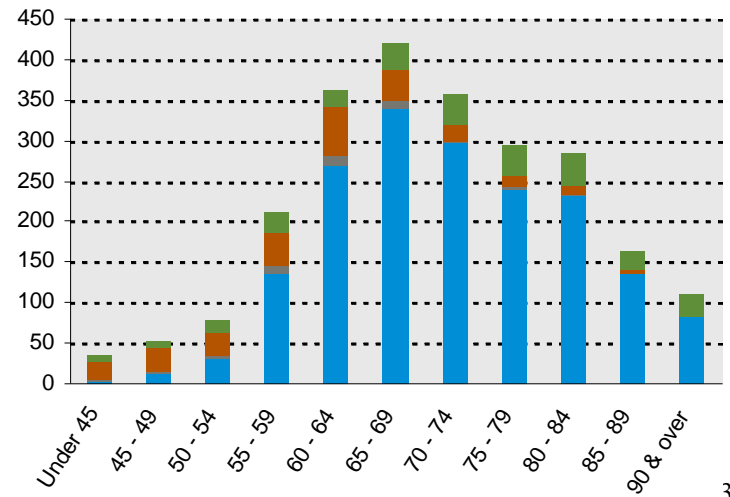
As of December 31, 2008, 2,098 retired participants and 270 beneficiaries were receiving total monthly benefits of \$3,561,030, excluding COLAs reimbursed by the Commonwealth. For comparison, in the previous valuation, there were 2,007 retired participants and 260 beneficiaries receiving monthly benefits of \$3,080,098, excluding COLAs reimbursed by the Commonwealth.

*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, 2008**



**CHART 5**  
**Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2008**



**SECTION 2: Valuation Results for the Barnstable County Retirement System**

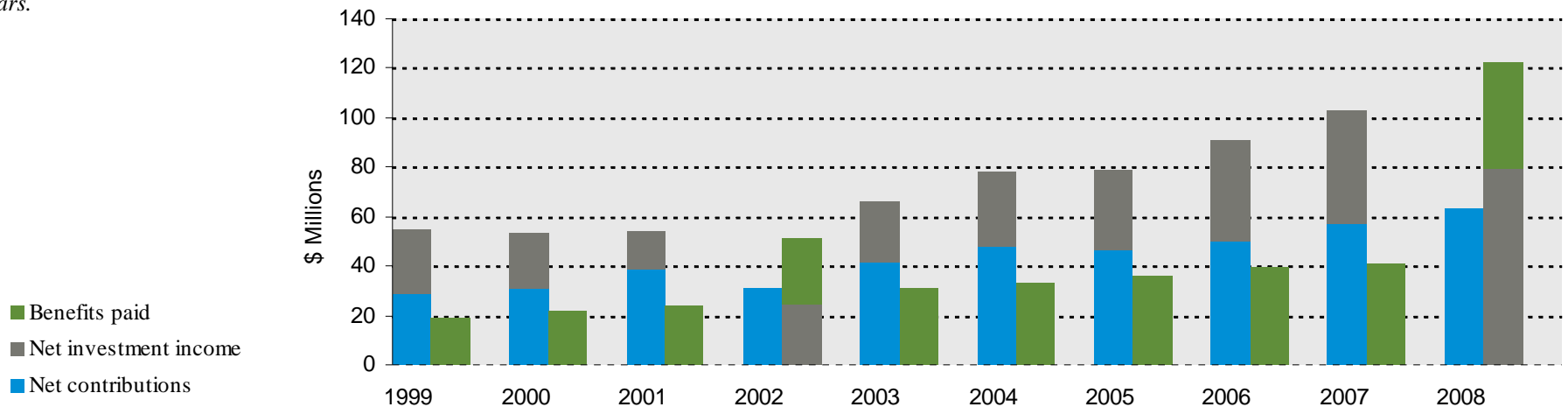
**B. FINANCIAL INFORMATION**

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 ten years.*

**CHART 6**  
**Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 1999 – 2008**



**SECTION 2: Valuation Results for the Barnstable County 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**

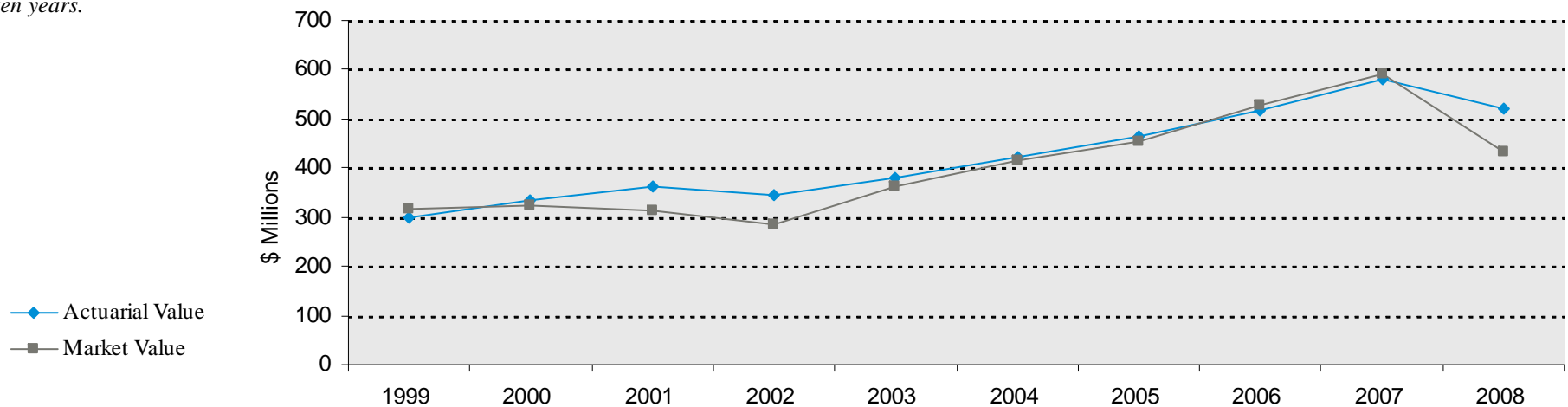
	Year Ended	
	December 31, 2008	December 31, 2007
1. Actuarial value of assets at the beginning of the year	\$579,377,610	\$517,396,087
2. Contributions, less benefit payments and expenses during the year	20,090,012	16,096,989
3. Average actuarial value: (1) + [50% of (2)]	589,422,616	525,444,581
4. Expected investment income: .0825 x (3)	48,627,366	43,349,178
5. Preliminary actuarial value of assets at the end of the year: (1) + (2) + (4)	648,094,988	576,842,254
6. Market value of assets at the end of the year	433,408,212	589,519,034
7. Adjustment toward market value: 20% of [(6) - (5)]	-42,937,355	2,535,356
8. Adjustment to be within 20% corridor	-85,067,778	0
9. Final actuarial value of assets: (5) + (7) + (8)	<u>\$520,089,855</u>	<u>\$579,377,610</u>
10. Actuarial value as a percentage of market value: (9) ÷ (6)	120.0%	98.3%

## SECTION 2: Valuation Results for the Barnstable County Retirement System

Both the actuarial value and market value of assets are representations of the Barnstable County 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 Barnstable County Retirement System's liabilities are compared to its assets to determine what portion, if any, remains unfunded. Amortization of the unfunded 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, 1999 – 2008**



**SECTION 2: Valuation Results for the Barnstable County 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 is \$132,700,599. 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, 2008**

---

1. Net loss from investments*	-\$125,469,777
2. Net gain from administrative expenses	254,690
3. Net loss from other experience**	<u>-7,485,512</u>
4. Net experience loss: (1) + (2) + (3)	-\$132,700,599

---

\* Details in Chart 10

\*\* Details in Chart 13

**SECTION 2: Valuation Results for the Barnstable County 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 Barnstable County 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 2007 and 2008 plan years was 8.73% and -13.47%, respectively.

Since the actual return for the year was less than the assumed return, the Barnstable County Retirement System experienced an actuarial loss of \$125,469,777 during the two-year period ending December 31, 2008 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, 2008	December 31, 2007
1. Actual return	-\$79,377,767	\$45,884,534
2. Average value of assets	589,422,616	525,444,581
3. Actual rate of return: (1) ÷ (2)	-13.47%	8.73%
4. Assumed rate of return	8.25%	8.25%
5. Expected return: (2) x (4)	\$48,627,366	\$43,349,178
6. Actuarial gain/(loss): (1) – (5)	<u>-\$128,005,133</u>	<u>\$2,535,356</u>

**SECTION 2: Valuation Results for the Barnstable County 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 maintained the assumed rate of return of 8.25%.

**CHART 11**

**Investment Return – Actuarial Value vs. Market Value: 1999 - 2008**

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
1999	\$26,183,189	9.72%	\$37,613,550	13.74%
2000	22,811,404	7.48	-2,443,230	-0.76
2001	15,615,391	4.59	-24,671,005	-7.46
2002	-24,583,451	-6.73	-32,053,900	-10.16
2003	24,466,937	7.02	64,521,174	22.15
2004	29,977,086	7.77	39,712,304	10.77
2005	32,279,873	7.54	27,463,017	6.53
2006	41,126,626	8.73	62,425,689	13.61
2007	45,884,534	8.73	46,934,182	8.78
2008	<u>-79,377,767</u>	-13.47	<u>-176,200,834</u>	-29.39
Total	\$134,383,812		\$43,300,947	
	Five-year average return	2.91%		0.01%
	Ten-year average return	3.34%		1.11%

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

**SECTION 2: Valuation Results for the Barnstable County Retirement System**

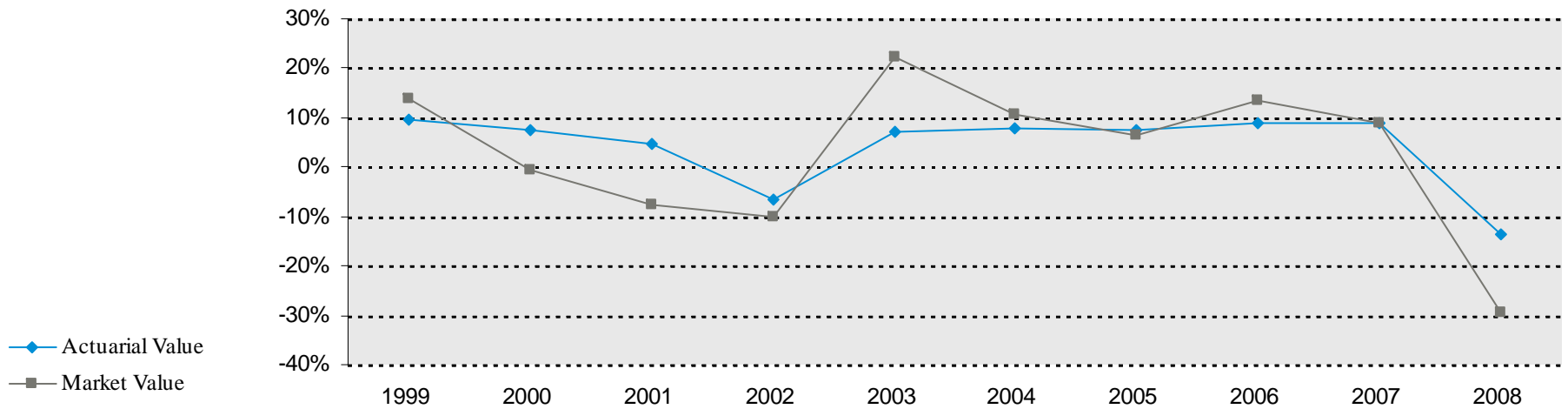
Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

**Administrative Expenses**

Administrative expenses for the years ended December 31, 2008 and 2007 were \$890,150 and \$955,794, compared to the assumption of \$1,000,000 for 2007 and \$1,045,000 for 2008, including an adjustment for interest. This resulted in a gain of \$254,690 for the two-year period. We have maintained the assumption of \$1,000,000 for calendar 2009.

*This chart illustrates how this leveling effect has actually worked over the years 1999 - 2008.*

**CHART 12**  
**Market and Actuarial Rates of Return for Years Ended December 31, 1999 - 2008**



**SECTION 2: Valuation Results for the Barnstable County 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 loss from this other experience for the two-year period ending December 31, 2008 amounted to -\$7,485,512 which is 0.8% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the Barnstable County Retirement System for the two-year period ending December 31, 2008 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 Sources Other Than Investments and Administrative Expenses for Year Ended December 31, 2008**

---

1. Salary increases more than expected for continuing actives	-\$4,899,900
2. Miscellaneous loss	<u>-2,585,612</u>
3. Total	-\$7,485,512

---

## SECTION 2: Valuation Results for the Barnstable County Retirement System

---

With this valuation we recommend the following changes:

- The mortality table for healthy lives was changed from the 1994 Group Annuity Mortality Table to RP-2000 Employees Mortality Table projected 10 years with Scale AA (gender distinct) for pre-retirement mortality and from the 1994 Group Annuity Mortality Table to the RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) for post-retirement mortality.
- The mortality table for disabled participants was changed from the 1994 Group Annuity Mortality Table with 5 year set forward to the RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) set forward 2 years.
- The assumed rates of disability, withdrawal and the salary scale were revised to more accurately reflect recent experience. The new rates of withdrawal, disability and the new salary scale were taken from PERAC's 2002 Local Experiences Study.

Changing these assumptions resulted in a net increase in the unfunded liability of \$9,023,457 and a decrease in the total normal cost of \$2,333,773.

**SECTION 2: Valuation Results for the Barnstable County 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 is based on a 19-year increasing amortization of the 2002 and 2003 ERI liabilities and the remaining unfunded liability (fully funded by June 30, 2028). Amortization payments all increase at 4.50% per year.

The Board has approved a funding schedule that fully amortizes the unfunded liability through 2028, with a

three-year phase-in. Because the fiscal 2010 appropriation has already been budgeted at \$39,899,322, the results of this valuation will first be reflected in the fiscal 2011 appropriation of \$43,893,051. If the schedule did not phase-in the appropriation increase, the fiscal 2011 appropriation would be \$48,120,601. If the schedule were extended though 2030 without phase-in, the fiscal year 2011 appropriation would be \$45,581,718. Exhibits G, H and I in Section 3 show the recommended contribution through 2028, through 2028 with phase-in and through 2030, respectively.

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

**CHART 14  
Recommended Contribution**

	Year Beginning January 1			
	2009		2007	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	\$33,487,162	13.40%	\$32,433,194	14.33%
2. Administrative expenses	1,000,000	0.40%	1,000,000	0.44%
3. Expected employee contributions	<u>-22,986,574</u>	<u>-9.20%</u>	<u>-20,384,094</u>	<u>-9.00%</u>
4. Employer normal cost: (1) + (2) + (3)	\$11,500,588	4.60%	\$13,049,100	5.76%
5. Actuarial accrued liability	966,564,614		825,863,068	
6. Actuarial value of assets	<u>520,089,855</u>		<u>517,396,087</u>	
7. Unfunded actuarial accrued liability: (5) - (6)	\$446,474,759		\$308,466,981	
8. Employer normal cost projected to July 1, 2009 and 2007, adjusted for timing	11,991,822	4.69%	13,606,477	5.88%
9. Projected unfunded actuarial accrued liability	464,526,896		320,939,104	
10. Payment on projected unfunded actuarial accrued liability, adjusted for timing	33,620,290	13.16%	21,732,644	9.39%
11. Preliminary recommended contribution: (8) + (10)	<u>\$45,612,112</u>	<u>17.85%</u>	<u>\$35,339,121</u>	<u>15.27%</u>
12. Budgeted appropriation	<u>\$39,899,322</u>	<u>15.61%</u>	<u>\$34,360,912</u>	<u>14.85%</u>
13. Projected payroll	\$255,533,761		\$231,429,394	

*Notes: Amortization payments increase at 4.50% per year.*

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

**SECTION 2: Valuation Results for the Barnstable County 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 15 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

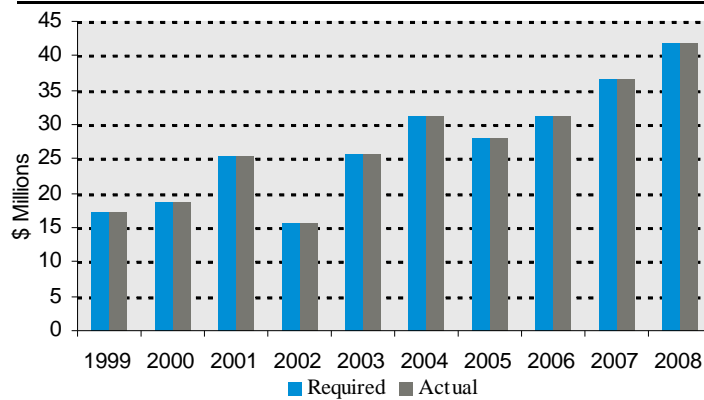
actuarial value of assets of the plan to the liabilities of the plan as calculated under the GASB. High ratios indicate a well-funded plan with assets sufficient to pay most benefits. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

Although GASB requires that the actuarial value of assets be used to determine the funded ratio, Chart 16 shows the funded ratio calculated using both the actuarial value of assets (53.81%) and the market value of assets (44.84%).

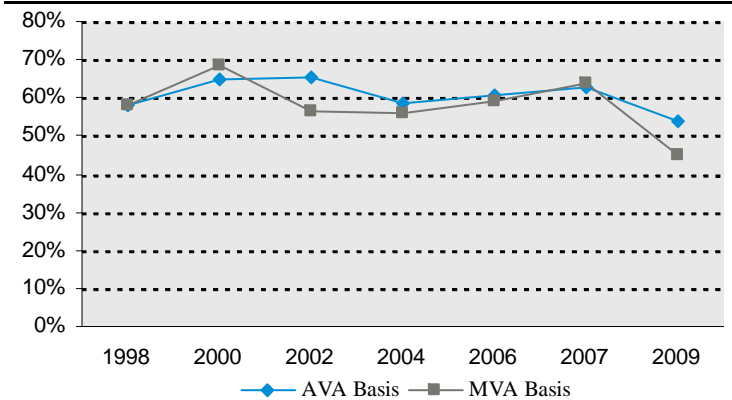
The details regarding the calculations of these values and other GASB numbers may be found in Section 4, Exhibits II, III, and IV.

*These graphs show key GASB factors.*

**CHART 15**  
**Required Versus Actual Contributions**



**CHART 16**  
**Funded Ratio**



**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT A**

**Table of Plan Coverage**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2008</b>	<b>2006</b>	
<b>Active participants in valuation:</b>			
Number	5,290	5,314	-0.5%
Average age	47.3	46.2	N/A
Average service	10.6	9.8	N/A
Total payroll	\$237,426,860	\$216,027,771	9.9%
Average payroll	44,882	40,653	10.4%
Member contributions	184,735,086	158,604,093	16.5%
Number with unknown age and/or service information	6	0	N/A
<b>Inactive participants entitled to a return of their employee contributions</b>			
	635	670	-5.2%
<b>Inactive participants with a vested right to a deferred or immediate benefit</b>			
	113	117	-3.4%
<b>Retired participants:</b>			
Number in pay status	1,779	1,701	4.6%
Average age	71.9	71.9	N/A
Average monthly benefit	\$1,481	\$1,345	10.1%
<b>Disabled participants:</b>			
Number in pay status	319	306	4.2%
Average age	60.5	60.6	N/A
Average monthly benefit	\$2,251	\$2,032	10.8%
<b>Beneficiaries in pay status</b>			
	270	260	3.8%

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT B**

**Participants in Active Service as of December 31, 2008  
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	103	102	1	--	--	--	--	--	--	--
	\$31,325	\$31,090	\$55,329	--	--	--	--	--	--	--
25 – 29	342	289	53	--	--	--	--	--	--	--
	\$38,870	\$36,946	\$49,361	--	--	--	--	--	--	--
30 – 34	352	190	131	30	1	--	--	--	--	--
	\$44,686	\$37,557	\$52,603	\$55,236	\$45,524	--	--	--	--	--
35 – 39	541	177	181	137	43	3	--	--	--	--
	\$48,784	\$37,038	\$49,636	\$58,276	\$61,992	\$67,552	--	--	--	--
40 – 44	759	245	176	132	102	95	9	--	--	--
	\$48,187	\$31,791	\$47,006	\$54,775	\$64,426	\$64,529	\$64,459	--	--	--
45 – 49	882	276	198	141	103	107	52	5	--	--
	\$45,202	\$29,564	\$38,670	\$49,257	\$58,257	\$65,409	\$71,427	\$78,661	--	--
50 – 54	935	206	234	173	107	89	67	55	4	--
	\$45,950	\$34,160	\$37,592	\$42,664	\$50,808	\$58,076	\$69,632	\$76,048	\$73,923	--
55 – 59	739	157	160	129	82	82	50	47	27	5
	\$45,253	\$31,809	\$37,689	\$42,253	\$46,580	\$54,158	\$61,491	\$70,528	\$66,109	\$106,493
60 – 64	414	89	90	74	53	47	24	19	12	6
	\$42,971	\$32,880	\$38,378	\$40,482	\$43,660	\$47,819	\$57,651	\$64,342	\$70,832	\$66,046
65 – 69	165	28	45	24	20	22	10	11	3	2
	\$39,489	\$28,840	\$30,462	\$39,301	\$49,172	\$53,639	\$38,624	\$47,094	\$65,132	\$65,492
70 & over	52	11	6	10	3	8	6	5	1	2
	\$30,197	\$27,218	\$13,717	\$23,443	\$11,789	\$49,930	\$37,839	\$31,875	\$48,925	\$41,977
Unknown	6	6	--	--	--	--	--	--	--	--
	\$10,381	\$10,381	--	--	--	--	--	--	--	--
Total	5,290	1,776	1,275	850	514	453	218	142	47	15
	\$44,882	\$33,567	\$42,518	\$48,025	\$54,226	\$59,091	\$64,363	\$68,949	\$67,552	\$76,245

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT C**

**Summary Statement of Income and Expenses**

	Year Ended December 31, 2008	Year Ended December 31, 2007
<b>Contribution income:</b>		
Employer contributions	\$41,826,233	\$36,738,676
Employee contributions	22,037,322	21,222,808
Federal grant reimbursement contributions	109,158	104,229
Less administrative expenses	<u>-955,794</u>	<u>-890,150</u>
Net contribution income	\$63,016,919	\$57,175,563
<b>Investment income</b>	<u>-79,377,767</u>	<u>45,884,534</u>
<b>Total income available for benefits</b>	-\$16,360,848	\$103,060,097
<b>Less benefit payments:</b>		
Pensions and annuities	-\$41,063,489	-\$38,733,174
Net 3(8)(c) reimbursements	861,681	518,381
Refunds to members	<u>-2,725,100</u>	<u>-2,863,781</u>
Net benefit payments	-\$42,926,907	-\$41,078,574
<b>Change in reserve for future benefits</b>	-\$59,287,755	\$61,981,523

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT D**

**Development of the Fund Through December 31, 2008**

<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>
1999	\$17,448,995	\$12,006,583	\$46,617	\$26,183,190	\$567,839	\$19,302,305	\$300,396,711
2000	18,674,787	12,671,911	50,636	22,811,404	591,022	21,486,621	332,527,806
2001	25,399,346	13,850,025	69,141	15,615,391	607,973	23,941,840	362,911,896
2002	15,545,341	16,241,497	63,541	-24,583,451	623,022	26,476,435	343,079,367
2003	25,561,567	16,407,178	116,269	24,466,937	626,414	30,687,605	378,317,300
2004	31,199,609	17,519,703	167,025	29,977,087	706,303	33,306,836	423,167,585
2005	27,846,430	19,027,004	122,481	32,279,864	780,532	36,024,848	465,637,984
2006	31,044,132	19,753,749	122,894	41,126,626	1,032,312	39,256,986	517,396,087
2007	36,738,676	21,222,808	104,229	45,884,534	890,150	41,078,574	579,377,610
2008	41,826,233	22,037,322	109,158	-79,377,767	955,794	42,926,907	520,089,855

\* Net of investment expenses.

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT E**

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

	Year Ended	
	December 31, 2008	December 31, 2007
1. Unfunded actuarial accrued liability at beginning of year	\$308,903,295	\$308,466,980
2. Normal cost at beginning of year	34,937,688	33,433,194
3. Total contributions	-63,972,713	-58,065,713
4. Interest		
(a) For whole year on (1) + (2)	\$28,366,881	\$28,206,764
(b) For half year on (3)	<u>-3,484,448</u>	<u>-3,137,930</u>
(c) Total interest	<u>24,882,433</u>	<u>25,068,834</u>
5. Expected unfunded actuarial accrued liability	\$304,750,703	\$308,903,295
6. Changes due to:		
(a) Investment loss	\$125,469,777	
(b) Administrative expense gain	-254,690	
(c) Continuing active salary loss	4,899,900	
(d) Miscellaneous loss	2,585,612	
(e) Changes in actuarial assumptions	<u>9,023,457</u>	
(f) Total changes	<u>141,724,056</u>	
7. Unfunded actuarial accrued liability at end of year	<u>\$446,474,759</u>	

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

---

---

**EXHIBIT F**

**Table of Amortization Bases as of July 1, 2009**

---

<b>Type</b>	<b>Annual Payment*</b>	<b>Years Remaining</b>	<b>Outstanding Balance</b>
2002 ERI liability	\$510,124	19.00	\$7,048,315
2003 ERI liability	193,113	19.00	2,668,215
Remaining unfunded liability	<u>32,917,053</u>	19.00	<u>454,810,366</u>
Total	\$33,620,290		\$464,526,896

---

*Notes: Amortization payments increase at 4.50% per year.*

*Payments include adjustment for timing.*

*Does not reflect adjustment to set fiscal 2010 appropriation to budgeted amount.*

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT G**

**Funding Schedule Fully Funded by 2028**

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of 2002 ERI Liability	(4) Amortization of 2003 ERI Liability	(5) Amortization of Remaining Unfunded Liability	(6) Total Plan Cost: (2) + (3) + (4) + (5)	(7) Total Unfunded Accrued Liability at Beginning of Fiscal Year
2010	\$11,991,822	\$510,124	\$193,113	\$27,204,263	\$39,899,322	\$464,526,896
2011	12,531,454	533,080	201,803	34,854,264	48,120,601	473,233,311
2012	13,095,369	557,068	210,884	36,422,706	50,286,027	474,505,796
2013	13,684,661	582,138	220,374	38,061,728	52,548,901	474,183,644
2014	14,300,471	608,333	230,291	39,774,506	54,913,601	472,058,815
2015	14,943,992	635,708	240,654	41,564,359	57,384,713	467,902,664
2016	15,616,472	664,314	251,483	43,434,755	59,967,024	461,464,085
2017	16,319,213	694,209	262,800	45,389,319	62,665,541	452,467,499
2018	17,053,578	725,448	274,626	47,431,838	65,485,490	440,610,663
2019	17,820,989	758,093	286,984	49,566,271	68,432,337	425,562,294
2020	18,622,934	792,208	299,899	51,796,753	71,511,794	406,959,491
2021	19,460,966	827,857	313,394	54,127,607	74,729,824	384,404,931
2022	20,336,709	865,110	327,497	56,563,349	78,092,665	357,463,827
2023	21,251,861	904,040	342,234	59,108,700	81,606,835	325,660,629
2024	22,208,195	944,722	357,635	61,768,591	85,279,143	288,475,439
2025	23,207,564	987,235	373,728	64,548,178	89,116,705	245,340,122
2026	24,251,904	1,031,661	390,546	67,452,846	93,126,957	195,634,087
2027	25,343,240	1,078,085	408,120	70,488,224	97,317,669	138,679,708
2028	26,483,686	1,126,600	426,486	73,660,194	101,696,966	73,737,354

*Notes: Assumes payments increase at 4.50% per year.*

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

*Assumes contributions of budgeted amount for fiscal 2010.*

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT H**

**Funding Schedule Fully Funded by 2028 with Three-Year Phase-In**

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of 2002 ERI Liability	(4) Amortization of 2003 ERI Liability	(5) Amortization of Remaining Unfunded Liability	(6) Total Plan Cost: (2) + (3) + (4) + (5)	(7) Total Unfunded Accrued Liability at Beginning of Fiscal Year
2010	\$11,991,822	\$510,124	\$193,113	\$27,204,263	\$39,899,322	\$464,526,896
2011	12,531,454	533,080	201,803	30,626,714	43,893,051	473,233,311
2012	13,095,369	557,068	210,884	34,423,129	48,286,450	478,992,317
2013	13,684,661	582,138	220,374	38,633,707	53,120,880	481,162,371
2014	14,300,471	608,333	230,291	40,372,223	55,511,318	479,006,270
2015	14,943,992	635,708	240,654	42,188,973	58,009,327	474,788,951
2016	15,616,472	664,314	251,483	44,087,477	60,619,746	468,255,613
2017	16,319,213	694,209	262,800	46,071,414	63,347,636	459,126,621
2018	17,053,578	725,448	274,626	48,144,627	66,198,279	447,095,283
2019	17,820,989	758,093	286,984	50,311,136	69,177,202	431,825,442
2020	18,622,934	792,208	299,899	52,575,137	72,290,178	412,948,855
2021	19,460,966	827,857	313,394	54,941,018	75,543,235	390,062,351
2022	20,336,709	865,110	327,497	57,413,364	78,942,680	362,724,745
2023	21,251,861	904,040	342,234	59,996,965	82,495,100	330,453,488
2024	22,208,195	944,722	357,635	62,696,828	86,207,380	292,721,030
2025	23,207,564	987,235	373,728	65,518,186	90,086,713	248,950,875
2026	24,251,904	1,031,661	390,546	68,466,504	94,140,615	198,513,299
2027	25,343,240	1,078,085	408,120	71,547,497	98,376,942	140,720,702
2028	26,483,686	1,126,600	426,486	74,767,134	102,803,906	74,822,568

*Notes: Assumes payments increase at 4.50% per year after fiscal 2013.  
Recommended contributions are assumed to be paid on July 1 and December 31.*

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT I**

**Funding Schedule Fully Funded by 2030**

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of 2002 ERI Liability	(4) Amortization of 2003 ERI Liability	(5) Amortization of Remaining Unfunded Liability	(6) Total Plan Cost: (2) + (3) + (4) + (5)	(7) Total Unfunded Accrued Liability at Beginning of Fiscal Year
2010	\$11,991,822	\$476,142	\$180,249	\$27,251,109	\$39,899,322	\$464,526,896
2011	12,531,454	497,569	188,360	32,364,335	45,581,718	473,233,311
2012	13,095,369	519,959	196,836	33,820,730	47,632,894	477,200,207
2013	13,684,661	543,359	205,694	35,342,662	49,776,376	479,916,003
2014	14,300,471	567,809	214,950	36,933,082	52,016,312	481,206,457
2015	14,943,992	593,360	224,623	38,595,071	54,357,046	480,879,756
2016	15,616,472	620,061	234,731	40,331,849	56,803,113	478,724,922
2017	16,319,213	647,964	245,294	42,146,782	59,359,253	474,510,080
2018	17,053,578	677,122	256,332	44,043,388	62,030,420	467,980,580
2019	17,820,989	707,593	267,867	46,025,340	64,821,789	458,856,950
2020	18,622,934	739,436	279,921	48,096,480	67,738,771	446,832,679
2021	19,460,966	772,709	292,518	50,260,822	70,787,015	431,571,807
2022	20,336,709	807,481	305,681	52,522,559	73,972,430	412,706,307
2023	21,251,861	843,818	319,436	54,886,074	77,301,189	389,833,246
2024	22,208,195	881,790	333,811	57,355,947	80,779,743	362,511,697
2025	23,207,564	921,470	348,833	59,936,965	84,414,832	330,259,395
2026	24,251,904	962,937	364,530	62,634,128	88,213,499	292,549,100
2027	25,343,240	1,006,268	380,934	65,452,664	92,183,106	248,804,654
2028	26,483,686	1,051,551	398,076	68,398,034	96,331,347	198,396,703
2029	27,675,452	1,098,871	415,989	71,475,946	100,666,258	140,638,051
2030	28,920,847	1,148,320	434,709	74,692,363	105,196,239	74,778,623

*Notes: Assumes payments increase at 4.50% per year.*

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

*Assumes contributions of budgeted amount for fiscal 2010.*

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT J**

**Unit Results**

<b>Unit</b>	<b>Actuarial Accrued Liability</b>	<b>Assets</b>	<b>Unfunded Actuarial Liability</b>	<b>2002 ERI 2009 Appropriation</b>	<b>2003 ERI 2009 Appropriation</b>	<b>Payroll as of September 30, 2008</b>	<b>2010 Appropriation by Unit</b>
Barnstable County	\$112,998,051	\$60,802,081	\$52,195,970	\$185,109	\$26,976	\$27,903,257	\$4,794,377
County Hospital	-	-	-	7,355	-	-	7,355
Town of Barnstable	138,881,292	74,729,355	64,151,937	98,817	-	34,294,755	5,730,725
Barnstable Fire	6,025,924	3,242,434	2,783,490	4,134	-	1,488,016	248,497
Barnstable Housing	2,668,123	1,435,666	1,232,457	3,713	-	658,855	111,911
Town of Bourne	53,428,131	28,748,651	24,679,480	76,775	-	13,193,315	2,243,390
Bourne Recreation	1,961,539	1,055,466	906,073	16,339	-	484,374	95,883
Bourne Water	2,050,133	1,103,137	946,996	4,737	-	506,251	87,874
Town of Brewster	29,388,727	15,813,510	13,575,217	16,221	-	7,257,127	1,207,991
Buzzards Bay Water	1,010,773	543,878	466,895	-	-	249,596	40,989
Cape Code Mosquito	4,152,983	2,234,641	1,918,342	2,591	-	1,025,520	171,003
Cape Cod Regional Technical High School	5,196,900	2,796,352	2,400,548	-	-	1,283,300	210,744
C.O.M.M. Fire	21,286,069	11,453,625	9,832,444	-	4,732	5,256,291	867,924
Town of Chatham	37,104,500	19,965,219	17,139,281	-	-	9,162,427	1,504,660
Cotuit Fire	4,262,413	2,293,522	1,968,891	-	-	1,052,542	172,849
Town of Dennis	45,185,363	24,313,376	20,871,987	-	-	11,157,881	1,832,355
Dennis Housing	1,069,388	575,417	493,971	2,475	-	264,070	45,841
Dennis Water	4,952,216	2,664,692	2,287,524	-	-	1,222,879	200,822
Dennis-Yarmouth Regional School	24,076,142	12,954,910	11,121,232	-	-	5,945,260	976,335
Town of Eastham	22,570,062	12,144,517	10,425,545	22,763	-	5,573,355	938,023
Town of Harwich	51,263,710	27,584,018	23,679,692	-	-	12,658,842	2,078,844
Hyannis Fire	15,729,056	8,463,503	7,265,553	1,634	-	3,884,066	639,478
Town of Mashpee	45,040,309	24,235,325	20,804,984	36,333	-	11,122,062	1,862,806
Town of Nantucket	90,582,300	48,740,596	41,841,704	-	114,404	22,368,007	3,787,693
County of Nantucket	3,745,971	2,015,635	1,730,336	-	-	925,014	151,906
Nauset Regional School	14,366,790	7,730,494	6,636,296	-	-	3,547,674	582,601

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

<b>Unit</b>	<b>Actuarial Accrued Liability</b>	<b>Assets</b>	<b>Unfunded Actuarial Liability</b>	<b>2002 ERI 2009 Appropriation</b>	<b>2003 ERI 2009 Appropriation</b>	<b>Payroll as of September 30, 2008</b>	<b>2010 Appropriation by Unit</b>
North Sagamore Water	896,124	482,187	413,937	-	-	221,285	36,340
Town of Orleans	29,515,771	15,881,869	13,633,902	-	-	7,288,499	1,196,922
Town of Provincetown	23,815,941	12,814,901	11,001,040	-	-	5,881,007	965,783
Town of Sandwich	55,221,979	29,713,886	25,508,093	-	-	13,636,280	2,239,359
Sandwich Water	3,360,891	1,808,431	1,552,460	-	-	829,924	136,291
Town of Truro	15,158,867	8,156,695	7,002,172	13,264	-	3,743,266	627,986
Veterans District	860,653	463,101	397,552	3,971	-	212,526	38,872
Town of Wellfleet	17,324,969	9,322,233	8,002,736	13,893	-	4,278,154	716,454
Town of Yarmouth	71,122,784	38,269,804	32,852,980	-	38,896	17,562,757	2,923,064
Yarmouth Housing	691,423	372,041	319,382	-	3,986	170,737	32,025
Orleans Housing	679,893	365,838	314,055	-	-	167,890	27,571
West Barnstable Fire	1,554,425	836,406	718,019	-	-	383,843	63,035
Bourne Housing	1,200,705	646,076	554,629	-	-	296,497	48,691
Chatham Housing	538,611	289,816	248,795	-	-	133,002	21,842
Brewster Housing	335,849	180,714	155,135	-	-	82,933	13,619
Ground Water Protection District	1,315,458	707,823	607,635	-	-	324,834	53,344
Mashpee Water	2,519,587	1,355,741	1,163,846	-	4,119	622,176	106,293
Mashpee Housing	291,217	156,699	134,518	-	-	71,912	11,809
Nantucket Housing	319,954	172,161	147,793	-	-	79,008	12,975
Sandwich Housing	320,326	172,361	147,965	-	-	79,100	12,990
Nantucket Regional Transportation Authority	522,322	281,052	241,270	-	-	128,980	21,181
<b>Total</b>	<b>\$966,564,614</b>	<b>\$520,089,855</b>	<b>\$446,474,759</b>	<b>\$510,124</b>	<b>\$193,113</b>	<b>\$238,679,346</b>	<b>\$39,899,322</b>

**SECTION 3: Supplemental Information for the Barnstable County Retirement System**

**EXHIBIT K**

**Unit Allocation of ERI Amortizations for Fiscal 2010**

<b>Unit</b>	<b>2002 ERI</b>	<b>2003 ERI</b>	<b>Total</b>
Barnstable County	\$185,109	\$26,976	\$212,085
Barnstable Fire	4,134	--	4,134
Barnstable Housing Authority	3,713	--	3,713
Bourne Recreation	16,339	--	16,339
Bourne Water	4,737	--	4,737
C.O.M.M. Fire	--	4,732	4,732
Cape Cod Mosquito	2,591	--	2,591
County Hospital	7,355	--	7,355
Dennis Housing	2,475	--	2,475
Hyannis Fire	1,634	--	1,634
Mashpee Water	--	4,119	4,119
Town of Barnstable	98,817	--	98,817
Town of Bourne	76,775	--	76,775
Town of Brewster	16,221	--	16,221
Town of Eastham	22,763	--	22,763
Town of Mashpee	36,333	--	36,333
Town of Nantucket	--	114,404	114,404
Town of Truro	13,264	--	13,264
Town of Wellfleet	13,893	--	13,893
Town of Yarmouth	--	38,896	38,896
Veterans District	3,971	--	3,971
Yarmouth Housing	--	<u>3,986</u>	<u>3,986</u>
<b>Total</b>	<b>\$510,124</b>	<b>\$193,113</b>	<b>\$703,237</b>

### SECTION 3: Supplemental Information for the Barnstable County Retirement System

---

#### EXHIBIT L

#### 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 Barnstable County 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 Barnstable County 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 270 beneficiaries in pay status)	2,368
2. Participants active during the year ended December 31, 2008 with total accumulated contributions of \$184,735,086 and projected payroll of \$249,971,296	5,290
3. Inactive participants with a right to a return of their employee contributions as of December 31, 2008	635
4. Inactive participants with a vested right to a deferred or immediate benefit as of December 31, 2008	113

The actuarial factors as of the January 1, 2009 valuation date are as follows:

1. Normal cost, including administrative expenses	\$34,487,162
2. Expected employee contributions	<u>-22,986,574</u>
3. Employer normal cost: (1) + (2)	\$11,500,588
4. Actuarial accrued liability	966,564,614
Retired participants and beneficiaries	\$421,520,781
Active participants	534,203,079
Inactive participants	10,840,754
5. Actuarial value of assets (\$433,408,212 at market value as reported in the Annual Statement)	520,089,855
6. Unfunded actuarial accrued liability: (4) - (5)	446,474,759

The actuarial factors projected to July 1, 2009 are as follows:

1. Employer normal cost projected to July 1, 2009, adjusted for timing	\$11,991,822
2. Projected unfunded actuarial accrued liability	464,526,896
3. Payment on projected unfunded actuarial accrued liability, adjusted for timing	33,620,290
4. Preliminary recommended contribution: (1) + (3)	<u>\$45,612,112</u>
5. Budgeted appropriation based on 2007 actuarial valuation	\$39,899,322
6. Projected payroll	255,533,761

*Notes: Amortization payments increase at 4.50% per year after fiscal 2013.*

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

**SECTION 4: Reporting Information for the Barnstable County Retirement System**

---

**EXHIBIT II**

**Supplementary Information Required by the GASB – Schedule of Employer Contributions**

---

<b>Plan Year Ended December 31</b>	<b>Annual Required Contributions</b>	<b>Actual Contributions</b>	<b>Percentage Contributed</b>
1999	\$17,448,700	\$17,448,700	100.0%
2000	18,674,787	18,674,787	100.0%
2001	25,399,346	25,399,346	100.0%
2002	15,545,341	15,545,341	100.0%
2003	25,561,567	25,561,567	100.0%
2004	31,199,609	31,199,609	100.0%
2005	27,846,430	27,846,430	100.0%
2006	31,044,132	31,044,132	100.0%
2007	36,738,676	36,738,676	100.0%
2008	41,826,233	41,826,233	100.0%

---

**SECTION 4: Reporting Information for the Barnstable County 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>
01/01/1993	\$97,194,645	\$226,430,792	\$129,236,147	42.92%	\$97,074,725	133.13%
01/01/1996	157,044,089	276,107,221	119,063,132	56.88%	108,456,079	109.78%
01/01/1998	235,247,660	404,215,695	168,968,035	58.20%	121,161,677	139.46%
01/01/2000	300,396,700	462,462,500	162,065,800	64.96%	152,293,100	106.42%
01/01/2002	362,911,896	553,531,966	190,620,070	65.56%	173,610,557	109.80%
01/01/2004	378,317,300	647,655,411	269,338,111	58.41%	190,614,004	141.30%
01/01/2006	465,637,984	765,747,723	300,109,739	60.81%	215,474,180	139.28%
01/01/2007	517,396,087	825,863,068	308,466,981	62.65%	226,391,633	136.25%
01/01/2009	520,089,855	966,564,614	446,474,759	53.81%	249,971,296	178.61%

**SECTION 4: Reporting Information for the Barnstable County Retirement System**

---

**EXHIBIT IV**

**Supplementary Information Required by the GASB**

---

<b>Valuation date</b>	January 1, 2009
<b>Actuarial cost method</b>	Entry Age Normal Cost Method
<b>Amortization method</b>	Payments increase at 4.50% per year after fiscal 2013
<b>Remaining amortization period</b>	19 years from July 1, 2009 for 2002 and 2003 Early Retirement Incentives and remaining unfunded liability
<b>Asset valuation method</b>	5-year smoothing of investment returns greater (less) than expected
<b>Actuarial assumptions:</b>	
Investment rate of return	8.25%
Projected salary increases	5.00%
Cost of living adjustments	3.00% of first \$12,000 of retirement income
<b>Plan membership:</b>	
Retired participants and beneficiaries receiving benefits	2,368
Terminated participants entitled to a return of their employee contributions	635
Terminated participants with a vested right to a deferred or immediate benefit	113
Active participants	<u>5,290</u>
Total	8,406

---

**SECTION 4: Reporting Information for the Barnstable County 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) (Previously, 1994 Group Annuity Mortality Table)
Post-Retirement	RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) (Previously, 1994 Group Annuity Mortality Table)

*Disabled:*

RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) set forward 2 years (Previously, 1994 Group Annuity Mortality Table with 5 year set forward)

**Termination Rates before Retirement:**

Age	Groups 1 and 2 - Rate (%)				
	Mortality		Disability	Withdrawal	
	Male	Female	(Previously)	(Previously)	
20	0.03	0.02	0.01	0.06	7.94
25	0.03	0.02	0.02	0.09	7.72
30	0.04	0.02	0.03	0.11	7.22
35	0.07	0.04	0.06	0.18	6.28
40	0.10	0.06	0.10	0.24	5.15
45	0.13	0.10	0.15	0.43	3.98
50	0.18	0.14	0.19	0.61	2.56
55	0.25	0.23	0.24	0.92	0.94
60	0.40	0.37	0.28	1.23	0.09

*Notes: 55% (previously, 50%) of the disability rates shown represent accidental disability.  
20% of the accidental disabilities will die from the same cause as the disability.  
55% (previously, 0%) of the death rates shown represent accidental death.*

**SECTION 4: Reporting Information for the Barnstable County Retirement System**

**Termination Rates before Retirement:**

Age	Group 4 - Rate (%)				
	Mortality		Disability	Withdrawal	
	Male	Female	(Previously)	(Previously)	
20	0.03	0.02	0.10	0.12	0.00
25	0.03	0.02	0.20	0.18	0.00
30	0.04	0.02	0.30	0.22	0.00
35	0.07	0.04	0.30	0.35	0.00
40	0.10	0.06	0.30	0.48	0.00
45	0.13	0.10	1.00	0.85	0.00
50	0.18	0.14	1.25	1.22	0.00
55	0.25	0.23	1.20	1.84	0.00
60	0.40	0.37	0.85	2.46	0.00

*Notes: 90% (previously, 50%) of the disability rates shown represent accidental disability.  
60% of the accidental disabilities will die from the same cause as the disability.  
90% (previously, 0%) 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	7.6		
6	7.5		
7	6.7		
8	6.3		
9	5.9		
10	5.4		
11	5.0		

**SECTION 4: Reporting Information for the Barnstable County Retirement System**

---

<b>Withdrawal Rates (cont.):</b>	12	4.6
	13	4.1
	<b>Years of Service</b>	<b>Groups 1 and 2</b>
	14	3.7
	15	3.3
	16 – 20	2.0
	21 – 29	1.0
	30+	0.0

---

<b>Retirement Rates:</b>		<b>Rate per year (%)</b>		
	<b>Age</b>	<b>Groups 1 and 2</b>		<b>Group 4</b>
		<b>Male</b>	<b>Female</b>	
	45 – 49	--	--	1.0
	50 – 51	1.0	1.5	2.0
	52	1.0	2.0	2.0
	53	1.0	2.5	5.0
	54	2.0	2.5	7.5
	55	2.0	5.5	15.0
	56 – 57	2.5	6.5	10.0
	58	5.0	6.5	10.0
	59	6.5	6.5	15.0
	60	12.0	5.0	20.0
	61	20.0	13.0	20.0
	62	30.0	15.0	25.0
	63	25.0	12.5	25.0
	64	22.0	18.0	30.0
	65	40.0	15.0	100.0
	66 – 67	25.0	20.0	--
	68	30.0	25.0	--
	69	30.0	20.0	--
	70	100.0	100.0	--

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

**SECTION 4: Reporting Information for the Barnstable County Retirement System**

---

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

**Percent Married:** 75%

---

**Net Investment Return:** 8.25%

**Salary Increases:**

<b>Years of Service</b>	<b>Groups 1 and 2</b>	<b>Group 4</b>
0	7.00%	8.00%
1	6.50%	7.50%
2	6.50%	7.00%
3	6.00%	6.50%
4	6.00%	6.00%
5	5.50%	6.00%
6	5.50%	5.50%
7	5.00%	5.50%
8	5.00%	5.25%
9	4.75%	5.25%
10+	4.75%	5.25%

(Previously, 5.0%)

**Interest on Employee Contributions:** 3.5%

**Administrative Expenses:** \$1,000,000 for calendar 2009.

---

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

**2008 Salary:** 2008 salaries are equal to salaries provided in the data except for participants missing salary, where salaries were calculated from annualized contributions divided by the contribution rates provided.

**SECTION 4: Reporting Information for the Barnstable County Retirement System**

---

**Actuarial Value of Assets:** A preliminary actuarial value is first determined by taking the actuarial value of assets at the beginning of the year and adding assumed investment earnings (at the assumed actuarial rate of return) and the net new money during the year (contributions less benefit payments and administrative expenses). Twenty percent of the difference between the market value of assets as reported in the System’s Annual Statement and the preliminary actuarial value of assets is added to the preliminary actuarial value. In order that the actuarial value not differ too significantly from the market value of assets, the final actuarial value of assets must be within 20% of the market value of assets.

---

**Actuarial Cost Method:** 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.

---

**Changes in Assumptions:** Based on past experience and future expectations, the following actuarial assumptions were changed:

- The mortality table for healthy lives was changed from the 1994 Group Annuity Mortality Table to RP-2000 Employees Mortality Table projected 10 years with Scale AA (gender distinct) for pre-retirement mortality and from the 1994 Group Annuity Mortality Table to the RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) for post-retirement mortality.
- The mortality table for disabled participants was changed from the 1994 Group Annuity Mortality Table with 5 year set forward to the RP-2000 Healthy Annuitant Mortality Table projected 10 years with Scale AA (gender distinct) set forward 2 years.
- The assumed rates of disability, withdrawal and the salary scale were revised to more accurately reflect recent experience. The new rates of withdrawal, disability and the new salary scale were taken from PERAC’s 2002 Local Experiences Study.

**SECTION 4: Reporting Information for the Barnstable County 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**

<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 Barnstable County Retirement System**

---

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. 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).

## SECTION 4: Reporting Information for the Barnstable County Retirement System

---

### 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, 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.

### 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.

### 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.

**SECTION 4: Reporting Information for the Barnstable County Retirement System**

---

**"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.

---

**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.

---

**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.

---