State-Boston Retirement System

Actuarial Valuation and Review as of January 1, 2012

SEGAL

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February 4, 2013

Retirement Board
State-Boston Retirement System
City Hall, Room 816
Boston, MA 02201

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of January 1, 2012. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2013 and later years and analyzes the preceding two years' experience.

The report shows the results of the valuation for the State-Boston Retirement System as a whole, and separately for the Teachers and the State-Boston Retirement System excluding the Teachers.

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

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

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

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

Sincerely,

THE SEGAL COMPANY

By: ______________________________

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

Purpose

This report has been prepared by The Segal Company to present a valuation of the State-Boston Retirement System as of January 1, 2012. 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, 2012;
- The assets of the Plan as of December 31, 2011;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

Significant Issues in Valuation Year

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

1. The actuarial valuation report as of January 1, 2012 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected.
2. The report shows the results of the valuation for the State-Boston Retirement System (SBRS) as a whole and separately for the Teachers and the SBRS excluding Teachers.
3. In accordance with Chapter 112 of the Acts of 2010, the assets attributable to Teachers (27% of the market value of assets) were transferred to the PRIT Fund in 2010. The obligation to fund the liabilities of the Teachers and a share of the administrative cost of the SBRS related to the Teachers remains an obligation of the Commonwealth. Appropriations were received by the SBRS from the Commonwealth for the Teachers in December 2010 and December 2011 and subsequently transferred to the PRIT Fund. Transfers are made from the PRIT Fund on a monthly basis to cover the excess of benefit payments to the Teachers and a share of administrative expenses over the Teachers' employee contributions.
4. In February 2010, the City of Boston received a final reimbursement from the Commonwealth for the fiscal 2009 pensions of the Teachers. This amount was transferred to the SBRS in two installments in 2010 and is referred to in this report as the crossover payment.

5. During the plan years ended 2010 and 2011, the market value rates of return for the SBRS were 11.99% and -0.08%, respectively. Because the actuarial value of assets gradually recognizes market value fluctuations, the actuarial rates of return for the plan years ended 2010 and 2011 were 7.48% and 6.00%, respectively. The actuarial value of assets as of December 31, 2011 was $4.855 billion, or 108.6% of the market value of assets of $4.472 billion (as reported by KPMG). As of December 31, 2009, the actuarial value of assets was 107.5% of the market value.

6. The total unrecognized investment loss as of December 31, 2011 is $383,600,069. This investment loss will be recognized in the determination of the actuarial value of assets 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 (net of investment expenses) on a market value basis will result in investment losses on the actuarial value of assets in the next few years. The funding schedule for the SBRS excluding Teachers shown in this report reflect the deferred investment losses in accordance with the asset valuation method adopted by the Board.

7. The following actuarial assumptions were changed in this valuation:

   - The investment return assumption was decreased from 8.00% to 7.75% for the SBRS excluding Teachers.
   - The administrative expense assumption was decreased from $9,200,000 for calendar 2010 to $5,000,000 for calendar 2012, based on information supplied by the System.
   - The pre-retirement mortality assumption and the mortality assumption for non-disabled and disabled retirees were updated as described in Sections 2 and 4 to reflect recent mortality experience and to include a margin for future mortality improvement.
   - The assumed rates of disability have been decreased by 50% for Group 1 and 2 employees and increased by 25% for Group 4 employees to better reflect past experience and future expectations for the SBRS excluding Teachers.
   - The salary increase, retirement, turnover, disability and percent married assumptions for Teachers have been changed to reflect the assumptions being used in the January 1, 2012 Commonwealth Actuarial Valuation Report of the Massachusetts Teachers' Retirement System dated October 19, 2012.

   Changing these assumptions resulted in a net increase in the unfunded liability of $374.2 million and a net increase in the employer normal cost of $6.7 million.

8. The following plan changes are included in this valuation:

   - As permitted by Section 30 of Chapter 176 of the Acts of 2011, the Board has adopted an increase to the Section 12 minimum annual allowance from $3,000 to $6,000.
   - As permitted by Section 19 of Chapter 188 of the Acts of 2010, the Board has adopted an increase to the retiree Cost of Living Adjustment (COLA) base from $12,000 to $13,000 as of July 1, 2012. Chapter 176 of the Acts of 2011 increases the COLA base to $13,000 effective July 1, 2012 for Teachers.

   Changing these plan provisions resulted in a net increase in the unfunded liability of approximately $30.3 million and a net increase in the employer normal cost of approximately $1.1 million.

9. The recommended contributions for the SBRS excluding Teachers are based on a funding schedule that fully funds the liabilities of the SBRS excluding Teachers by June 30, 2025 with total increases in the appropriation of 9.25% per year. The fiscal 2013 appropriation is $170,142,481 and the fiscal 2014 appropriation is $185,880,660. The funding schedule for the SBRS excluding Teachers is shown in Exhibit 3-D.

10. The Commonwealth appropriation for the Teachers is $94,846,000 for fiscal 2013 and is expected to increase by 5% for fiscal 2014.

11. Sections 2 and 3 show participant and asset information, the experience analysis, liabilities and a funding schedule for the SBRS excluding Teachers, with comparisons to 2010. Sections 4 and 5 show the same information for the Teachers with comparisons to 2010. Section 6 shows participant and asset information for all employees of the SBRS.

Summary of Key Valuation Results – SBRS excluding Teachers

	January 1, 2012	January 1, 2010
Contributions:		
Recommended for fiscal 2013 and 2011	$170,142,481*	$215,494,237
Recommended for fiscal 2014 and 2012	185,880,660	154,880,673
Recommended for fiscal 2015 and 2013	203,074,621	167,096,783*
Funding elements for plan year beginning January 1:		
Normal cost, including administrative expenses	$128,503,757	$123,397,700
Market value of assets	3,260,503,002	2,959,889,324
Actuarial value of assets	3,575,387,127	3,181,966,171
Actuarial accrued liability	5,060,071,300	4,552,069,511
Unfunded actuarial accrued liability	1,484,684,173	1,370,103,340
GASB 25/27:		
Annual required contributions (ARC)	$170,142,481*	$342,635,652**
Actual contributions	--	342,365,652
Percentage of ARC contributed	--	100.00%
Funded ratio	70.66%	69.90%
Demographic data for plan year beginning January 1:		
Number of retired participants and beneficiaries	10,000	10,044
Number of inactive participants entitled to a return of their employee contributions	6,196	5,377
Number of inactive participants with a vested right to a deferred or immediate benefit	627	812
Number of active participants	13,951	14,449
Total payroll***	$802,947,807	$809,569,497
Average payroll***	57,555	56,029

* *Fiscal 2013 appropriation was restated due to the adoption of an increase to the COLA base and an increase to the Section 12 minimum annual allowance.*

** *Includes crossover payment of $126,871,415.*

*** *Payroll figures are for the prior calendar year. Calendar year 2009 payroll figures were increased by 11.46% for firefighters to reflect a bargaining contact that was not settled until after December 31, 2009. Calendar year 2009 payroll figures were reduced for police superior officers to reflect retroactive payments that were included in the salary data. Calendar year 2011 payroll figures were increased by 2.5% for police officers to reflect an unsettled bargaining contract.*

Summary of Key Valuation Results - Teachers

	January 1, 2012	January 1, 2010
Funding elements for plan year beginning January 1:		
Normal cost, including administrative expenses	$53,145,171	$55,083,678
Market value of assets	1,211,096,998	1,013,552,440
Actuarial value of assets	1,279,812,942	1,088,927,156
Actuarial accrued liability	2,842,103,544	2,538,948,170
Unfunded actuarial accrued liability	1,562,290,602	1,450,021,014
GASB 25/27:		
Annual required contributions (ARC)	$94,846,000*	$121,290,000
Actual contributions	--	121,290,000
Percentage of ARC contributed	--	100.00%
Funded ratio	45.03%	42.89%
Demographic data for plan year beginning January 1:		
Number of retired participants and beneficiaries	4,189	3,914
Number of inactive participants entitled to a return of their employee contributions	1,713	1,285
Number of inactive participants with a vested right to a deferred or immediate benefit	251	139
Number of active participants	5,448	5,566
Total payroll**	$436,451,621	$435,215,882
Average payroll**	80,112	78,192

* *Contribution amounts for funding future benefits of Teachers are determined by the State Retirement System.*

** *Payroll figures are for the prior calendar year.*

Summary of Key Valuation Results – All SBRS Employees

	January 1, 2012	January 1, 2010
Funding elements for plan year beginning January 1:		
Normal cost, including administrative expenses	$181,648,929	$178,481,378
Market value of assets	4,471,600,000	3,973,441,764
Actuarial value of assets	4,855,200,069	4,270,893,327
Actuarial accrued liability	7,902,174,844	7,091,017,681
Unfunded actuarial accrued liability	3,046,974,775	2,820,124,354
GASB 25/27:		
Annual required contributions (ARC)	$264,988,481**	$463,655,652*
Actual contributions	--	463,655,652
Percentage of ARC contributed	--	100.00%
Funded ratio	61.45%	60.23%
Demographic data for plan year beginning January 1:		
Number of retired participants and beneficiaries	14,189	13,958
Number of inactive participants entitled to a return of their employee contributions	7,909	6,662
Number of inactive participants with a vested right to a deferred or immediate benefit	878	951
Number of active participants	19,399	20,015
Total payroll***	$1,239,399,428	$1,244,785,379
Average payroll***	63,890	62,193

* *Includes crossover payment of $126,871,415.*

** *Fiscal 2013 appropriation for the SBRS excluding Teachers was restated due to the adoption of an increase to the COLA base and an increase to the Section 12 minimum annual allowance. Contribution amounts for funding future benefits of Teachers are determined by the State Retirement System.*

*** *Payroll figures are for the prior calendar year. Calendar year 2009 payroll figures were increased by 11.46% for firefighters to reflect a bargaining contact that was not settled until after December 31, 2009. Calendar year 2009 payroll figures were reduced for police superior officers to reflect retroactive payments that were included in the salary data. Calendar year 2011 payroll figures were increased by 2.5% for police officers to reflect an unsettled bargaining contract.*

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 for the SBRS excluding Teachers.

More detailed information for this valuation year and the preceding valuation can be found in Chart 2-2 and Exhibit 3-A.

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

CHART 2-1

Participant Population: 2007 – 2011

Year Ended December 31	Active Participants	Inactive Participants	Retired Participants and Beneficiaries
2007	15,943	4,959	10,246
2009	14,449	6,189	10,044
2011	13,951	6,823	10,000

Participant Data

Below is a summary of the participant data used in this valuation for the SBRS excluding Teachers.

CHART 2-2

Table of Plan Coverage

Category	Year Ended December 31 2011	Year Ended December 31 2009	Change From Prior Year
Active participants in valuation:			
Number	13,951	14,449	-3.4%
Average age	46.8	46.4	N/A
Average years of service	14.4	13.8	N/A
Total payroll*	$802,947,807	$809,569,497	-0.8%
Average payroll*	57,555	56,029	2.7%
Member contributions	824,276,390	761,566,608	8.2%
Number with unknown age and/or service information	2	2	0.0%
Inactive participants with a vested right to a deferred or immediate benefit	627	812	-22.8%
Inactive participants entitled to a return of their employee contributions	6,196	5,377**	15.2%
Retired participants:			
Number in pay status	6,021	5,914	1.8%
Average age	74.3	74.3	N/A
Average monthly benefit	$2,305	$2,085	10.6%
Disabled participants:			
Number in pay status	1,735	1,725	0.6%
Average age	67.2	66.9	N/A
Average monthly benefit	$3,296	$3,077	7.1%
Beneficiaries in pay status:			
Number in pay status	2,244	2,405	-6.7%
Average age	76.9	76.4	N/A
Average monthly benefit	$1,358	$1,264	7.4%

* *Payroll figures are for the prior calendar year. Calendar year 2009 payroll figures were increased by 11.46% for firefighters to reflect a bargaining contact that was not settled until after December 31, 2009. Calendar year 2009 payroll figures were reduced for police superior officers to reflect retroactive payments that were included in the salary data. Calendar year 2011 payroll figures were increased by 2.5% for police officers to reflect an unsettled bargaining contract.*

** *Includes 544 Suffolk County employees who were included in the active participant data and were transferred to the State Retirement System on January 1, 2010.*

Active Participants

Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 13,951 active participants with an average age of 46.8, average years of service of 14.4 years and average payroll of $57,555. The 14,449 active participants in the prior valuation had an average age of 46.4, average service of 13.8 years and average payroll of $56,029.

Among the active participants, there were two participants with unknown age. 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 627 participants with a vested right to a deferred or immediate vested benefit and 6,196 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 2-3

Distribution of Active Participants by Age as of December 31, 2011

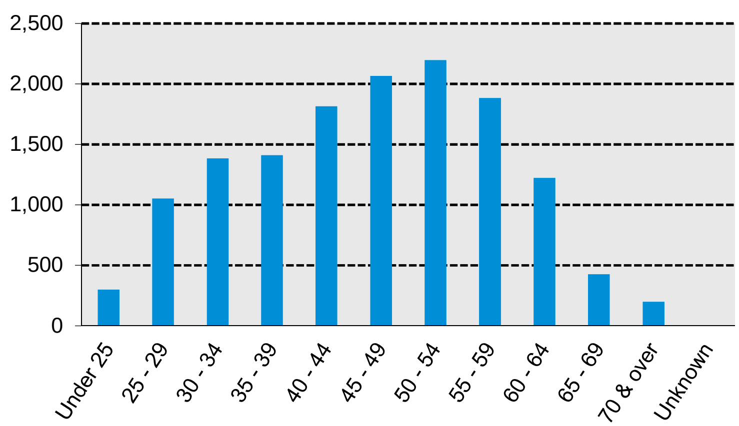
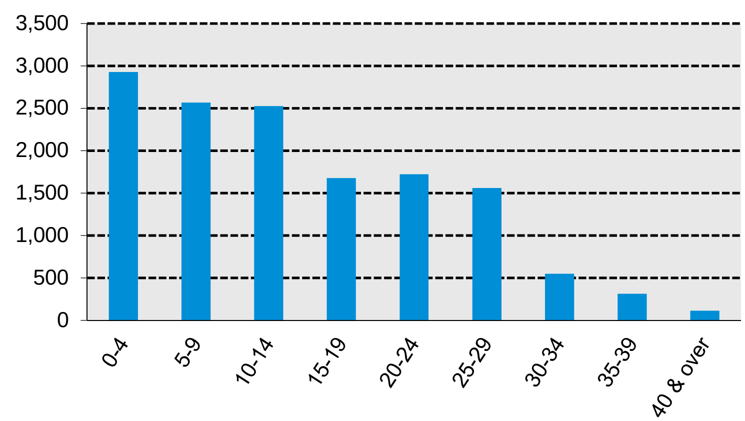


CHART 2-4

Distribution of Active Participants by Years of Service as of December 31, 2011



Retired Participants and Beneficiaries

As of December 31, 2011, 7,756 retired participants and 2,244 beneficiaries were receiving total monthly benefits of $22,644,880, excluding COLAs reimbursed by the Commonwealth. For comparison, in the previous valuation, there were 7,639 retired participants and 2,405 beneficiaries receiving monthly benefits of $20,677,684, 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 2-5

Distribution of Retired Participants and Beneficiaries by Type and by Monthly Amount as of December 31, 2011

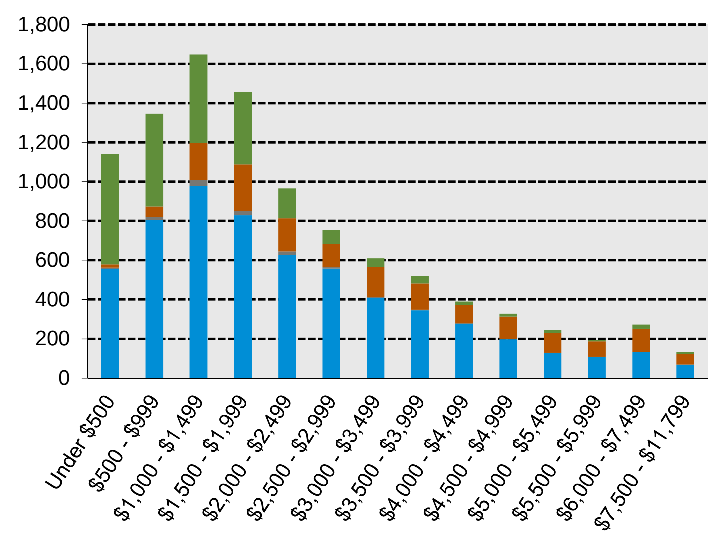
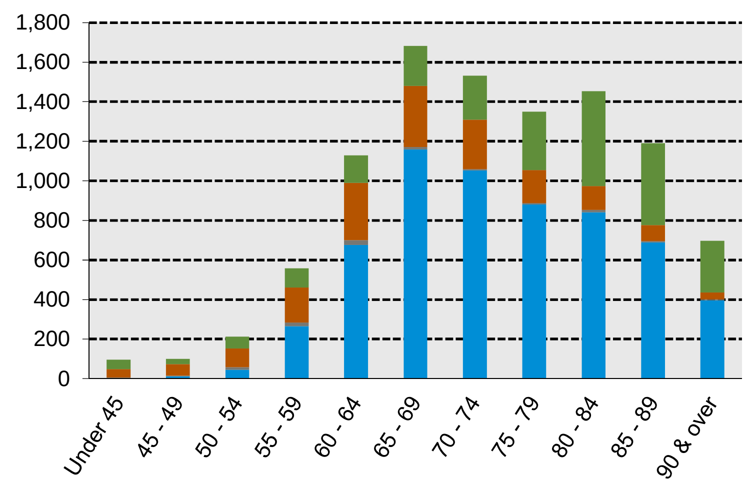


CHART 2-6

Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2011



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 Exhibit 3-B.

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.

Both the actuarial value and market value of assets are representations of the financial status of the SBRS. 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 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.

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

CHART 2-7

Determination of Actuarial Value of Assets

		Year Ended	
		December 31, 2011	**December 31, 2010**
1.	Actuarial value of assets at the beginning of the year	$3,482,792,829	$3,181,966,171
2.	Contributions, less benefit payments and expenses during the year	-103,180,862	72,919,056
3.	Average actuarial value of assets: (1) + 50% of (2)	3,431,202,398	3,218,425,699
4.	Expected investment income: .08 x (3)	274,496,191	257,474,056
5.	Preliminary actuarial value of assets at the end of the year: (1) + (2) + (4)	3,654,108,158	3,512,359,283
6.	Market value of assets at the end of the year	3,260,503,002	3,364,527,011
7.	Adjustment toward market value: 20% of [(6) - (5)]	-78,721,031	-29,566,454
8.	Adjustment to be within 20% corridor	0	0
9.	Final actuarial value of assets: (5) + (7) + (8)	$3,575,387,127	$3,482,792,829
10.	Actuarial value as a percentage of market value: (9) ÷ (6)	109.7%	103.5%

C. ACTUARIAL EXPERIENCE

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

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

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

The total experience loss for the two-year period ended December 31, 2011 is $19,903,799. 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 2-8

Actuarial Experience for Two-Year Period Ended December 31, 2011

1.	Net loss from investments*	-$110,652,801
2.	Net gain from other experience**	90,749,002
3.	Net experience loss: (1) + (2)	-$19,903,799

* *Details in Chart 2-9*

** *Details in Chart 2-11*

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 investment policy investment policy of the SBRS. For valuation purposes, the assumed rate of return on the actuarial value of assets was 8.00% for 2011 and 2010. The actual rates of return on an actuarial basis for the 2011 and 2010 plan years were 5.71% and 7.08%, respectively.

Since the actual return for the year was less than the assumed return, there was an actuarial loss of $110,652,801 (including an adjustment for interest) during the two-year period ending December 31, 2011 with regard to investments.

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

CHART 2-9

Actuarial Value Investment Experience

	Year Ended December 31, 2011	Year Ended December 31, 2010
1. Actual return	$195,775,161	$227,907,602
2. Average value of assets	3,431,202,398	3,218,425,699
3. Actual rate of return: (1) ÷ (2)	5.71%	7.08%
4. Assumed rate of return	8.00%	8.00%
5. Expected return: (2) x (4)	$274,496,192	$257,474,056
6. Actuarial loss: (1) – (5)	-$78,721,031	-$29,566,454

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 two years.

Based upon this experience and future expectations, we have decreased the assumed rate of return from 8.00% to 7.75% for the SBRS excluding Teachers.

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 SBRS for the years ended December 31, 2010 and 2011 were $4,907,735 and $4,838,140, respectively, compared to the assumption of $9,200,000 for calendar year 2010 and $6,671,000 for calendar year 2011.

We have assumed administrative expenses of $5,000,000 for the SBRS in calendar 2012 and assigned a portion based on projected payroll to the SBRS excluding Teachers of $3,232,709.

CHART 2-10

Investment Return – Actuarial Value vs. Market Value: 2010 - 2011

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2010	$227,907,602	7.08%	$331,718,631	11.07%
2011	195,775,161	5.71	-843,146	-0.03
Total	$423,682,763		$330,875,485	

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

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, 2011 amounted to $90,749,002, which is 1.8% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the SBRS excluding Teachers for the two-year period ending December 31, 2011 is shown in the chart below.

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

CHART 2-11

Experience Due to Changes in Demographics for Two-Year Period Ended December 31, 2011

1.	Salary increases less than expected for continuing actives	$149,180,102
2.	Fewer deaths than expected amongst retired members and beneficiaries	-14,192,854
3.	Miscellaneous loss	-44,238,246
4.	Total	$90,749,002

This valuation reflects the following changes in assumptions for the SBRS excluding Teachers:

- The investment return assumption was decreased from 8.00% to 7.75%.
- Salaries reported for 2011 were increased by 2.5% for police to reflect unsettled bargaining contracts.
- The administrative expense assumption is $5,000,000 for calendar 2012, based on information supplied by the System. A portion of the assumed administrative expenses of $3,232,709 is allocated to the SBRS excluding Teachers based on projected payroll.
- The pre-retirement mortality assumption was changed from the RP-2000 Combined Healthy Mortality Table to the RP-2000 Employee Mortality Table projected 20 years using Scale AA.
- The mortality assumption for non-disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table to the RP-2000 Healthy Annuitant Mortality Table projected 15 years using Scale AA.
- The mortality assumption for disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table set forward five years to the RP-2000 Health Annuitant Mortality Table projected 5 years using Scale AA with a three year set forward for males.
- The assumed rates of disability have been decreased by 50% for Group 1 and 2 employees and increased by 25% for Group 4 employees.

Changing these assumptions resulted in a net increase in the unfunded liability of $270.8 million and a net increase in the employer normal cost of $8.1 million.

D. RECOMMENDED CONTRIBUTION

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

The fiscal 2013 appropriation has already been budgeted at $170,142,481. The results of this valuation will first be reflected in the fiscal 2014 appropriation of $185,880,660. Exhibit 3-D in Section 3 shows the recommended contribution through fiscal 2030 based on a funding schedule that fully funds the liabilities of the SBRS excluding Teachers by June 30, 2025 with total increases in the appropriation of 9.25% per year and annual recognition of deferred investment losses.

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

CHART 2-12

Recommended Contribution

	Year Beginning January 1			
	2012		2010	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	$125,271,048	14.89%	$117,412,838	13.82%
2. Administrative expenses	3,232,709	0.38%	5,984,862	0.70%
3. Expected employee contributions	-78,243,958	-9.30%	-77,013,679	-9.06%
4. Employer normal cost: (1) + (2) + (3)	$50,529,799	5.97%	$46,384,021	5.46%
5. Actuarial accrued liability	5,060,071,300		4,552,069,511	
6. Actuarial value of assets	3,575,387,127		3,181,966,171	
7. Unfunded actuarial accrued liability: (5) - (6)	$1,484,684,173		$1,370,103,340	
8. Employer normal cost projected to July 1, 2012 and 2010	51,378,201	5.97%	47,338,008	5.45%
9. Projected unfunded actuarial accrued liability	1,541,142,220		1,294,123,221	
10. Budgeted appropriation for fiscal 2013 and 2011	$170,142,481	19.77%	$215,494,237	24.81%
11. Projected payroll for fiscal 2013 and 2011	$860,399,640		$868,535,345	

Notes: Fiscal 2011 budgeted appropriation does not include crossover payment of $126,871,415.
Contributions assumed to be paid on July 1.

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 2-13 below presents a graphical representation of this information for the SBRS excluding Teachers.

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

Although the GASB requires that the actuarial value of assets be used to determine the funded ratio, Chart 2-14 shows the funded ratio calculated using both the actuarial value of assets (70.66%) and the market value of assets (64.44%).

These graphs show key GASB factors.

CHART 2-13

Required Versus Actual Contributions

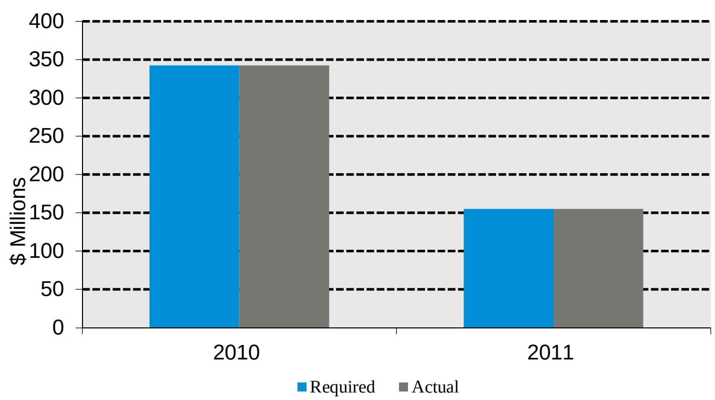


CHART 2-14

Funded Ratio

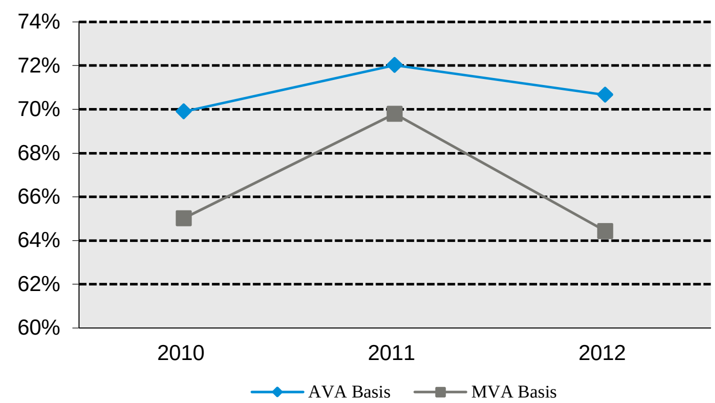


EXHIBIT 3-A

Participants in Active Service as of December 31, 2011
By Age, Years of Service, and Average Payroll

		Years of Service								
Age	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	300	290	10	- -	- -	- -	- -	- -	- -	- -
	$35,541	$35,735	$29,925	- -	- -	- -	- -	- -	- -	- -
25 - 29	1,052	778	259	15	- -	- -	- -	- -	- -	- -
	$47,793	$47,935	$47,790	$40,461	- -	- -	- -	- -	- -	- -
30 - 34	1,383	547	627	202	7	- -	- -	- -	- -	- -
	$54,243	$47,351	$60,182	$54,747	$46,246	- -	- -	- -	- -	- -
35 - 39	1,409	333	416	463	183	14	- -	- -	- -	- -
	$57,580	$43,986	$58,340	$62,652	$67,546	$60,283	- -	- -	- -	- -
40 - 44	1,814	266	305	492	422	274	55	- -	- -	- -
	$60,891	$38,034	$47,794	$61,978	$74,948	$72,774	$67,283	- -	- -	- -
45 - 49	2,064	244	286	389	298	486	349	12	- -	- -
	$61,135	$37,903	$40,803	$50,098	$65,844	$79,646	$76,554	$60,728	- -	- -
50 - 54	2,196	194	255	373	277	423	505	151	18	- -
	$61,331	$38,278	$37,591	$44,312	$57,025	$70,415	$82,459	$83,355	$74,103	- -
55 - 59	1,884	150	200	281	240	272	376	231	128	6
	$61,065	$39,973	$40,307	$48,539	$46,921	$63,413	$74,399	$86,793	$81,005	$74,742
60 - 64	1,222	96	124	177	151	172	170	130	130	72
	$60,261	$38,076	$37,466	$43,926	$54,056	$52,657	$60,860	$83,480	$97,762	$89,387
65 - 69	426	26	51	95	68	57	74	19	17	19
	$44,171	$22,125	$27,722	$39,536	$47,952	$48,060	$48,788	$56,360	$50,999	$80,188
70 & over	199	3	34	40	31	23	28	7	17	16
	$34,556	$8,704	$20,674	$25,938	$28,314	$48,024	$45,965	$47,699	$41,736	$49,839
Unknown	2	- -	- -	- -	- -	- -	1	- -	1	- -
	$79,607	- -	- -	- -	- -	- -	$79,973	- -	$79,241	- -
Total	13,951	2,927	2,567	2,527	1,677	1,721	1,558	550	311	113
	$57,555	$42,791	$48,826	$52,786	$61,593	$69,394	$74,042	$82,949	$83,818	$81,463

Note: Calendar year 2011 payroll figures were increased by 2.5% for police officers to reflect an unsettled bargaining contract.

EXHIBIT 3-B

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2011		Year Ended December 31, 2010	
Net assets at actuarial value at the beginning of the year		$3,482,792,829		$3,181,966,171
Contribution income:				
Employer contributions	$154,880,673		$342,365,652*	
Employee contributions	94,176,741		122,974,383**	
Less administrative expenses	-4,838,140		-4,907,735	
Net contribution income		244,219,274		460,432,300
Investment income		195,775,161		227,907,602
Total income available for benefits		$439,994,435		$688,339,902
Net benefit payments		-$384,247,408		-$405,025,319
Requested transfer of assets from the PRIT Fund for Teachers' benefit payments and administrative expenses not previously reimbursed		$36,847,271		$17,512,075
Change in reserve for future benefits		$92,594,298		$300,826,658
Net assets at actuarial value at the end of the year		$3,575,387,127		$3,482,792,829

* *Includes additional payment of $82,000,000 and crossover payment of $126,871,415.*

** *Excludes the transfer of Annuity Savings Fund balances for Suffolk County employees to the State Retirement System, as this transfer was included in the January 1, 2010 actuarial value of assets.*

EXHIBIT 3-C

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

	Year Ended			
	December 31, 2011		December 31, 2010	
1. Unfunded actuarial accrued liability at beginning of year		$1,151,899,331		$1,370,103,340
2. Normal cost at beginning of year		127,036,091		123,397,700
3. Total contributions		-200,287,790		-443,347,878
4. Interest				
(a) For whole year on (1) + (2)	$102,314,833		$119,480,084	
(b) For half year on (3)	-8,011,512		-17,733,915	
(c) Total interest		94,303,321		101,746,169
5. Expected unfunded actuarial accrued liability		$1,172,950,953		$1,151,899,331
6. Changes due to:				
(a) Experience loss	$19,903,799		- -	
(b) Assumption changes	270,815,689		- -	
(c) Plan provision changes	21,013,732		- -	
(d) Total changes		311,733,220		- -
7. Unfunded actuarial accrued liability at end of year		$1,484,684,173		- -

EXHIBIT 3-D

Funding Schedule

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Inactive Sheriff Liability	(4) Amortization of Remaining Unfunded Liability	(5) Crossover Payment Savings	(6) Savings from Additional Payment in Fiscal 2011	(7) Total Employer Contributions: (2) + (3) + (4) + (5) + (6)	(8) Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(9) Percent Increase in Total Cost
2013	$51,378,201	$3,874,532	$139,018,495	$(14,679,119)	$(9,449,628)	$170,142,481	$1,541,142,220	9.85%
2014	53,690,220	3,874,532	152,444,655	(14,679,119)	(9,449,628)	185,880,660	1,607,034,626	9.25%
2015	56,106,280	3,874,532	167,222,556	(14,679,119)	(9,449,628)	203,074,621	1,654,038,348	9.25%
2016	58,631,063	3,874,532	183,482,175	(14,679,119)	(9,449,628)	221,859,023	1,680,580,836	9.25%
2017	61,269,461	3,874,532	201,365,737	(14,679,119)	(9,449,628)	242,380,983	1,684,643,850	9.25%
2018	64,026,587	3,874,532	221,028,852	(14,679,119)	(9,449,628)	264,801,224	1,663,739,378	9.25%
2019	66,907,783	3,874,532	242,641,769	(14,679,119)	(9,449,628)	289,295,337	1,614,883,516	9.25%
2020	69,918,633	3,874,532	266,390,738	(14,679,119)	(9,449,628)	316,055,156	1,534,557,899	9.25%
2021	73,064,971	3,874,532	292,479,502	(14,679,119)	(9,449,628)	345,290,258	1,388,274,033	9.25%
2022	76,352,895	3,874,532	321,130,927	(14,679,119)	(9,449,628)	377,229,607	1,202,542,524	9.25%
2023	79,788,775	3,874,532	352,588,786	(14,679,119)	(9,449,628)	412,123,346	971,544,913	9.25%
2024	83,379,270	3,874,532	387,119,701	(14,679,119)	(9,449,628)	450,244,756	688,749,144	9.25%
2025	87,131,337	3,874,532	367,083,844	(14,679,119)	(9,449,628)	433,960,966	346,829,642	-3.62%
2026	91,052,247	-	-	-	-	91,052,247	-	-79.02%
2027	95,149,598	-	-	-	-	95,149,598	-	4.50%
2028	99,431,330	-	-	-	-	99,431,330	-	4.50%
2029	103,905,740	-	-	-	-	103,905,740	-	4.50%
2030	108,581,498	-	-	-	-	108,581,498	-	4.50%

Notes: Item (2) increases at 4.50% per year.
Anticipates deferred investment losses.
Recommended contribution for fiscal 2013 reflects budgeted amount.
Recommended contribution is assumed to be paid on July 1.

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 for the Teachers of the SBRS.

More detailed information for this valuation year and the preceding valuation can be found in Chart 4-2 and Exhibit 5-A.

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

CHART 4-1

Participant Population: 2007 – 2011

Year Ended December 31	Active Participants	Inactive Participants	Retired Participants and Beneficiaries
2007	5,805	1,281	3,693
2009	5,566	1,424	3,914
2011	5,448	1,964	4,189

Participant Data

Below is a summary of the participant data used in this valuation for the Teachers.

CHART 4-2

Table of Plan Coverage

Category	Year Ended December 31 2011	Year Ended December 31 2009	Change From Prior Year
Active participants in valuation:			
Number	5,448	5,566	-2.1%
Average age	43.6	44.0	N/A
Average years of service	12.7	12.9	N/A
Total payroll*	$436,451,621	$435,215,882	0.3%
Average payroll*	80,112	78,192	2.5%
Member contributions	408,602,061	394,164,781	3.7%
Number with unknown age and/or service information	0	1	-100.0%
Inactive participants with a vested right to a deferred or immediate benefit	251	139	80.6%
Inactive participants entitled to a return of their employee contributions	1,713	1,285	33.3%
Retired participants:			
Number in pay status	3,805	3,517	8.2%
Average age	70.7	70.4	N/A
Average monthly benefit	$3,968	$3,708	7.0%
Disabled participants:			
Number in pay status	112	112	0.0%
Average age	69.2	68.8	N/A
Average monthly benefit	$2,755	$2,555	7.8%
Beneficiaries in pay status:			
Number in pay status	272	285	-4.6%
Average age	73.3	73.0	N/A
Average monthly benefit	$1,530	$1,460	4.8%

** Payroll figures are for the prior calendar year.*

Active Participants
Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 5,448 active participants with an average age of 43.6, average years of service of 12.7 years and average payroll of $80,112. The 5,566 active participants in the prior valuation had an average age of 44.0, average service of 12.9 years and average payroll of $78,192.

Inactive Participants
In this year's valuation, there were 251 participants with a vested right to a deferred or immediate vested benefit and 713 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 4-3

Distribution of Active Participants by Age as of December 31, 2011

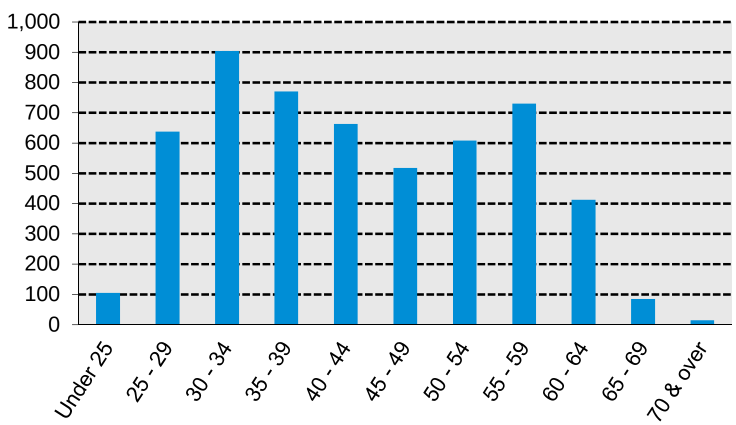
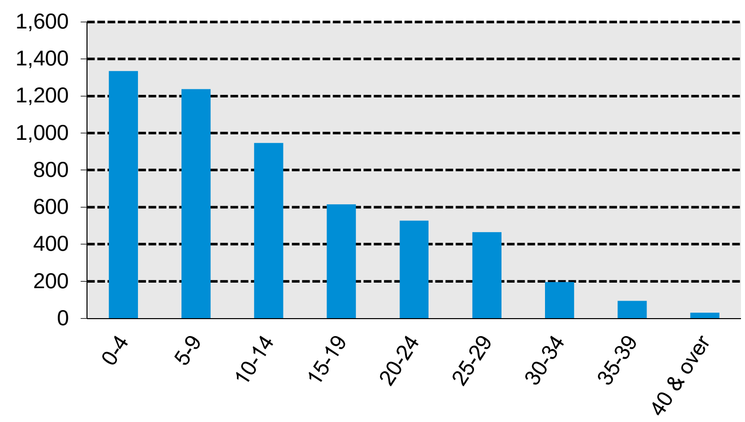


CHART 4-4

Distribution of Active Participants by Years of Service as of December 31, 2011



Retired Participants and Beneficiaries

As of December 31, 2011, 3,917 retired participants and 272 beneficiaries were receiving total monthly benefits of $15,824,119. For comparison, in the previous valuation, there were 3,629 retired participants and 285 beneficiaries receiving monthly benefits of $13,742,273.

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

CHART 4-5

Distribution of Retired Participants and Beneficiaries by Type and by Monthly Amount as of December 31, 2011

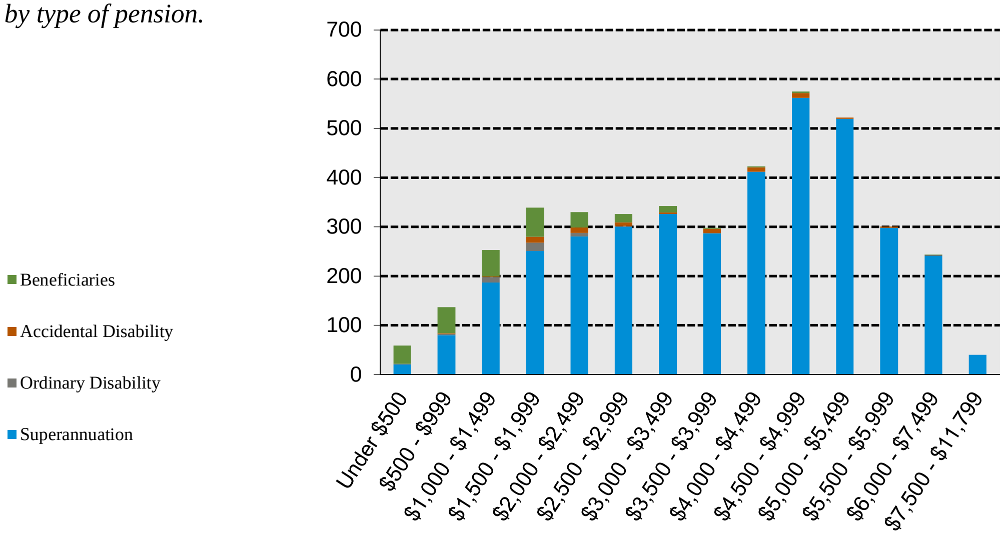
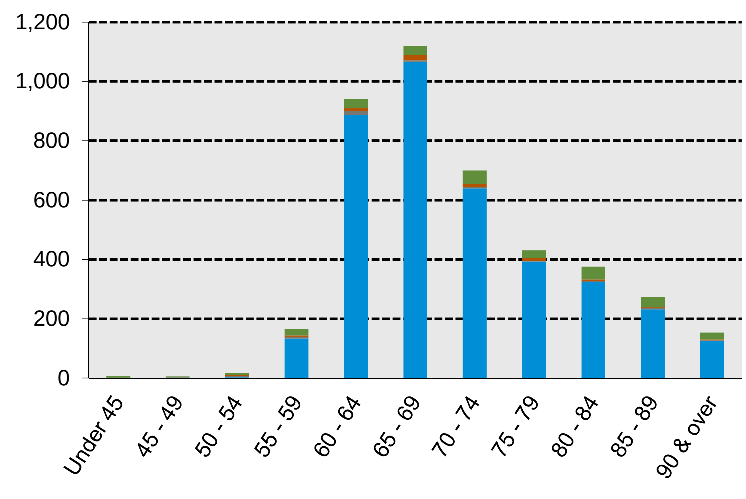


CHART 4-6

Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2011



B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both net contributions and net investment earnings (less investment fees and administrative expenses) 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 Exhibit 5-B.

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.

Both the actuarial value and market value of assets are representations of the financial status of the SBRS. 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 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.

CHART 4-7

Determination of Actuarial Value of Assets

		Year Ended	
		December 31, 2011	December 31, 2010
1.	Actuarial value of assets at the beginning of the year	$1,238,975,696	$1,088,927,156
2.	Contributions, less benefit payments and expenses during the year	-42,448,272	54,777,925
3.	Average actuarial value of assets: (1) + 50% of (2)	1,217,751,560	1,102,621,637*
4.	Expected investment income: .0825 x (3)	100,464,504	90,966,285
5.	Preliminary actuarial value of assets at the end of the year: (1) + (2) + (4)	1,296,991,928	1,234,671,366
6.	Market value of assets at the end of the year	1,211,096,998	1,256,193,016
7.	Adjustment toward market value: 20% of [(6) - (5)]	-17,178,986	4,304,330
8.	Adjustment to be within 20% corridor	0	0
9.	Final actuarial value of assets: (5) + (7) + (8)	$1,279,812,942	$1,238,975,696
10.	Actuarial value as a percentage of market value: (9) ÷ (6)	105.7%	98.6%

* *For 2010, only 25% of contributions, less benefit payments and expenses were included in the average actuarial value of assets since Teachers' assets were not tracked separately until July 1, 2010.*

C. ACTUARIAL EXPERIENCE

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

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

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

The total experience gain for the two-year period ended December 31, 2011 is $68,880,827. 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 4-8

Actuarial Experience for Two-Year Period Ended December 31, 2011

1. Net loss from investments*	-$12,519,549
2. Net gain from other experience**	81,400,376
3. Net experience gain: (1) + (2)	$68,880,827

* *Details in Chart 4-9*

** *Details in Chart 4-11*

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 investment policy of the PRIM Board. For valuation purposes, the assumed rate of return on the actuarial value of assets was 8.25% for 2011 and 2010. The actual rates of return on an actuarial basis for the 2011 and 2010 plan years were 6.84% and 8.64%, respectively.

Since the actual return for the year was less than the assumed return, there was an actuarial loss of $12,519,549 (including an adjustment for interest) during the two-year period ending December 31, 2011 with regard to investments.

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

CHART 4-9

Actuarial Value Investment Experience

	Year Ended December 31, 2011	Year Ended December 31, 2010
1. Actual return	$83,285,518	$95,270,615
2. Average value of assets	1,217,751,561	1,102,621,637
3. Actual rate of return: (1) ÷ (2)	6.84%	8.64%
4. Assumed rate of return	8.25%	8.25%
5. Expected return: (2) x (4)	$100,464,504	$90,966,285
6. Actuarial gain/(loss): (1) – (5)	-$17,178,986	$4,304,330

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 two years.

We have maintained the assumed rate of return of 8.25% for the Teachers of the SBRS to be consistent with the assumptions used in the January 1, 2012 Commonwealth Actuarial Valuation Report of the Massachusetts Teachers' Retirement System dated October 19, 2012.

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 SBRS for the years ended December 31, 2010 and 2011 were $4,907,735 and $4,838,140, respectively, compared to the assumption of $9,200,000 for calendar year 2010 and $6,671,000 for calendar year 2011.

We have assumed administrative expenses of $5,000,000 for the SBRS in calendar 2012 and assigned a portion based on projected payroll to the Teachers of $1,767,291.

CHART 4-10

Investment Return – Actuarial Value vs. Market Value: 2010 - 2011

	Actuarial Value Investment Return		Market Value Investment Return	
Year Ended December 31	Amount	Percent	Amount	Percent
2010	$95,270,615	8.64%	$154,709,657	14.59%
2011	83,285,518	6.84	-2,647,747	-0.21
Total	$178,556,133		$152,061,910	

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

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, 2011 amounted to $81,400,376, which is 2.9% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the Teachers of the SBRS for the two-year period ending December 31, 2011 is shown in the chart below.

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

CHART 4-11

Experience Due to Changes in Demographics for Two-Year Period Ended December 31, 2011

1.	Salary increases less than expected for continuing actives	$45,854,922
2.	Fewer deaths than expected amongst retired members and beneficiaries	-13,958,720
3.	Miscellaneous gain	49,504,174
4.	Total	$81,400,376

This valuation reflects the following changes in assumptions for the Teachers of the SBRS:

- The administrative expense assumption is $5,000,000 for calendar 2012, based on information supplied by the System. A portion of the assumed administrative expenses of $1,767,291 is allocated to the Teachers based on projected payroll.
- The pre-retirement mortality assumption was changed from the RP-2000 Combined Healthy Mortality Table the RP-2000 Employee Mortality Table projected 10 years using Scale AA with an additional 1.25% load on the actuarial accrued liability and normal cost.
- The mortality assumption for non-disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table to the RP-2000 Healthy Annuitant Mortality Table projected 10 years using Scale AA with an additional 1.25% load on the actuarial accrued liability and normal cost.
- The mortality assumption for disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table set forward five years to the RP-2000 Healthy Annuitant Mortality Table with a three year set forward for males and an additional 1.25% load on the actuarial accrued liability and normal cost.
- The salary increase, retirement, turnover, disability and percent married assumptions for Teachers have been changed to reflect the assumptions being used in the January 1, 2012 Commonwealth Actuarial Valuation Report of the Massachusetts Teachers' Retirement System dated October 19, 2012.

Changing these assumptions resulted in a net increase in the unfunded liability of $103.4 million and a net decrease in the employer normal cost of $1.4 million.

D. RECOMMENDED CONTRIBUTION

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

The fiscal 2013 appropriation for the Teachers has already been budgeted at $94,846,000 by the Commonwealth. The fiscal 2014 appropriation is expected to increase by 5% and the pension obligations of the Commonwealth are expected to be fully funded by June 30, 2040.

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

CHART 4-12

Recommended Contribution

	Year Beginning January 1			
	2012		2010	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	$51,377,880	11.17%	$51,868,540	11.37%
2. Administrative expenses	1,767,291	0.38%	3,215,138	0.70%
3. Expected employee contributions	-48,411,917	-10.52%	-47,430,124	-10.39%
4. Employer normal cost: (1) + (2) + (3)	$4,733,254	1.03%	$7,653,554	1.68%
5. Actuarial accrued liability	2,842,103,544		2,538,948,170	
6. Actuarial value of assets	1,279,812,942		1,088,927,156	
7. Unfunded actuarial accrued liability: (5) - (6)	$1,562,290,602		$1,450,021,014	
8. Employer normal cost projected to July 1, 2012 and 2010, adjusted for timing	5,034,217	1.07%	8,020,210	1.72%
9. Projected unfunded actuarial accrued liability	1,625,458,077		1,508,649,138	
10. Budgeted appropriation for fiscal 2013 and 2011	$94,846,000	20.16%	$121,290,000	26.00%
11. Projected payroll for fiscal 2013 and 2011	$470,372,057		$466,587,389	

Note: Recommended contributions are assumed to be paid on December 31.

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 4-13 below presents a graphical representation of this information for the Teachers of the SBRS.

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

Although the GASB requires that the actuarial value of assets be used to determine the funded ratio, Chart 4-14 shows the funded ratio calculated using both the actuarial value of assets (45.03%) and the market value of assets (42.61%).

These graphs show key GASB factors.

CHART 4-13

Required Versus Actual Contributions

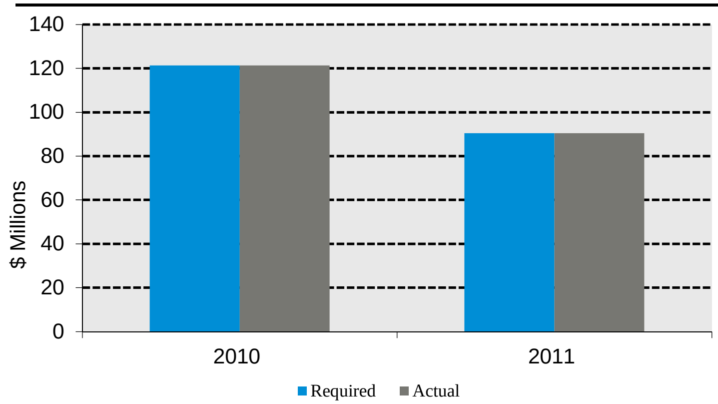


CHART 4-14

Funded Ratio

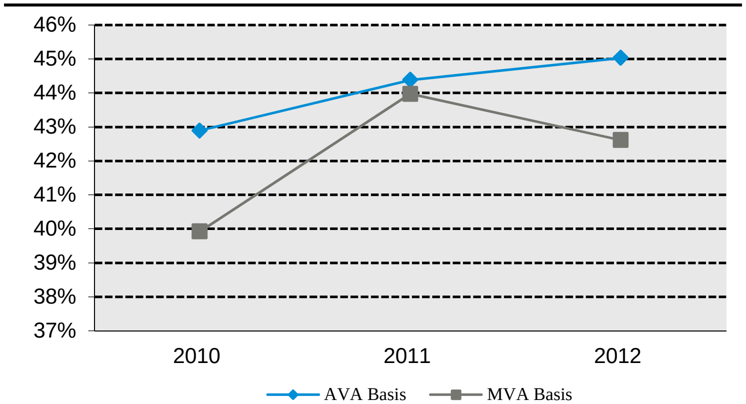


EXHIBIT 5-A

Participants in Active Service as of December 31, 2011
By Age, Years of Service, and Average Payroll

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	105	105	- -	- -	- -	- -	- -	- -	- -	- -
	$52,919	$52,919	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	638	499	137	2	- -	- -	- -	- -	- -	- -
	$61,682	$59,683	$68,775	$74,629	- -	- -	- -	- -	- -	- -
30 - 34	904	357	454	93	- -	- -	- -	- -	- -	- -
	$72,207	$64,757	$76,384	$80,415	- -	- -	- -	- -	- -	- -
35 - 39	770	144	266	300	57	3	- -	- -	- -	- -
	$79,011	$67,359	$78,850	$83,009	$87,765	$86,581	- -	- -	- -	- -
40 - 44	663	77	131	195	193	52	15	- -	- -	- -
	$83,893	$67,812	$81,119	$86,724	$88,507	$87,315	$82,619	- -	- -	- -
45 - 49	518	52	78	112	91	143	41	1	- -	- -
	$85,402	$64,913	$81,654	$86,037	$89,252	$90,743	$89,476	$91,138	- -	- -
50 - 54	608	45	80	85	95	129	149	24	1	- -
	$87,191	$66,974	$81,199	$85,716	$88,677	$91,761	$91,103	$95,086	$98,609	- -
55 - 59	730	32	53	103	101	121	151	124	45	- -
	$90,076	$76,910	$81,149	$86,870	$87,545	$92,029	$91,843	$95,567	$96,666	- -
60 - 64	412	20	29	45	67	67	86	37	45	16
	$92,132	$81,303	$86,357	$90,982	$89,320	$92,362	$92,481	$99,111	$96,621	$99,535
65 - 69	85	4	8	10	10	9	22	8	4	10
	$87,621	$46,250	$89,749	$74,164	$90,540	$90,360	$94,274	$80,650	$97,437	$97,555
70 & over	15	- -	1	1	1	4	1	2	- -	5
	$92,987	- -	$43,358	$86,262	$82,116	$95,669	$94,957	$89,051	- -	$105,468
Total	5,448	1,335	1,237	946	615	528	465	196	95	31
	$80,112	$62,951	$77,714	$84,813	$88,528	$91,162	$91,340	$95,479	$96,698	$99,853

EXHIBIT 5-B

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2011		Year Ended December 31, 2010	
Net assets at actuarial value at the beginning of the year		$1,238,975,696		$1,088,927,156
Contribution income:				
Employer contributions	$90,399,000		$121,290,000	
Employee contributions	0		0	
Less administrative expenses	0		0	
Net contribution income		90,399,000		121,290,000
Net investment income		83,285,518		95,270,615
Total income available for benefits		$173,684,518		$216,560,615
Net benefit payments		-$96,000,000		-$49,000,000
Requested transfer of assets from the PRIT Fund for Teachers' benefit payments and administrative expenses not previously reimbursed		-$36,847,271		-$17,512,075
Change in reserve for future benefits		$40,837,247		$150,048,540
Net assets at actuarial value at the end of the year		$1,279,812,943		$1,238,975,696

EXHIBIT 5-C

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

	Year Ended			
	December 31, 2011		December 31, 2010	
1. Unfunded actuarial accrued liability at beginning of year		$1,480,083,283		$1,450,021,014
2. Normal cost at beginning of year		56,533,949		55,083,678
3. Total contributions		-139,168,624		-143,282,157
4. Interest				
(a) For whole year on (1) + (2)	$126,770,922		$124,171,137	
(b) For half year on (3)	-5,740,706		-5,910,389	
(c) Total interest		121,030,216		118,260,748
5. Expected unfunded actuarial accrued liability		$1,518,478,824		$1,480,083,283
6. Changes due to:				
(a) Experience (gain)/loss	-$68,880,827		- -	
(b) Assumption changes	103,374,728		- -	
(c) Plan provision changes	9,317,877		- -	
(d) Total changes		43,811,778		- -
7. Unfunded actuarial accrued liability at end of year		$1,562,290,602		- -

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 Chart 6-2.

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

CHART 6-1

Participant Population: 1995 – 2011

Year Ended December 31	Active Participants	Inactive Participants	Retired Participants and Beneficiaries
1995	21,128	1,425	13,339
1996	18,651	3,703	13,492
1999	19,953	1,459	13,381
2001	22,003	3,560	13,144
2003	20,456	5,294	14,034
2005	20,917	6,178	13,783
2007	21,748	6,240	13,939
2009	20,015	7,613	13,958
2011	19,399	8,787	14,189

Participant Data

Below is a summary of the participant data used in this valuation for all employees of the SBRS.

CHART 6-2

Table of Plan Coverage

Category	Year Ended December 31 2011	Year Ended December 31 2009	Change From Prior Year
Active participants in valuation:			
Number	19,399	20,015	-3.1%
Average age	45.9	45.7	N/A
Average years of service	13.9	13.5	N/A
Total payroll*	$1,239,399,428	$1,244,785,379	-0.4%
Average payroll*	63,890	62,193	2.7%
Member contributions	1,232,878,451	1,155,731,389	6.7%
Number with unknown age and/or service information	2	3	N/A
Inactive participants with a vested right to a deferred or immediate benefit	878	951	-7.7%
Inactive participants entitled to a return of their employee contributions	7,909	6,662**	18.7%
Retired participants:			
Number in pay status	9,826	9,431	4.2%
Average age	72.9	72.9	N/A
Average monthly benefit	$2,949	$2,690	9.6%
Disabled participants:			
Number in pay status	1,847	1,837	0.5%
Average age	67.3	67.0	N/A
Average monthly benefit	$3,264	$3,046	7.2%
Beneficiaries in pay status:			
Number in pay status	2,516	2,690	-6.5%
Average age	76.5	76.0	N/A
Average monthly benefit	$1,377	$1,285	7.2%

* *Payroll figures are for the prior calendar year. Calendar year 2009 payroll figures were increased by 11.46% for firefighters to reflect a bargaining contact that was not settled until after December 31, 2009. Calendar year 2009 payroll figures were reduced for police superior officers to reflect retroactive payments that were included in the salary data. Calendar year 2011 payroll figures were increased by 2.5% for police officers to reflect an unsettled bargaining contract.*

** *Includes 544 Suffolk County employees who were included in the active participant data and were transferred to the State Retirement System on January 1, 2010.*

B. FINANCIAL INFORMATION

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

Based upon this experience and future expectations, we have decreased the assumed rate of return from 8.00% to 7.75% for the SBRS excluding Teachers. We have maintained the assumed rate of return of 8.25% for the Teachers of the SBRS to be consistent with the assumptions used in the January 1, 2012 Commonwealth Actuarial Valuation Report of the Massachusetts Teachers' Retirement System dated October 19, 2012.

CHART 6-3

Investment Return – Actuarial Value vs. Market Value: 2002 - 2011

	Actuarial Value Investment Return		Market Value Investment Return	
Year Ended December 31	Amount	Percent	Amount	Percent
2002	-$169,224,346	-5.01%	-$330,387,570	-11.00%
2003	217,873,886	6.84	604,025,038	22.78
2004	258,709,415	7.71	367,429,123	11.45
2005	273,445,360	7.65	262,427,939	7.42
2006	335,622,622	8.79	506,115,642	13.43
2007	368,013,791	8.95	403,369,820	9.53
2008	-330,344,896	-7.44	-1,167,563,433	-25.41
2009	251,082,864	6.17	635,296,107	18.76
2010	323,178,217	7.48	486,428,288	11.99
2011	279,060,679	6.00	-3,490,893	-0.08
Total	$1,807,417,592		$1,763,650,061	
	Five-year average return	4.13%		1.70%
	Ten-year average return	4.65%		4.77%

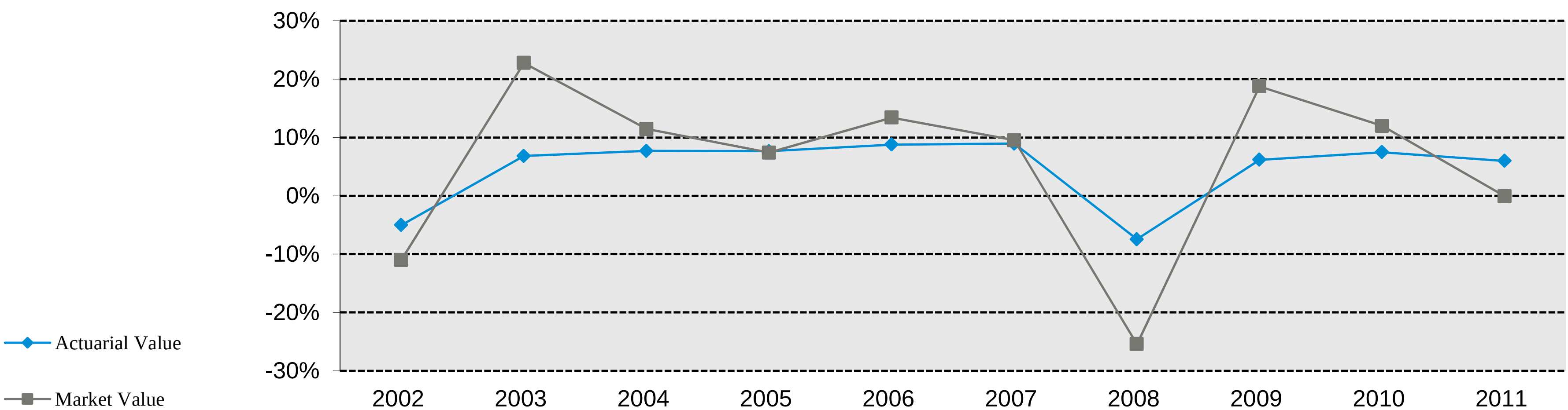
Note: Each year's yield is weighted by the average asset value in that year.

The following chart shows the market and actuarial rates of return for the last ten years for the SBRS.

This chart illustrates how this leveling effect has actually worked over the years 2002 - 2011.

CHART 6-4

Market and Actuarial Rates of Return for Years Ended December 31, 2002 - 2011



C. 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 6-5 below presents a graphical representation of this information for the SBRS.

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

Although the GASB requires that the actuarial value of assets be used to determine the funded ratio, Chart 6-6 shows the funded ratio calculated using both the actuarial value of assets (61.45%) and the market value of assets (56.59%).

The details regarding the calculations of these values and other GASB numbers may be found in Section 8, Exhibits II, III, and IV.

These graphs show key GASB factors.

CHART 6-5

Required Versus Actual Contributions

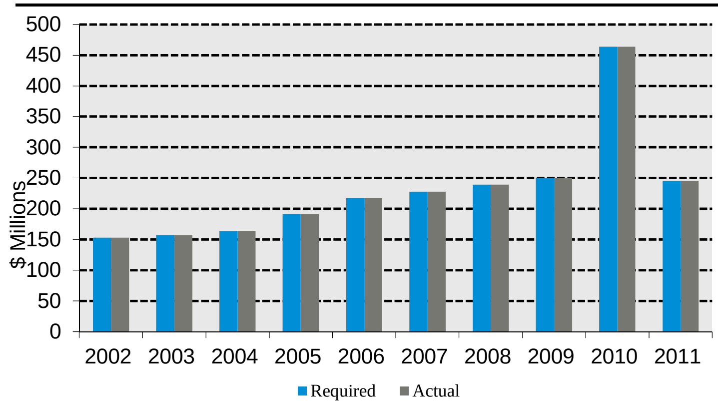
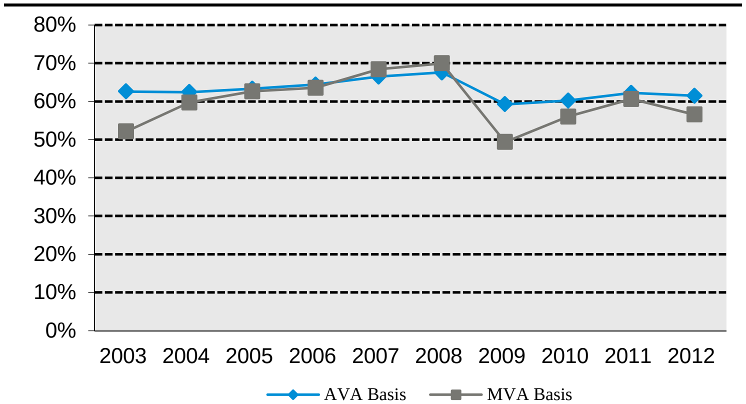


CHART 6-6

Funded Ratio



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

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

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

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.

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 2,516 beneficiaries in pay status)		14,189
2.	Participants active during the year ended December 31, 2011 (including 2 participants with unknown age, total accumulated contributions of $1,232,878,451 and projected 2012 payroll of $1,301,803,428)		19,399
3.	Inactive participants as of December 31, 2011 with a right to a return of their employee contribution		7,909
4.	Inactive participants as of December 31, 2011 with a vested right to a deferred or immediate vested benefit		878
The actuarial factors as of January 1, 2012 are as follows:			
1.	Total normal cost		$176,648,928
2.	Administrative expenses		5,000,000
3.	Expected employee contributions		-126,655,875
4.	Employer normal cost: (1) + (2) + (3)		$54,993,053
5.	Actuarial accrued liability		7,902,174,844
	Retired participants and beneficiaries	$4,276,237,312	
	Active participants	3,468,691,261	
	Inactive participants	157,246,271	
6.	Actuarial value of assets ($4,471,600,000 at market value as reported by KPMG)		4,855,200,069
7.	Unfunded actuarial accrued liability: (5) – (6)		3,046,974,775
The actuarial factors projected to July 1, 2012 are as follows:			
1.	Projected employer normal cost		$56,412,418
2.	Projected unfunded actuarial accrued liability		3,166,600,297
3.	Budgeted appropriation		264,988,481
4.	Projected payroll		1,330,771,697

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	$152,882,000	$152,882,000	100.0%
2003	157,064,000	157,064,000	100.0%
2004	164,069,000	164,069,000	100.0%
2005	191,132,000	191,132,000	100.0%
2006	217,088,000	217,088,000	100.0%
2007	227,822,000	227,822,000	100.0%
2008	239,039,000	239,039,000	100.0%
2009	250,823,000	250,823,000	100.0%
2010	463,656,000	463,656,000	100.0%
2011	245,280,000	245,280,000	100.0%

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)
01/01/2003	$3,204,893,000	$5,121,319,000	$1,916,426,000	62.58%	$1,099,779,000	174.26%
01/01/2004	3,384,814,000	5,420,842,000	2,036,028,000	62.44%	1,067,492,000	190.73%
01/01/2005	3,587,118,000	5,664,288,000	2,077,170,000	63.33%	1,115,529,000	186.20%
01/01/2006	3,836,807,000	5,957,373,000	2,120,566,000	64.40%	1,168,808,000	181.43%
01/01/2007	4,138,146,000	6,223,154,000	2,085,008,000	66.50%	1,221,404,000	170.71%
01/01/2008	4,458,002,000	6,596,148,000	2,138,146,000	67.58%	1,299,112,000	164.59%
01/01/2009	4,089,989,000	6,900,229,000	2,810,240,000	59.27%	1,364,068,000	206.02%
01/01/2010	4,270,893,000	7,091,018,000	2,820,124,000	60.23%	1,306,060,000	215.93%
01/01/2011	4,592,675,000	7,283,907,000	2,790,232,000	62.21%	1,371,363,000	203.46%
01/01/2012	4,855,200,000	7,902,175,000	3,046,975,000	61.45%	1,301,803,000	234.06%

EXHIBIT IV

Supplementary Information Required by the GASB

Valuation date	January 1, 2012
Actuarial cost method	Entry Age Normal Cost Method
Amortization method	Prior year's contribution increased by 9.25% for SBRS excluding Teachers; prior year's contribution increased by 5% for fiscal 2014, 6% for fiscal 2015, 2016 and 2017, and thereafter the remaining unfunded liability will be amortized on a 4.0% annual increasing basis for Teachers
Remaining amortization period	13 years remaining as of January 1, 2012 for SBRS excluding Teachers; 28 years remaining as of January 1, 2012 for Teachers
Asset valuation method	Sum of actuarial value at beginning of the year, contributions and investment earnings based on the actuarial interest assumption less benefit payments and operating expenses plus 20% of market value at end of year in excess of that sum, plus additional adjustment toward market value as necessary so that final actuarial value is within 20% of market value. Similar formula used for negative adjustment toward market value if actuarial value exceeds market value.
Actuarial assumptions:	
Investment rate of return	7.75% (previously 8.00%) for SBRS excluding Teachers; 8.25% for Teachers
Projected salary increases	Varies by length of service with ultimate rate of 4.75% (previously, 5.00% per year) for Teachers; 5.00% per year for SBRS excluding Teachers
Cost of living adjustments	3.00% for the first $13,000 of retirement income (previously, 3.00% of first $12,000 of retirement income)
Plan membership:	
Retired participants and beneficiaries receiving benefits	14,189
Inactive participants entitled to a return of their employee contributions	7,909
Inactive participants with a vested right to a deferred or immediate benefit	878
Active participants	19,399
Total	42,375

EXHIBIT V

Actuarial Assumptions and Actuarial Cost Method

Mortality Rates:

Pre-Retirement:	RP-2000 Employee Mortality Table projected 20 years using Scale AA for SBRS excluding Teachers and RP-2000 Employee Mortality Table projected 10 years using Scale AA with an additional 1.25% load on the actuarial accrued liability and normal cost for Teachers
Healthy Retiree:	RP-2000 Healthy Annuitant Mortality Table projected 15 years using Scale AA for SBRS excluding Teachers and RP-2000 Healthy Annuitant Mortality Table projected 10 years using Scale AA with an additional 1.25% load on the actuarial accrued liability and normal cost for Teachers
Disabled Retiree:	RP-2000 Healthy Annuitant Mortality Table projected 5 years using Scale AA with a three year set forward for males for SBRS excluding Teachers and RP-2000 Healthy Annuitant Mortality Table with a three year set forward for males and an additional 1.25% load on the actuarial accrued liability and normal cost for Teachers
	The mortality tables listed above were determined to contain provisions appropriate to reasonably reflect future mortality improvement, based on a review of the mortality experience of the plan.

Termination Rates before Retirement:

Groups 1 and 2 - Rate (%) – SBRS Excluding Teachers

	Mortality		Disability	Withdrawal
Age	**Male**	**Female**		
20	0.02	0.01	0.03	6.58
25	0.03	0.02	0.04	5.27
30	0.04	0.02	0.06	4.83
35	0.07	0.04	0.07	4.47
40	0.09	0.05	0.11	3.84
45	0.12	0.08	0.18	3.21
50	0.15	0.12	0.30	1.52
55	0.21	0.22	0.50	0.33
60	0.35	0.36	0.81	0.00

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

Group 4 - Rate (%), SBRS Excluding Teachers

	Mortality		Disability	Withdrawal
Age	**Male**	**Female**		
20	0.02	0.01	0.15	0.00
25	0.03	0.02	0.21	0.00
30	0.04	0.02	0.28	0.00
35	0.07	0.04	0.37	0.00
40	0.09	0.05	0.55	0.00
45	0.12	0.08	0.90	0.00
50	0.15	0.12	1.51	0.00
55	0.21	0.22	2.52	0.00
60	0.35	0.36	0.00	0.00

Notes: *90% of the disability rates shown represent accidental disability.*
60% of the accidental disabilities will die from the same cause as the disability.
50% of the death rates shown represent accidental death.

Termination Rates before Retirement:

	Rate (%) - Teachers		
	Mortality		Disability
Age	Male	Female	
20	0.03	0.02	0.04
25	0.03	0.02	0.05
30	0.04	0.02	0.06
35	0.07	0.04	0.06
40	0.10	0.06	0.10
45	0.13	0.10	0.30
50	0.18	0.14	0.50
55	0.25	0.23	0.80
60	0.42	0.37	1.00

Notes: *A 1.25% load on actuarial accrued liability and normal cost has been added as an additional mortality assumption.*
35% of the disability rates shown represent accidental disability.
40% of the accidental disabilities will die from the same cause as the disability.
55% of the death rates shown represent accidental death.

Withdrawal Rates:

Rate (%) - Teachers

	Years of Service									
	0 - 1		2		3		4		5	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
20	12.0	10.0	10.5	9.5	7.9	9.0	6.5	9.0	4.5	9.0
30	11.4	12.0	10.2	10.8	7.7	10.2	6.3	10.2	4.5	9.0
40	9.7	11.0	8.3	8.8	7.0	7.7	5.8	7.5	5.4	6.5
50	10.0	8.2	7.5	7.2	7.4	5.7	5.3	5.0	4.8	4.2

	Years of Service									
	6		7		8		9		10+	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
20	4.0	8.0	3.5	7.5	2.5	7.5	1.5	7.0	1.0	5.0
30	3.9	7.7	3.2	7.5	2.5	7.5	1.5	7.0	1.0	5.0
40	3.7	4.6	3.5	4.5	3.4	4.5	2.0	4.1	1.7	2.9
50	4.0	2.6	3.8	2.5	3.5	2.0	2.4	2.0	2.2	2.1

Retirement Rates:

	Rate (%) – SBRS excluding Teachers		
Age	**Groups 1 and 2**	**Age**	**Group 4**
55	3.0	50	1.0
56	3.0	51	1.0
57	3.0	52	1.0
58	3.0	53	1.0
59	3.0	54	1.0
60	8.0	55	10.0
61	8.0	56	5.0
62	15.0	57	5.0
63	10.0	58	5.0
64	10.0	59	5.0
65	35.0	60	10.0
66	20.0	61	15.0
67	20.0	62	15.0
68	20.0	63	15.0
69	20.0	64	25.0
70	100.0	65	100.0

Retirement Rates:

Rate (%) – Non-TARP Teachers

	Years of Service			
	Less than 20		20 or more	
Age	Male	Female	Male	Female
50 – 53	0.0	0.0	2.0	2.0
54	0.0	0.0	2.0	2.0
55	6.0	6.0	5.0	5.0
56	6.0	6.0	5.0	5.0
57	7.0	7.0	5.0	5.0
58	7.0	7.0	6.0	7.0
59	10.0	10.0	7.0	10.0
60	15.0	15.0	20.0	20.0
61	20.0	20.0	35.0	30.0
62	20.0	20.0	35.0	30.0
63	20.0	20.0	35.0	30.0
64	25.0	25.0	35.0	30.0
65	30.0	30.0	40.0	40.0
66	30.0	30.0	30.0	40.0
67	30.0	30.0	30.0	40.0
68	30.0	30.0	30.0	40.0
69	30.0	30.0	30.0	40.0
70	100.0	100.0	100.0	100.0

Retirement Rates:

Rate (%) – TARP Teachers

	Years of Service					
	Less than 20		20 – 29		30 or more	
Age	Male	Female	Male	Female	Male	Female
50 – 53	0.0	0.0	1.0	1.5	2.0	2.0
54	0.0	0.0	1.0	1.5	2.0	2.0
55	3.0	2.0	3.0	3.0	6.0	6.0
56	8.0	2.0	5.0	3.0	20.0	15.0
57	15.0	8.0	8.0	7.0	35.0	30.0
58	15.0	10.0	10.0	7.0	50.0	35.0
59	20.0	15.0	20.0	11.0	50.0	35.0
60	15.0	20.0	20.0	16.0	50.0	35.0
61	30.0	20.0	25.0	20.0	50.0	35.0
62	20.0	25.0	30.0	30.0	40.0	40.0
63	30.0	24.0	30.0	30.0	40.0	30.0
64	40.0	20.0	30.0	30.0	40.0	35.0
65	40.0	30.0	40.0	30.0	50.0	35.0
66	40.0	30.0	30.0	30.0	50.0	35.0
67	40.0	30.0	30.0	30.0	50.0	30.0
68	40.0	30.0	30.0	30.0	50.0	30.0
69	40.0	30.0	30.0	30.0	50.0	30.0
70	100.0	100.0	100.0	100.0	100.0	100.0

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

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

Percent Married: 80% for Teachers, 75% for SBRS excluding Teachers

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

Net Investment Return: 7.75% for SBRS excluding Teachers and 8.25% for Teachers

Salary Increases:

Years of Service	Teachers	SBRS Excluding Teachers
0	8.00%	5.00%
1	7.75%	5.00%
2	7.50%	5.00%
3	7.25%	5.00%
4	7.00%	5.00%
5	6.75%	5.00%
6	6.50%	5.00%
7	6.25%	5.00%
8	6.00%	5.00%
9	5.75%	5.00%
10	5.50%	5.00%
11	5.25%	5.00%
12-13	5.00%	5.00%
14 and later	4.75%	5.00%

Includes allowance for inflation of 4½%.

Interest on Employee Contributions: 3.5%

Administrative Expenses: $5,000,000 for calendar 2012, increasing 4.5% per year, allocated in proportion to projected payroll.

2011 Salary: 2011 salary equal to salaries provided in the data, except salaries for new hires were annualized.

Calendar year 2011 salaries were increased by 2.5% for police officers to reflect an unsettled bargaining contact.

Total Service: Total creditable service based on date of hire.

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 by KPMG) 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 age of the participant at Date of Hire. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary. This valuation reflects a change in valuation software.
Changes in Assumptions:	Based on past experience and future expectations, the following actuarial assumptions were changed: ➤ The investment return assumption was decreased from 8.00% to 7.75% for the SBRS excluding Teachers. ➤ The administrative expense assumption was decreased from $9,200,000 for calendar 2010 to $5,000,000 for calendar 2012, based on information supplied by the System. ➤ The pre-retirement mortality assumption was changed from the RP-2000 Combined Healthy Mortality Table to the RP-2000 Employee Mortality Table projected 20 years using Scale AA for the SBRS excluding Teachers and to the RP-2000 Employee Mortality Table projected 10 years using Scale AA with an additional 1.25% load on the actuarial accrued liability and normal cost for Teachers.

- The mortality assumption for non-disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table to the RP-2000 Healthy Annuitant Mortality Table projected 15 years using Scale AA for the SBRS excluding Teachers and to the RP-2000 Healthy Annuitant Mortality Table projected 10 years using Scale AA with an additional 1.25% load on the actuarial accrued liability and normal cost for Teachers.
- The mortality assumption for disabled retirees was changed from the RP-2000 Combined Healthy Mortality Table set forward five years to the RP-2000 Healthy Annuitant Mortality Table projected five years using Scale AA with a three year set forward for males for the SBRS excluding Teachers and to the RP-2000 Healthy Annuitant Mortality Table with a three year set forward for males and an additional 1.25% load on the actuarial accrued liability and normal cost for Teachers.
- The assumed rates of disability have been decreased by 50% for Group 1 and 2 employees and increased by 25% for Group 4 employees to better reflect past experience and future expectations for the SBRS excluding Teachers.
- The salary increase, retirement, turnover, disability and percent married assumptions for Teachers have been changed to reflect the assumptions being used in the January 1, 2012 Commonwealth Actuarial Valuation Report of the Massachusetts Teachers' Retirement System dated October 19, 2012.

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

TARP – Chapter 114 of the Acts of 2000 provides enhanced retirement benefits to teachers who elect to participate in the program and to all teachers hired on or after

July 1, 2001. The retirement allowance of a participating teacher with 30 or more years of service is increased by an additional 2 percent for each full year of creditable service in excess of 24 years, up to the statutory maximum of 80 percent of the member's three-year salary average.

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 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

Date of Hire	Contribution Rate
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 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 (previously, $250), 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 be the member at the time of death.

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

"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. The Board has adopted an increase in the COLA base from $12,000 to $13,000 effective July 1, 2012. Chapter 176 of the Acts of 2011 increases the COLA base to $13,000 effective July 1, 2012 for Teachers. 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	The following plan changes are included in this valuation: ➤ As permitted by Section 30 of Chapter 176 of the Acts of 2011, the Board has adopted an increase to the Section 12 minimum annual allowance from $3,000 to $6,000. ➤ As permitted by Section 19 of Chapter 188 of the Acts of 2010, the Board has adopted an increase to the retiree Cost of Living Adjustment base from $12,000 to $13,000 as of July 1, 2012. Chapter 176 of the Acts of 2011 increases the COLA base to $13,000 effective July 1, 2012 for Teachers.