

Gloucester Contributory Retirement System

Actuarial Valuation and Review as of
January 1, 2014





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July 17, 2014

*Gloucester Retirement Board
Gloucester Contributory Retirement System
P.O. Box 114
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Dear Board Members:

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

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


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

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

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

Sincerely,

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

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

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SECTION 1: Valuation Summary for the Gloucester Contributory Retirement System

Purpose

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

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

Significant Issues in Valuation Year

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

1. The actuarial valuation report as of January 1, 2014 is based on financial information as of that date. Changes in the value of assets subsequent to that date, to the extent that they exist, are not reflected.
2. During the plan years ended 2012 and 2013, the market value rates of return were 12.98% and 14.36%, respectively. Because the actuarial value of assets gradually recognizes market value fluctuations, the actuarial rates of return for the plan years ended 2012 and 2013 were 9.21% and 9.91%, respectively. The actuarial value of assets as of December 31, 2013 was \$78.6 million, or 95.3% of the market value of assets of \$82.5 million (as reported in the Annual Statement). As of December 31, 2011 the actuarial value of assets was 102.6% of market value.
3. As indicated in Section 2, Subsection B of this report, the total unrecognized investment gain as of December 31, 2013 was \$3,887,249. This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of investment losses derived from future experience. This implies that earning the assumed rate of investment return (net of investment expenses) per year on a market value basis will result in investment gains on the actuarial value of assets in the next few years.

SECTION 1: Valuation Summary for the Gloucester Contributory Retirement System

4. This valuation reflects the following assumption changes:
- The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.
 - The administrative expense assumption was reset to \$385,000 for the 2014 calendar year, increasing by the inflation assumption thereafter.
 - The investment return assumption was lowered from 7.875% to 7.75%.
 - The pre-retirement mortality assumption was changed from the RP-2000 Employee Mortality Table projected 12 years with Scale AA to the RP-2000 Employee Mortality Table projected 20 years with Scale AA.
 - The healthy retiree mortality assumption was changed from the RP-2000 Healthy Annuitant Mortality Table projected 12 years with Scale AA to the RP-2000 Healthy Annuitant Mortality Table projected 15 years with Scale AA.
 - The mortality assumption for disabled participants was changed from the RP-2000 Healthy Annuitant Mortality Table set forward five years projected 12 years with Scale AA to the RP-2000 Healthy Annuitant Mortality Table set forward three years projected five years with Scale AA.
 - The assumed retirement age for inactive vested participants was changed from age 65 to age 55 for Group 1 and 2 members hired prior to April 2, 2012.
 - Rates of disability were generally lowered as follows:

Age	Rate (%)	
	Groups 1 and 2	Group 4
20	0.01	0.10
25	0.02	0.20
30	0.03	0.30
35	0.06	0.30
40	0.10	0.30
45	0.15	1.00
50	0.19	1.25
55	0.24	1.20
60	0.28	0.85

SECTION 1: Valuation Summary for the Gloucester Contributory Retirement System

- Rates of withdrawal were revised as follows:

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

- Rates of retirement were revised as follows:

Rate per year (%)			
Age	Groups 1 and 2		Group 4
	Male	Female	
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

SECTION 1: Valuation Summary for the Gloucester Contributory Retirement System

Age	Rate per year (%)		
	Groups 1 and 2		Group 4
	Male	Female	
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	--

- Assumed interest on employee contributions was increased from 2.0% to 3.5%.
- Projected salaries for firefighters were adjusted to reflect the increase in hours from 42 per week to 56 per week effective July 1, 2014.

Changing these assumptions resulted in a net increase in the unfunded actuarial accrued liability of \$8.9 million and a net increase in the employer normal cost of \$113,000.

5. Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by of Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.
6. As of January 1, 2012 the System had an unfunded liability of \$84.7 million. The unfunded liability was expected to increase to \$86.7 million as of January 1, 2014. The actual unfunded liability of \$97.5 million is \$10.8 million higher than expected due to a net experience loss of \$1.9 million, which is detailed in Section 2 of this report, and the change in assumptions of \$8.9 million described above.
7. The recommended contribution for fiscal 2015 is equal to the previously budgeted amount of \$7,418,285. The results of this valuation will first be reflected in the fiscal 2016 appropriation. The funding schedule in Section 2, Chart 16 fully funds the Retirement System by June 30, 2034 with appropriations that increase 6.15% per year through 2034.

SECTION 1: Valuation Summary for the Gloucester Contributory Retirement System

8. Section 4 includes the disclosure information required by Governmental Accounting Standards Board (GASB) Statements No. 25 and 27. Section 5 shows the format of the disclosure information required by GASB Statements No. 67 and 68. The exhibits in Section 5 will be completed at the end of the year when December 31, 2014 financial information is available. At that time, the liabilities will be projected to the end of the year and the allocations to each employer will be determined.

SECTION 1: Valuation Summary for the Gloucester Contributory Retirement System

Summary of Key Valuation Results

	2014	2012
Contributions for fiscal year beginning July 1:		
Recommended for fiscal 2015 and 2013	\$7,418,285	\$6,793,146
Recommended for fiscal 2016 and 2014	7,874,330	7,098,838
Recommended for 2017 and 2015	8,358,411	7,418,285
Funding elements for plan year beginning January 1:		
Normal cost, including administrative expenses	\$4,331,764	\$3,685,027
Market value of assets	82,469,785	65,619,370
Actuarial value of assets	78,582,536	67,318,567
Actuarial accrued liability	176,129,856	152,051,654
Unfunded actuarial accrued liability	97,547,320	84,733,087
Funded ratio based on market value of assets	46.82%	43.16%
Funded ratio based on actuarial value of assets	44.62%	44.27%
Demographic data for plan year beginning January 1:		
Number of retired participants and beneficiaries	454	433
Number of inactive participants entitled to a return of their employee contributions	52	51
Number of inactive participants with a vested right to a deferred or immediate benefit	12	14
Number of active participants	517	506
Total payroll	\$24,881,703	\$22,490,770
Average payroll	48,127	44,448

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

A. PARTICIPANT DATA

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

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

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

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

CHART 1
Participant Population: 2005 – 2013

Year Ended December 31	Active Participants	Inactive Participants	Retired Participants and Beneficiaries	Ratio of Non-Actives to Actives
2005	539	94	411	0.94
2007	547	97	408	0.92
2009	515	83	437	1.01
2011	506	65	433	0.98
2013	517	64	454	1.00

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

Active Participants

Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 517 active participants with an average age of 50.4, average years of service of 12.9 years and average payroll of \$48,127. The 506 active participants in the prior valuation had an average age of 50.3, average service of 13.1 years and average payroll of \$44,448.

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

Inactive Participants

In this year's valuation, there were 12 participants with a vested right to a deferred or immediate vested benefit and 52 participants entitled to a return of their employee contributions.

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

CHART 2

Distribution of Active Participants by Age as of December 31, 2013

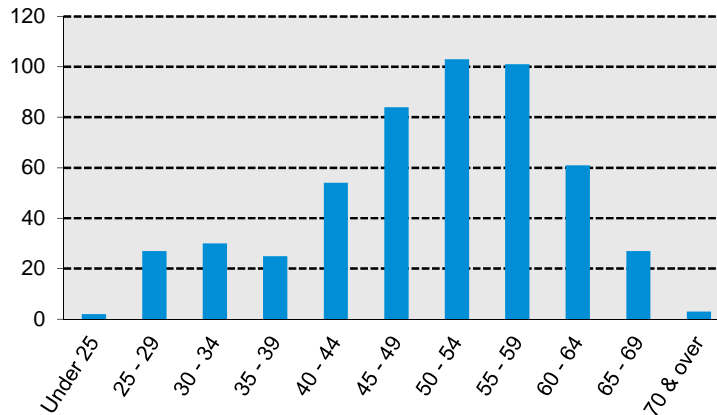
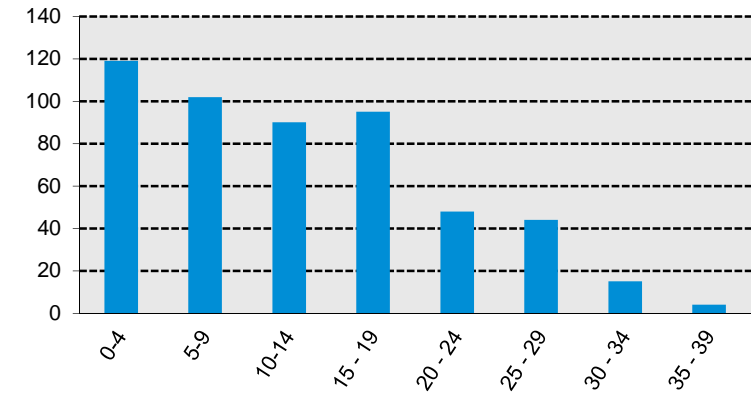


CHART 3

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



SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

Retired Participants and Beneficiaries

As of December 31, 2013, 381 retired participants and 73 beneficiaries were receiving total monthly benefits of \$866,801, excluding COLAs reimbursed by the Commonwealth. For comparison, in the previous valuation, there were 369 retired participants and 64 beneficiaries receiving monthly benefits of \$786,618, 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.

- Beneficiaries
- Accidental Disability
- Ordinary Disability
- Superannuation

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

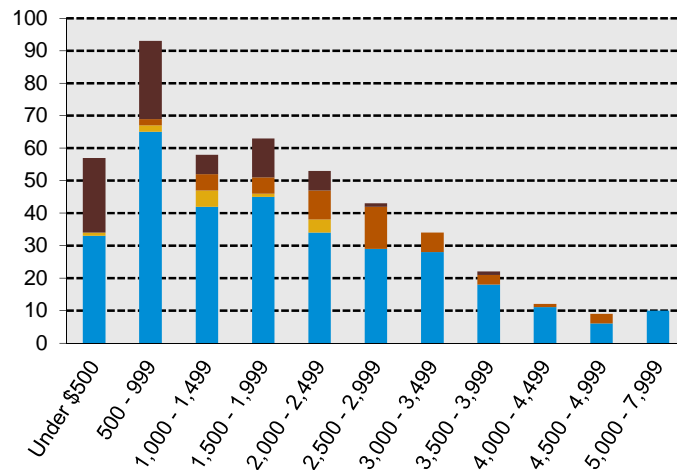
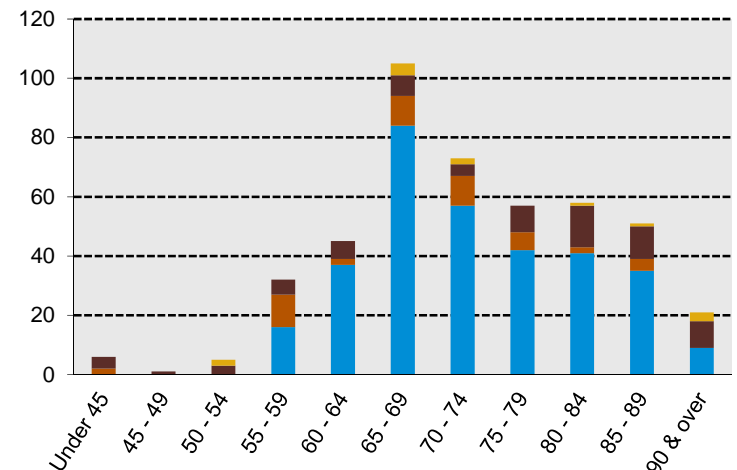


CHART 5
Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2013



SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

B. FINANCIAL INFORMATION

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

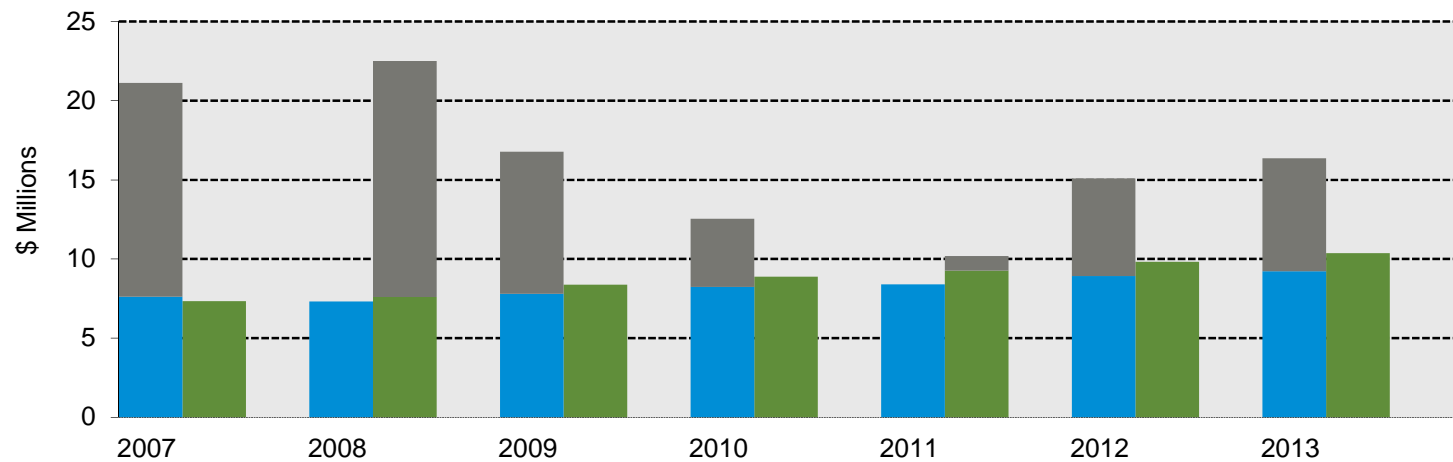
Retirement plan assets change as a result of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits C and D.

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

- Net investment income
- Net contributions
- Benefits paid

CHART 6

Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2007 – 2013



SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

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

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

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

CHART 7 Determination of Actuarial Value of Assets

	Year Ended	
	December 31, 2013	December 31, 2012
1. Market value of assets, December 31, 2013		
	\$82,469,785	\$73,179,358
2. Calculation of unrecognized return*	Original <u>Amount</u>	Unrecognized <u>Return</u>
(a) Year ended December 31, 2013	\$4,755,972	\$3,566,979
(b) Year ended December 31, 2012	3,217,384	1,608,692
(c) Year ended December 31, 2011	-5,153,688	-1,288,422
(d) Year ended December 31, 2010	3,048,332	0
(e) Year ended December 31, 2009	3,876,944	N/A
(f) Total unrecognized return		0
	3,887,249	598,277
3. Preliminary actuarial value: (1) - (2f)	78,582,536	72,581,081
4. Adjustment to be within 10% corridor	0	0
5. Final actuarial value of assets: (3) + (4)	<u>78,582,536</u>	<u>\$72,581,081</u>
6. Actuarial value as a percentage of market value: (5) ÷ (1)	95.3%	99.2%
7. Amount deferred for future recognition: (1) - (5)	\$3,887,249	\$598,277

* Unrecognized return is the difference between the actual market return and the expected return on an actuarial value basis and is recognized over a four-year period.

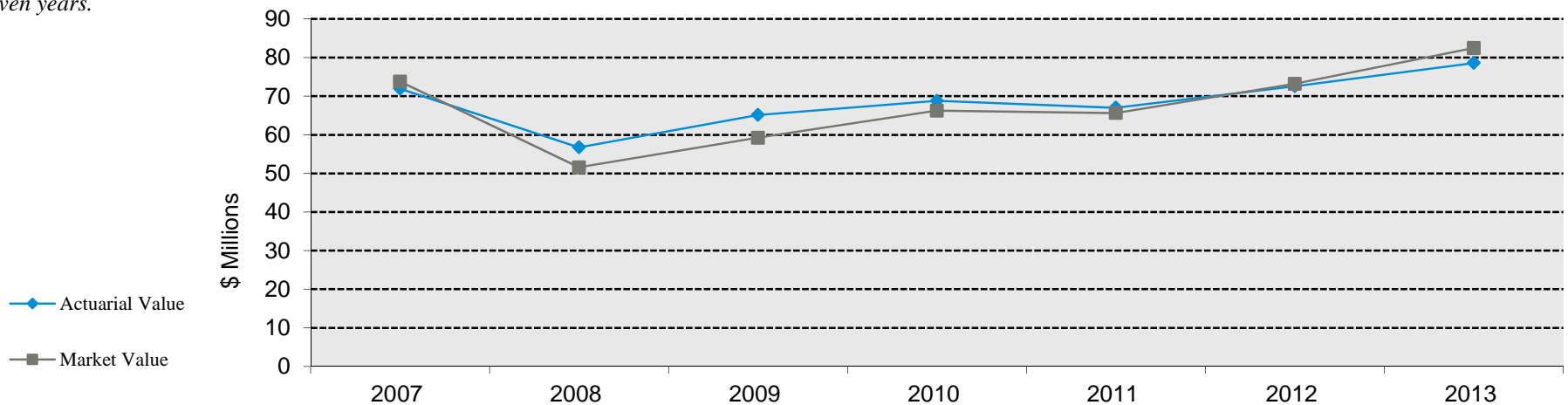
SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

Both the actuarial value and market value of assets are representations of the Gloucester Contributory 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 Gloucester Contributory Retirement System's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

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

CHART 8

Actuarial Value of Assets vs. Market Value of Assets as of December 31, 2007 – 2013



SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

C. ACTUARIAL EXPERIENCE

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

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

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

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

The total experience loss over the two-year period ending December 31, 2013 is \$1,967,073. 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, 2013

1. Net gain from investments*	\$2,433,458
2. Net loss from administrative expenses	-99,427
3. Net loss from other experience**	<u>-4,301,104</u>
4. Net experience loss: (1) + (2) + (3)	<u>-\$1,967,073</u>

* Details in Chart 10

** Details in Chart 13

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Gloucester Contributory Retirement System’s investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets was 7.875%. The actual rate of return on an actuarial basis for the 2013 plan year was 9.91% and 9.21% for the 2012 year.

Since the actual return for the year was greater than the assumed return, the Gloucester Contributory Retirement System experienced an actuarial gain during the two-year period ending December 31, 2013 with regard to its investments of \$2,433,458, including an adjustment for interest.

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

**CHART 10
Actuarial Value Investment Experience**

	Year Ended	
	December 31, 2013	December 31, 2012
1. Actual return	\$7,138,008	\$6,161,831
2. Average value of assets	72,012,804	66,868,908
3. Actual rate of return: (1) ÷ (2)	9.91%	9.21%
4. Assumed rate of return	7.875%	7.875%
5. Expected return: (2) x (4)	\$5,671,008	\$5,265,926
6. Actuarial gain/(loss): (1) – (5)	<u>\$1,467,000</u>	<u>\$895,905</u>

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

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

As indicated below, the experience in the past few years has shown both higher and lower rates of return than the long-term assumption. Overall, interest rates have declined substantially in the current economic environment. Based upon this experience, the current asset allocation, and future expectations, we have changed the assumed rate of return to 7.75%. We will continue to monitor the plan's investment returns.

CHART 11

Investment Return – Actuarial Value vs. Market Value: 2007 - 2013

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2007	\$13,501,091	23.16%	\$5,520,803	8.11%
2008	-14,930,384	-20.80	-21,909,752	-29.76
2009	8,993,139	15.94	8,228,098	16.05
2010	4,312,600	6.65	7,675,576	13.03
2011	-629,022	-0.92	230,579	0.35
2012	6,161,831	9.21	8,459,305	12.98
2013	<u>7,138,008</u>	9.91	<u>10,426,981</u>	14.36
Total	\$24,547,263		\$18,631,591	
	Five-year average return	7.91%		11.16%
	Seven-year average return	5.35%		4.09%

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

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

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

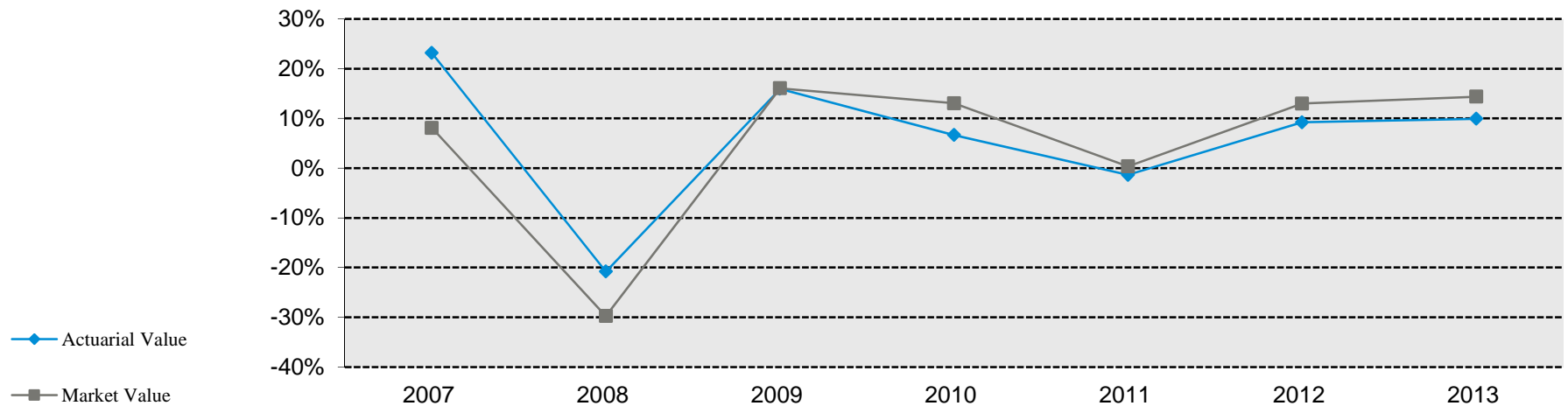
Administrative Expenses

Administrative expenses for the years ended December 31, 2012 and 2013 were \$318,689 and \$328,980, respectively, compared to the assumption of \$275,000 for 2012 and \$280,500 for 2013. This resulted in a loss of \$99,427 for the year. Based on budgeted expenses, we have increased the assumption from \$275,000 to \$385,000 for the 2014 calendar year, increasing by the inflation assumption thereafter.

This chart illustrates how this leveling effect has actually worked over the years 2007 - 2013.

CHART 12

Market and Actuarial Rates of Return for Years Ended December 31, 2007 - 2013



SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

Other Experience

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

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

The net loss from this other experience for the two-year period ending December 31, 2013 amounted to \$4,301,104, which is 2.6% of the actuarial accrued liability.

A brief summary of the demographic experience of the Gloucester Contributory Retirement System for the two-year period ending December 31, 2013 is shown in the chart below.

The following assumptions were changed with this valuation:

- The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.
- The administrative expense assumption was reset to \$385,000 for the 2014 calendar year, increasing by the inflation assumption thereafter.
- The investment return assumption was lowered from 7.875% to 7.75%.
- The pre-retirement mortality assumption was changed from the RP-2000 Employee Mortality Table projected 12 years with Scale AA to the RP-2000 Employee Mortality Table projected 20 years with Scale AA.
- The healthy retiree mortality assumption was changed from the RP-2000 Healthy Annuitant Mortality Table projected 12 years with Scale AA to the RP-2000 Healthy Annuitant Mortality Table projected 15 years with Scale AA.
- The mortality assumption for disabled participants was changed from the RP-2000 Healthy Annuitant Mortality Table set forward five years projected 12 years with Scale AA to the RP-2000 Healthy Annuitant Mortality Table set forward three years projected five years with Scale AA.

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

CHART 13

Experience Due to Changes in Demographics for Two-Year Period Ended December 31, 2013

1. Salary increases more than expected for continuing actives	-\$1,258,603
2. Fewer deaths than expected amongst members and beneficiaries	-302,301
3. Miscellaneous experience, including data adjustments	<u>-2,740,200</u>
4. Total	-\$4,301,104

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

- The assumed retirement age for inactive vested participants was changed from age 65 to age 55 for Group 1 and 2 members hired prior to April 2, 2012.
- Rates of disability, withdrawal and retirement were revised to reflect past experience and future expectations.
- Assumed interest on employee contributions was increased from 2.0% to 3.5%.
- Projected salaries for firefighters were adjusted to reflect the increase in hours from 42 per week to 56 per week effective July 1, 2014.

The changes in assumptions and methods increased the unfunded liability by \$8.9 million and normal cost by \$113,000.

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

The unfunded liability was expected to increase from \$84.7 million as of January 1, 2012 to \$86.7 million as of January 1, 2014. The actual unfunded liability as of January 1, 2014 of \$97.5 million is \$10.8 million higher than expected as detailed in Chart 14 below.

CHART 14
Development of Unfunded Actuarial Accrued Liability

	Year Ended	
	December 31, 2013	December 31, 2013
1. Unfunded actuarial accrued liability at beginning of year	\$85,808,788	\$84,733,087
2. Normal cost at beginning of year	3,758,728	3,685,027
3. Total contributions	-9,553,759	-9,243,196
4. Interest		
(a) For whole year on (1) + (2)	\$7,053,442	\$6,962,926
(b) For half year on (3)	<u>-340,112</u>	<u>-329,056</u>
(c) Total interest	<u>6,713,330</u>	<u>6,633,870</u>
5. Expected unfunded actuarial accrued liability	\$86,727,087	\$85,808,788
6. Changes due to:		
(a) Net experience loss	\$1,967,073	--
(b) Assumption changes	8,853,160	--
(c) Total changes	<u>10,820,233</u>	--
7. Unfunded actuarial accrued liability at end of year	<u>\$97,547,320</u>	--

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

D. RECOMMENDED CONTRIBUTION

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

These figures assume that contributions will be made on September 30.

The recommended contribution for fiscal 2015 is equal to the previously budgeted amount of \$7,418,285. The results of this valuation will first be reflected in the fiscal 2016 appropriation. The funding schedule in Chart 16 fully funds the Retirement System by June 30, 2034 with appropriations that increase 6.15% per year through 2034.

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

CHART 15
Recommended Contribution

	Year Beginning January 1			
	2014		2012	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	\$3,946,764	14.82%	\$3,410,027	14.73%
2. Administrative expenses	385,000	1.45%	275,000	1.19%
3. Expected employee contributions	<u>-2,537,904</u>	<u>-9.53%</u>	<u>-2,161,269</u>	<u>-9.34%</u>
4. Employer normal cost: (1) + (2) + (3)	\$1,793,860	6.74%	\$1,523,758	6.58%
5. Actuarial accrued liability	176,129,856		152,051,654	
6. Actuarial value of assets	<u>78,582,536</u>		<u>67,318,567</u>	
7. Unfunded actuarial accrued liability: (5) - (6)	\$97,547,320		\$84,733,087	
8. Employer normal cost projected to July 1, 2014 and 2012, adjusted for timing	1,854,861	6.86%	1,568,362	6.71%
9. Projected unfunded actuarial accrued liability	101,256,750		88,006,233	
10. Payment on projected unfunded actuarial accrued liability, adjusted for timing	5,563,424	20.59%	5,224,784	22.35%
11. Total recommended contribution: (8) + (10)	<u>\$7,418,285</u>	<u>27.45%</u>	<u>\$6,793,146</u>	<u>29.06%</u>
12. Projected payroll	\$27,025,587		\$23,372,964	

*Notes: Recommended contributions are assumed to be paid on September 30.
Recommended contributions set equal to budgeted amount determined with the previous valuation.*

SECTION 2: Valuation Results for the Gloucester Contributory Retirement System

CHART 16

Funding Schedule – Fully funded by 2034, with increase in appropriation of 6.15% per year

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of 2002 Housing Authority ERI Liability	(4) Amortization of 2003 Housing Authority ERI Liability	(5) Amortization of 2003 City ERI Liability	(6) Amortization of Remaining Liability	(7) Total Plan Cost: (2) + (3) + (4) + (5) + (6)	(8) Total Unfunded Actuarial Liability Accrued at Beginning of Fiscal Year	(9) Total Plan Cost: % Increase
2015	\$1,854,861	\$3,808	\$6,525	\$48,454	\$5,504,637	\$7,418,285	\$101,256,750	--
2016	1,919,781	3,808	6,525	48,454	5,895,762	7,874,330	103,220,386	6.15%
2017	1,986,973	3,808	6,525	48,454	6,312,651	8,358,411	104,922,556	6.15%
2018	2,056,517	3,808	6,525	48,454	6,756,947	8,872,251	106,315,754	6.15%
2019	2,128,495	-	-	-	7,289,184	9,417,679	107,347,045	6.15%
2020	2,202,992	-	-	-	7,793,646	9,996,638	107,957,551	6.15%
2021	2,280,097	-	-	-	8,331,092	10,611,189	108,081,862	6.15%
2022	2,359,900	-	-	-	8,903,620	11,263,520	107,647,415	6.15%
2023	2,442,497	-	-	-	9,513,457	11,955,954	106,573,805	6.15%
2024	2,527,984	-	-	-	10,162,971	12,690,955	104,772,040	6.15%
2025	2,616,463	-	-	-	10,854,679	13,471,142	102,143,725	6.15%
2026	2,708,039	-	-	-	11,591,251	14,299,290	98,580,180	6.15%
2027	2,802,820	-	-	-	12,375,530	15,178,350	93,961,476	6.15%
2028	2,900,919	-	-	-	13,210,532	16,111,451	88,155,385	6.15%
2029	3,002,451	-	-	-	14,099,464	17,101,915	81,016,241	6.15%
2030	3,107,537	-	-	-	15,045,732	18,153,269	72,383,698	6.15%
2031	3,216,301	-	-	-	16,052,954	19,269,255	62,081,380	6.15%
2032	3,328,872	-	-	-	17,124,975	20,453,847	49,915,415	6.15%
2033	3,445,383	-	-	-	18,265,880	21,711,263	35,672,840	6.15%
2034	3,565,971	-	-	-	19,480,011	23,045,982	19,119,867	6.15%
2035	3,690,780	-	-	-	-	3,690,780	-	-83.99%

*Notes: Recommended contributions are assumed to be paid on September 30.
Assumes item (2) increases at 3.5% per year.
Assumes contribution of budgeted amount for fiscal 2015.*

SECTION 3: Supplemental Information for the Gloucester Contributory Retirement System

EXHIBIT A

Table of Plan Coverage

Category	Year Ended December 31		Change From Prior Year
	2013	2011	
Active participants in valuation:			
Number	517	506	2.2%
Average age	50.4	50.3	N/A
Average years of service	12.9	13.1	N/A
Total payroll	\$24,881,703	\$22,490,770	10.6%
Average payroll	48,127	44,448	8.3%
Account balances	23,910,939	22,313,839	7.2%
Total active vested participants	333	302	10.3%
Inactive participants entitled to a return of their employee contributions			
	52	51	2.0%
Inactive participants with a vested right to a deferred or immediate benefit			
	12	14	-14.3%
Retired participants:			
Number in pay status	321	306	4.9%
Average age	73.0	72.6	N/A
Average monthly benefit	\$2,008	\$1,884	6.6%
Disabled participants:			
Number in pay status	60	63	-4.8%
Average age	69.6	68.2	N/A
Average monthly benefit	\$2,402	\$2,321	3.5%
Beneficiaries in pay status:			
Number in pay status	73	64	14.1%
Average age	74.0	75.5	N/A
Average monthly benefit	\$1,069	\$1,000	6.9%

SECTION 3: Supplemental Information for the Gloucester Contributory Retirement System

EXHIBIT B

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

Age	Years of Service								
	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39
Under 25	2	2	--	--	--	--	--	--	--
	\$36,400	\$36,400	--	--	--	--	--	--	--
25 - 29	27	23	4	--	--	--	--	--	--
	\$49,201	\$49,793	\$45,794	--	--	--	--	--	--
30 - 34	30	17	12	1	--	--	--	--	--
	\$49,692	\$46,228	\$56,127	\$31,353	--	--	--	--	--
35 - 39	25	10	6	7	2	--	--	--	--
	\$49,181	\$34,480	\$61,380	\$55,171	\$65,128	--	--	--	--
40 - 44	54	16	12	9	16	1	--	--	--
	\$51,999	\$44,116	\$42,376	\$57,704	\$63,236	\$62,464	--	--	--
45 - 49	84	16	23	15	16	11	3	--	--
	\$49,055	\$44,752	\$34,744	\$37,364	\$60,531	\$82,067	\$57,919	--	--
50 - 54	103	21	17	21	16	9	17	2	--
	\$51,755	\$40,803	\$46,580	\$47,634	\$51,510	\$58,420	\$70,623	\$65,595	--
55 - 59	101	6	14	25	26	12	13	5	--
	\$45,832	\$30,458	\$43,103	\$40,751	\$44,586	\$40,705	\$62,780	\$72,045	--
60 - 64	61	7	8	9	10	11	6	6	4
	\$42,713	\$25,152	\$33,414	\$37,614	\$37,981	\$40,437	\$51,810	\$63,408	\$76,910
65 - 69	27	1	5	3	9	4	3	2	--
	\$42,484	\$23,662	\$53,029	\$35,830	\$41,990	\$52,407	\$31,668	\$34,121	--
70 & over	3	--	1	--	--	--	2	--	--
	\$39,784	--	\$19,680	--	--	--	\$49,836	--	--
Total	517	119	102	90	95	48	44	15	4
	\$48,127	\$42,100	\$43,922	\$44,027	\$51,070	\$54,872	\$61,273	\$62,674	\$76,910

SECTION 3: Supplemental Information for the Gloucester Contributory Retirement System

EXHIBIT C

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2013	Year Ended December 31, 2012
Net assets at actuarial value at the beginning of the year	\$72,581,081	\$67,318,567
Contribution income:		
Employer contributions	\$7,098,838	\$6,793,146
Employee contributions	2,424,594	2,407,524
Federal Grant Reimbursement contributions	30,327	42,526
Less administrative expenses	<u>-328,980</u>	<u>-318,689</u>
Net contribution income	9,224,779	8,924,507
Net investment income	<u>7,138,008</u>	<u>6,161,832</u>
Total income available for benefits	\$16,362,787	\$15,086,339
Less benefit payments:		
Pensions	-\$9,917,852	-\$9,585,124
Net 3(8)(c) reimbursements	-14,251	-96,895
Refunds, annuities, & Option B refunds	-429,230	-147,806
Workers Compensation Settlements	<u>0</u>	<u>6,000</u>
Net benefit payments	-\$10,361,332	-\$9,823,825
Change in reserve for future benefits	\$6,001,455	\$5,262,514
Net assets at actuarial value at the end of the year	\$78,582,536	\$72,581,081

SECTION 3: Supplemental Information for the Gloucester Contributory Retirement System

EXHIBIT D

Development of the Fund Through December 31, 2013

Year Ended December 31	Employer Contributions	Employee Contributions	Other Contributions	Net Investment Return*	Administrative Expenses	Benefit Payments	Actuarial Value of Assets at End of Year
2007	\$5,512,525	\$2,266,409	\$22,567	\$13,501,091	\$189,733	\$7,339,467	\$71,938,829
2008	5,808,066	1,743,136	14,946	-14,930,384	263,499	7,587,147	56,724,053
2009	6,067,057	1,962,848	22,974	8,993,139	262,720	8,367,849	65,139,502
2010	6,293,396	2,202,247	18,176	4,312,600	282,917	8,887,311	68,795,694
2011	6,543,097	2,100,878	14,490	-933,855	253,431	9,253,139	67,013,734
2012	6,793,146	2,407,524	42,526	6,161,832	318,689	9,823,825	72,581,081
2013	7,098,838	2,424,594	30,327	7,138,008	328,980	10,361,332	78,582,536

* *Net of investment fees*

SECTION 3: Supplemental Information for the Gloucester Contributory Retirement System

EXHIBIT E

Table of Amortization Bases

Type	Annual Payment	Years Remaining	Outstanding Balance
2002 ERI – HA	\$3,808	4	\$13,415
2003 ERI – HA	6,525	4	22,982
2003 ERI - City	48,454	4	170,676
Remaining unfunded liability	<u>5,504,637</u>	20	<u>101,049,677</u>
Total	\$5,563,424		\$101,256,750

Notes: Payments assumed to be made on September 30.

Payment on remaining unfunded liability reflects adjustment to set fiscal 2015 appropriation to budgeted amount.

SECTION 3: Supplemental Information for the Gloucester Contributory Retirement System

EXHIBIT F

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) Withdrawal rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal cost:

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

Actuarial accrued liability for actives:

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

Actuarial accrued liability for pensioners:

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

Unfunded actuarial accrued liability:

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

SECTION 3: Supplemental Information for the Gloucester Contributory Retirement System

Amortization of the unfunded actuarial accrued liability:

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

Investment return:

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

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

EXHIBIT I

Summary of Actuarial Valuation Results

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

1. Retired participants as of the valuation date (including 73 beneficiaries in pay status)	454
2. Participants active during the year ended December 31, 2013 with total accumulated contributions of \$23,910,939 and projected payroll of \$26,629,102	517
3. Inactive employees with vested rights to a return of their contributions as of December 31, 2013	52
4. Inactive employees with vested rights to a deferred or immediate benefit as of December 31, 2013	12

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

1. Normal cost, including administrative expenses	\$4,331,764
2. Expected employer contributions	<u>-2,537,904</u>
3. Employer normal cost: (1) + (2)	\$1,793,860
4. Actuarial accrued liability	176,129,856
Retired participants and beneficiaries	\$97,426,261
Inactive participants	2,217,871
Active participants	76,485,724
5. Actuarial value of assets (\$82,469,785 at market value)	78,582,536
6. Unfunded actuarial accrued liability	97,547,320

The determination of the recommended contribution projected to July 1, 2014 is as follows:

1. Projected employer normal cost, adjusted for timing	\$1,854,861
2. Projected unfunded actuarial accrued liability	101,256,750
3. Payment on projected unfunded actuarial accrued liability, adjusted for timing	5,563,424
4. Recommended contribution: (1) + (3)	<u>\$7,418,285</u>
5. Projected payroll	\$27,025,587
6. Total budgeted appropriation as a percentage of payroll: (4) ÷ (5)	27.45%

Notes: Recommended contributions are assumed to be paid on September 30.

Recommended contributions set equal to budgeted amount determined with the previous valuation.

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

EXHIBIT II

Supplementary Information Required by the GASB – History of Employer Contributions

Plan Year Ended December 31	Annual Required Contributions (ARC)	Actual Contributions	Percentage Contributed
2007	\$5,512,525	\$5,512,525	100.0%
2008	5,808,066	5,808,066	100.0%
2009	6,067,057	6,067,057	100.0%
2010	6,292,539	6,292,539	100.0%
2011	6,543,097	6,543,097	100.0%
2012	6,793,146	6,793,146	100.0%
2013	7,098,383	7,098,383	100.0%

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

EXHIBIT III

Supplementary Information Required by the GASB – Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll* [(b) - (a)] / (c)
01/01/2003	\$46,649,000	\$99,649,000	\$52,977,000	46.81%	\$20,985,000	252.45%
01/01/2004	52,051,000	105,752,000	53,701,000	49.22%	20,532,000	261.55%
01/01/2006	58,165,000	117,403,000	59,238,000	49.54%	20,903,000	283.39%
01/01/2008	71,938,829	128,811,115	56,872,286	55.85%	22,787,184	249.58%
01/01/2010	65,139,502	138,859,148	73,719,646	46.91%	23,227,715	317.38%
01/01/2012	67,318,567	152,051,654	84,733,087	44.27%	23,142,683	366.13%
01/01/2014	78,582,536	176,129,856	97,547,320	44.62%	26,629,102	366.32%

* Not less than zero

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

EXHIBIT IV

Supplementary Information Required by the GASB

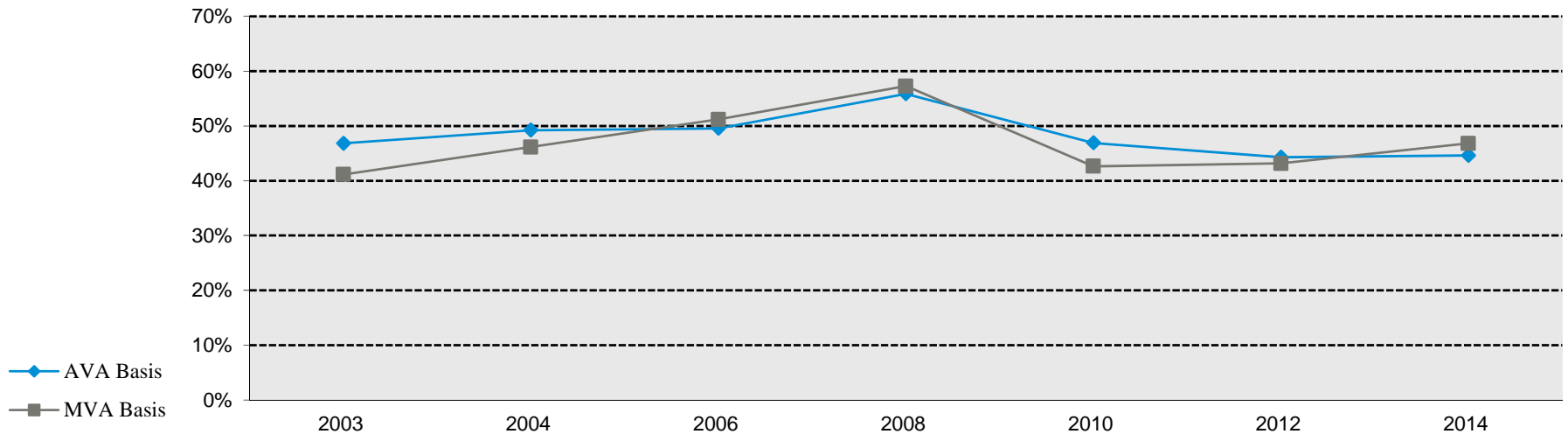
Valuation date	January 1, 2014
Actuarial cost method	Entry Age Normal Cost Method
Amortization method	Level dollar for the 2002 and 2003 ERIs and increasing amortization for the remaining unfunded liability such that total appropriation increases 6.15% per year
Remaining amortization period	As of July 1, 2014, 4 years remaining on 2002 and 2003 ERIs and 20 years for remaining unfunded liability
Asset valuation method	4-year smoothing of investment returns greater (less) than expected.
Actuarial assumptions:	
Investment rate of return	7.75% (previously, 7.875%)
Projected salary increases	4.0% in 2014 and 4.5% for 2015 and later
Cost of living adjustments	3.00% for the first \$14,000 of retirement income
Plan membership:	
Retired participants and beneficiaries receiving benefits	454
Terminated participants entitled to a return of their employee contributions	52
Terminated participants with a vested right to a deferred or immediate benefit	12
Active participants	<u>517</u>
Total	1,035

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

**EXHIBIT V
Funded Ratio**

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

The chart below depicts a history of the funded ratios for this plan. On a market value basis, the funded ratio has increased from 43.16% as of January 1, 2012 to 46.82% as of January 1, 2014. On an actuarial basis, the funded ratio has increased from 44.27% as of January 1, 2012 to 44.62% as of January 1, 2014.



SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

EXHIBIT VI

Actuarial Assumptions and Actuarial Cost Method

Mortality Rates:

<i>Pre-Retirement:</i>	RP-2000 Employee Mortality Table projected 20 years with Scale AA (Previously, RP-2000 Employee Mortality Table projected 12 years with Scale AA)
<i>Healthy Retiree:</i>	RP-2000 Healthy Annuitant Mortality Table projected 15 years with Scale AA (Previously, RP-2000 Healthy Annuitant Mortality Table projected 12 years with Scale AA)
<i>Disabled Retiree:</i>	RP-2000 Employee Mortality Table set forward three years projected five years with Scale AA (Previously, RP-2000 Health Annuitant Mortality Table set forward five years projected 12 years with Scale AA)

The RP-2000 Employee Mortality Table projected 20 years with Scale AA and the RP-2000 Healthy Annuitant Mortality Table projected 15 years with Scale AA were determined to contain provisions appropriate to reasonably reflect future mortality improvement, based on a review of the mortality experience of the plan.

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

Termination Rates before Retirement:

Groups 1 and 2 - Rate (%)

Mortality

Age	Male	Female	Disability
20	0.02	0.01	0.01
25	0.03	0.02	0.02
30	0.04	0.02	0.03
35	0.07	0.04	0.06
40	0.09	0.05	0.10
45	0.12	0.08	0.15
50	0.15	0.12	0.19
55	0.21	0.22	0.24
60	0.35	0.36	0.28

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

Group 4 - Rate (%)

Mortality

Age	Male	Female	Disability
20	0.02	0.01	0.10
25	0.03	0.02	0.20
30	0.04	0.02	0.30
35	0.07	0.04	0.30
40	0.09	0.05	0.30
45	0.12	0.08	1.00
50	0.15	0.12	1.25
55	0.21	0.22	1.20
60	0.35	0.36	0.85

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

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

Previously,

Age	Groups 1 and 2 - Rate (%)		
	Mortality		Disability
	Male	Female	
20	0.03	0.02	0.03
25	0.03	0.02	0.04
30	0.04	0.02	0.06
35	0.07	0.04	0.08
40	0.10	0.06	0.12
45	0.13	0.09	0.18
50	0.17	0.14	0.31
55	0.24	0.23	0.50
60	0.40	0.37	0.61

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

Age	Group 4 - Rate (%)		
	Mortality		Disability
	Male	Female	
20	0.03	0.02	0.10
25	0.03	0.02	0.12
30	0.04	0.02	0.18
35	0.07	0.04	0.26
40	0.10	0.06	0.38
45	0.13	0.09	0.58
50	0.17	0.14	0.98
55	0.24	0.23	1.60
60	0.40	0.37	1.97

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

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

Withdrawal Rates:

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

Previously,

Age	Rate per year (%)	
	Groups 1 and 2	Group 4
20	37.51	3.15
25	28.23	2.85
30	17.35	2.48
35	10.07	1.88
40	7.21	0.84
45	5.68	--
50	4.57	--
55	--	--
60	--	--

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

Retirement Rates:

Age	Rate per year (%)		Group 4
	Groups 1 and 2		
	Male	Female	
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	--

Previously,

Age	Rate per year (%)	
	Groups 1 and 2	Group 4
50 – 54	--	2.0
55	10.0	5.0
56 - 58	3.0	5.0
59	5.0	5.0
60 - 61	5.0	10.0
62 - 64	10.0	20.0
65	100.0	100.0

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

Retirement Age for Inactive Vested Participants:	55 for participants hired prior to April 2, 2012. For participants hired April 2, 2012 or later, 60 for Group 1, 55 for Group 2 and 50 for Group 4. (Previously, 65 for Groups 1 and 2 and 55 for Group 4)
Unknown Data for Participants:	Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.
Family Composition:	75% of participants are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their spouses.
Benefit Election:	All participants are assumed to elect Option A.
Net Investment Return:	7.75% (Previously, 7.875%)
Salary Increases:	4.00% for 2014 and 4.50% for 2015 and later, including an allowance for inflation of 3.00% in 2014 and 3.50% in 2015 and later. For Firefighters, projected salaries were adjusted to reflect the increase in hours from 42 per week to 56 per week effective July 1, 2014.
Interest on Employee Contributions:	3.5% (Previously, 2.0%)
2013 Salary:	Salary reported in the data, except for employees hired in 2013 for whom salaries were annualized.
Net 3(8)(c) Liability:	No liability is valued for benefits paid to or received from other municipal retirement systems.
Total Service:	Total creditable service reported in the data.
Administrative Expenses:	\$385,000 for calendar 2014, increasing by 3.00% in 2014 and 3.50% per year thereafter. (Previously, \$275,000 for calendar 2012)
Actuarial Value of Assets:	Market value of assets (adjusted by payables and receivables) adjusted to phase in investment gains or losses above or below the expected rate of investment return on an actuarial basis over a four-year rolling period. The phase-in is 25% for year one, 50% for year two, 75% for year three and 100% for year four. The actuarial value of assets may be no less than 90% or more than 110% of the market value of assets.

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age of the participant less total creditable service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary. Normal Cost is determined by using the plan of benefits applicable to each participant. (Previously, Normal Cost determined as if the current plan of benefits had always been in effect.)
Changes in Assumptions:	<p>Based on past experience and future expectations the following actuarial assumptions were changed:</p> <ul style="list-style-type: none">➤ The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.➤ The administrative expense assumption was reset to \$385,000 for the 2014 calendar year, increasing by the inflation assumption thereafter.➤ The investment return assumption was lowered from 7.875% to 7.75%.➤ The pre-retirement mortality assumption was changed from the RP-2000 Employee Mortality Table projected 12 years with Scale AA to the RP-2000 Employee Mortality Table projected 20 years with Scale AA.➤ The healthy retiree mortality assumption was changed from the RP-2000 Healthy Annuitant Mortality Table projected 12 years with Scale AA to the RP-2000 Healthy Annuitant Mortality Table projected 15 years with Scale AA.➤ The mortality assumption for disabled participants was changed from the RP-2000 Healthy Annuitant Mortality Table set forward five years projected 12 years with Scale AA to the RP-2000 Healthy Annuitant Mortality Table set forward three years projected five years with Scale AA.➤ The assumed retirement age for inactive vested participants was changed from age 65 to age 55 for Group 1 and 2 members hired prior to April 2, 2012.➤ Rates of disability, withdrawal and retirement were revised as detailed above.➤ Assumed interest on employee contributions was increased from 2.0% to 3.5%.➤ Projected salaries for firefighters were adjusted to reflect the increase in hours from 42 per week to 56 per week effective July 1, 2014.

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

EXHIBIT VII

Summary of Plan Provisions

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

Plan Year: January 1 through 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.)

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

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

SECTION 4: Reporting Information for the Gloucester Contributory 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.

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

For members with less than 30 years of creditable service:

Age Last Birthday at Date of Retirement

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

For members with 30 years of creditable service or greater:

Age Last Birthday at Date of Retirement

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

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

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

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

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

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 voluntarily withdraw their contributions with less than 10 ten years of credited service receive 3% interest on their contributions.

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

Retirement Benefits (Superannuation)

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

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

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

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

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

Ordinary Disability Benefits

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

Accidental Disability Benefit

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

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

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 \$250 per month, and there are additional amounts for surviving children.

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

Upon the death of a job-connected disability retiree who retired prior to November 7, 1996 and could not elect an Option C benefit, a surviving spouse will receive an allowance of \$9,000 per year 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.

SECTION 4: Reporting Information for the Gloucester Contributory Retirement System

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 of Chapter 127 of the Acts of 1999, which provide that the Retirement Board may approve an annual COLA in excess of the Consumer Price Index but not to exceed a 3% COLA on the first \$12,000 of a retirement allowance. The Board adopted an increase in the COLA base from \$12,000 to \$14,000 effective July 1, 2011, as per Section 19 of Chapter 188. 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:

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

SECTION 5: GASB Information for Gloucester Contributory Retirement System

EXHIBIT 1

Net Pension Liability

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

Total pension liability	\$176,129,856
Plan fiduciary net position	82,469,785
System's net pension liability	93,660,071
Plan fiduciary net position as a percentage of the total pension liability	46.82%

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

Inflation	3.00% in 2014, 3.5% in 2015 and later
Salary increases	4.00% for 2014 and 4.50% for 2015 and later. For firefighters, projected salaries were adjusted to reflect the increase in hours from 42 per week to 56 per week effective July 1, 2014.
Investment rate of return	7.75%, net of pension plan investment expense, including inflation
Cost of Living Adjustments	3% of first \$14,000
Pre-retirement:	RP-2000 Employee Mortality Table projected 20 years with Scale AA
Healthy Retiree:	RP-2000 Healthy Annuitant Mortality Table projected 15 years with Scale AA
Disabled Retiree:	RP-2000 Healthy Annuitant Mortality Table set forward three years projected five years with Scale AA

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

SECTION 5: GASB Information for Gloucester Contributory Retirement System

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

Discount rate: The discount rate used to measure the total pension liability was 7.75%. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that Gloucester Contributory Retirement System contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the Gloucester Contributory Retirement System, calculated using the discount rate of 7.75%, as well as what the Gloucester Contributory Retirement System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75%) or 1-percentage-point higher (8.75%) than the current rate:

	1% Decrease (6.75%)	Current Discount (7.75%)	1% Increase (8.75%)
Gloucester Contributory Retirement System's net pension liability as of December 31, 2013	\$194,353,722	\$176,129,855	\$160,486,990

SECTION 5: GASB Information for Gloucester Contributory Retirement System

EXHIBIT 2

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

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

Service cost	\$3,946,764
Interest	--
Recognized portion of current-period difference between expected and actual experience	--
Contributions – employee	--
Projected earnings on pension plan investments	--
Recognized portion of current-period difference between projected and actual earnings on pension plan investments	--
Recognition of deferred outflows of resources	--
Recognition of deferred inflows of resources	--
Pension expense for fiscal year ended June 30, 2015	To be determined

B. Deferred outflows/inflows of resources related to pensions

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

C. Projected recognition of deferred outflows/(inflows)

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

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

SECTION 5: GASB Information for Gloucester Contributory Retirement System

EXHIBIT 3

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

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Total pension liability										
Service cost	\$3,946,764									
Interest	--									
Differences between expected and actual experience	--									
Changes of assumptions	--									
Changes of benefit terms	--									
Benefit payments, including refunds of employee contributions	--									
Net change in total pension liability	TBD									
Total pension liability – beginning	176,129,856									
Total pension liability - ending (a)	TBD									
Plan fiduciary net position										
Contributions – employer	--									
Contributions – employee	--									
Net investment income	--									
Benefit payments, including refunds of employee contributions	--									
Other	--									
Net change in fiduciary net position	TBD									
Plan fiduciary net position - beginning	82,469,785									
Plan fiduciary net position - ending (b)	TBD									
Net pension liability – ending: (a)-(b)	<u>TDE</u>									
Plan's fiduciary net position as a percentage of the total pension liability	TBD									
Covered-employee payroll	\$26,629,102									
Net pension liability as a percentage of covered-employee payroll	TBD									

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

SECTION 5: GASB Information for Gloucester Contributory Retirement System

EXHIBIT 4

Schedule of Contributions – Last Ten Years

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Actuarially determined contribution*	\$7,418,285									
Contributions in relation to the actuarially determined contribution	TBD									
Contribution deficiency (excess)	TBD									
Covered-employee payroll	\$26,629,102									
Contributions as a percentage of covered-employee payroll	27.86%									

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

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

SECTION 5: GASB Information for Gloucester Contributory Retirement System

EXHIBIT 5

Notes to Required Supplementary Information

Valuation date	Actuarial determined contribution rates are calculated as of January 1 two years prior to the end of the employer's fiscal year in which contributions are reported.
Actuarial cost method	Entry Age Normal Cost Method
Amortization method	Level dollar for the 2002 and 2003 ERIs and increasing amortization for the remaining unfunded liability such that total appropriation increases 6.15% per year
Remaining amortization period	Four years from July 1, 2014 for the 2002 and 2003 ERI liabilities and 20 years from July 1, 2014 for the remaining unfunded liability.
Asset valuation method	Market value of assets less unrecognized returns in each of the last four years. Unrecognized return is equal to the difference between the actual and expected return on an actuarial value basis, and is recognized over a four-year period, further adjusted, if necessary, to be within 10% of the market value.
Actuarial assumptions:	
Investment rate of return	7.75% (previously, 7.875%)
Discount rate	7.75% (previously, 7.875%)
Inflation rate	3.00% in 2014, 3.5% in 2015 and later
Projected salary increases	4.00% for 2014 and 4.5% for 2015 and later. For firefighters, projected salaries were adjusted to reflect the increase in hours from 42 per week to 56 per week effective July 1, 2014.
Cost of living adjustments	3.00% of first \$14,000 of retirement income
Plan membership:	
Retired participants and beneficiaries receiving benefits	454
Inactive participants entitled to a return of their employee contributions	52
Inactive participants with a vested right to a deferred or immediate benefit	12
Active participants	<u>517</u>
Total	1,035

SECTION 5: GASB Information for Gloucester Contributory Retirement System

Changes in Assumptions:

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

The administrative expense assumption was reset to \$385,000 for the 2014 calendar year, increasing by the inflation assumption thereafter.

The investment return assumption was lowered from 7.875% to 7.75%.

The pre-retirement mortality assumption was changed from the RP-2000 Employee Mortality Table projected 12 years with Scale AA to the RP-2000 Employee Mortality Table projected 20 years with Scale AA.

The healthy retiree mortality assumption was changed from the RP-2000 Healthy Annuitant Mortality Table projected 12 years with Scale AA to the RP-2000 Healthy Annuitant Mortality Table projected 15 years with Scale AA.

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

The assumed retirement age for inactive vested participants was changed from age 65 to age 55 for Group 1 and 2 members hired prior to April 2, 2012.

Rates of disability, withdrawal and retirement were revised as detailed above.

Assumed interest on employee contributions was increased from 2.0% to 3.5%.

Projected salaries for firefighters were adjusted to reflect the increase in hours from 42 per week to 56 per week effective July 1, 2014.

Changes in Plan Provisions:

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