REPORT ON THE RESULTS OF AN EXPERIENCE STUDY OF THE BURLINGTON EMPLOYEES' RETIREMENT SYSTEM

COVERING THE PERIOD JULY 1, 2007 THROUGH JUNE 30, 2012

buckconsultants

A Xerox Company

May 2, 2013

Retirement Board
Burlington Employees' Retirement System
179 South Winooski Avenue, Suite 100
Burlington, VT 05401

Dear Board Members:

The results of our experience study of the Burlington Employees' Retirement System covering the five-year period ending June 30, 2012, are described in this report, along with our recommendations for changes in the present assumptions.

The Table of Contents, which immediately follows, outlines the information contained in this report.

I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. I meet
the Qualification Standards of the Academy to render the actuarial opinions contained herein. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and I am available to answer questions concerning it.

Respectfully submitted,

David Driscoll

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Principal, Consulting Actuary

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I. INTRODUCTION

In order to accumulate funds to pay retirement benefits on a reasonable and relatively stable basis, the actuary prepares annual valuations of the System's assets and liabilities to measure the funded status and to ensure that funding is progressing at a rate that is adequate to meet the System's obligations.

The primary purposes of funding are to equitably allocate costs between generations of taxpayers and to provide security to members, who view the funds set aside as assurance that their benefits will be paid.

While the ultimate cost of the System is not determinable until all benefits are paid and expenses provided for, each actuarial valuation attempts to estimate costs based on assumptions selected to predict, as accurately as possible, future experience in order to produce stable contribution rates.

Overly conservative or aggressive assumptions will result in actuarial gains or losses each year. When translated into contributions, this will result in decreasing or increasing contribution rates and an inequitable allocation of costs.

The major actuarial assumptions are:

(a) Active service demographic assumptions,

(b) Compensation increase assumptions,

(c) Post-retirement mortality rates,

(d) Interest rate, and

(e) Cost-of-living adjustment rates.

Before presenting our analysis of the System's experience and discussion of the proposed assumptions, it is important to outline considerations that should govern the selection of actuarial assumptions. The recommendations of the American Academy of Actuaries are as follows:

(i) The actuarial assumptions selected should reflect the actuary's best judgement of future events. They should take into account actual experience to the extent possible, but they should also reflect long-term future trends rather than give undue weight to recent past experience.

(ii) The actuary should consider the impact of inflation in selecting the actuarial assumptions to be used.

(iii) The actuary should give consideration to the reasonableness of each actuarial assumption independently as well as the combined impact of all the assumptions.

(iv) The actuary should give careful attention to changes in plan design that may significantly alter expected future experience. For example, a liberalization of early retirement benefits may make advisable a revision in the retirement assumption.

(v) The actuary, in choosing assumptions, should take into account general or specific information available from other sources, including the plan sponsor, plan administrator, investment managers, accountants, economists, etc.

The purpose of this Report is to provide the information necessary to decide on the appropriate assumptions to be used in future valuations. It should be noted that these decisions cannot be made "in a vacuum" but must reflect the present and expected situation within the State and the System.

The balance of this Report deals in detail with the various assumptions. In each area we have made recommendations as to what we believe are appropriate assumptions. These recommendations reflect our "best estimate" of the likely future experience based on:

(a) the recent past experience,

(b) the general economic views prevailing at this time, and

(c) anticipated trends.

II. ACTIVE SERVICE DEMOGRAPHIC ASSUMPTIONS

The active service demographic assumptions include rates of:

(a) Termination,

(b) Disability,

(c) Death before retirement, and

(d) Retirement.

Our review of active service demographic assumptions is based on the actuarial valuation data for Class A and B members of the System.

The basis for analysis of the System's experience is a comparison of the actual number of separations from service under each category with those expected based on the assumptions currently in use.

The "expected" values are calculated by applying the various rates or probabilities to the individuals exposed to each respective event. For example, active members age 40 with 10 years of credited service would be exposed to the probabilities of withdrawal, death and disability. A Class A member age 54 with seven years of service would be exposed to death, disability and retirement.

Numerical summaries of the System's experience from July 1, 2007, through June 30, 2012, are presented in Appendix I. The tables show the ratios of the actual experience of the System as compared to that anticipated by the present actuarial assumptions. The results are shown separately by assumption and, where appropriate, by sex.

The ratios of actual to expected experience indicate the extent of deviation from the assumptions. A ratio of 1.0 would mean the experience has been exactly as anticipated.

As an aid to the Trustees in analyzing these results, we have also prepared a series of graphs, which present the statistical data summarized in Appendix I in visual form. Our comments will refer to these graphs, which immediately follow each of the following subsections.

Termination

The graphs that follow present the withdrawal and vesting experience separately for Class A and B employees.

Reviewing the withdrawal and vesting experience, it can be seen that there are more members than expected leaving before service retirement among both males and females at most ages.

Since the number of members withdrawing without a benefit and the number of vested retirements exceed those expected, we recommend that the assumed probabilities of withdrawal be increased. In the case of Class A, we propose that assumed rates be decreased for those under age 40 and increased for those over that age. For Class B, the assumed termination rates for employees with more than three years of credited service differ from those applied to employees with less than three years. We propose raising the assumed rates of turnover among employees with less than three years of service and leaving those for employees with more than three years of service unchanged.

The graphs presented on pages 7 and 8 show the current rates, the actual rates and the proposed rates separately for Class A and B, and at different levels of service for Class B. The proposed rates are set forth in detail in Appendix II.

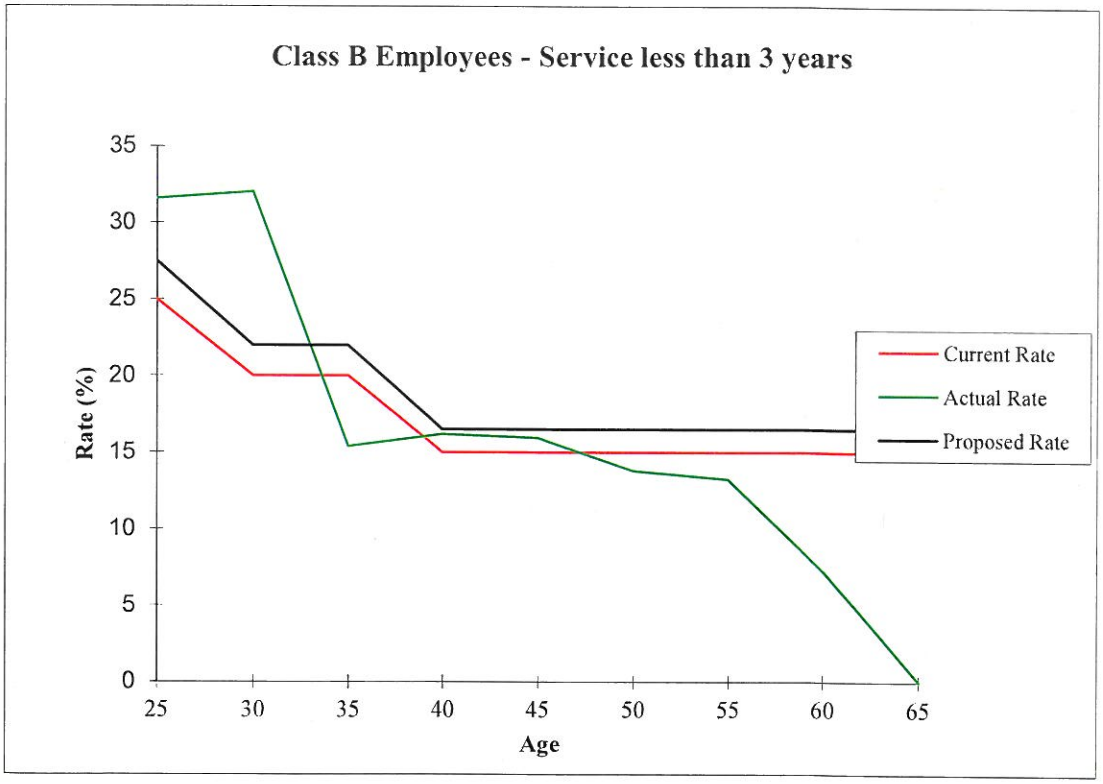
Disability and Death

The graphs that follow show the incidence of disability and active service mortality. The financial impact on the funding of the System of this experience is relatively minor. It should be noted that the low incidence of actual deaths and disabilities makes this experience susceptible to rather large fluctuations from year to year.

The current assumed rates of disability produced expected numbers of disabilities that are reasonably close to actual numbers, taking into consideration the small size of the decrement, and we do not recommend any change in the assumed disability rates at this time.

A review of the active service mortality experience indicates that the current assumption is forecasting somewhat smaller numbers of deaths among active participants than are actually observed. However, we also do not recommend any change in the assumed mortality rates at this time, as the number of both expected and actual deaths is rather small.

Active Service Experience - Terminations
July 1, 2007 through June 30, 2012

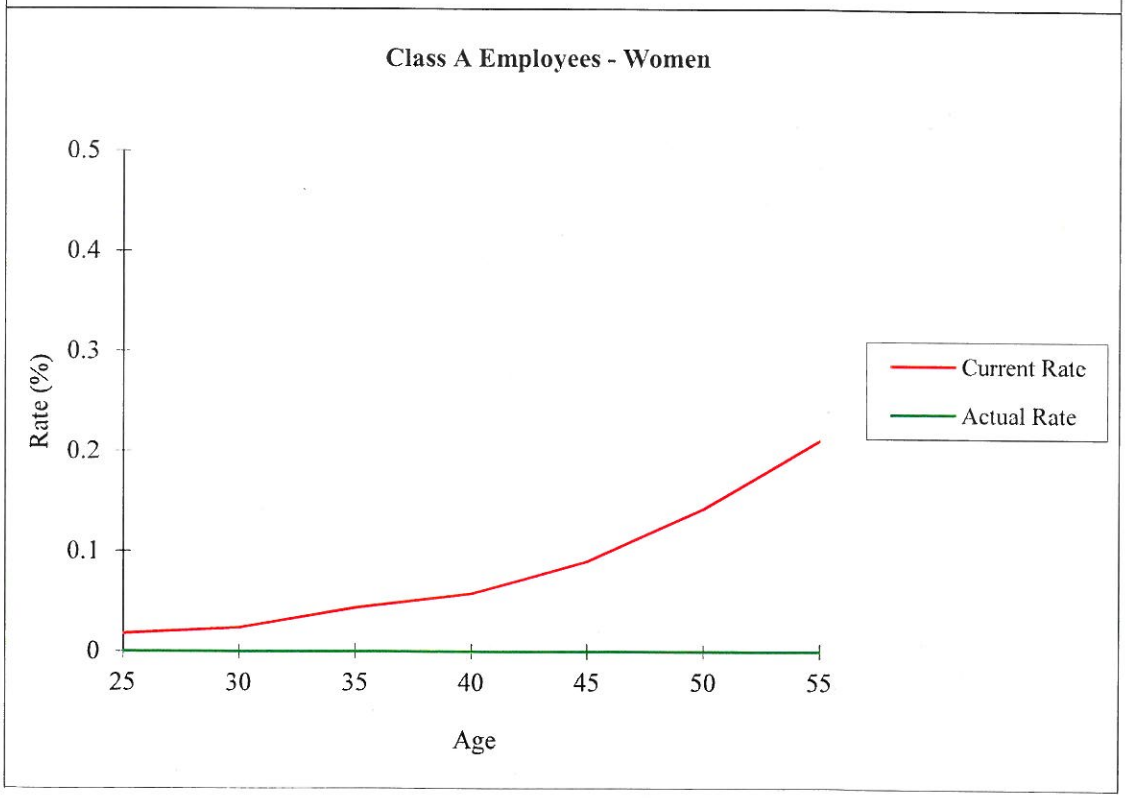


Active Service Experience - Terminations
July 1, 2007 through June 30, 2012 (continued)

Active Service Experience - Disability Retirements
July 1, 2007 through June 30, 2012

Active Service Experience - Disability Retirements
July 1, 2007 through June 30, 2012 (continued)

Active Service Experience - Deaths
July 1, 2007 through June 30, 2012



Active Service Experience - Deaths
July 1, 2007 through June 30, 2012 (continued)

Service Retirement

The graphs on the following page show that service retirements in were generally below expected levels throughout the experience review period. In interpreting this experience as a guide to what may happen in the future, it is important to consider the economic environment in which this experience arose. In the case of Class A, the small exposure and varied direction and magnitude of the deviations from the current assumption leads us to recommend that the assumption be retained for now. For Class B, we are recommending modest changes that are intended to modify the current assumption to partially reflect recent experience. Appendix II shows the current and proposed tables of service retirement probabilities.

Active Service Experience - Service Retirements
July 1, 2007 through June 30, 2012

III. POST-RETIREMENT MORTALITY RATES

A review of the statistics with regard to post-retirement mortality for Class A and B retired members, which are summarized in Tables 8 and 9 of Appendix I, reveals that retired individuals in Class A are dying in smaller numbers than are predicted by the current assumption while those in Class B are dying in somewhat greater numbers than the current assumption predicts. However, guidance provided by the applicable Actuarial Standard of Practice, which has changed since the last experience study was performed for the System, indicates that in selecting this assumption consideration must be given to the extent to which longevity will improve among participants in future years.

Based on a review of the current experience of the System, and heeding the requirement of the Actuarial Standard of Practice, we recommend that the post-retirement mortality assumption be changed to the RP-2000 Combined Tables with projection of mortality improvements using Scale AA to the year 2017.

IV. ECONOMIC ASSUMPTIONS

Economic assumptions include:

(a) rates of compensation increase,

(b) investment income, and

(c) post-retirement adjustment in benefits on account of inflation.

Inflation

The System provides annual cost-of-living adjustments (COLAs) for some participants. The basis for these adjustments is the annual change in the U.S. Consumer Price Index (CPI-U). COLAs are limited to 6% annually regardless of the magnitude of the change in the CPI.

A review of the CPI over the period covered by the study indicates that the inflation rate has averaged slightly below 2% annually since January 1, 2007.

Other economic data presently available (e.g., recent yields on inflation-indexed bonds) suggest that the financial markets anticipate a long-term average rate of inflation of 2.5% to 3.0%. Current economic assumptions used in the valuation of the system are based on an inflation rate of approximately 3% per year. We recommend that this assumption be retained.

Currently, we assume a 3% annual adjustment in pensions for those receiving full COLAs and a 1.5% annual adjustment in pensions for those receiving one-half COLAs. We recommend no changes in the assumed annual adjustment for COLAs.

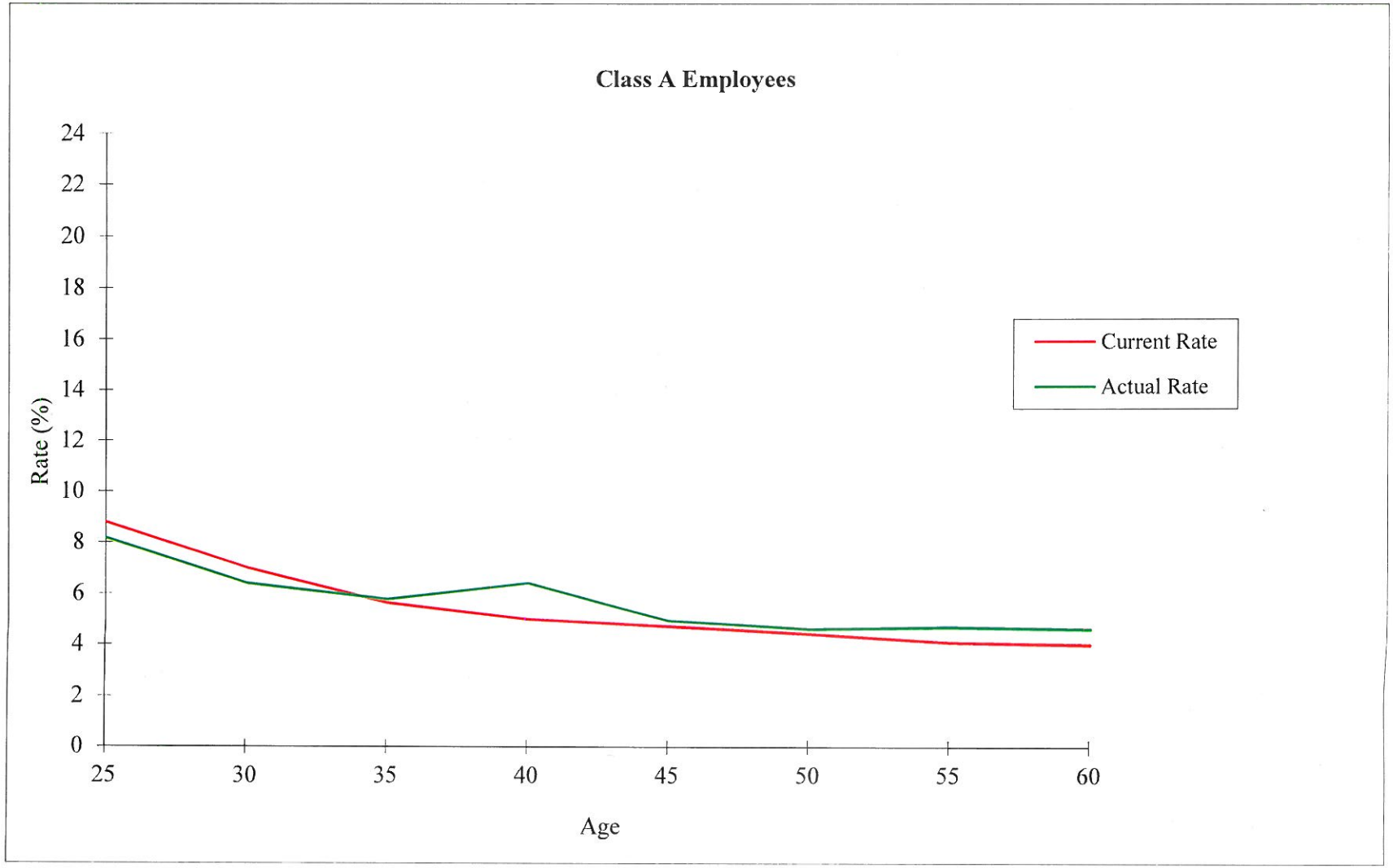
Merit-Promotion Salary Increases

Currently a single compensation scale is used for both male and female members. The overall pattern of compensation increases appears to be generally consistent between males and females. The average annual pay increase produced by the current scale is as follows:

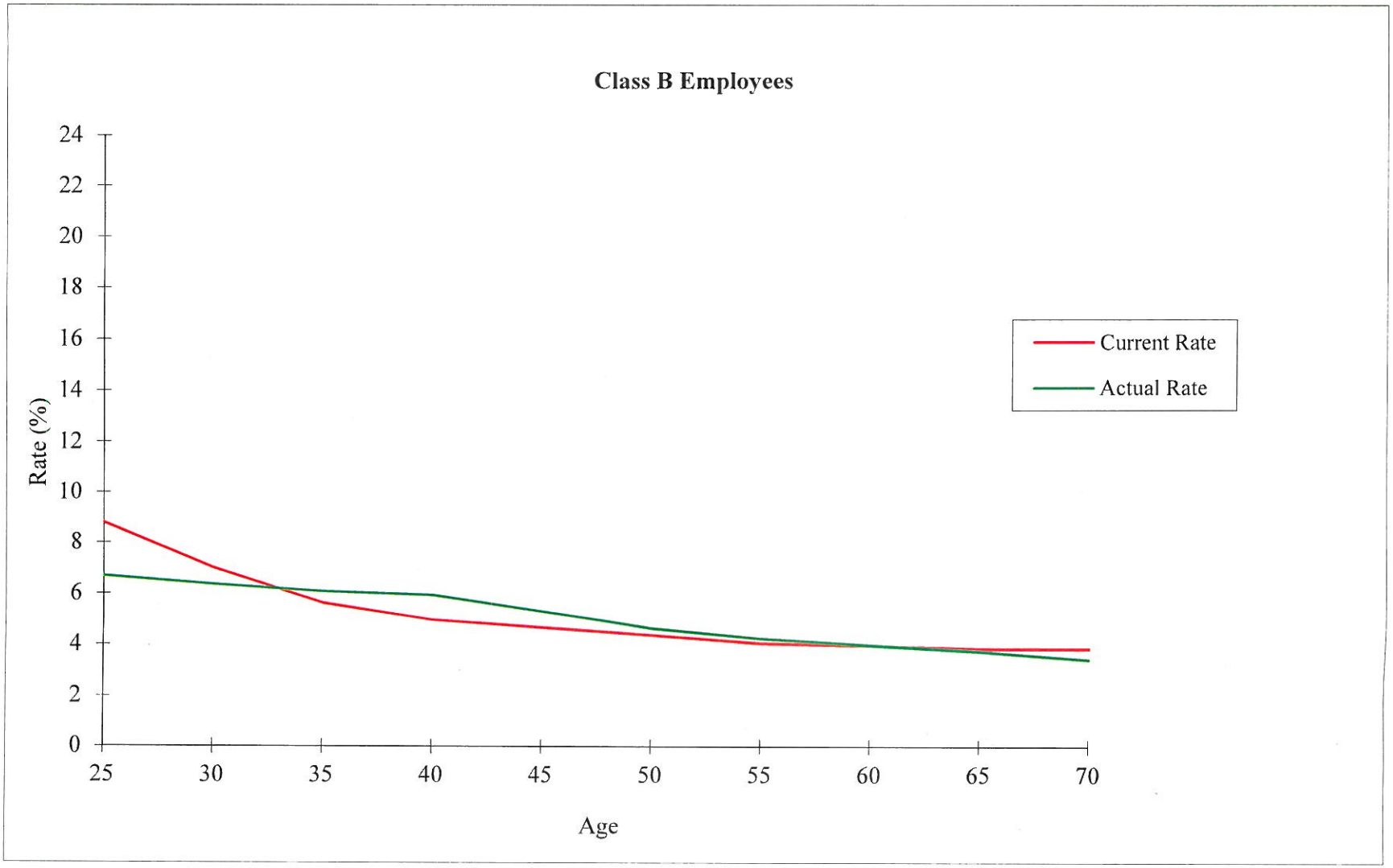
Age	Average Annual Increase
25	8.8%
35	5.6%
45	4.6%
55	4.0%

The graphs on page 18 and 19 set forth the levels of total compensation increase during the five-year period for Class A and B. These results include both merit-promotion increases and inflationary increases. Both the graphs and the summary of actual and expected salaries shown in Table 7 indicate that in the aggregate the current salary scale performs fairly well in predicting salaries of active members. We recommend that no changes be made to the salary increase assumptions at this time.

Active Service Experience - Salary Experience
July 1, 2007 through June 30, 2012



Active Service Experience - Salary Experience
July 1, 2007 through June 30, 2012 (continued)



Interest Rate

The present interest assumption used in the funding of the System is 8.00% per year. At this writing, all but a comparatively small proportion of the System's assets are expected to be invested in accordance with the target allocation of the Vermont Pension Investment Committee (VPIC).

Using Buck's capital market-modeling tool, GEMS (described in more detail in Appendix IV), we have projected the return under the asset allocation policy presently in place over various time horizons:

	10-Year	20-Year	30-Year
Expected Return (Geometric)	6.59%	7.75%	8.44%

Given the appropriateness of focusing on long-term expectations of return in setting valuation assumptions, we recommend that the System retain its present investment return assumption of 8.00% until such time as a different investment policy is adopted.

V. COST ANALYSIS AND CONCLUSIONS

To assist the Board in selecting and approving the final package of valuation assumptions to be used prospectively from June 30, 2012, we have recalculated the results of the valuation of the System as of June 30, 2012, to reflect the potential impact of the recommended assumptions.

Based on the revised valuation, the normal contribution rate applicable to fiscal year 2014 would have increased in Class A from 8.84% to 8.97%. The normal contribution rate would have increased in Class B from 5.85% to 5.92%. The total contribution payable by the City to the System for fiscal year 2014 would have increased from $8,357,370 to $8,587,630. These results are summarized in Appendix III.

We look forward to discussing the results of this experience investigation with the Board prior to the preparation of the June 30, 2013, valuation of the System.

APPENDIX I

ACTUAL AND EXPECTED EXPERIENCE

TABLE 1

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

TERMINATIONS

Central Age of Group	Class A			Class B		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 25	2	3.38	0.592	18	14.29	1.260
25-29	8	10.57	0.757	49	35.18	1.393
30-34	11	8.91	1.235	28	35.78	0.783
35-39	9	6.46	1.393	30	29.15	1.029
40-44	7	5.17	1.354	28	21.24	1.318
45-49	1	0.65	1.538	32	30.69	1.043
50-54	0	0.10	0.000	23	31.06	0.741
55 and over	0	0	0.000	19	10.12	1.877
Total	38	35.24	1.078	227	207.51	1.094

TABLE 2

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

DISABILITY RETIREMENTS
CLASS A

Central Age of Group	Class A Employees - Men			Class A Employees - Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0.06	0.000	0	0.01	0.000
25-29	0	0.28	0.000	0	0.06	0.000
30-34	0	0.49	0.000	0	0.05	0.000
35-39	0	0.67	0.000	0	0.04	0.000
40-44	0	0.94	0.000	0	0.07	0.000
45-49	1	0.84	1.190	0	0.07	0.000
50-54	0	0.60	0.000	0	0.08	0.000
55 and over	0	0	0.000	0	0.01	0.000
Total	1	3.88	0.258	0	0.38	0.000

TABLE 3

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

DISABILITY RETIREMENTS
CLASS B

Central Age of Group	Class B Employees - Men			Class B Employees - Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0.04	0.000	0	0.03	0.000
25-29	0	0.10	0.000	0	0.09	0.000
30-34	0	0.18	0.000	0	0.15	0.000
35-39	0	0.27	0.000	0	0.19	0.000
40-44	1	0.53	1.887	0	0.32	0.000
45-49	0	1.26	0.000	3	0.77	3.896
50-54	3	2.07	1.449	0	1.44	0.000
55 and over	8	9.26	0.864	5	4.78	1.046
Total	12	13.71	0.875	8	7.77	1.030

TABLE 4

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

DEATHS
CLASS A

Central Age of Group	Class A Employees - Men			Class A Employees - Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0.00	0.000	0	0	0.000
25-29	0	0.08	0.000	0	0	0.000
30-34	0	0.10	0.000	0	0	0.000
35-39	0	0.13	0.000	0	0	0.000
40-44	0	0.18	0.000	0	0	0.000
45-49	1	0.15	6.667	0	0	0.000
50-54	0	0.10	0.000	0	0	0.000
55-59	0	0.05	0.000	0	0	0.000
60-64	0	0	0.000	0	0	0.000
65 and over	0	0	0.000	0	0	0.000
Total	1	0.79	1.266	0	0.00	0.000

TABLE 5

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

DEATHS
CLASS B

Central Age of Group	Class B Employees - Men			Class B Employees - Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0.02	0.000	0	0.00	0.000
25-29	0	0.06	0.000	0	0.00	0.000
30-34	0	0.10	0.000	0	0.04	0.000
35-39	0	0.14	0.000	0	0.05	0.000
40-44	2	0.25	8.000	0	0.09	0.000
45-49	0	0.56	0.000	1	0.24	4.167
50-54	1	0.85	1.176	0	0.39	0.000
55-59	2	1.63	1.227	1	0.50	2.000
60-64	3	1.69	1.775	0	0.41	0.000
65 and over	0	0.39	0.000	0	0.24	0.000
Total	8	5.69	1.406	2	1.96	1.020

TABLE 6

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

SERVICE RETIREMENTS

Central Age of Group	Class A			Class B		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 45				0	0	0.000
45				0	0	0.000
46				0	0	0.000
47				0	0	0.000
48				0	0	0.000
49				0	0	0.000
50				0	0	0.000
51				0	0	0.000
52				0	0	0.000
53				0	0	0.000
54				0	0	0.000
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70 and over						
Total	29	37.02	0.783	46	91.63	0.502

TABLE 7

COMPARISON OF ACTUAL AND EXPECTED ANNUAL SALARIES OF MEMBERS

Central Age of Group	Class A Employees Annual Salaries			Class B Employees Annual Salaries		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 25	1,291,287	1,300,888	0.993	1,780,244	1,819,533	0.978
25-29	6,278,650	6,384,027	0.983	6,422,523	6,540,731	0.982
30-34	8,333,362	8,384,154	0.994	10,438,752	10,478,421	0.996
35-39	9,043,720	8,952,270	1.010	11,540,010	11,476,920	1.005
40-44	10,368,666	10,361,966	1.001	16,083,971	16,070,285	1.001
45-49	5,499,620	5,498,739	1.000	25,802,850	25,812,208	1.000
50-54	2,323,065	2,315,730	1.003	27,167,118	27,225,102	0.998
55-59	737,233	733,885	1.005	27,999,289	28,021,596	0.999
60-64	681,726	682,030	1.000	14,964,185	15,031,002	0.996
65 and over	-	-	0.000	2,444,867	2,450,633	0.998
Total	44,557,329	44,613,689	0.999	144,643,809	144,926,431	0.998

TABLE 8

SUMMARY OF MORTALITY EXPERIENCE OF PENSIONERS

CLASS A

Group	Class A Employees - Men			Class A Employees - Women			Total		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Service Retirees	7	7.84	0.893	0	0.00	0.000	7	7.84	0.893
Disability Retirees	2	2.58	0.775	0	0.00	0.000	2	2.58	0.775
Dependents of Deceased Members	0	0.00	0.000	0	0.90	0.000	0	0.00	0.000
Total	9	10.42	0.864	0	0.90	0.000	9	10.42	0.864

TABLE 9

SUMMARY OF MORTALITY EXPERIENCE OF PENSIONERS

CLASS B

Group	Class B Employees - Men			Class B Employees - Women			Total		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Service Retirees	31	21.30	1.455	10	10.89	0.918	41	32.19	1.274
Disability Retirees	2	6.15	0.325	3	0.97	3.093	5	7.12	0.702
Dependants of Deceased Members	0	0.74	0.000	13	5.18	2.510	13	5.92	2.196
Total	33	28.19	1.171	26	17.04	1.526	59	45.23	1.304

APPENDIX II

RECOMMENDED ACTIVE SERVICE TABLES

TABLE 1

COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS FROM ACTIVE SERVICE

TERMINATIONS
CLASS A

Central Age of Group	Class A Employees	
	Current	Recommended
25	9.00%	7.00%
26	8.40%	6.80%
27	7.80%	6.60%
28	7.20%	6.40%
29	6.60%	6.20%
30	6.00%	6.00%
31	5.80%	
32	5.60%	
33	5.40%	
34	5.20%	
35	5.00%	
36	4.80%	5.80%
37	4.60%	5.60%
38	4.40%	5.40%
39	4.20%	5.20%
40	4.00%	5.00%
41	3.80%	4.80%
42	3.60%	4.60%
43	3.40%	4.40%
44	3.20%	4.20%
45	3.00%	4.00%
46	2.80%	3.80%
47	2.60%	3.60%
48	2.40%	3.40%
49	2.20%	3.20%
50	2.00%	3.00%
51	1.60%	2.40%
52	1.20%	1.80%
53	0.80%	1.20%
54	0.40%	0.60%
55	0.00%	0.00%

TABLE 2

COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS FROM ACTIVE SERVICE

TERMINATIONS WITH LESS THAN 3 YEARS
CLASS B

Central Age of Group	Class B Employees - Service less than 3 years	
	Service between 0 and 3 years	
	Current	Recommended
25	25.00%	27.50%
26	24.00%	26.40%
27	23.00%	25.30%
28	22.00%	24.20%
29	21.00%	23.10%
30	20.00%	22.00%
31	20.00%	22.00%
32	20.00%	22.00%
33	20.00%	22.00%
34	20.00%	22.00%
35	20.00%	22.00%
36	19.00%	20.90%
37	18.00%	19.80%
38	17.00%	18.70%
39	16.00%	17.60%
40	15.00%	16.50%
41	15.00%	16.50%
42	15.00%	16.50%
43	15.00%	16.50%
44	15.00%	16.50%
45	15.00%	16.50%
46	15.00%	16.50%
47	15.00%	16.50%
48	15.00%	16.50%
49	15.00%	16.50%

TABLE 2

COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS FROM ACTIVE SERVICE

TERMINATIONS WITH LESS THAN 3 YEARS
CLASS B (continued)

Central Age of Group	Class B Employees - Service less than 3 years	
	Service between 0 and 3 years	
	Current	Recommended
50	25.00%	16.50%
51	24.00%	16.50%
52	23.00%	16.50%
53	22.00%	16.50%
54	21.00%	16.50%
55	20.00%	16.50%
56	20.00%	16.50%
57	20.00%	16.50%
58	20.00%	16.50%
59	20.00%	16.50%
60	20.00%	16.50%
61	19.00%	16.50%
62	18.00%	16.50%
63	17.00%	16.50%
64	16.00%	16.50%
65	15.00%	16.50%
66	15.00%	16.50%
67	15.00%	16.50%
68	15.00%	16.50%
69	15.00%	16.50%
70	15.00%	16.50%

TABLE 3

COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS FROM ACTIVE SERVICE

SERVICE RETIREMENTS

Central Age of Group	Class B Employees	
	Current	Recommended
55	5.00%	5.00%
56	10.00%	5.00%
57	6.00%	5.00%
58	7.00%	5.00%
59	7.00%	5.00%
60	10.00%	10.00%
61	20.00%	15.00%
62	25.00%	20.00%
63	30.00%	25.00%
64	20.00%	25.00%
65	20.00%	25.00%
66	20.00%	20.00%
67	20.00%	25.00%
68	20.00%	20.00%
69	50.00%	25.00%
70	100.00%	100.00%

APPENDIX III

COMPARATIVE VALUATION RESULTS

**RESULTS FOR THE ACTUARIAL VALUATION
PREPARED AS OF JUNE 30, 2012, ON
CURRENT AND RECOMMENDED ASSUMPTIONS**

Item	Current Assumptions	Recommended Assumptions
1. Accrued Liabilities:		
Active and Members	$ 90,404,576	$ 91,311,140
Retired Members, Beneficiaries and Members Entitled to Deferred Vested Benefits	106,041,405	107,139,233
Total	$ 196,445,981	$ 198,450,373
2. Assets	137,838,546	137,838,546
3. Unfunded Past Service Cost	$ 58,607,435	$ 60,611,827
4. Past Service Contribution	$ 5,437,938	$ 5,630,227
5. Normal Contribution	2,919,432	2,957,403
6. Total Contribution = (4) + (5)	$ 8,357,370	$ 8,587,630

APPENDIX IV

ABOUT GEMS

ABOUT GEMS GENERAL ECONOMY AND MARKET SIMULATOR)

GEMS® is a cutting-edge Economic Scenario Generator (ESG) that enables users to simulate future states of the global economy and financial markets, including the pricing of derivatives and alternative assets. It uses financial models that are the most technologically advanced in the industry, ensuring that models perform consistently with history, provide a realistic representation of extreme events and support hedging strategies with market consistent pricing. GEMS includes comprehensive yield curve modeling and a multifactor arbitrage pricing model that develops asset-class return series based on asset-class relationships to underlying economic and capital market variables such as GDP, inflation, interest rates, credit spreads, and unemployment. The model is calibrated to current market conditions and trends the economic variables to longer-term historical norms – simulating a variety of economic environments and concomitant asset-class returns in the process.

Some of the other distinguishing features of GEMS are:

1. Many asset-class return distributions are non-normal even though many models historically have treated them as such. Asset classes exhibit non-normal return distribution characteristics such as skew and kurtosis. GEMS is more effective at capturing these characteristics. In doing so, it more effectively captures outlier fat-tail events (leptokurtosis) and positive or negative skew in a manner that more closely resembles what actually occurs.
2. Asset-class returns are linked to underlying economic conditions in the model so the user can relate a specific asset-class or portfolio return path to conditions that can be described in terms of economic variables.
3. Because GEMS is calibrated to current levels of economic activity and trends to a longer-term state of equilibrium, shorter-term asset returns forecasts in GEMS are more reflective

of recent market activity and short-term characteristics and trends in economic and market variables, and longer-term returns reflect asset performance over complete market cycles.

4. There is empirical evidence that asset correlations are dynamic and move closer to unity when markets are volatile and under stress. GEMS models asset correlations dynamically.