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

Covering the period July 1, 2005 – June 30, 2010

buckconsultants A Xerox Company

May 30, 2011

Board of Trustees
Vermont Municipal Employees' Retirement System
Montpelier, Vermont 05609

Dear Board Members:

Section 5062, subsection (k), of Title 24, Chapter 125, Vermont Statutes Annotated, provides that at least once in each five-year period the actuary is to make a study of the System's recent experience to assist in setting assumptions. In accordance with this provision, the results of our experience study covering the five-year period ending June 30, 2010, are described in this report, along with our recommendations of certain modifications in the present assumptions. We have also included a brief section discussing the financial impact of the recommended changes.

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

This study was prepared under the supervision of David L. Driscoll, with analysis of the rate-of-return and inflation assumptions performed under the supervision of Kai Petersen. We are Fellows of the Society of Actuaries and Members of the American Academy of Actuaries. We meet the Qualification Standards of the Academy to render the actuarial opinions contained herein, and we are available to answer questions concerning them. Additionally, Mr. Petersen is a Chartered Financial Analyst (CFA) Charter holder and has performed the analyses in accordance with the professional standards of the CFA Institute.

Respectfully submitted,

David L. Driscoll, F.S.A., E.A.
Principal and Consulting Actuary

Kai Petersen, F.S.A., C.F.A.
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THE VERMONT MUNICIPAL EMPLOYEES' RETIREMENT SYSTEM

REPORT ON THE RESULTS OF AN INVESTIGATION
OF THE ACTUARIAL EXPERIENCE OF THE SYSTEM, 2005 - 2010.

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 purpose of funding is to equitably allocate costs between generations of taxpayers and 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 participating municipalities 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) recent past experience,

(b) 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 Groups A, B and C members of the System. Retirement rates for Group D were omitted from the study, as the group is relatively new and to date has very few retired members.

The basis for analysis of the System's experience is a comparison of the actual number of separations from service resulting from each of these decrements 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 not yet eligible for early retirement would be exposed to the probabilities of withdrawal, death and disability. A member eligible for early retirement would be exposed to disability, death and retirement decrements.

Numerical summaries of the System's experience from July 1, 2005, through June 30, 2010, are presented in Appendix I. The tables show the ratios of the actual separations from service resulting from each decrement to those predicted by the present actuarial assumptions. The results are shown separately by assumption and, where appropriate, by gender.

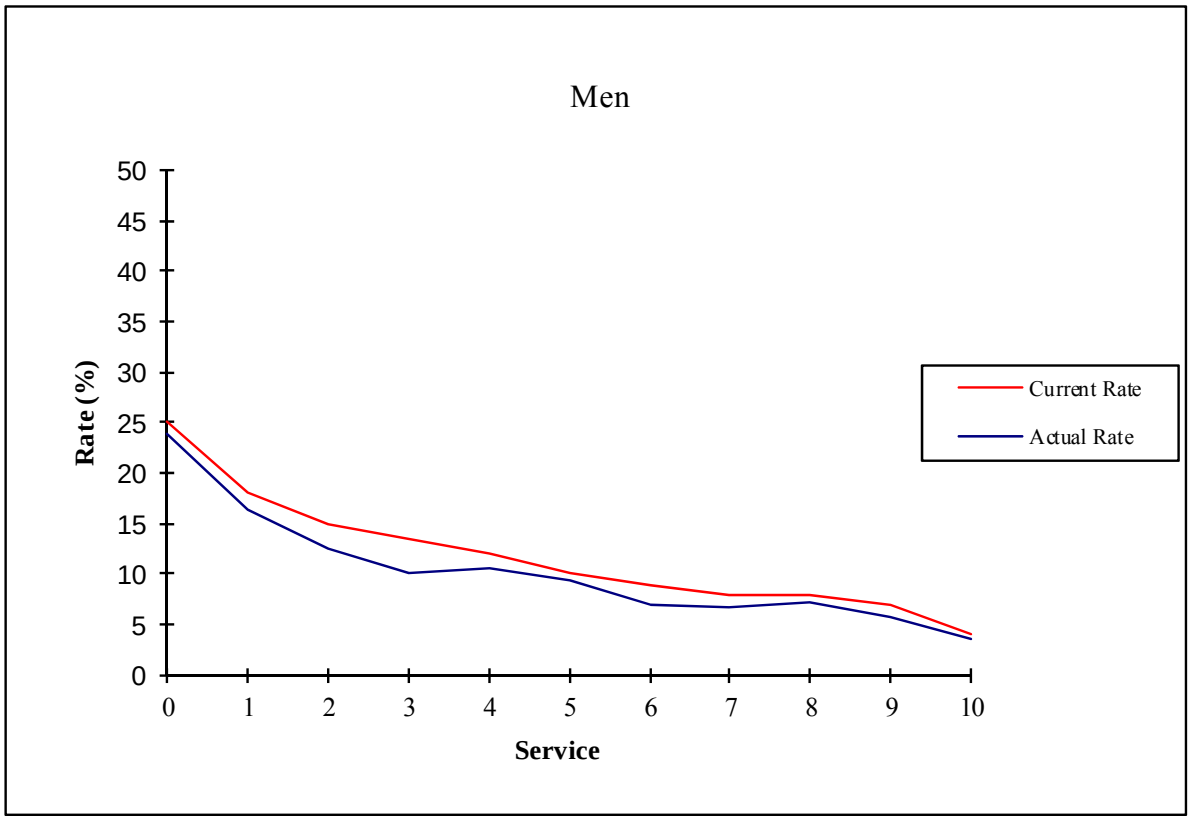
The ratios of actual to expected experience indicate the extent of deviation from the assumptions. A ratio of 1.0 would indicate that experience has been exactly as anticipated.

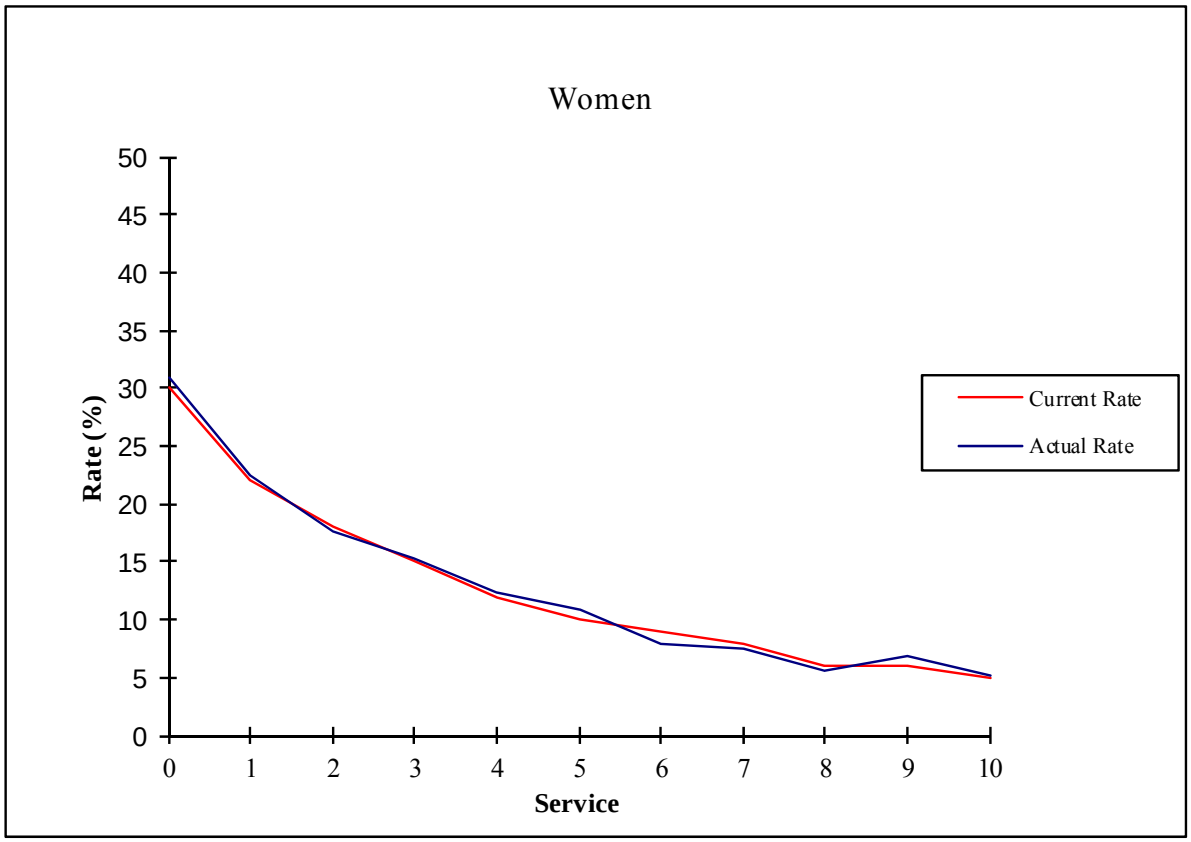
As an aid to the Trustees in analyzing these results, we have also prepared a series of graphs that present the statistical data summarized in Appendix I in visual form. Our comments will refer to these graphs, which immediately follow each of the following subsections.

Termination

The graphs that follow present the withdrawal and vesting experience separately for male and female municipal employees. It can be seen that the overall experience in the last five years indicates that the actual numbers of female members leaving before service retirement eligibility were close to the expected numbers. The numbers of male members leaving before service retirement eligibility were slightly below those expected. In view of economic conditions that have prevailed over the five-year period covered by the study, the fact that actual terminations overall were somewhat below expected levels is not surprising. We recommend no changes be made to the current assumed rates.

Active Service Experience - Terminations
July 1, 2005 through June 30, 2010





Disability

The graphs that follow show the incidence of disability among employees. The financial impact on the funding of the System as the result of this experience is relatively minor. It should be noted that the low incidence of actual in-service deaths and disabilities makes this experience susceptible to rather large fluctuations from year to year. Upon close examination, the present assumed rates of disability produce expected numbers of disabilities that are not substantially different from the actual numbers for male members. However, actual numbers of disabilities among female members were notably lower than expected numbers. This is not the first experience study in which this pattern has been observed. We therefore recommend a decrease in the disability rates for females. The proposed rates are set forth in detail in Table 1 of Appendix II.

Death

Like disabilities, deaths among active members are a relatively small proportion of the overall incidence of departure from the active population. The financial impact on the funding of the System of this experience is relatively minor. Upon examination, the overall active service mortality experience indicates that the current assumption is forecasting somewhat higher numbers of deaths among active participants than are actually observed. We therefore recommend a change in the pre-retirement mortality assumption from 70% of the rates contained in the 1995 Buck Tables for Males and Females to 50% of these rates.

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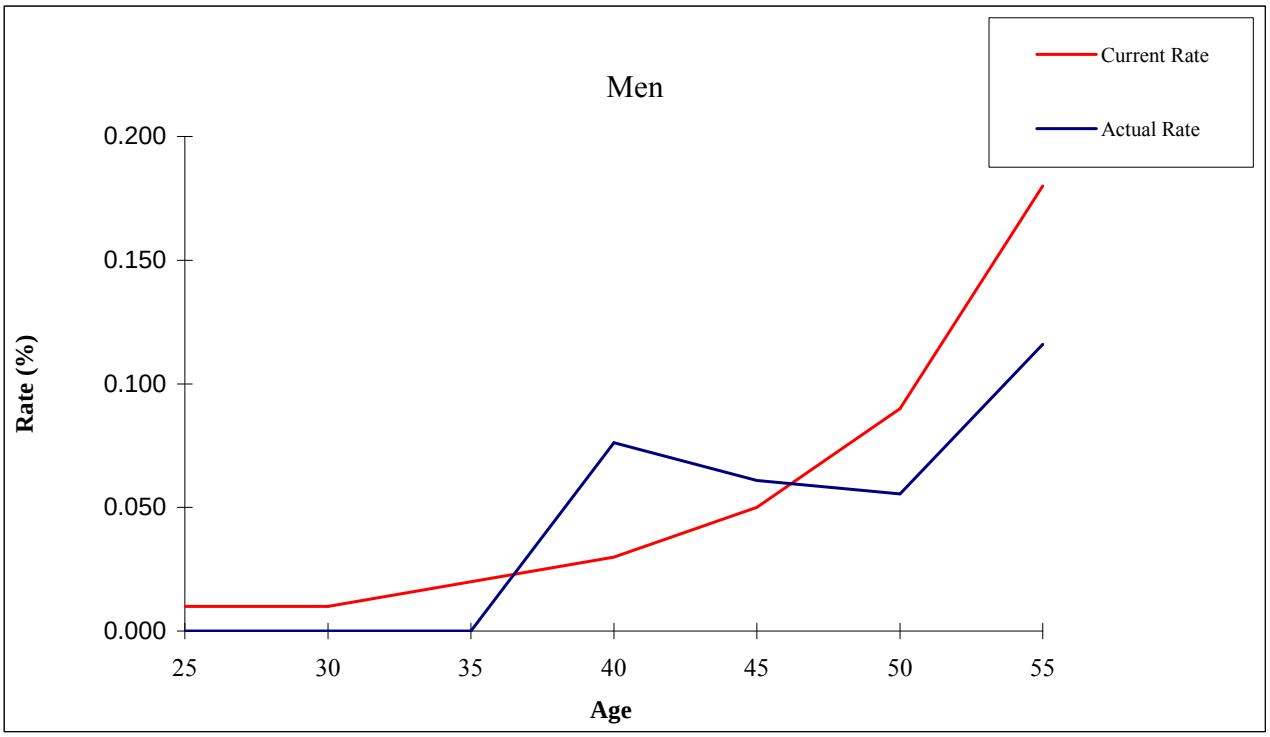
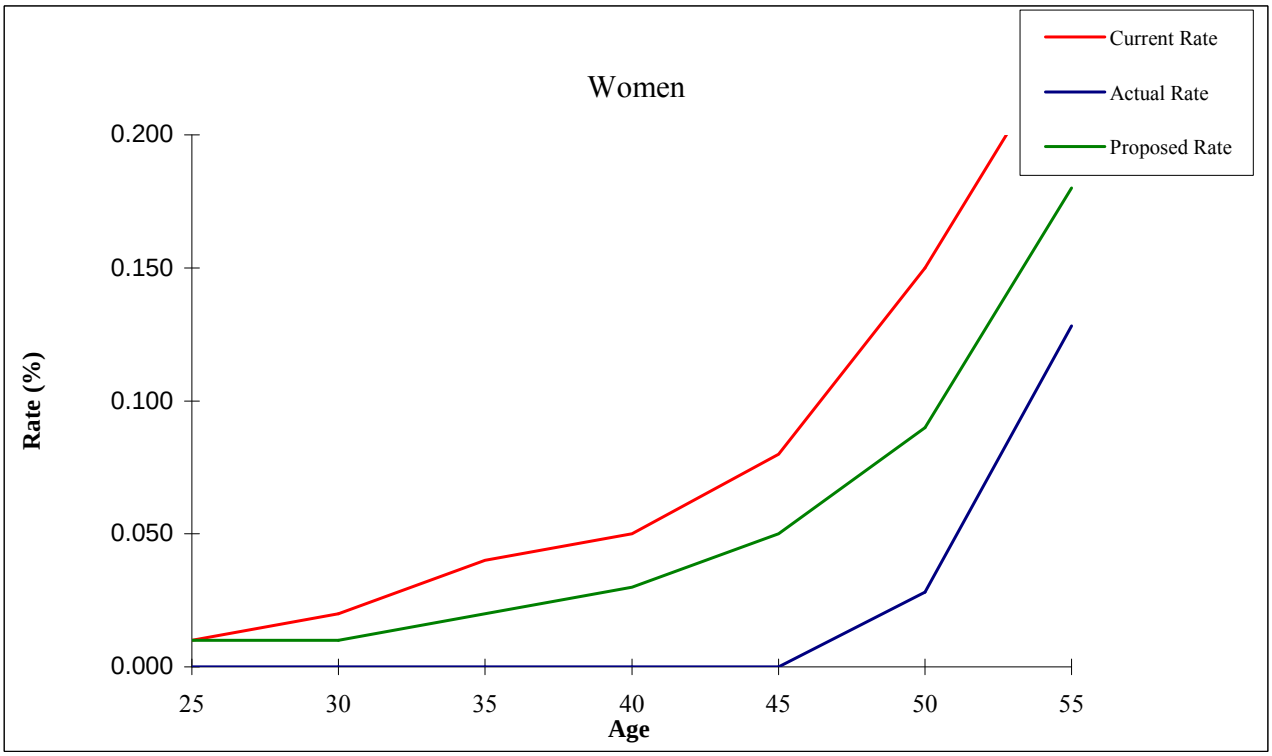
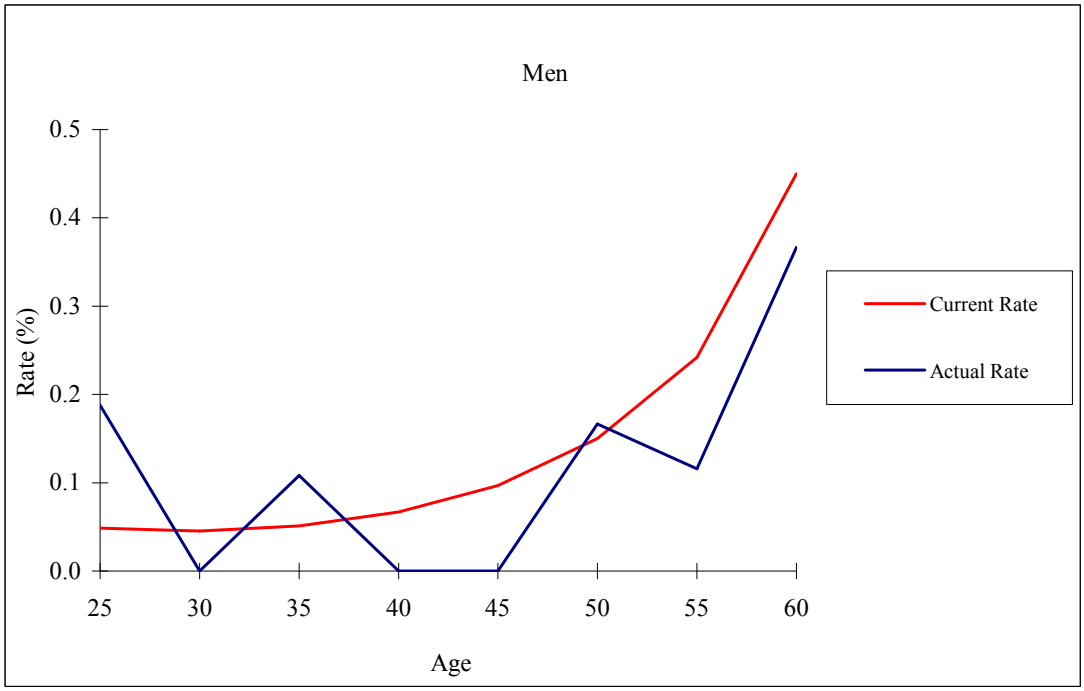
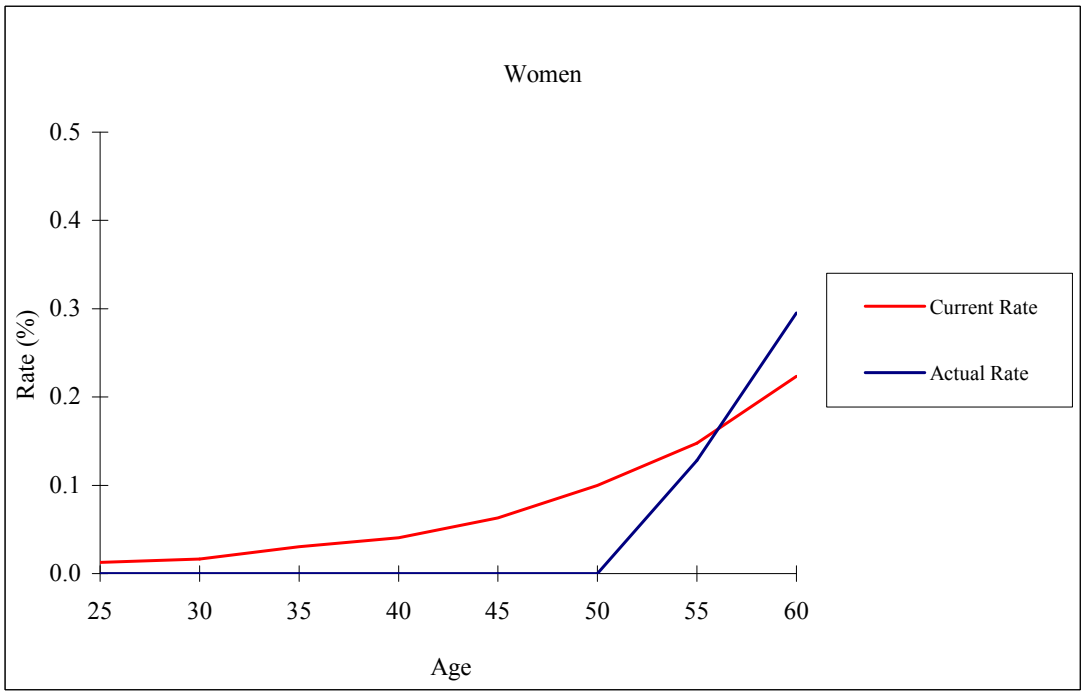
Active Service Experience - Disability Retirement
July 1, 2005 through June 30, 2010





Active Service Experience - Deaths
July 1, 2005 through June 30, 2010





Retirement

The experience with regard to retirement is shown on the following three graphs for Groups A, B and C.

Group A Employees

The graphs that follow indicate that the overall actual numbers of retirements among Group A employees over the past five years have been somewhat lower than the expected numbers of retirements. The differences between actual and expected numbers at most ages are not great. The greatest differences are found at ages 70 and over. Active members at these ages are few in number and account for a small proportion of the overall active membership of the group. For these reasons, and in view of the probable influence of recent economic conditions on retirement decisions in the recent past, we recommend no change to the current rates.

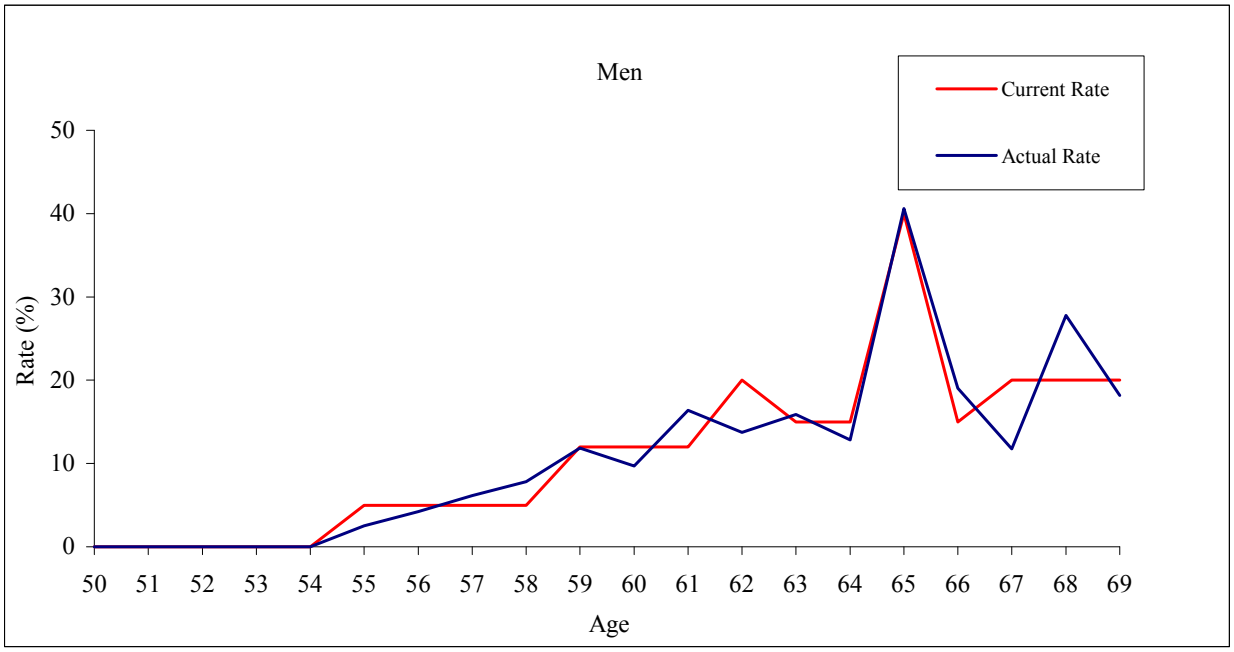
Group B Employees

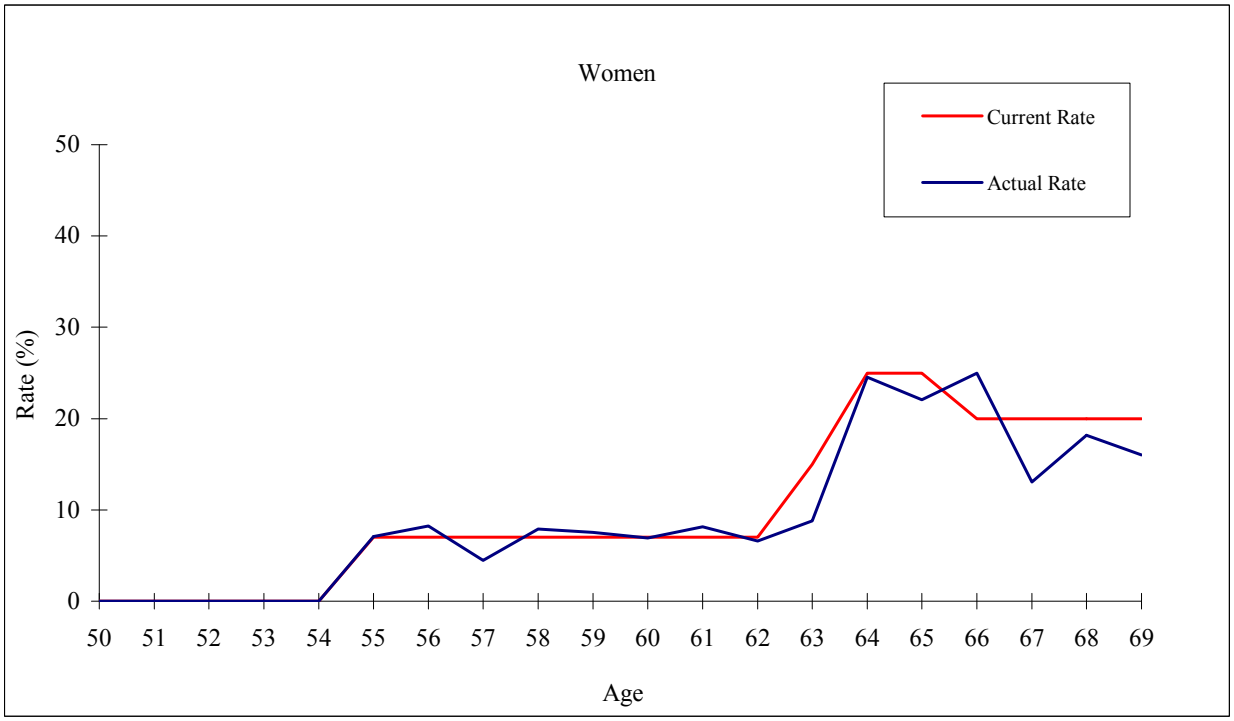
The graphs that follow indicate that the overall actual numbers of retirements among Group B employees over the past five years have been somewhat lower than the expected numbers of retirements. The differences between actual and expected numbers at most ages are not great. The greatest differences are found at ages 70 and over. Active members at these ages are few in number and account for a small proportion of the overall active membership of the group. For these reasons, and in view of the probable influence of recent economic conditions on retirement decisions in the recent past, we recommend no change to the current rates.

Group C Employees

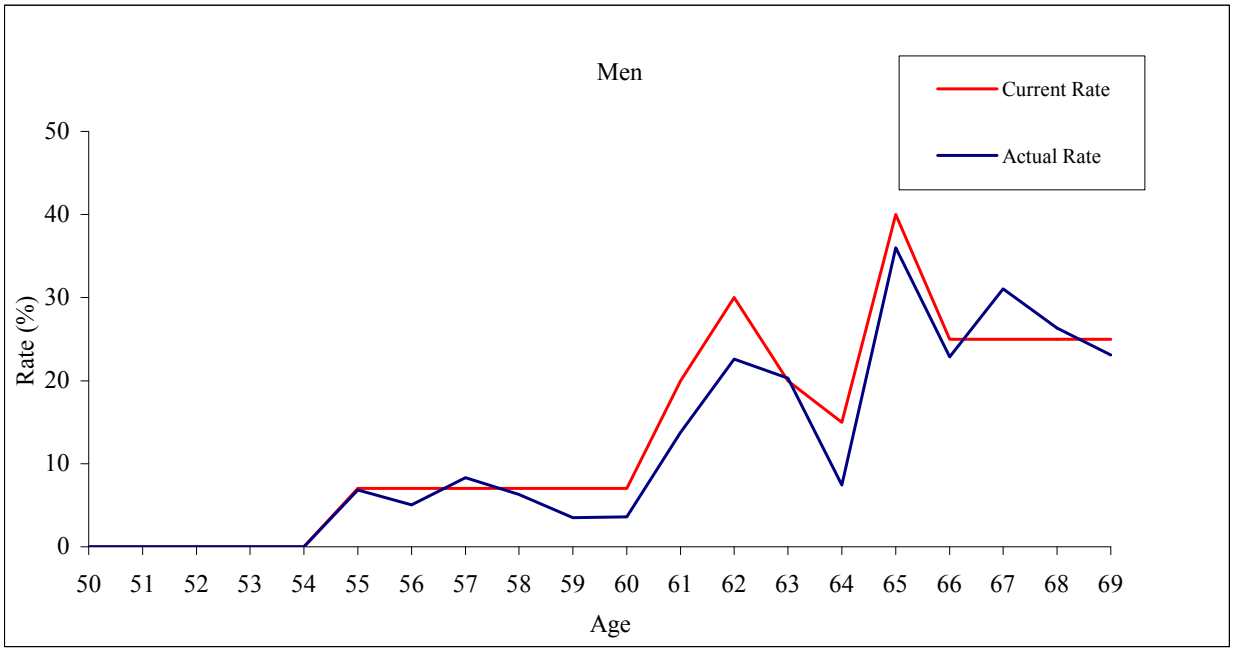
The graphs that follow indicate that the overall actual numbers of retirements among Group C employees ages 55 through 64 over the past five years have been lower than the expected numbers of retirements. Among members age 65 through 69, actual retirements were substantially lower than the expected retirements. We therefore recommend decreasing the assumed probabilities of retirement for members ages between 65 and 69 from 100% to 35%. The proposed rates are set forth in detail in Table 2 of Appendix II.

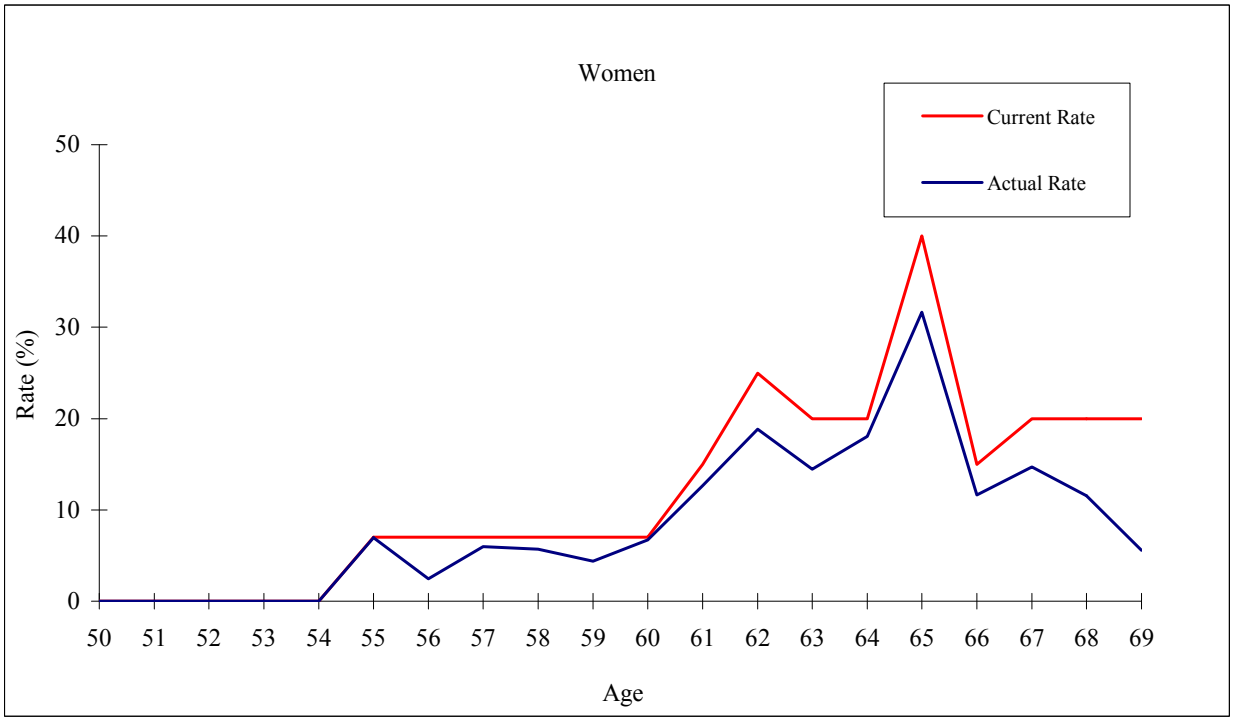
Active Service Experience - Group A Service Retirements
July 1, 2005 through June 30, 2010



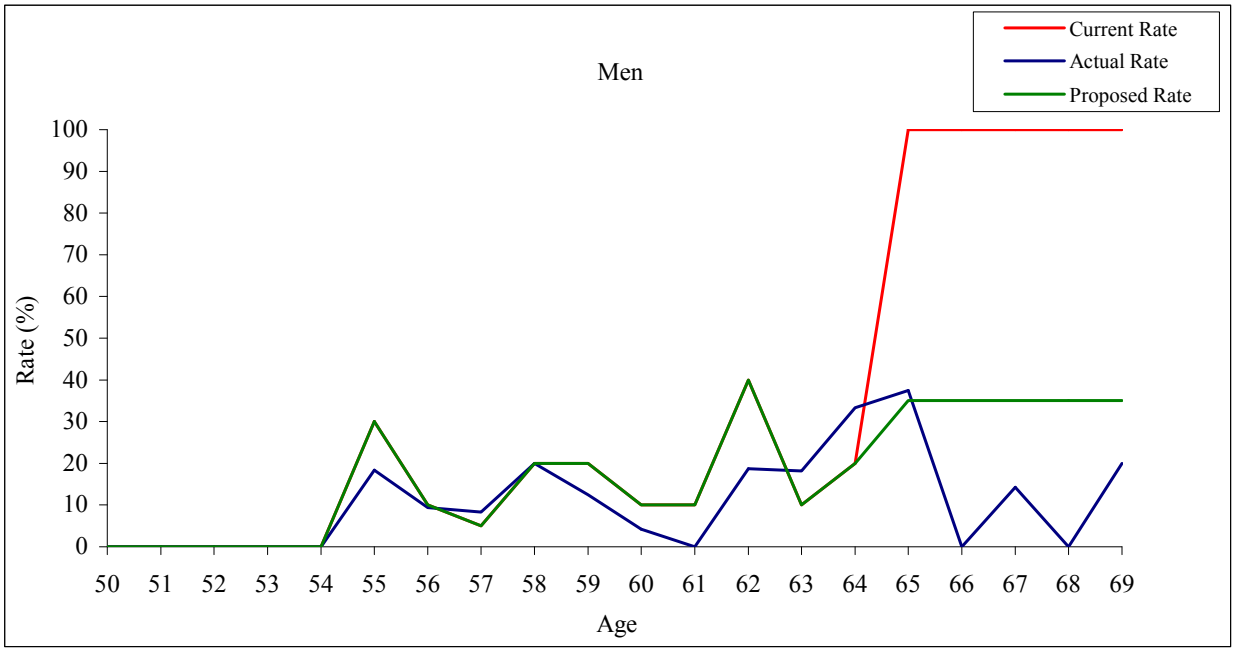


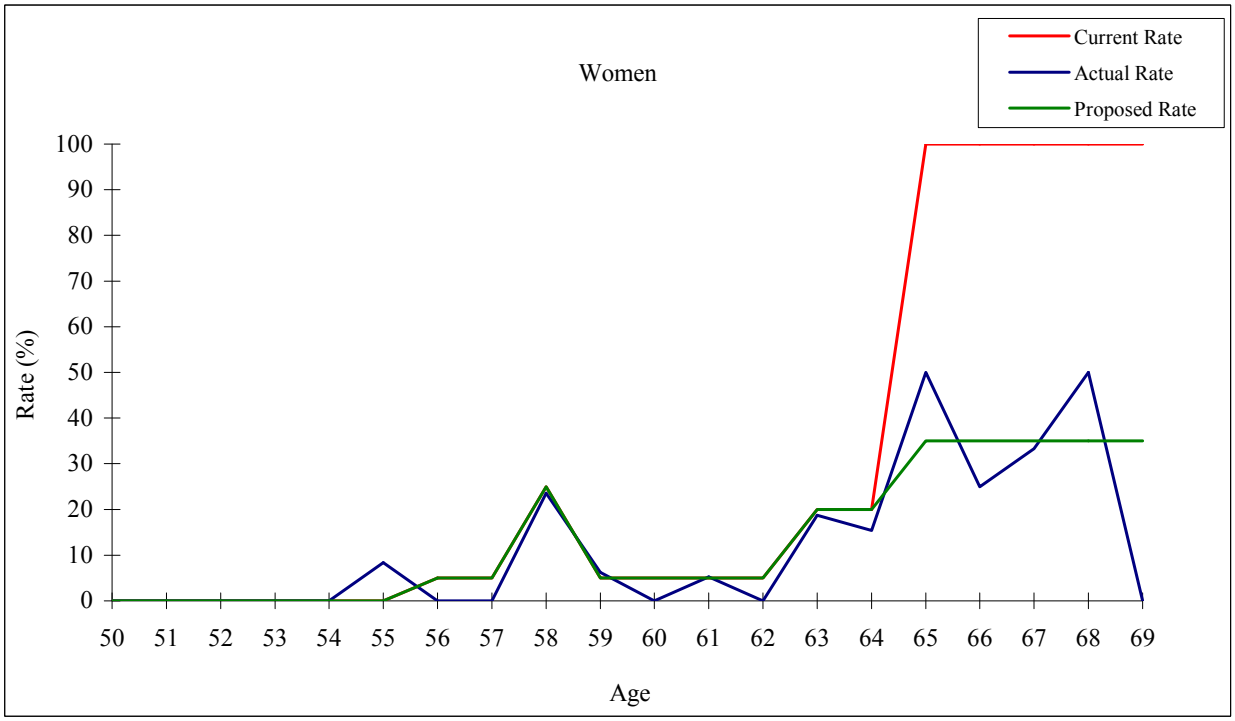
Active Service Experience - Group B Service Retirements
July 1, 2005 through June 30, 2010





Active Service Experience - Group C Service Retirements
July 1, 2005 through June 30, 2010





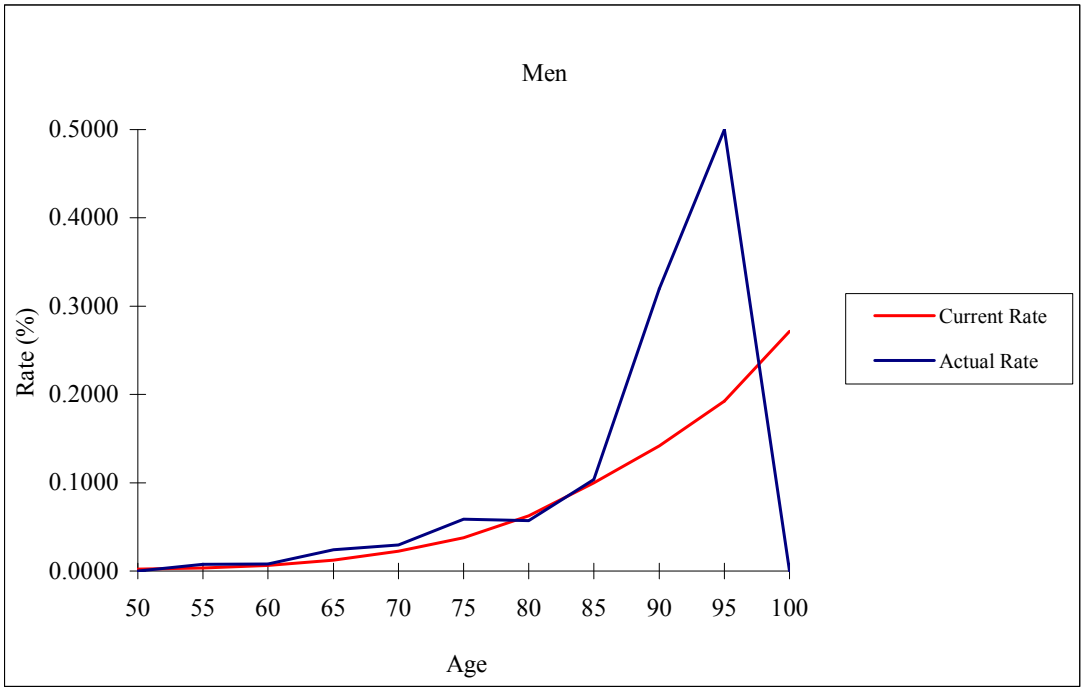
III. POST-RETIREMENT MORTALITY RATES

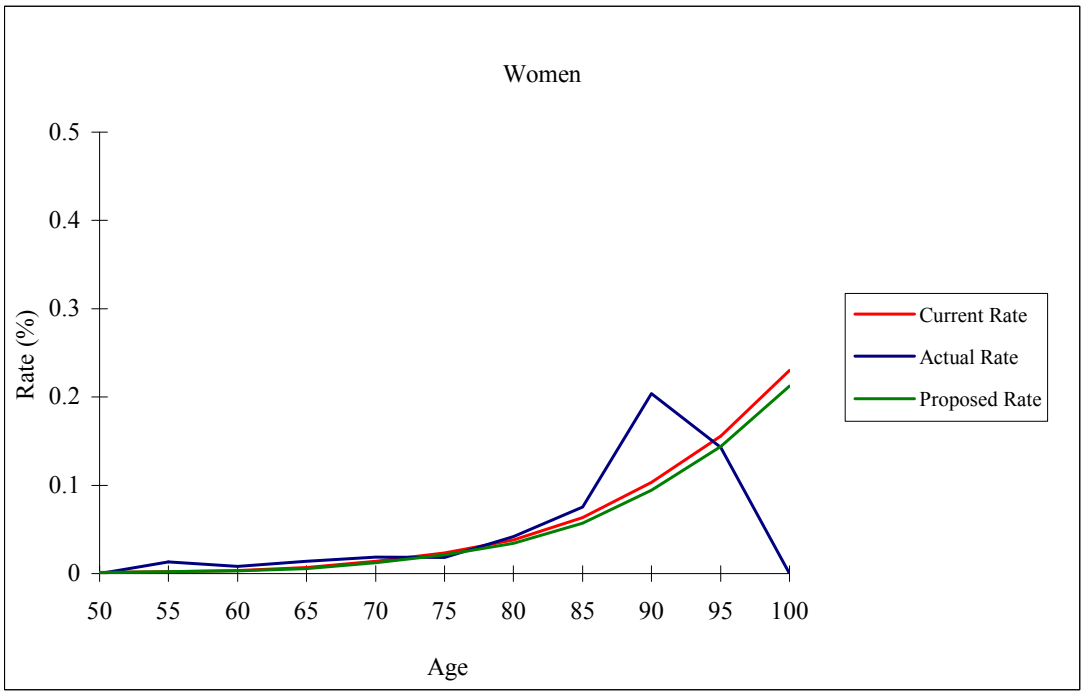
The graphs on the following page illustrate the pattern of mortality among retired members. A review of the statistics, which are summarized in Table 8 of the Appendix I, reveals that actual deaths among female retired members were only slightly higher than expected. Current mortality experience among male retired members shows a margin over expected levels that is consistent with the need to reflect future anticipated improvements in longevity. Upon a closer examination of this experience and in consideration of the expected mortality for future retirees, we recommend changing the post-retirement mortality tables from the unrated 1995 Buck Mortality Table for males and females to 1995 Buck Mortality Table with no setback for males and a one-year setback for females. We propose that the mortality rates presently used for disability retirees and beneficiaries remain unchanged.

IV. MEMBERS IN INACTIVE STATUS

Since 2008, liabilities for members in inactive status have been maintained at 200% of their accumulated contributions with interest. An examination of the liability ultimately created by participants who ultimately move from inactive status to some other status leads us to recommend that the percentage of contributions with interest used to estimate the liability for these participants remain at 200%.

Post Retirement Experience - Deaths
July 1, 2005 through June 30, 2010





V. 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 / Cost-of-Living

The System provides annual cost-of-living adjustments (COLAs). For the Group A, the annual adjustment is equal to one-half of the percentage increase in the CPI-U, but not more than 2%. For Groups B, C and D, the adjustment equals one-half of the percentage increase in the CPI-U, limited to 3%.

With regard to the inflation assumption, the U.S. Consumer Price Index indicates that annual rates of inflation since 2006 have been as follows:

Fiscal Year End	Increase*
2006	4.3%
2007	2.7%
2008	5.0%
2009	-1.4%
2010	1.1%

*Based on CPI-U unadjusted 12 month ended June 30 for All items

Over the five-year period covered by this study, the U.S. Consumer Price Index (CPI-U) thus indicates that the inflation rate has averaged slightly above 2.3% annually.

Other economic data presently available (e.g., yields on inflation-indexed bonds) suggest that the financial markets presently anticipate a long-term average rate of inflation of 2.5% to 3.0%. The Survey of Professional Forecasters published by the Federal Reserve Bank of Philadelphia showed an uptick in inflation forecasts of about 0.1% in the survey data released in March 2011. Current economic assumptions used in the valuation of the system are based on an inflation rate of approximately 3% per year.

Currently, we assume a 1.5% annual adjustment in pensions for Group A and a 1.8% annual adjustment in pensions for Groups B, C and D. We recommend no changes in these percentages.

Merit-Promotion Salary Increases

Currently, salaries are assumed to increase at 5.0% annually. As shown in Table 6 of Appendix I, overall active service salary increase experience over the past five years conformed closely to this assumption. We recommend no changes to the current assumption.

Interest Rate

The estimated total rates of return earned by the VMERS' assets are shown below.

Year Ending June 30	Rate of Return Based on Actuarial Asset Value	Rate of Return Based on Market Asset Value
2006	8.44%	10.58%
2007	10.11%	15.69%
2008	7.41%	-5.66%
2009	-6.65%	-17.25%
2010	10.92%	16.99%
2006-2010	5.84%	3.16%

The rate of return on the market value of assets has averaged approximately 3.16% annually during the past five years.

In an effort to forecast the expected long-term rate of return on System assets, we use a capital market model (described in more detail in the Appendix) in which individual asset class returns are estimated under a wide variety of simulated economic environments based on their underlying relationships to key economic variables, and then rolled up into a forecast of the performance of a portfolio invested in accordance with the target allocation established by the Vermont Pension Investment Committee (VPIC) at its August 24, 2010, meeting. The model is calibrated to current economic and market conditions, and trends to a state of equilibrium. Over a 20- year period, the 50th percentile rate of return forecast for such a portfolio is approximately 7.9%.

Differences between near-term and long-term expectations of rates of return on assets may be incorporated in the assumed rate of return by setting it on a select-and-ultimate basis. A select-and-ultimate return assumption posits different rates for an initial number of years (called a select period) before stabilizing at an ultimate rate. A select-and-ultimate rate structure can be used to reflect expectations of unusually strong or weak returns in near-term years followed by a trending to a long-term equilibrium. In this sense, it is a more elaborate and complete specification of future return assumptions than is a single rate used in all future years.

We have developed a select-and-ultimate interest rate assumption on the basis of the current VPIC target asset allocation. Using the 50th percentile forecast results for each year over a 20-year horizon and applying an adjustment to reflect the five-year smoothing of asset returns generates the following select-and-ultimate interest rate set:

Year 1: 6.25%	Year 9: 8.50%
Year 2: 6.75%	Year 10: 8.50%
Year 3: 7.00%	Year 11: 8.50%
Year 4: 7.50%	Year 12: 8.50%
Year 5: 7.75%	Year 13: 8.50%
Year 6: 8.25%	Year 14: 8.50%
Year 7: 8.25%	Year 15: 8.50%
Year 8: 8.25%	Year 16: 8.75%
Year 17 and later: 9.00%	

Use of a select-and-ultimate interest rate assumptions as the investment return assumption is justifiable on the basis of the manner in which these assumptions have been established and on the basis of relevant Actuarial Standards of Practice promulgated by the Actuarial Standards Board, which specifically label the select-and-ultimate approach to setting assumed rates of return on pension plan assets as acceptable. Conformity to Actuarial Standards of Practice makes this approach suitable for use in preparing calculations under current pension accounting standards of the Governmental Accounting Standards Board (GASB). However, for computational or administrative ease, it may be preferable to set the assumed interest rate equal to the single rate (perhaps constrained to be a multiple of 0.10% or 0.25%) that produces the same result as the select-and-ultimate rate set.

VI. COST ANALYSIS AND CONCLUSION

To assist the Board in selecting and approving the final package of valuation assumptions to be used prospectively from June 30, 2011, we have prepared a valuation of the System as of June 30, 2010, to reflect the potential impact of the revised assumptions.

Based on the demographic assumptions recommended in this report and various investment return assumptions, the total net contribution calculated as of June 30, 2010, for the fiscal year ending June 30, 2012, are shown below. Additional details on these results are summarized in Appendix IV.

	FYE
Current Assumptions - 8.00%	3.96%
Recommended Assumptions:	
8.00% Return	3.95%
8.10% Return	3.65%
Select and Ultimate Returns	3.64%

This report discusses actuarial assumptions only. Methods such as the five-year average asset valuation procedure and the amortization period used for the unfunded accrued liability also affect the costs of System. These methods are not reviewed because they are not amenable to five-year experience analysis. We should note, however, that this experience study has not revealed any reasons to change any of the methods currently employed.

APPENDIX I

ACTUAL AND EXPECTED EXPERIENCE

TABLE 1

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

TERMINATIONS

Central Age of Group	Men			Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 23	35	28.4	1.233	48	30.8	1.559
25	140	109.9	1.355	410	243.9	1.681
30	149	124.5	1.052	302	206.4	1.463
35	131	137.4	0.953	256	259.3	0.987
40	124	162.1	0.765	357	376.4	0.949
45	152	193.2	0.787	380	441.3	0.861
50	123	180.2	0.683	349	425.8	0.820
55 and over	183	229.7	0.797	317	402.8	0.787
Total	1,037	1,165	0.890	2,419	2,387	1.014

TABLE 2

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

DISABILITY RETIREMENTS

Central Age of Group	Men			Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 23	0	0.01	0.000	0	0.02	0.000
25	0	0.05	0.000	0	0.14	0.000
30	0	0.09	0.000	0	0.22	0.000
35	0	0.17	0.000	0	0.52	0.000
40	1	0.42	2.381	0	1.28	0.000
45	1	0.86	1.163	0	2.81	0.000
50	1	1.74	0.575	1	5.39	0.186
55 and over	6	7.19	0.834	6	14.47	0.415
Total	9	10.53	0.855	7	24.85	0.282

TABLE 3

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

DEATHS

Central Age of Group	Men			Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
Under 23	0	0.06	0.000	0	0.02	0.000
25	1	0.28	3.571	0	0.13	0.000
30	0	0.36	0.000	0	0.18	0.000
35	1	0.52	1.923	0	0.45	0.000
40	0	0.93	0.000	0	0.99	0.000
45	0	1.70	0.000	0	2.09	0.000
50	3	2.83	1.060	0	3.56	0.000
55	3	4.27	0.703	4	4.58	0.873
60	5	6.17	0.810	7	5.33	1.313
65 and over	4	3.27	1.223	4	2.41	1.660
Total	17	20.39	0.834	15	19.74	0.760

TABLE 4

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

GROUP A SERVICE RETIREMENTS

Age	Men			Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
50	0	0.00	0.000	0	0.00	0.000
51	0	0.00	0.000	0	0.00	0.000
52	0	0.00	0.000	0	0.00	0.000
53	0	0.00	0.000	0	0.00	0.000
54	0	0.00	0.000	0	0.00	0.000
55	2	3.75	0.533	16	15.19	1.053
56	3	3.30	0.909	18	14.84	1.213
57	4	3.25	1.231	9	13.37	0.673
58	5	3.00	1.667	16	13.44	1.190
59	7	6.96	1.006	14	12.25	1.143
60	6	7.20	0.833	14	12.95	1.081
61	9	6.24	1.442	15	12.39	1.211
62	7	9.20	0.761	10	10.01	0.999
63	7	6.15	1.138	11	18.30	0.601
64	5	5.85	0.855	26	26.00	1.000
65	13	12.80	1.016	15	16.25	0.923
66	4	2.55	1.569	13	9.80	1.327
67	2	3.20	0.625	6	8.60	0.698
68	5	3.20	1.563	6	6.60	0.909
69	2	2.20	0.909	4	4.80	0.833
70 and over	16	42.00	0.381	12	72.00	0.167
Total	97	120.85	0.803	205	266.79	0.768

TABLE 5

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

GROUP B SERVICE RETIREMENTS

Age	Men			Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
50	0	0.00	0.000	0	0.00	0.000
51	0	0.00	0.000	0	0.00	0.000
52	0	0.00	0.000	0	0.00	0.000
53	0	0.00	0.000	0	0.00	0.000
54	0	0.00	0.000	0	0.00	0.000
55	8	7.63	1.048	14	13.16	1.064
56	6	8.12	0.739	5	13.44	0.372
57	10	7.84	1.276	11	12.60	0.873
58	8	8.47	0.945	10	11.76	0.850
59	4	7.77	0.515	7	10.99	0.637
60	4	7.56	0.529	11	11.27	0.976
61	15	20.80	0.721	19	21.45	0.886
62	21	26.40	0.795	23	29.00	0.793
63	13	12.20	1.066	13	17.00	0.765
64	4	7.95	0.503	15	16.00	0.938
65	18	18.80	0.957	19	23.60	0.805
66	8	8.00	1.000	5	6.00	0.833
67	9	7.00	1.286	5	6.60	0.758
68	5	4.50	1.111	3	5.20	0.577
69	3	3.00	1.000	1	3.60	0.278
70 and over	10	42.00	0.238	12	61.00	0.197
Total	146	198.04	0.737	173	262.67	0.659

TABLE 6

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS FROM ACTIVE SERVICE

GROUP C SERVICE RETIREMENTS

Age	Men			Women		
	Actual	Expected	Ratio of Actual To Expected	Actual	Expected	Ratio of Actual To Expected
50	0	0.00	0.000	0	0.00	0.000
51	0	0.00	0.000	0	0.00	0.000
52	0	0.00	0.000	0	0.00	0.000
53	0	0.00	0.000	0	0.00	0.000
54	0	0.00	0.000	0	0.00	0.000
55	9	14.70	0.612	1	0.00	0.000
56	3	3.10	0.968	0	0.50	0.000
57	2	1.10	1.818	0	0.60	0.000
58	5	5.00	1.000	4	4.00	1.000
59	3	4.40	0.682	1	0.80	1.250
60	1	2.40	0.417	0	1.00	0.000
61	0	1.40	0.000	1	0.90	1.111
62	3	6.40	0.469	0	0.80	0.000
63	2	1.10	1.818	3	3.20	0.938
64	3	1.80	1.667	2	2.60	0.769
65	3	8.00	0.375	5	10.00	0.500
66	0	6.00	0.000	1	4.00	0.250
67	1	7.00	0.143	1	3.00	0.333
68	0	5.00	0.000	1	2.00	0.500
69	1	5.00	0.200	0	0.00	0.000
70 and over	2	10.00	0.200	0	2.00	0.000
Total	38	82.40	0.461	20	35.40	0.565

TABLE 7

COMPARISON OF ACTUAL AND EXPECTED ANNUAL SALARIES OF MEMBERS

Age	Annual Salaries (Salaries shown in 1,000s)		
	Actual	Expected	Ratio of Actual To Expected
Under 25	3,997	3,835	1.042
25-29	24,959	24,555	1.016
30-34	38,279	38,147	1.003
35-39	58,782	58,292	1.008
40-44	95,046	94,832	1.002
45-49	123,908	123,714	1.002
50-54	146,805	147,103	0.998
55-59	136,492	136,818	0.998
60-64	101,640	102,337	0.993
65 and over	44,647	45,164	0.989
Total	774,555	774,797	1.000

TABLE 8

SUMMARY OF MORTALITY EXPERIENCE OF PENSIONERS

Group	Men			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	98	85.27	1.149	76	74.23	1.024	174	159.50	1.091
Disability Retirees	15	7.68	1.953	4	2.59	1.544	19	10.27	1.850
Dependants of Deceased Members	9	3.26	2.761	25	9.03	2.769	34	12.29	2.766
Total	122	96.21	1.268	105	85.85	1.223	227	182.06	1.247

APPENDIX II

RECOMMENDED ACTIVE SERVICE TABLES

TABLE 1

COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS FROM ACTIVE SERVICE

DISABILITY

Central Age of Group	Men		Women	
	Current	Recommended	Current	Recommended
25	0.01%	0.01%	0.01%	0.01%
26	0.01%	0.01%	0.01%	0.01%
27	0.01%	0.01%	0.02%	0.01%
28	0.01%	0.01%	0.02%	0.01%
29	0.01%	0.01%	0.02%	0.01%
30	0.01%	0.01%	0.02%	0.01%
31	0.01%	0.01%	0.02%	0.01%
32	0.02%	0.02%	0.03%	0.02%
33	0.02%	0.02%	0.03%	0.02%
34	0.02%	0.02%	0.03%	0.02%
35	0.02%	0.02%	0.04%	0.02%
36	0.02%	0.02%	0.04%	0.02%
37	0.02%	0.02%	0.04%	0.02%
38	0.03%	0.03%	0.05%	0.03%
39	0.03%	0.03%	0.05%	0.03%
40	0.03%	0.03%	0.05%	0.03%
41	0.03%	0.03%	0.06%	0.03%
42	0.04%	0.04%	0.06%	0.04%
43	0.04%	0.04%	0.07%	0.04%
44	0.05%	0.05%	0.08%	0.05%
45	0.05%	0.05%	0.08%	0.05%
46	0.06%	0.06%	0.09%	0.06%
47	0.07%	0.07%	0.11%	0.07%
48	0.07%	0.07%	0.12%	0.07%
49	0.08%	0.08%	0.14%	0.08%
50	0.09%	0.09%	0.15%	0.09%
51	0.11%	0.11%	0.17%	0.11%
52	0.13%	0.13%	0.19%	0.13%
53	0.14%	0.14%	0.20%	0.14%
54	0.16%	0.16%	0.22%	0.16%

TABLE 2

COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS FROM ACTIVE SERVICE

GROUP C SERVICE RETIREMENTS

Central Age of Group	Men		Women	
	Current	Recommended	Current	Recommended
55	30.00%	30.00%	0.00%	0.00%
56	10.00%	10.00%	5.00%	5.00%
57	5.00%	5.00%	5.00%	5.00%
58	20.00%	20.00%	25.00%	25.00%
59	20.00%	20.00%	5.00%	5.00%
60	10.00%	10.00%	5.00%	5.00%
61	10.00%	10.00%	5.00%	5.00%
62	40.00%	40.00%	5.00%	5.00%
63	10.00%	10.00%	20.00%	20.00%
64	20.00%	20.00%	20.00%	20.00%
65	100.00%	35.00%	100.00%	35.00%
66	100.00%	35.00%	100.00%	35.00%
67	100.00%	35.00%	100.00%	35.00%
68	100.00%	35.00%	100.00%	35.00%
69	100.00%	35.00%	100.00%	35.00%
70	100.00%	100.00%	100.00%	100.00%

APPENDIX III

RECOMMENDED POST-RETIREMENT MORTALITY

POST-RETIREMENT MORTALITY RATES

POST RETIREMENT MORTALITY TABLES
SERVICE PENSIONERS

AGE	MALES	FEMALES	AGE	MALES	FEMALES
19	0.00064	0.00019	68	0.01787	0.00913
20	0.00068	0.00019	69	0.02001	0.01062
21	0.00070	0.00019	70	0.02233	0.01222
22	0.00071	0.00019	71	0.02485	0.01389
23	0.00071	0.00019	72	0.02760	0.01562
24	0.00071	0.00019	73	0.03062	0.01740
25	0.00070	0.00018	74	0.03397	0.01927
26	0.00068	0.00018	75	0.03767	0.02124
27	0.00067	0.00018	76	0.04176	0.02335
28	0.00066	0.00019	77	0.04629	0.02566
29	0.00065	0.00020	78	0.05129	0.02821
30	0.00065	0.00021	79	0.05678	0.03106
31	0.00065	0.00024	80	0.06280	0.03427
32	0.00066	0.00027	81	0.06934	0.03789
33	0.00068	0.00031	82	0.07634	0.04195
34	0.00070	0.00036	83	0.08378	0.04649
35	0.00073	0.00040	84	0.09160	0.05152
36	0.00076	0.00044	85	0.09971	0.05710
37	0.00080	0.00047	86	0.10800	0.06329
38	0.00085	0.00050	87	0.11636	0.07012
39	0.00090	0.00052	88	0.12474	0.07758
40	0.00096	0.00055	89	0.13320	0.08568
41	0.00102	0.00058	90	0.14184	0.09425
42	0.00110	0.00062	91	0.15083	0.10316
43	0.00118	0.00067	92	0.16026	0.11249
44	0.00127	0.00074	93	0.17028	0.12230
45	0.00138	0.00082	94	0.18102	0.13267
46	0.00151	0.00090	95	0.19261	0.14370
47	0.00165	0.00099	96	0.20526	0.15548
48	0.00180	0.00109	97	0.21918	0.16809
49	0.00197	0.00119	98	0.23464	0.18168
50	0.00215	0.00131	99	0.25195	0.19640
51	0.00235	0.00143	100	0.27147	0.21246
52	0.00257	0.00155	101	0.29353	0.23013
53	0.00283	0.00169	102	0.31847	0.24979
54	0.00312	0.00183	103	0.34656	0.27189
55	0.00346	0.00196	104	0.37804	0.29697
56	0.00387	0.00211	105	0.41312	0.32556
57	0.00436	0.00226	106	0.45193	0.35819
58	0.00495	0.00242	107	0.49453	0.39528
59	0.00563	0.00262	108	0.54086	0.43713
60	0.00643	0.00287	109	0.59071	0.48387
61	0.00735	0.00319	110	0.64374	0.53538
62	0.00840	0.00360	111	0.69941	0.59129
63	0.00959	0.00413	112	0.75705	0.65094
64	0.01094	0.00479	113	0.81591	0.71342
65	0.01243	0.00562	114	0.87527	0.77769
66	0.01408	0.00661	115	1.00000	1.00000
67	0.01590	0.00779			

Basis: 1995 Buck Mortality Tables for Males, and 1 year setback for Females.

APPENDIX IV

DESCRIPTION OF CAPITAL MARKET MODEL USED IN ANALYSIS OF EXPECTED RATE OF RETURN ON SYSTEM ASSETS

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.

APPENDIX V

COMPARATIVE VALUATION RESULTS

RESULTS FOR THE ACTUARIAL VALUATION
PREPARED AS OF JUNE 30, 2010 ON
CURRENT AND RECOMMENDED ASSUMPTIONS

Item	Current	Recommended Assumptions		
	8.00%	8.00%	8.10%	Select and Ultimate
1. Present Value of Future Benefits:				
Active and Inactive Members	$ 392,927,539	$ 396,082,294	$ 389,202,981	$ 378,404,847
Retired Members	$ 123,745,478	$ 124,719,271	$ 123,650,284	$ 126,210,056
Total	$ 516,673,017	$ 520,801,565	$ 512,853,265	$ 504,614,903
2. Assets	$ 376,152,881	$ 376,152,881	$ 376,152,881	$ 376,152,881
3. Present Value of Contributions				
Member	$ 65,100,895	$ 66,002,652	$ 65,603,502	$ 67,572,528
Employer Normal	$ 42,759,147	$ 41,689,338	$ 38,903,735	$ 40,396,622
4. Unfunded Accrued Liability	$ 32,660,094	$ 36,956,694	$ 32,193,147	$ 20,492,872
5. Normal Contribution	3.14%	3.02%	2.83%	2.86%
6. Accrued Liability Contribution	0.82%	0.93%	0.82%	0.78%
7. Total FYE Contribution (5. + 6.)	3.96%	3.95%	3.65%	3.64%