Fresno County Employees' Retirement Association

ACTUARIAL EXPERIENCE STUDY

Analysis of Actuarial Experience During the Period July 1, 2009 through June 30, 2012

SEGAL

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August 9, 2013

Board of Retirement
Fresno County Employees' Retirement Association
1111 H Street
Fresno, CA 93721

Re: Review of Non-Economic Actuarial Assumptions for the June 30, 2013 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit this report of our review of the actuarial experience of the Fresno County Employees' Retirement Association. This study utilizes the census data for the period July 1, 2009 to June 30, 2012 and provides the proposed actuarial assumptions to be used effective with the June 30, 2013 valuation.

Please note that we have also reviewed the economic assumptions. The economic actuarial assumption recommendations for the June 30, 2013 valuation are provided in a separate report.

We are Members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

We look forward to reviewing this report with you and answering any questions you may have.

Sincerely,

Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary

Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Associate Actuary

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I. INTRODUCTION, SUMMARY, AND RECOMMENDATIONS

To project the cost and liabilities of the Pension Fund, assumptions are made about all future events that could affect the amount and timing of the benefits to be paid and the assets to be accumulated. Each year actual experience is compared against the assumptions, and to the extent there are differences, the future contribution requirement is adjusted.

If assumptions are changed, contribution requirements are adjusted to take into account a change in the projected experience in all future years. There is a great difference in both philosophy and cost impact between recognizing the actuarial deviations as they occur annually and changing the actuarial assumptions. Taking into account one year's gains or losses without making a change in the assumptions means that that year's experience was temporary and that, over the long run, experience will return to what was originally assumed. Changing assumptions reflects a basic change in thinking about the future, and it has a much greater effect on the current contribution requirements than recognizing gains or losses as they occur.

The use of realistic actuarial assumptions is important in maintaining adequate funding, while paying promised benefit amounts to participants already retired and to those near retirement. The actuarial assumptions used do not determine the "actual cost" of the plan. The actual cost is determined solely by the benefits and administrative expenses paid out, offset by investment income received. However, it is desirable to estimate as closely as possible what the actual cost will be so as to permit an orderly method for setting aside contributions today to provide benefits in the future, and to maintain equity among generations of participants and taxpayers.

This study was undertaken in order to review the demographic actuarial assumptions and to compare the actual experience with that expected under the current assumptions during the three-year experience period from July 1, 2009 through June 30, 2012. The study was performed in accordance with Actuarial Standard of Practice (ASOP) No. 35, "Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations" and, as appropriate, ASOP No. 27 "Selection of Economic Assumptions for Measuring Pension Obligations." These Standards of Practice put forth guidelines for the selection of the various actuarial assumptions utilized in a pension plan actuarial valuation. Based on the study's results and expected near-term experience, we recommend various changes in the current actuarial assumptions.

We are recommending changes in the assumptions for retirement from active employment, reciprocity, percent married, pre-retirement mortality, healthy life post-retirement mortality, disabled life post-retirement mortality, termination, disability (ordinary and duty), salary increases, and annual leave conversion.

Our recommendations for the major actuarial assumption categories are as follows:

Retirement Rates - The probability of retirement at each age at which participants are eligible to retire.

Recommendation: We recommend adjusting the retirement rates to those developed in Section III (B) for General Tier I Male, General Tier 1 Female and Safety Tier 1 and Tier 2 members to reflect slightly later retirement for General Male and Safety members and slightly earlier retirements for General Female members. We also recommend increasing the reciprocity assumption for Safety members. We recommend decreasing the marriage assumption for male members.

Mortality Rates - The probability of dying at each age. Mortality rates are used to project life expectancies.

Recommendation: For members who retire from service, we recommend adjusting the rates as developed in Section III (C) for General and Safety members and all beneficiaries to reflect a slight improvement for Safety retirees. The disabled member mortality rates for General and Safety members have also been adjusted as developed in Section III (D) to reduce some of the margins included in the current assumptions.

The recommended pre-retirement mortality assumptions for General and Safety members are consistent with the tables used for post-service retirement mortality. In addition, we recommend that all pre-retirement deaths be assumed as non-service connected deaths.

Termination Rates - The probability of leaving employment at each age and receiving either a refund of member contributions or a deferred vested retirement benefit.

Recommendation: We recommend adjusting the termination rates to those developed in Section III (E) to reflect lower incidence of termination overall. In addition, a slightly lower proportion of members with fifteen or more years of service is expected to elect a refund of member contributions with a higher proportion electing instead to receive a deferred vested benefit under the recommended assumptions.

Disability Incidence Rates - The probability of becoming disabled at each age.

Recommendation: We recommend adjusting the disability rates to those developed in Section III (F) to reflect slightly higher incidence of disability for General Female and Safety members.

Individual Salary Increases - Increases in the salary of a member between the date of the valuation to the date of separation from active service.

Recommendation: We recommend decreasing slightly the merit and promotional rates of salary increase for Safety members to those developed in Section III (H) to reflect past experience.

Annual Leave Conversion - Additional service that is expected to be received when the member retires due to conversion of unused annual leave.

Recommendation: We recommend adjusting the current assumptions to reflect the actual accumulated annual leave balances for active members as of June 30, 2012.

Section II provides some background on basic principles and the methodology used for the experience study and the review of the demographic actuarial assumptions. A detailed discussion of each assumption and reasons for the proposed changes is found in Section III.

II. BACKGROUND AND METHODOLOGY

In this report, we analyzed the "demographic" or "non-economic" assumptions only. Our analysis of the "economic" assumptions for the June 30, 2013 valuation is provided in a separate report. Demographic assumptions include the probabilities of certain events occurring in the population of members, referred to as "decrements," e.g., termination from service, disability retirement, service retirement, and death after retirement. We also review the individual salary increases net of inflation (i.e., the merit and promotional assumptions) in this report.

Demographic Assumptions

In order to determine the probability of an event occurring, we examine the "decrements" and "exposures" of that event. For example, taking termination from service, we compare the number of employees who actually terminate in a certain age and/or service category (i.e., the number of "decrements") with those who could have terminated (i.e., the number of "exposures"). For example, if there were 500 active employees in the 20-24 age group at the beginning of the year and 50 of them terminate during the year, we would say the probability of termination in that age group is 50 ÷ 500 or 10%.

The reliability of the resulting probability is highly dependent on both the number of decrements and the number of exposures. For example, if there are only a few people in a high age category at the beginning of the year (number of exposures), we would not lend as much credence to the probability of termination developed for that age category, especially if it is out of line with the pattern shown for the other age groups. Similarly, if we are considering the death decrement, there may be a large number of exposures in, say, the age 20-24 category, but very few decrements (actual deaths); therefore, we would not be able to rely heavily on the probability developed for that category.

One reason we use several years of experience for such a study is to have more exposures and decrements, and therefore more statistical reliability. Another reason for using several years of data is to smooth out fluctuations that may occur from one year to the next. However, we also calculate the rates on a year-to-year basis to check for any trend that may be developing in the later years.

III. ACTUARIAL ASSUMPTIONS

A. ECONOMIC ASSUMPTIONS

The economic assumptions are reviewed in a separate report titled "Review of Economic Actuarial Assumptions for the June 30, 2013 Actuarial Valuation."

B. RETIREMENT RATES

The age at which a member retires from service (i.e., who did not retire on a disability pension) will affect both the amount of the benefits that will be paid to that member as well as the period over which funding must take place.

The retirement experience during the current three-year period indicated that actual retirements were slightly later than expected from General Tier 1 Male and Safety Tiers 1 and 2 and actual retirements were slightly earlier than expected for General Tier 1 Female. In this study, we have adjusted the retirement probabilities to reflect the current three-year experience, as well as prior experience as represented by the current retirement assumptions.

For General Tiers 2, 3, 4 and 5 and for Safety Tiers 4 and 5 before age 60, we are not recommending a change in the retirement assumptions because there is insufficient data available to support a change. For Safety Tiers 4 and 5, from ages 60 to 64 we are recommending a reduction in those retirement rates commensurate with the reduction we are recommending to Safety Tiers 1 and 2 at the same ages.

The following tables show the current, observed and proposed rates for General Tier 1 Male, General Tier 1 Female, and Safety.

Retirement Rates for General Tier 1 Male

Rate (%)

Age	Current	Observed	Proposed
50	3.00	9.48	4.00
51	3.00	4.39	3.00
52	3.00	4.07	3.00
53	4.00	5.30	4.00
54	4.00	6.47	5.00
55	9.00	6.58	8.00
56	13.00	8.16	11.00
57	17.00	14.57	16.00
58	20.00	22.41	21.00
59	20.00	24.51	22.00
60	30.00	21.62	25.00
61	30.00	23.53	25.00
62	30.00	24.64	27.00
63	30.00	16.33	27.00
64	30.00	33.33	30.00
65	40.00	50.00	40.00
66	50.00	72.73	50.00
67	50.00	50.00	50.00
68	50.00	33.33	50.00
69	50.00	25.00	50.00
70	100.00	24.00	100.00

Retirement Rates for General Tier 1 Female

Rate (%)

Age	Current	Observed	Proposed
50	4.00	6.58	5.00
51	4.00	5.75	5.00
52	4.00	6.96	5.00
53	4.00	5.28	5.00
54	5.00	6.61	6.00
55	10.00	8.47	9.00
56	12.00	12.82	12.00
57	13.00	16.88	14.00
58	15.00	14.22	15.00
59	16.00	20.81	18.00
60	18.00	21.02	19.00
61	22.00	26.71	23.00
62	25.00	34.17	27.00
63	25.00	22.83	25.00
64	25.00	28.95	27.00
65	35.00	42.31	40.00
66	35.00	40.74	40.00
67	40.00	61.11	40.00
68	45.00	50.00	45.00
69	50.00	33.33	50.00
70	100.00	36.00	100.00

Retirement Rates for Safety Tiers 1 and 2

Rate (%)

Age	Current	Observed	Proposed
45	1.00	3.57	1.00
46	1.00	0.00	1.00
47	1.00	0.00	1.00
48	1.00	0.00	1.00
49	3.00	6.06	3.00
50	5.00	7.14	6.00
51	5.00	9.23	6.00
52	8.00	9.68	9.00
53	15.00	19.57	18.00
54	25.00	36.36	30.00
55	35.00	54.84	40.00
56	25.00	30.00	25.00
57	25.00	12.50	25.00
58	25.00	20.00	25.00
59	30.00	9.09	25.00
60	100.00	41.67	50.00
61	100.00	37.50	50.00
62	100.00	33.33	50.00
63	100.00	100.00	50.00
64	100.00	50.00	50.00
65	100.00	11.11	100.00

Chart 1 compares actual experience with the current and the proposed rates of retirement for General Tier 1 Male members. Chart 2 has the same data for General Tier 1 Female members and Chart 3 has the same data for Safety Tiers 1 and 2 members.

In prior valuations, deferred vested General and Safety members were assumed to retire at age 58 and 55, respectively. The average age at retirement over the prior three years was 57.7 and 55.5 for General and Safety, respectively. We recommend maintaining the assumed retirement ages for General and Safety deferred vested members.

It was also assumed that 40% of future inactive General and 60% of future inactive Safety deferred vested participants would be covered under a reciprocal retirement system and receive 5.00% and 5.50% compensation increases for General and Safety members, respectively, from termination until their date of retirement. Based on the actual experience that 42% of General and 65% of

Safety members went on to be covered by a reciprocal retirement system as reported in the data provided in the three-year experience period, we recommend maintaining a 40% reciprocal assumption for General and changing to a 65% reciprocal assumption for Safety. Based on our average 1.00% and 1.50% recommended merit and longevity salary increase assumptions, we propose a 4.75% and 5.25% salary increase assumption for General and Safety members, respectively, be utilized to anticipate salary increases from the date of termination from FCERA to the expected date of retirement for participants in a reciprocal retirement system.

In prior valuations, it was assumed that 80% of all active male members and 55% of all active female members would be married or have an eligible domestic partner when they retired. According to the experience of members who retired recently, about 72% of all male members and 50% of all female members were married or had a domestic partner at retirement. We recommend changing the marriage assumption to 75% for male members and maintaining the marriage assumption at 55% for female members.

Based on observed experience from members who retired during the last three years, we also recommend maintaining the assumption that when active members retire, female spouses are assumed to be three years younger than their male spouses. Spouses will be assumed to be of the opposite sex to the member until we have more actual experience concerning domestic partners.

Chart 1
Retirement Rates - General Tier 1 Male Members

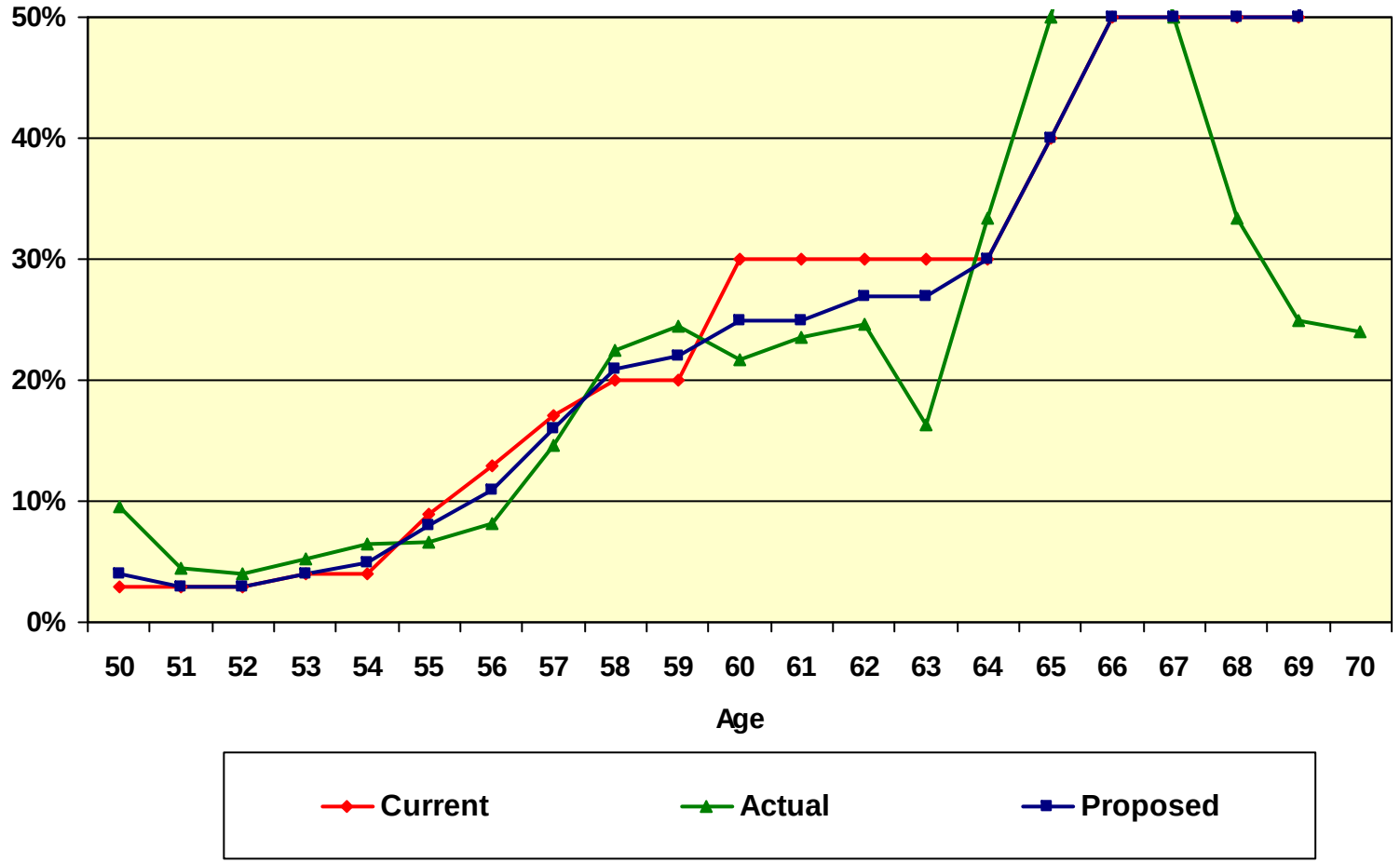


Chart 2
Retirement Rates - General Tier 1 Female Members

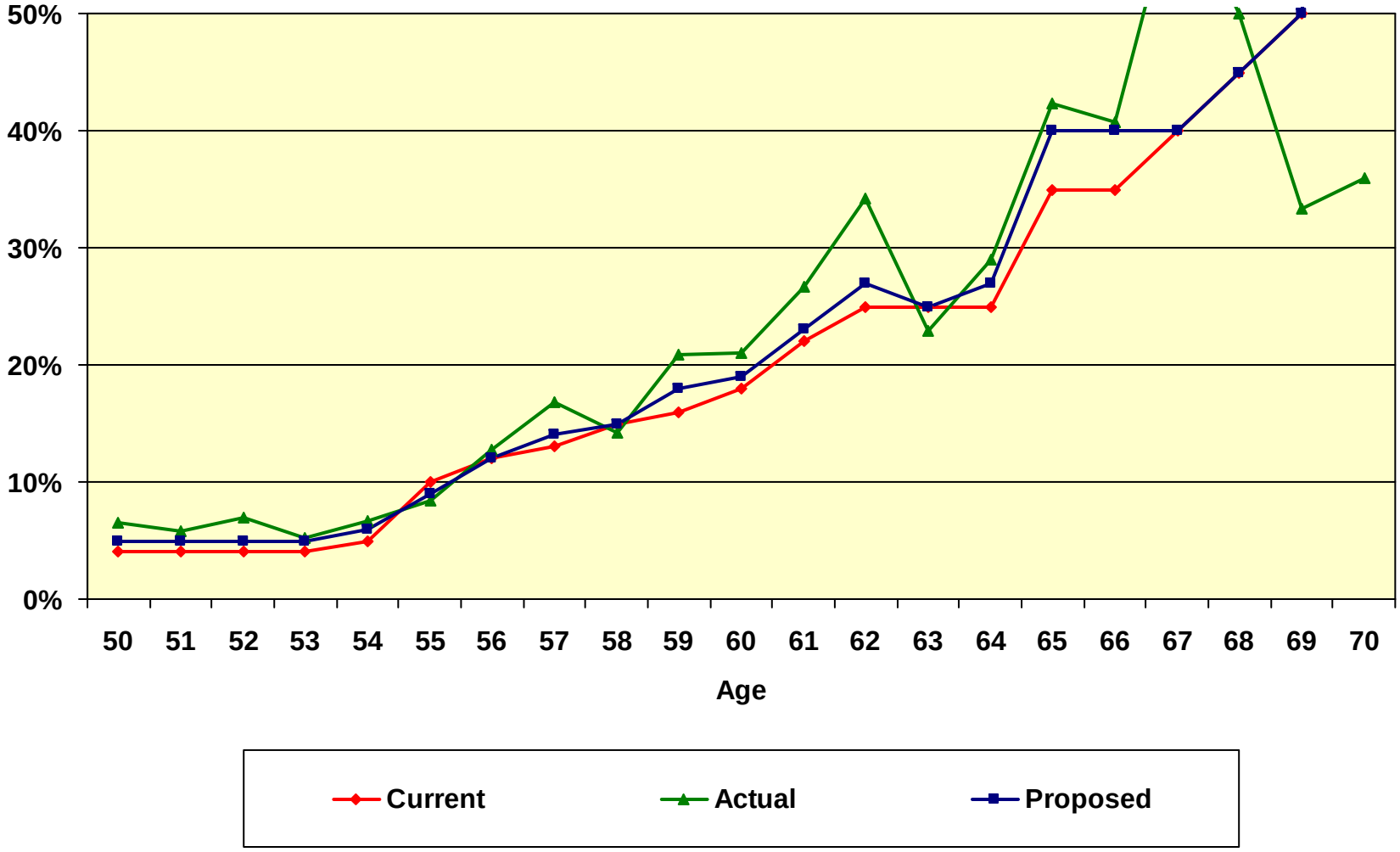
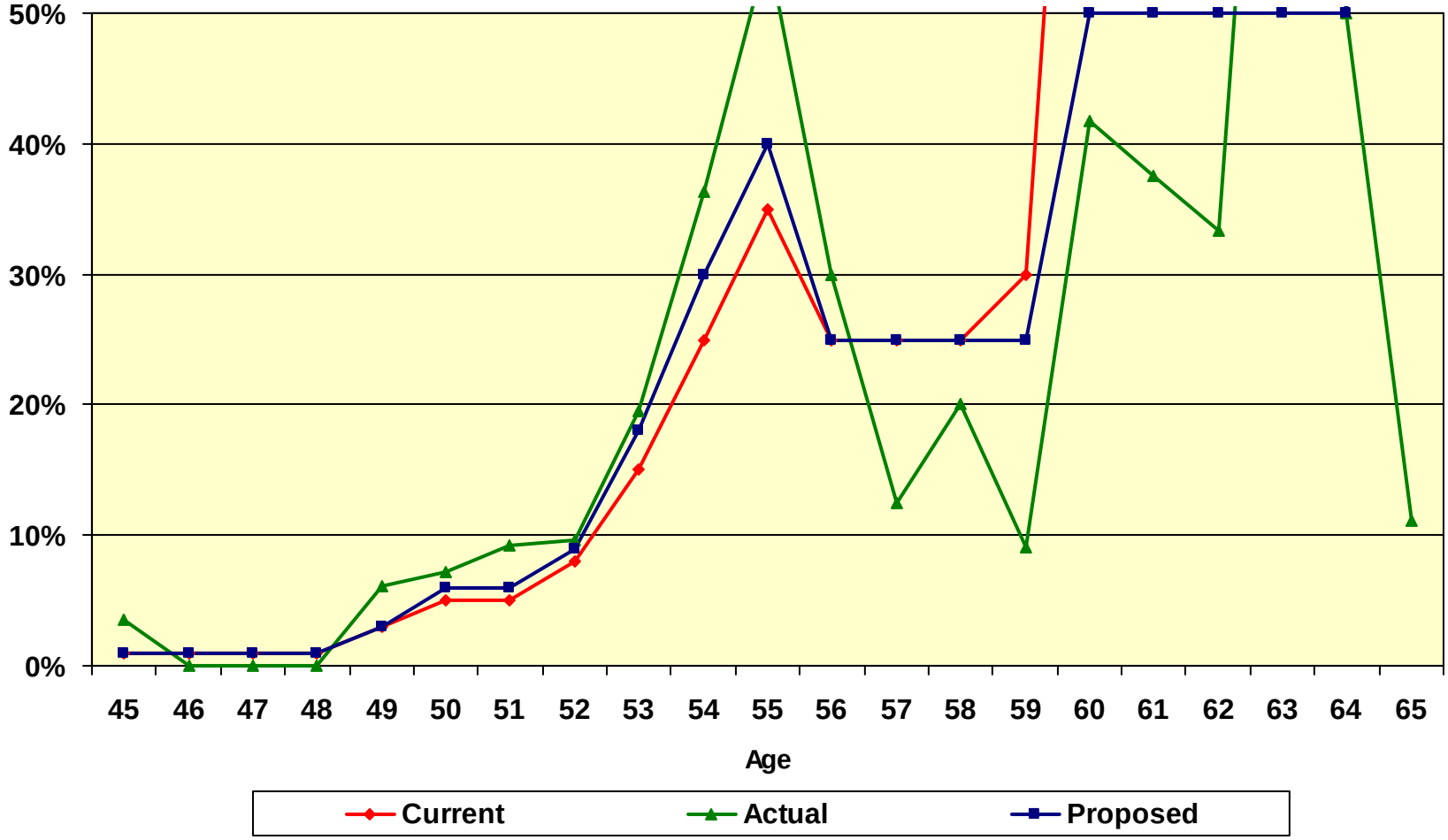


Chart 3
Retirement Rates - Safety Tier 1 and Tier 2 Members



C. MORTALITY RATES - HEALTHY

The "healthy" mortality rates project what proportion of members will die before retirement as well as the life expectancy of a member who retires from service (i.e., who did not retire on a disability pension). The tables currently being used for post-service retirement mortality rates are the RP-2000 Healthy Annuitant Mortality Table with adjustment for white collar workers (separate tables for males and females) set back two years for General members and all beneficiaries and the RP-2000 Healthy Annuitant Mortality Table with adjustment for blue collar workers (separate tables for males and females) set back three years for Safety members.

Pre-Retirement Mortality

The number of deaths among active members is not large enough to provide statistics credible enough to develop a unique table. Therefore, it is assumed that pre-retirement mortality assumptions for non-service connected deaths for General and Safety follow the same tables used for post-retirement mortality. In addition, based on experience from the last three years, we recommend that all pre-retirement deaths be assumed to be non-service connected deaths.

Post-Retirement Mortality (Service Retirements)

Among service retired member and beneficiaries, the actual deaths compared to the expected deaths under the current and the proposed assumptions for the last three years are as follows:

	General Healthy Retirees and All Beneficiaries		
Year Ending June 30	Current Expected Deaths	Actual Deaths	Proposed Expected Deaths
2010	105	103	105
2011	112	125	112
2012	119	153	121
Total	336	381	338
Actual/Expected	113%		113%

	Safety Healthy Retirees		
Year Ending June 30	Current Expected Deaths	Actual Deaths	Proposed Expected Deaths
2010	8	5	7
2011	8	10	8
2012	8	10	8
Total	24	25	23
Actual/Expected	104%		109%

For General members and all beneficiaries, the ratio of actual to expected deaths under the current assumption was 113%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) projected with scale AA to 2015 set back one year for males and set back two years for females. This will maintain the actual to expected ratio for the most recent three year period at 113% for General members and all beneficiaries, and will continue to provide some margin for future mortality improvements. We will continue to monitor this assumption closely in future studies.

For Safety members, the ratio of actual to expected deaths was 104%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) projected with scale AA to 2015 set back one year. This will bring the actual to expected rates to 109% and so will provide some additional margin for future mortality improvements. Here again, we will continue to monitor this assumption closely in future studies.

Chart 4 compares actual to expected deaths for General members and all beneficiaries under the current and the proposed assumptions for all members and beneficiaries over the last three years. Experience shows that there were fewer deaths than predicted by the current table.

Chart 5 has the same comparison for Safety members.

Chart 6 shows the life expectancies under the current and the proposed tables for General members and all beneficiaries.

Chart 7 has the same information for Safety members.

Mortality Table for Member Contributions

We recommend the mortality table used for determining contributions for General members be changed from the RP-2000 Healthy Annuitant Mortality Table with adjustment for white collar workers set back two years weighted 35% male and 65% female to the RP-2000 Combined Healthy Mortality Table projected with scale AA to 2015 set back one year for males and set back two years for females weighted 35% male and 65% female. This is based on the proposed mortality table for General members and the actual gender distribution for current General members.

For Safety members, we recommend the mortality table be changed from the RP-2000 Healthy Annuitant Mortality Table with adjustment for blue collar workers set back three years weighted 80% male and 20% female to the RP-2000 Combined Healthy Mortality Table projected with scale

AA to 2015 set back one year weighted 80% male and 20% female. This is based on the proposed mortality table for Safety members and the actual gender distribution for current Safety members.

Chart 4
Post - Retirement Deaths
Non - Disabled General Members and All Beneficiaries

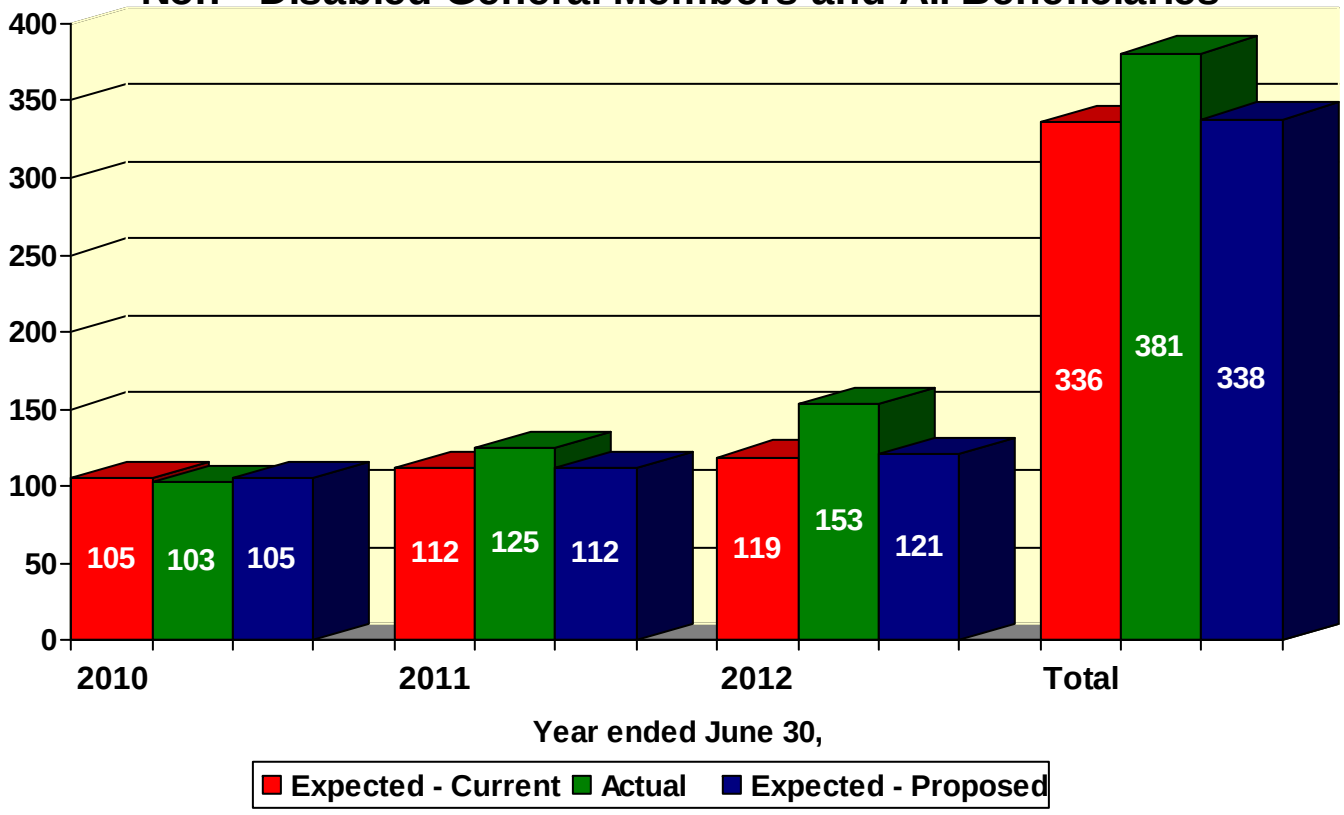


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Chart 5
Post - Retirement Deaths
Non - Disabled Safety Members

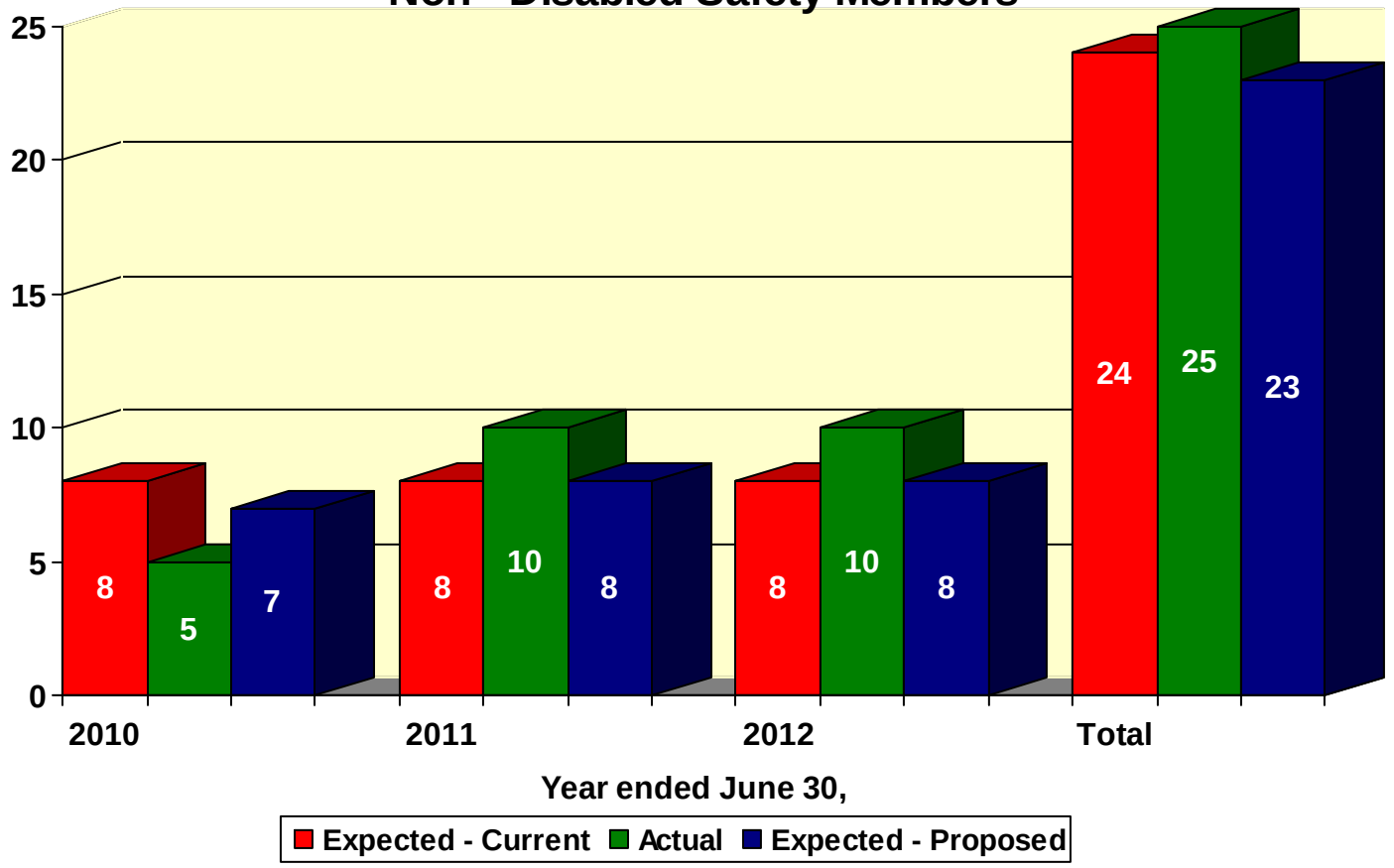

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Chart 6
Life Expectancies
Non - Disabled General Members and All Beneficiaries

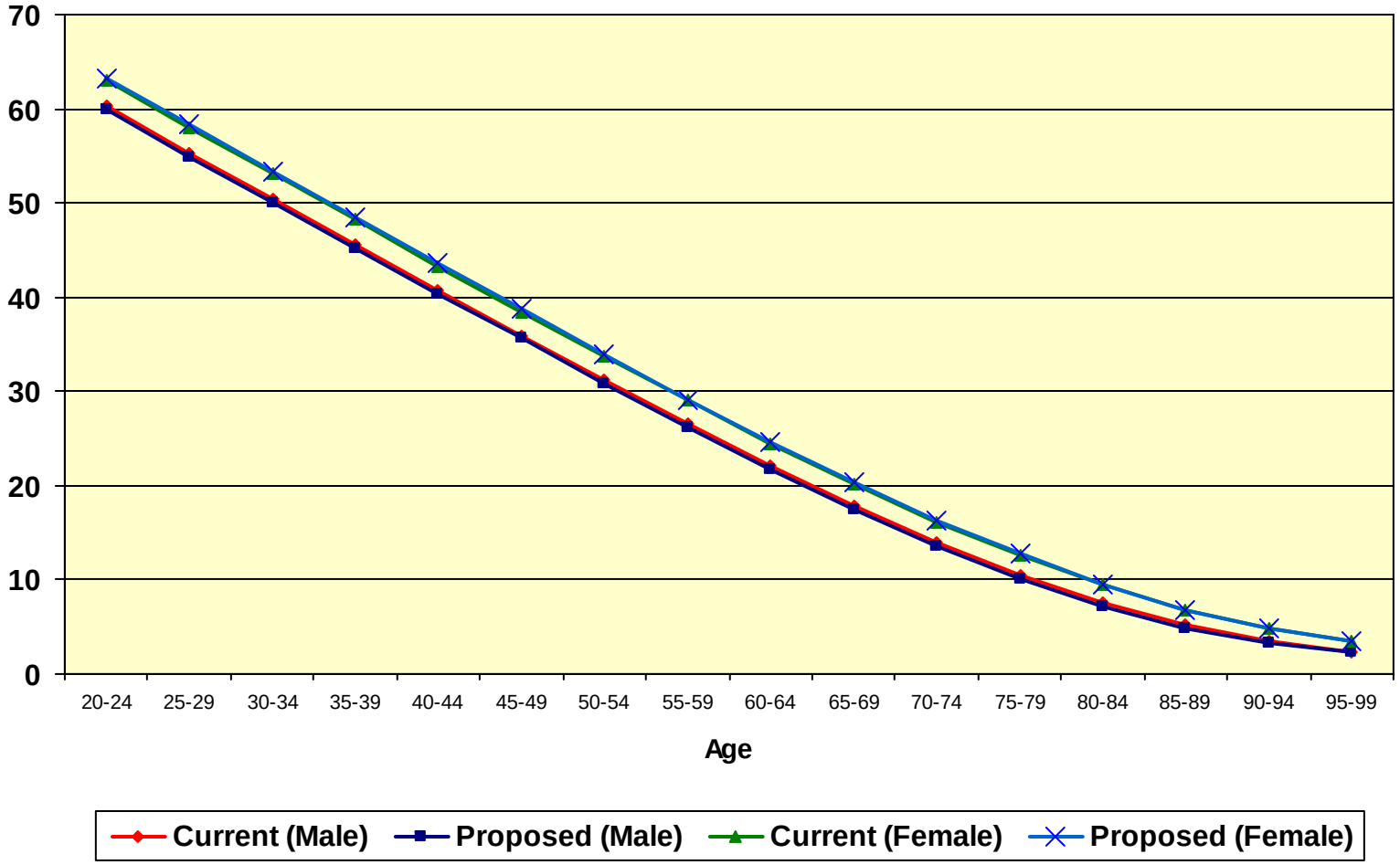

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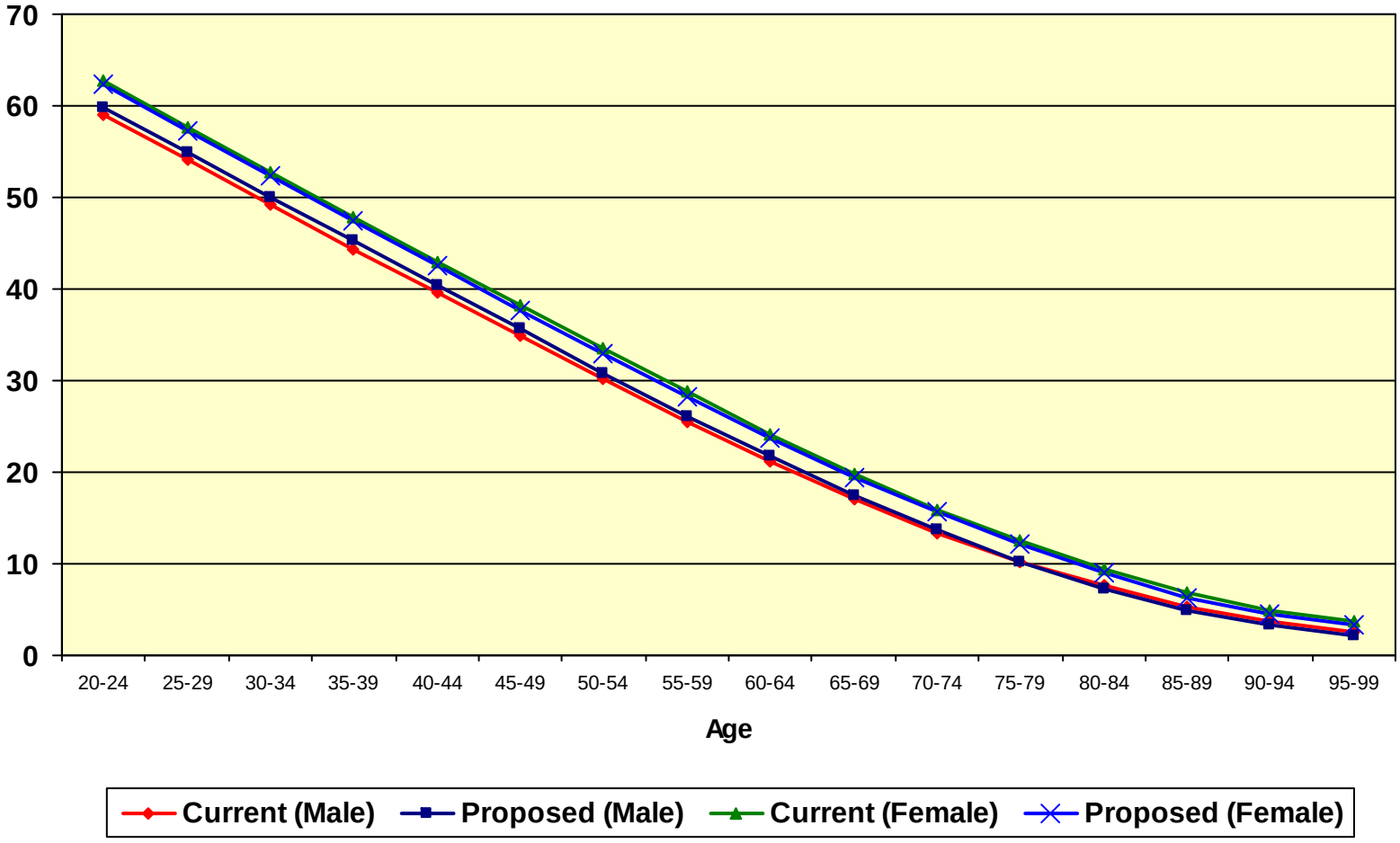
Chart 7
Life Expectancies
Non - Disabled Safety Members



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D. MORTALITY RATES - DISABLED

Since death rates for disabled members can differ from those of healthy members, a different mortality assumption is often used. The table currently being used is the RP-2000 Healthy Annuitant Mortality Table with adjustment for white collar workers (separate tables for males and females) set forward four years for General members and the RP-2000 Healthy Annuitant Mortality Table with adjustment for blue collar workers (separate tables for males and females) set back three years for Safety members.

The number of actual deaths compared to the number expected under the current and the proposed assumptions for the last three years has been as follows:

	General – Disability			Safety – Disability		
Year Ending June 30	Expected Deaths	Actual Deaths	Proposed Expected Deaths	Expected Deaths	Actual Deaths	Proposed Expected Deaths
2010	6.82	3	7.61	0.93	1	1.06
2011	7.78	16	8.69	1.08	6	1.23
2012	6.45	9	7.23	1.07	3	1.23
Total	21.05	28	23.53	3.08	10	3.52
Actual/Expected	133%		119%	325%		284%

Based on the actual experience of 28 and 19 deaths from the current and the last triennial experience study periods, respectively, we recommend changing the mortality table for General disabled members to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) projected with scale AA to 2015 set forward six years for males and set forward five years for females. We will continue to monitor this assumption closely in future studies.

Based on the actual experience of 10 and 2 deaths from the current and the last triennial experience study periods, respectively, we recommend changing the mortality table for Safety disabled members to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) projected with scale AA to 2015 set forward one year. In the last triennial experience study, the same mortality assumptions were recommended for both disabled and non-disabled Safety retirees. With this study we have noticed that actual experience, while limited, supports separate age adjustments for disabled and non-disabled Safety retirees. We will continue to monitor this assumption closely in future studies.

Chart 8 compares actual to expected deaths under both the current and the proposed assumptions

for disabled General members over the last three years.

Chart 9 compares actual to expected deaths under both the current and the proposed assumptions for disabled Safety members over the last three years.

Chart 10 and 11 show the life expectancies under both the current and the proposed tables for General and Safety, respectively.

Chart 8
Post - Retirement Deaths
Disabled General Members

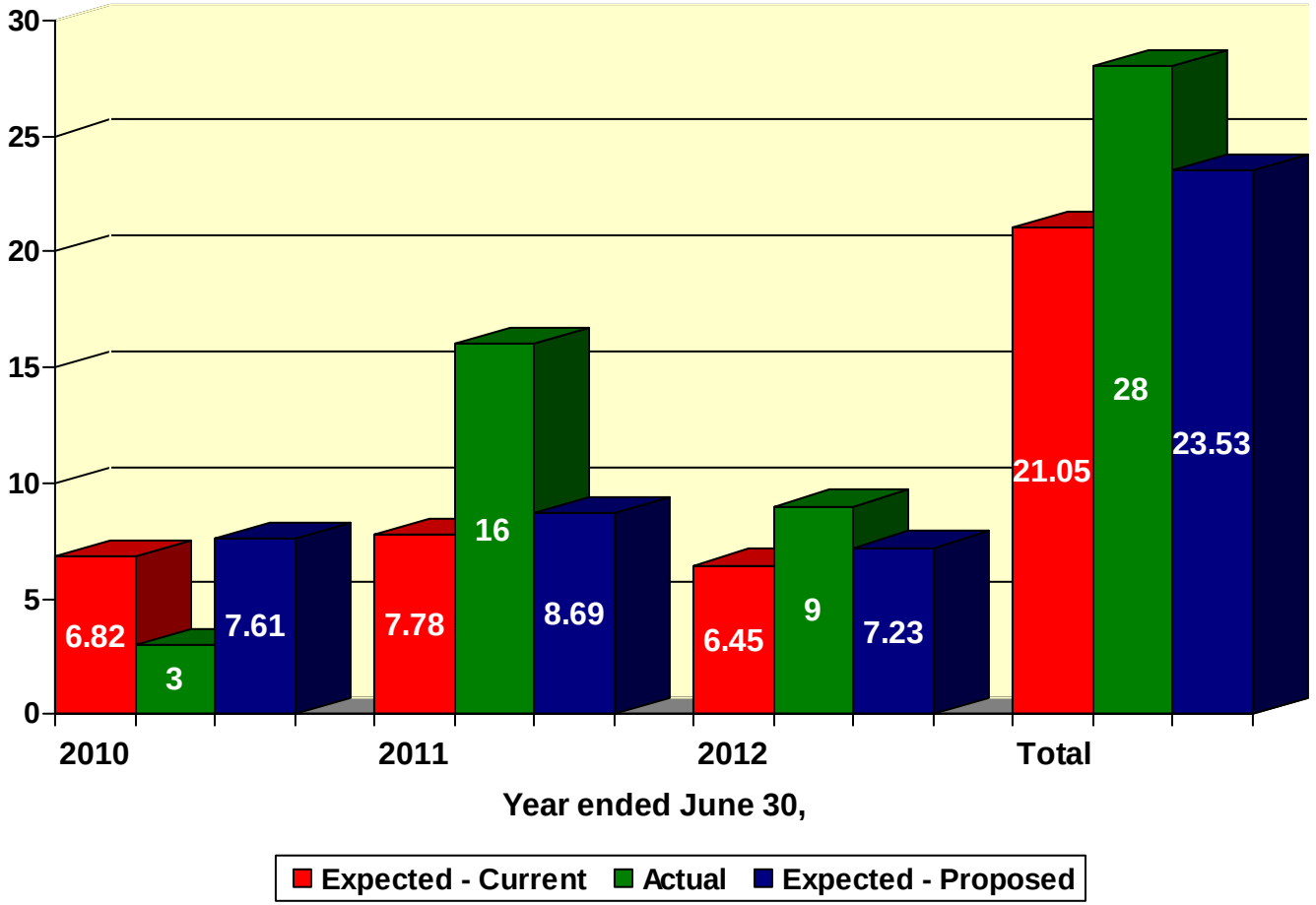


Chart 9
Post - Retirement Deaths
Disabled Safety Members

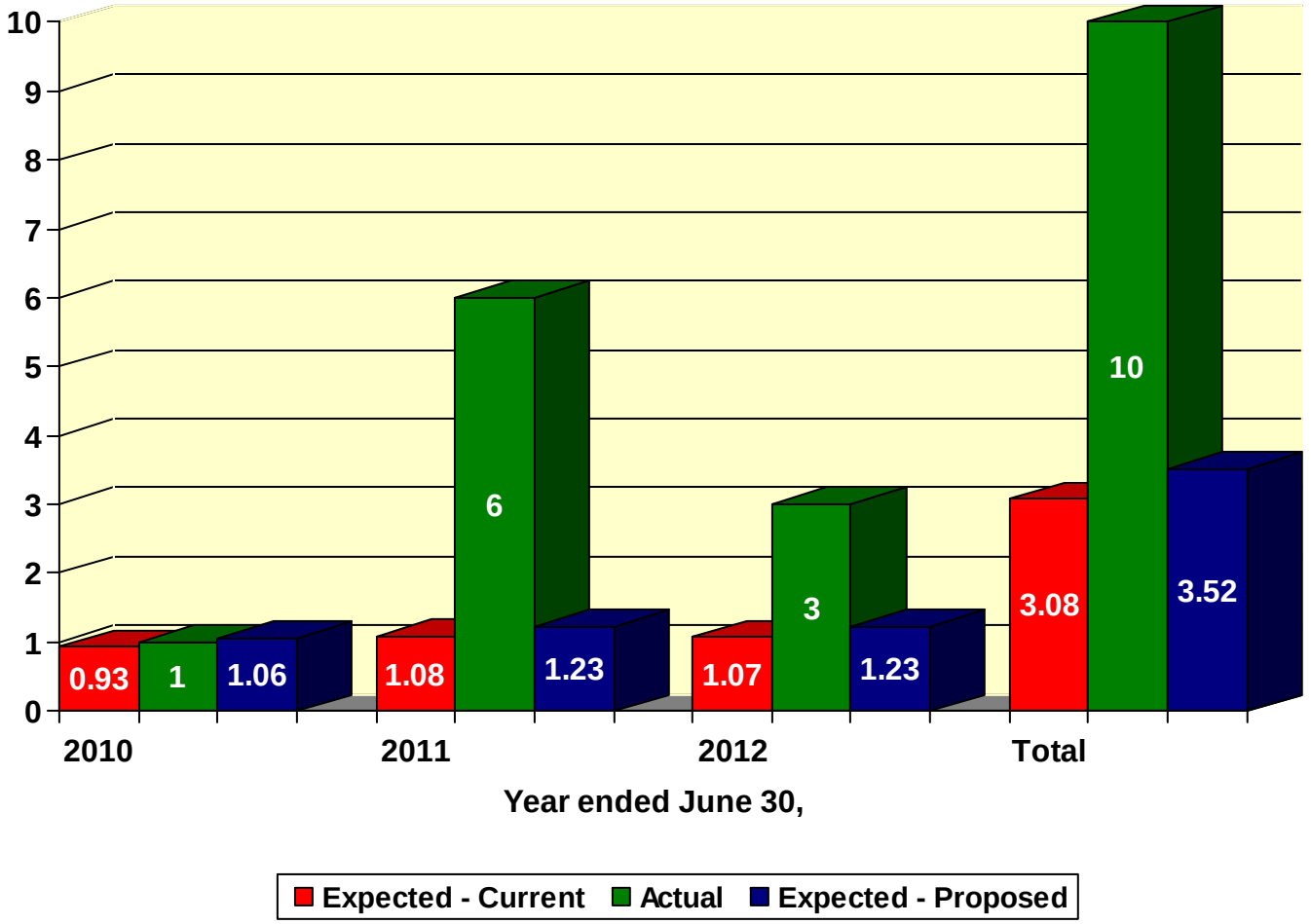


Chart 10
Life Expectancies (Disabled General Members)

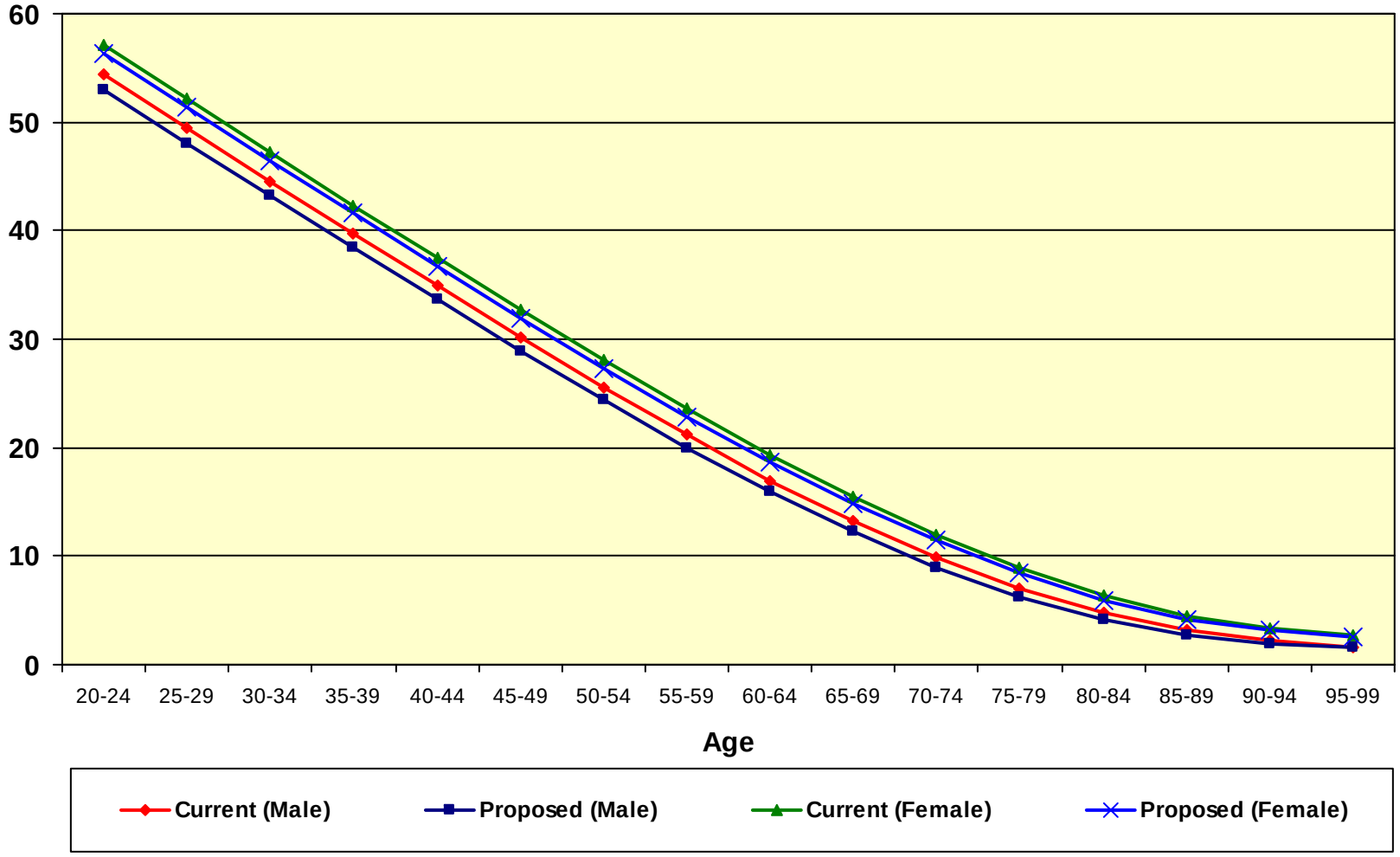
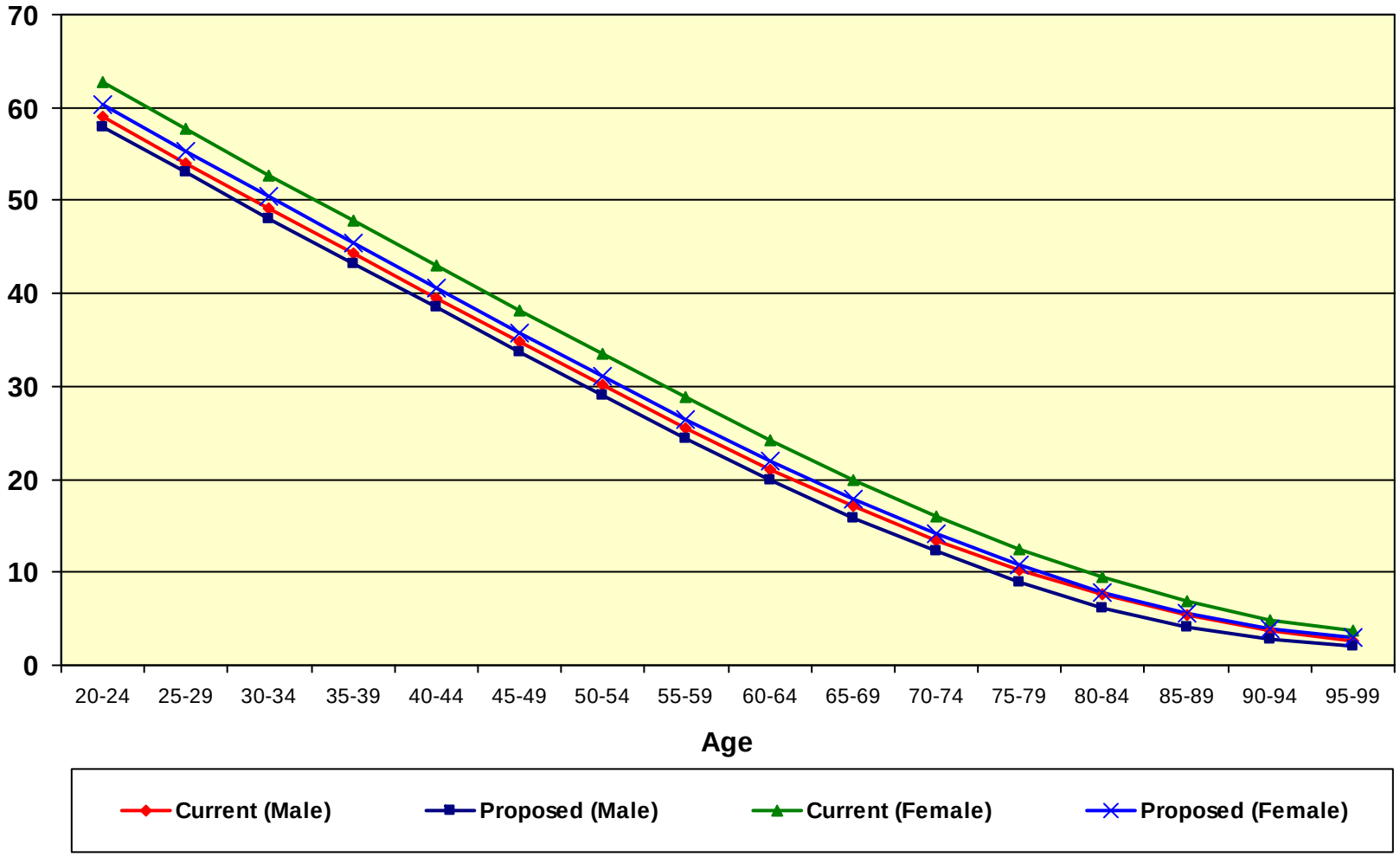


Chart 11
Life Expectancies (Disabled Safety Members)



E. TERMINATION RATES

Termination rates include all terminations for reasons other than death, disability, or retirement. Under the current assumptions there is an overall assumed incidence of total termination combined with a separate assumption for the percent of members who would elect a refund of contributions versus a deferred retirement benefit. The termination experience (total) over the last three years for General and Safety members separated between those members with under five years of service and those with five or more years of service is as follows:

Rates of Termination (General Male)
(Less than Five Years of Service)

Years of Service	Current Rate	Observed Rate	Proposed Rate
0	17.00%	17.13%	17.00%
1	6.00	11.07	8.00
2	6.00	7.47	7.00
3	6.00	5.76	6.00
4	6.00	6.03	6.00

Rates of Termination (General Female)
(Less than Five Years of Service)

Years of Service	Current Rate	Observed Rate	Proposed Rate
0	17.00%	12.64%	15.00%
1	6.00	7.62	7.00
2	6.00	7.36	6.50
3	6.00	4.86	5.00
4	6.00	4.66	5.00

Rates of Termination (Safety)
(Less than Five Years of Service)

Years of Service	Current Rate	Observed Rate	Proposed Rate
0	17.00%	0.00%	17.00%
1	4.00	22.22	6.00
2	4.00	23.19	5.00
3	4.00	6.38	4.75
4	4.00	5.60	4.50

Rates of Termination (General Male)
(Five or More Years of Service)

Age	Current Rate	Observed Rate	Proposed Rate
20 – 24	6.00%	0.00%	5.50%
25 – 29	6.00	3.13	5.50
30 – 34	5.00	3.10	4.50
35 – 39	4.50	3.24	4.00
40 – 44	4.25	2.90	3.80
45 – 49	4.00	1.82	3.60
50 – 54	3.50	4.62	3.50
55 – 59	3.00	3.82	3.25
60 – 64	3.00	4.35	3.00
65 – 69	1.00	20.00	1.50

Rates of Termination (General Female)
(Five or More Years of Service)

Age	Current Rate	Observed Rate	Proposed Rate
20 – 24	7.50%	0.00%	5.00%
25 – 29	7.50	3.25	5.00
30 – 34	7.00	3.73	5.00
35 – 39	5.00	3.16	4.50
40 – 44	4.50	2.53	4.00
45 – 49	4.00	2.89	3.50
50 – 54	3.50	0.84	3.25
55 – 59	3.00	2.79	3.00
60 – 64	3.00	4.70	3.00
65 – 69	1.00	6.78	1.50

Rates of Termination (Safety)
(Five or More Years of Service)

Age	Current Rate	Observed Rate	Proposed Rate
20 – 24	4.00%	0.00%	3.75%
25 – 29	4.00	2.04	3.75
30 – 34	3.50	1.01	3.00
35 – 39	3.00	1.50	2.50
40 – 44	2.50	1.30	2.00
45 – 49	1.00	1.12	1.00
50 – 54	1.00	0.00	1.00
55 – 59	1.00	11.11	1.00
60 – 64	0.00	0.00	0.00

Chart 12 compares actual to expected total terminations over the past three years for both the current and the proposed assumptions for General Male and Female members and Safety members.

Chart 13 shows the current along with the proposed termination rates for General Male members with less than five years of service.

Chart 14 shows the same information as Chart 13, but for General Female members.

Chart 15 shows the same information as Chart 13, but for Safety members.

Chart 16 shows the current along with the proposed termination rates for General Male members with five or more years of service.

Chart 17 shows the same information as Chart 16, but for General Female members.

Chart 18 shows the same information as Chart 16, but for Safety members

Based upon the recent experience, the terminations rates for General and Safety members have been decreased in most cases. In addition, among the terminations, we recommend the following assumptions for the percent of members electing a refund and the percent of members electing to leave their contributions on deposit so that they would be eligible to receive a deferred retirement benefit.

Proportion of Total Termination Assumed to Receive Refunds and Deferred Vested Benefit (%)

	Refunds			Deferred Vested Benefits		
Years of Service	Current Rate	Observed Rate	Proposed Rate	Current Rate	Observed Rate	Proposed Rate
0-4	90.00%	88.92%	90.00%	10.00%	11.08%	10.00%
5-9	30.00	27.64	30.00	70.00	72.36	70.00
10-14	30.00	29.27	30.00	70.00	70.73	70.00
15-19	30.00	11.11	15.00	70.00	88.89	85.00
20 or more	30.00	15.15	15.00	70.00	84.85	85.00

We will continue to assume that all termination rates are zero at any age where members are eligible and assumed to retire. That means that, at these ages, the members will either retire (and commence receiving a benefit) or continue working.

Chart 12
Actual Number of Terminations Compared to Expected

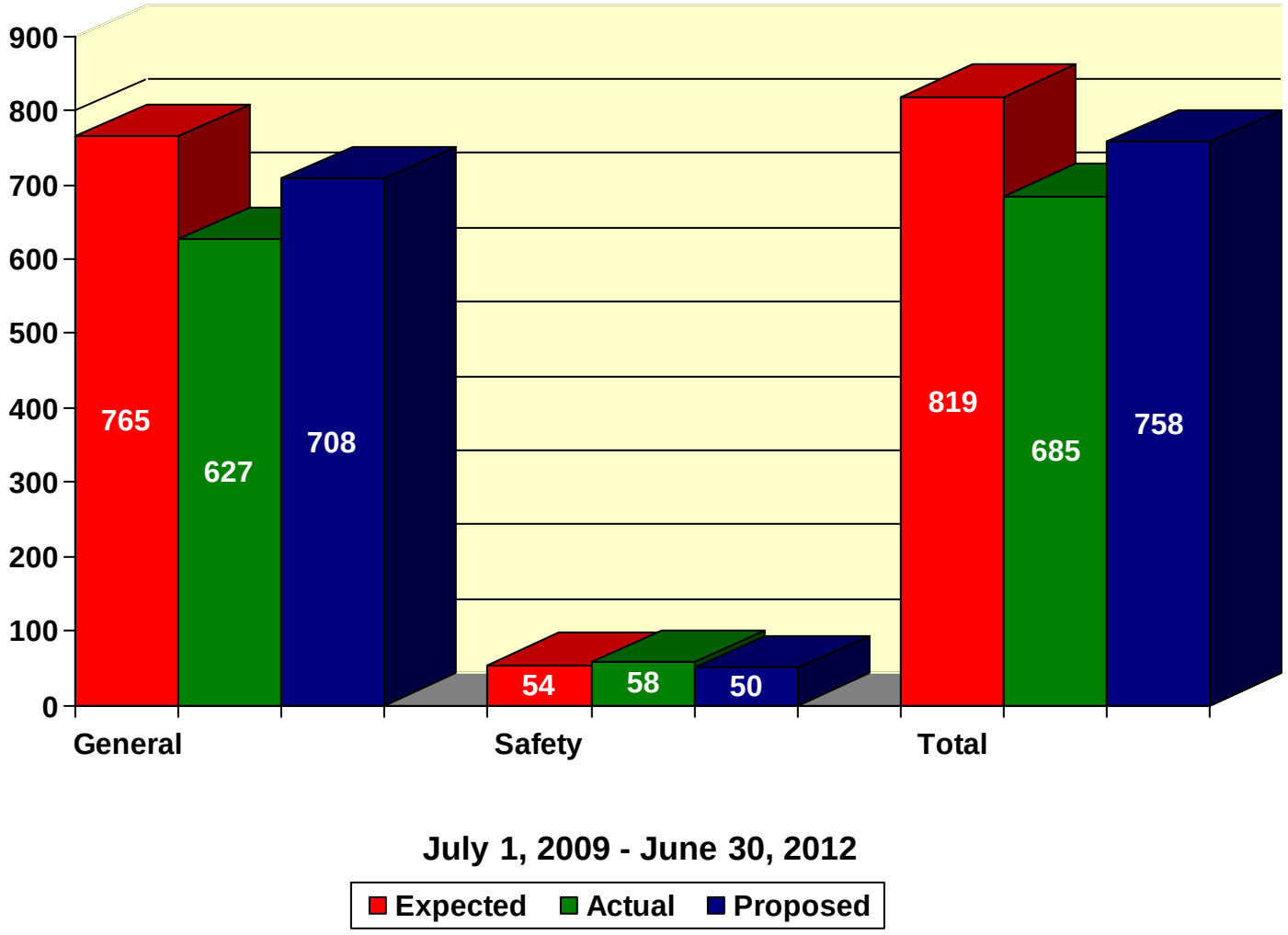


Chart 13
Termination Rates - General Male Members
(Less than Five Years of Service)

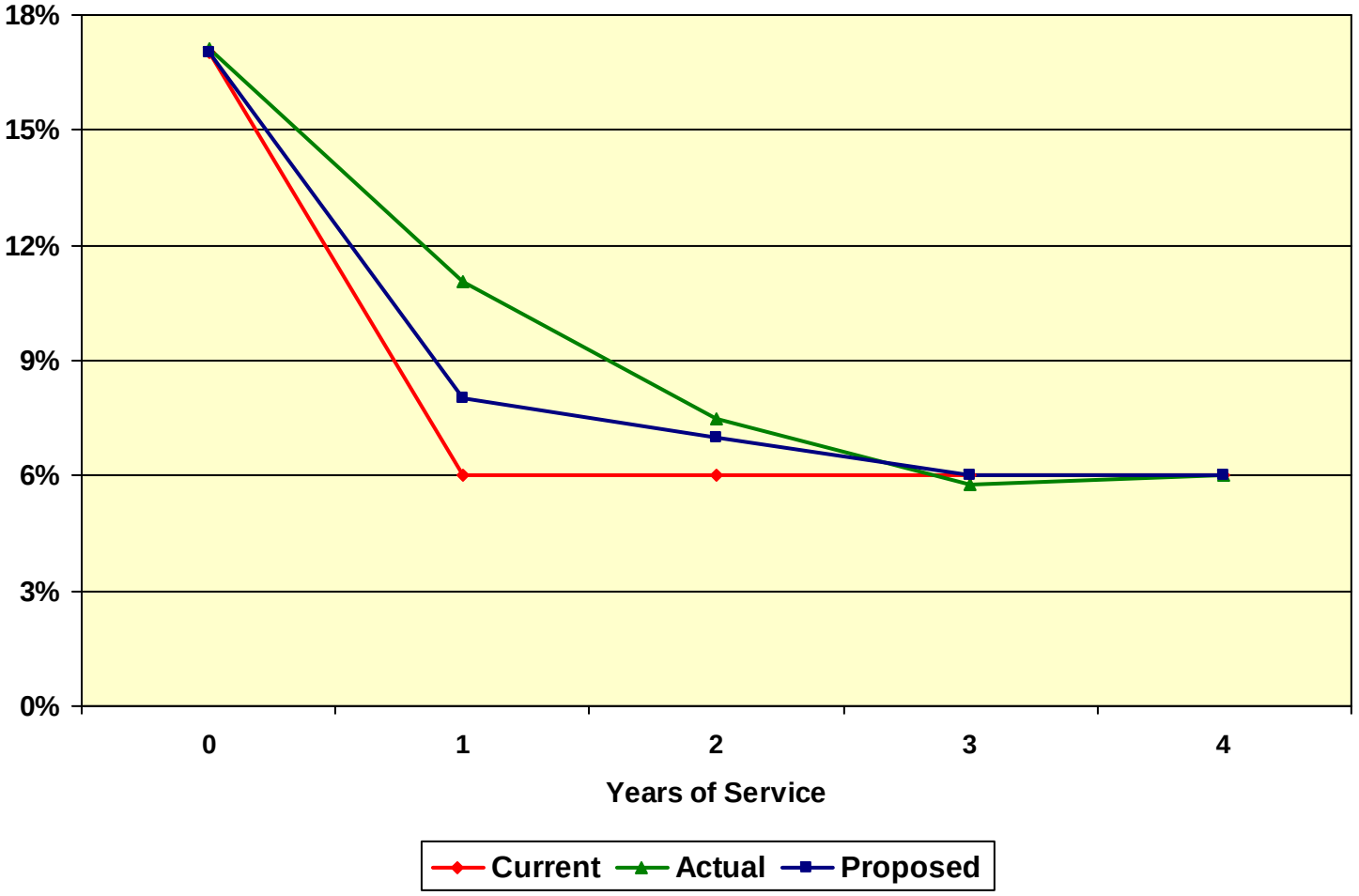


Chart 14
Termination Rates - General Female Members
(Less Than Five Years of Service)

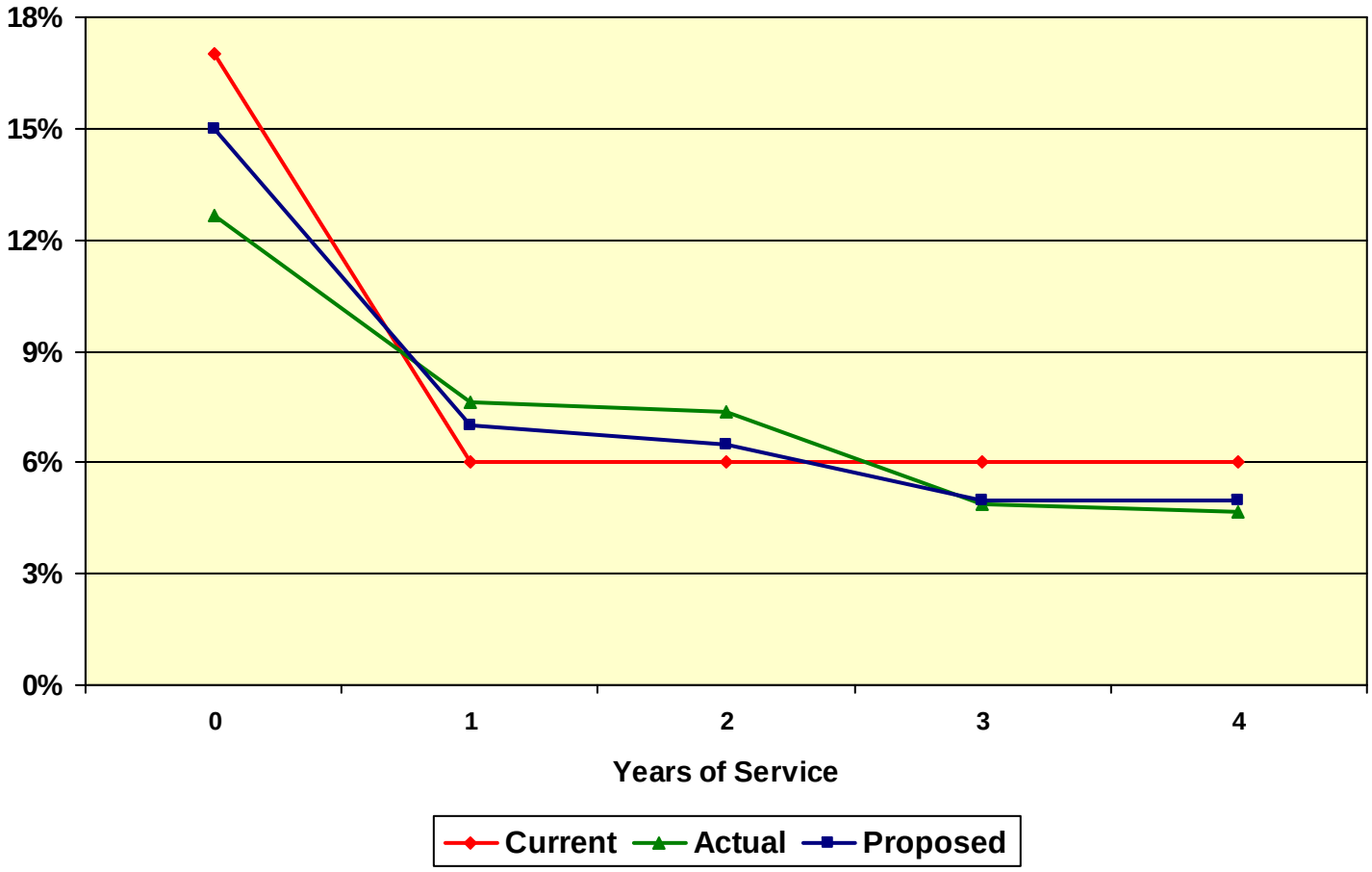


Chart 15
Termination Rates - Safety Members
(Less Than Five Years of Service)

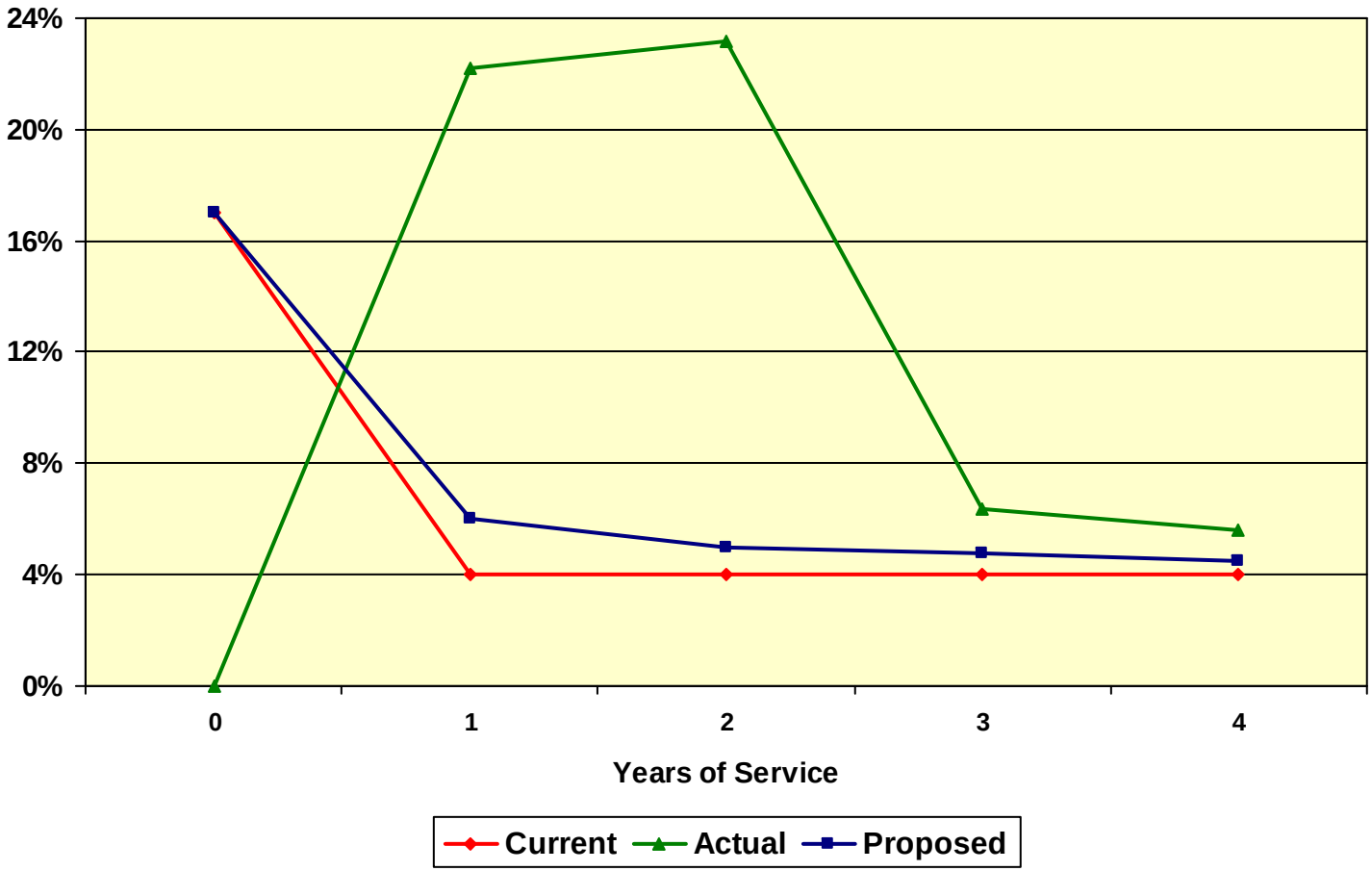


Chart 16
Termination Rates - General Male Members
(Five or More Years of Service)

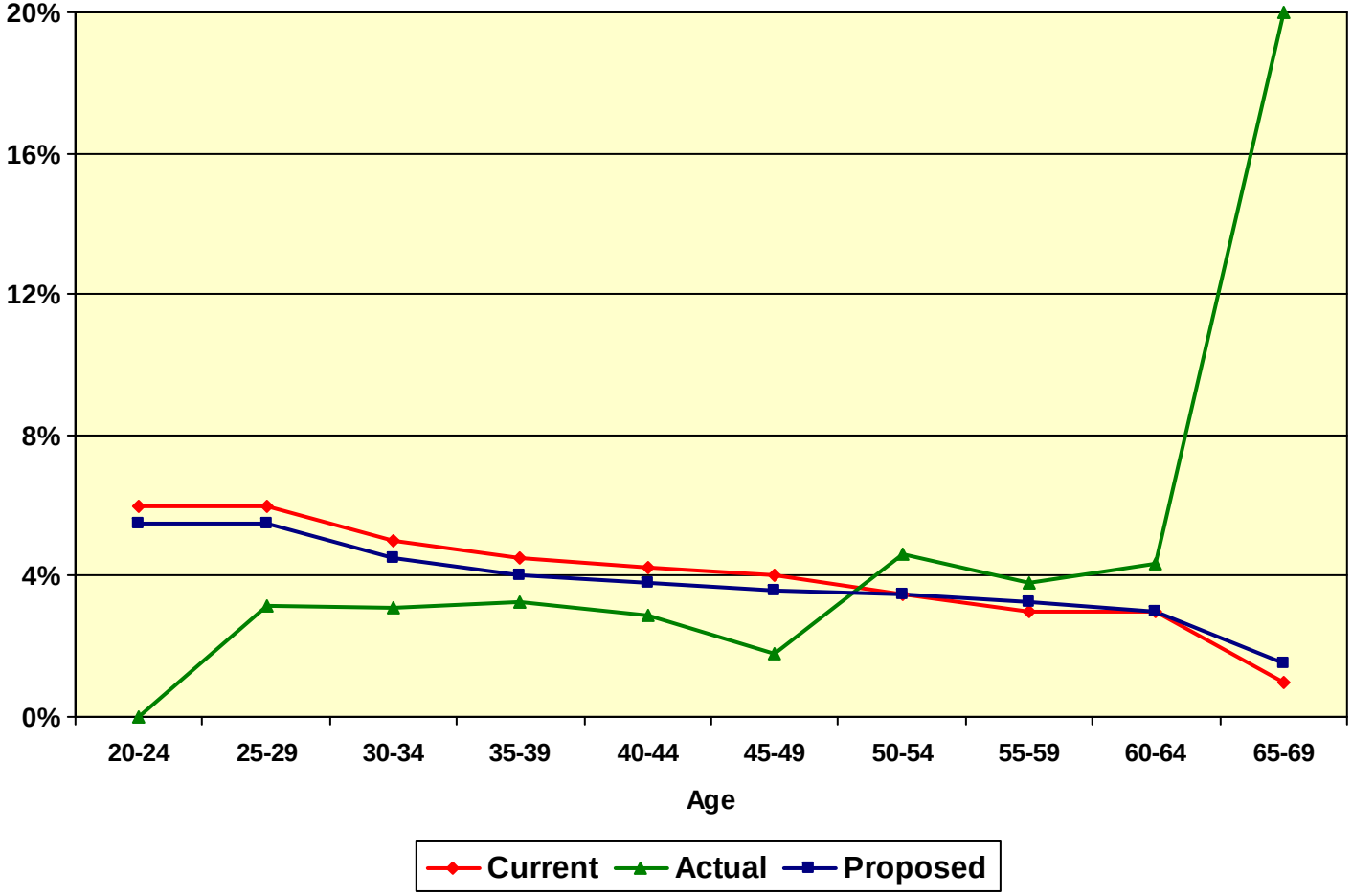


Chart 17
Termination Rates - General Female Members
(Five or More Years of Service)

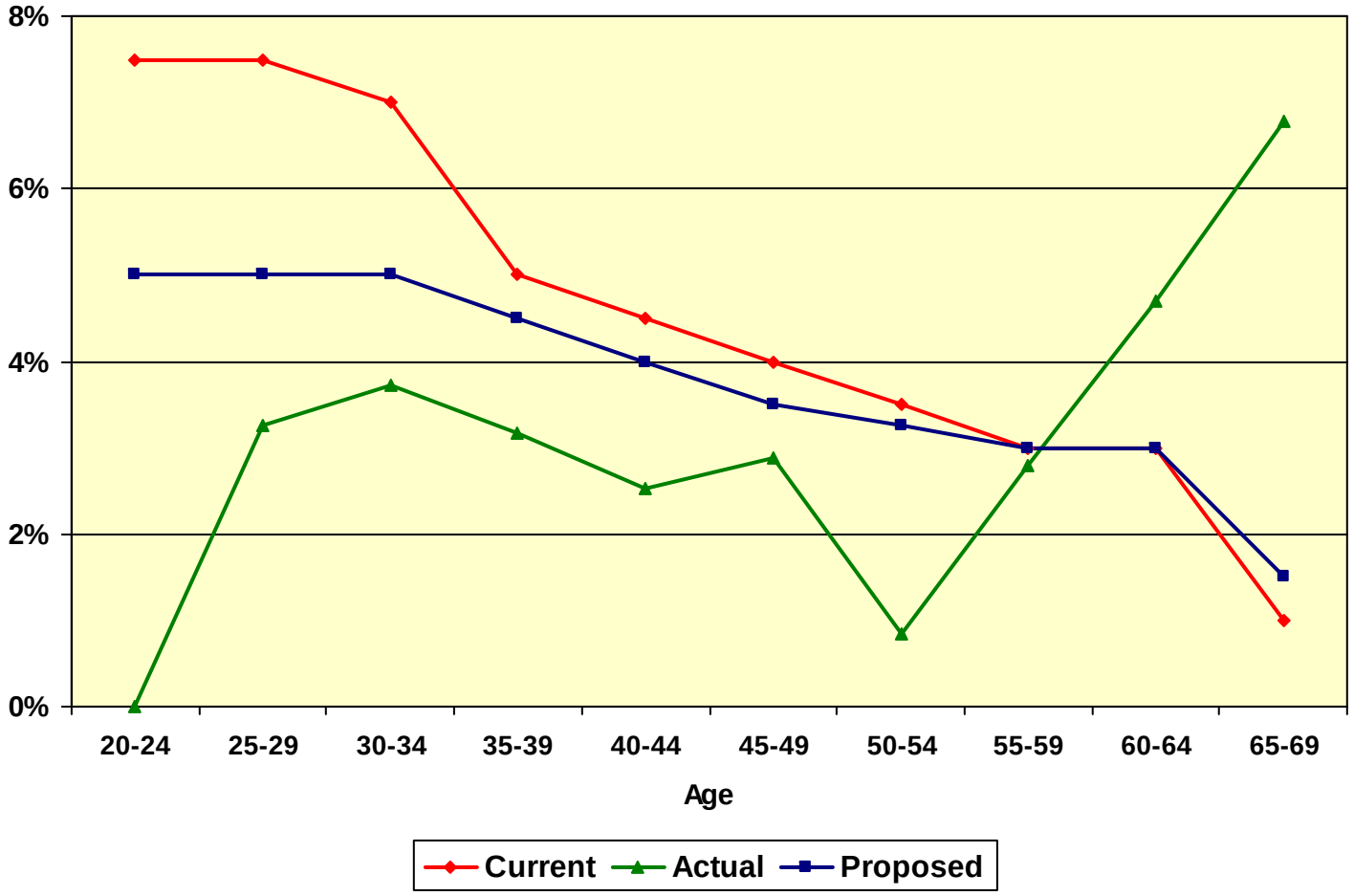
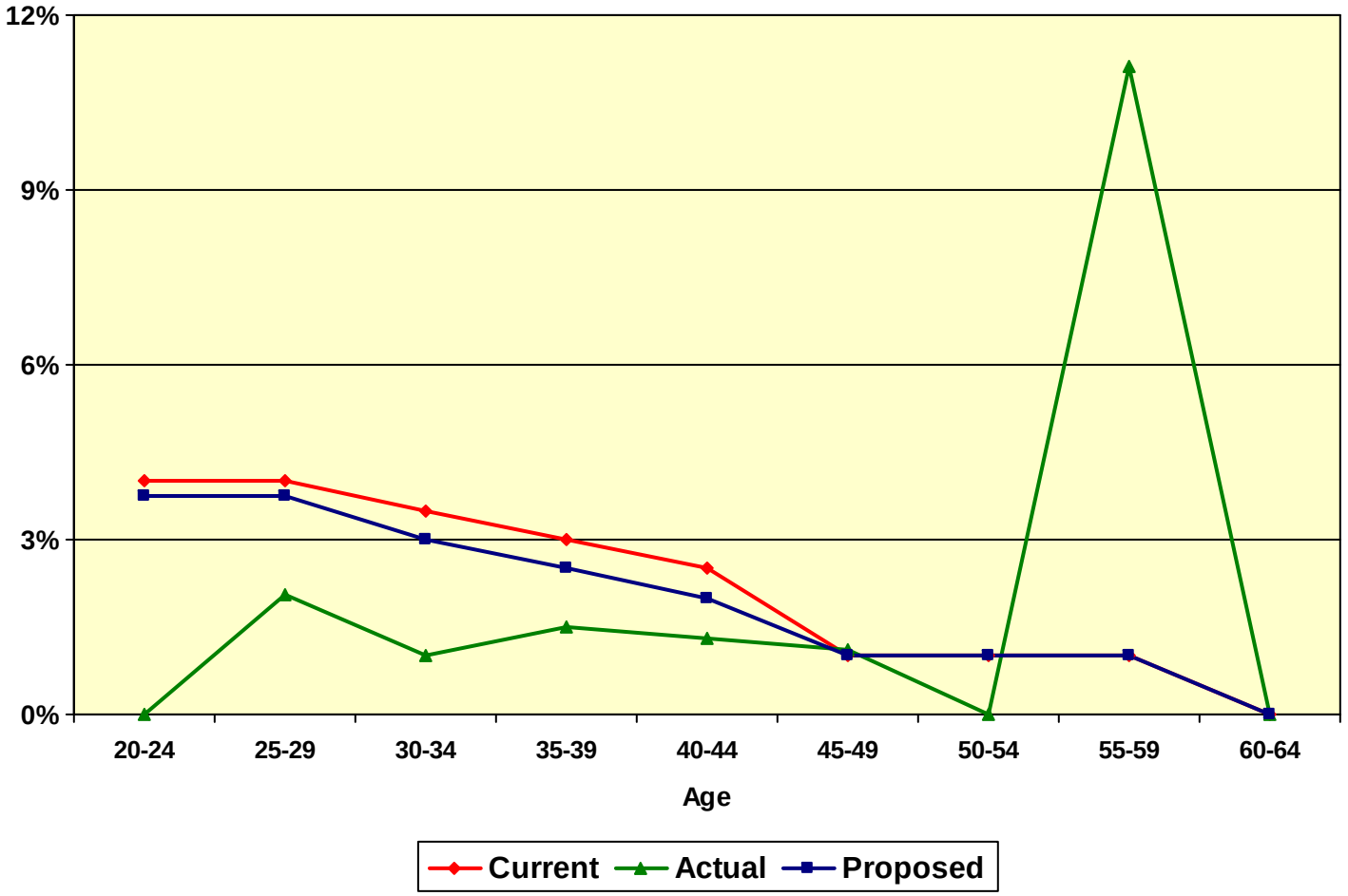


Chart 18
Termination Rates - Safety Members
(Five or More Years of Service)



F. DISABILITY INCIDENCE RATES

When a member becomes disabled, he or she may be entitled to a minimum 50% of pay pension (duty disability), or a pension that depends upon the member's years of service (ordinary disability). The following summarizes the actual incidence of combined duty and ordinary disabilities over the past three years compared to the current and the proposed assumptions for combined duty and ordinary disability incidence:

Rates of Disability Incidence (General Male)

Age	Current Rate	Observed Rate	Proposed Rate
20 – 24	0.01%	0.00%	0.01%
25 – 29	0.01	0.00	0.01
30 – 34	0.02	0.00	0.02
35 – 39	0.03	0.00	0.03
40 – 44	0.07	0.00	0.05
45 – 49	0.25	0.00	0.25
50 – 54	0.30	0.21	0.30
55 – 59	0.40	0.85	0.45
60 – 64	1.00	0.82	1.00
65 – 69	0.00	2.82	1.00

Rates of Disability Incidence (General Female)

Age	Current Rate	Observed Rate	Proposed Rate
20 – 24	0.01%	0.00%	0.01%
25 – 29	0.02	0.00	0.02
30 – 34	0.02	0.00	0.02
35 – 39	0.08	0.06	0.08
40 – 44	0.12	0.06	0.12
45 – 49	0.18	0.12	0.18
50 – 54	0.20	0.28	0.20
55 – 59	0.30	0.45	0.35
60 – 64	0.50	0.50	0.50
65 – 69	0.00	0.00	0.50

Rates of Disability Incidence (Safety)

Age	Current Rate	Observed Rate	Proposed Rate
20 – 24	0.05%	0.00%	0.05%
25 – 29	0.15	0.00	0.15
30 – 34	0.30	0.26	0.30
35 – 39	0.50	0.20	0.50
40 – 44	0.60	1.35	0.70
45 – 49	0.70	1.65	0.90
50 – 54	1.10	0.32	1.10
55 – 59	3.00	2.75	3.00
60 – 64	0.00	7.32	3.00

Chart 19 compares the actual number of ordinary and duty disabilities over the past three years to that expected under both the current and the proposed assumptions. The current disability rates were adjusted slightly to reflect the past three years' experience.

Chart 20 shows actual disablement rates, compared to the assumed and the proposed rates for General Male members.

Chart 21 graphs the same information as Chart 20, but for General Female members.

Since 34% of disabled General members received a duty disability, we recommend that the current 33% assumption used to anticipate duty disability retirement be maintained. The remaining 67% of General disabled members will be assumed to receive an ordinary disability.

Chart 22 graphs the same information as Chart 20, but for Safety members.

Since 96% of disabled Safety members received a duty disability, we recommend that the current 100% assumption used to anticipate duty disability retirement be maintained. No Safety disabled members will be assumed to receive an ordinary disability.

Chart 19
Actual Number of Disabilities Compared to Expected

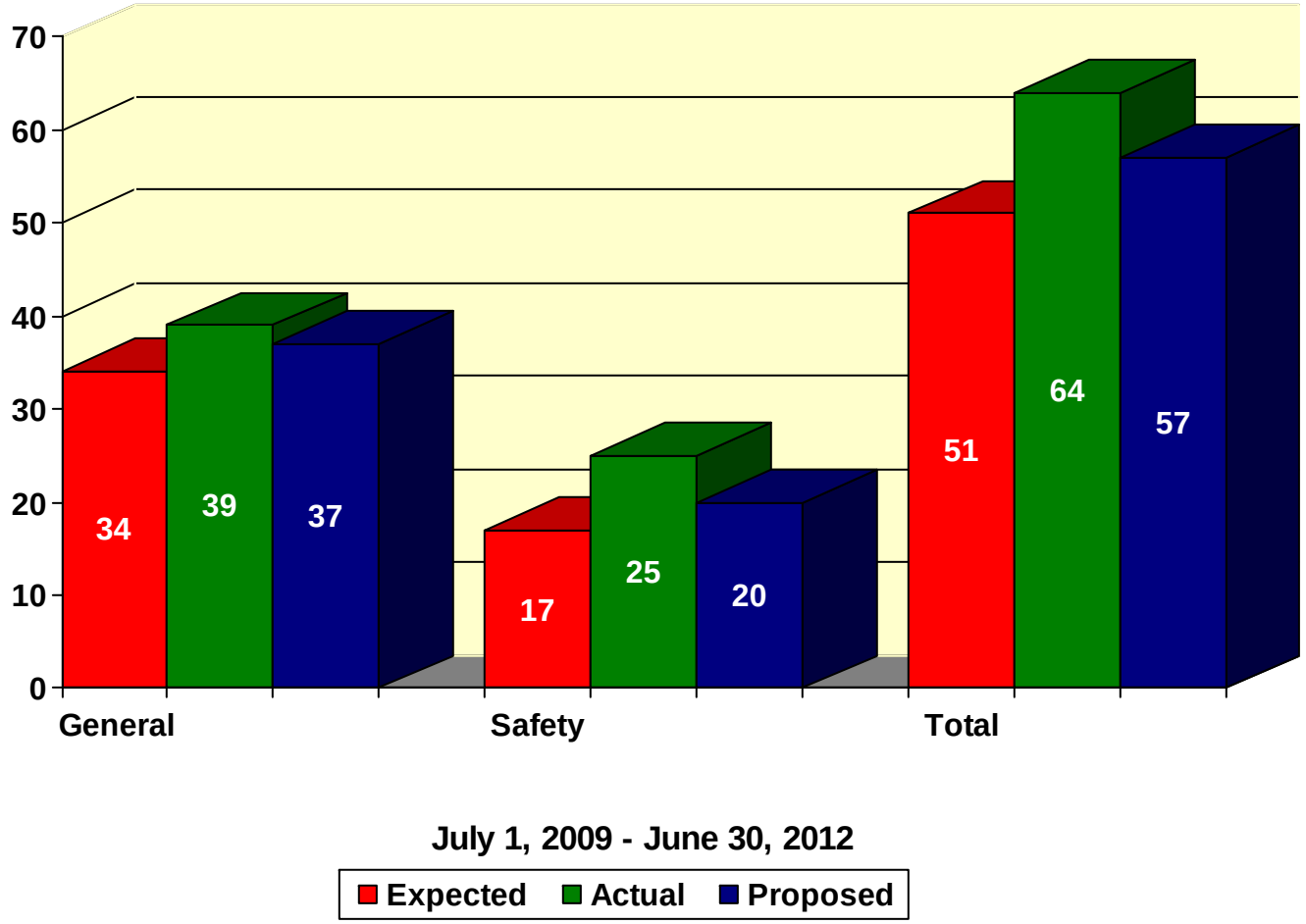


Chart 20
Disablement Rates for General Male Members

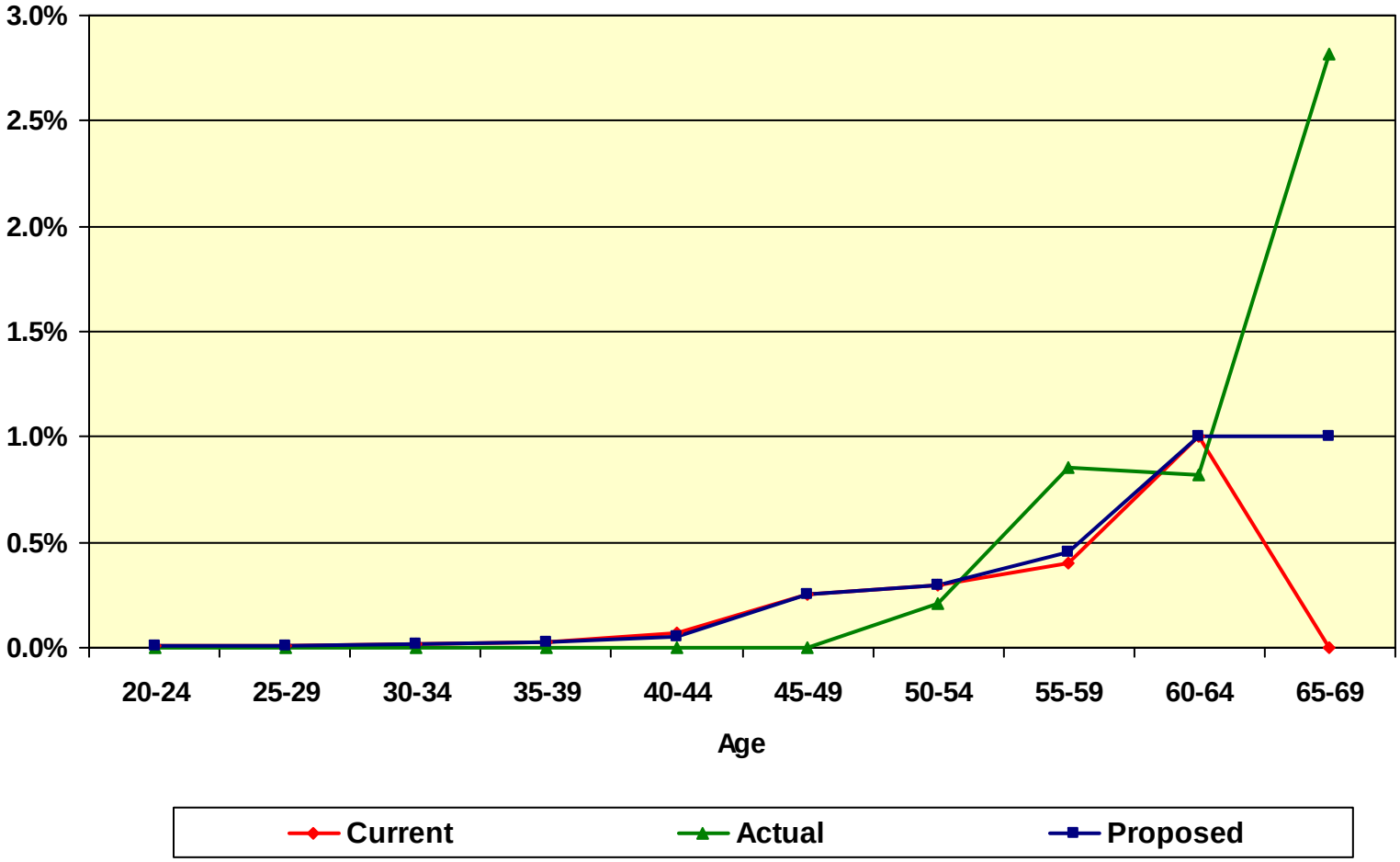


Chart 21
Disablement Rates for General Female Members

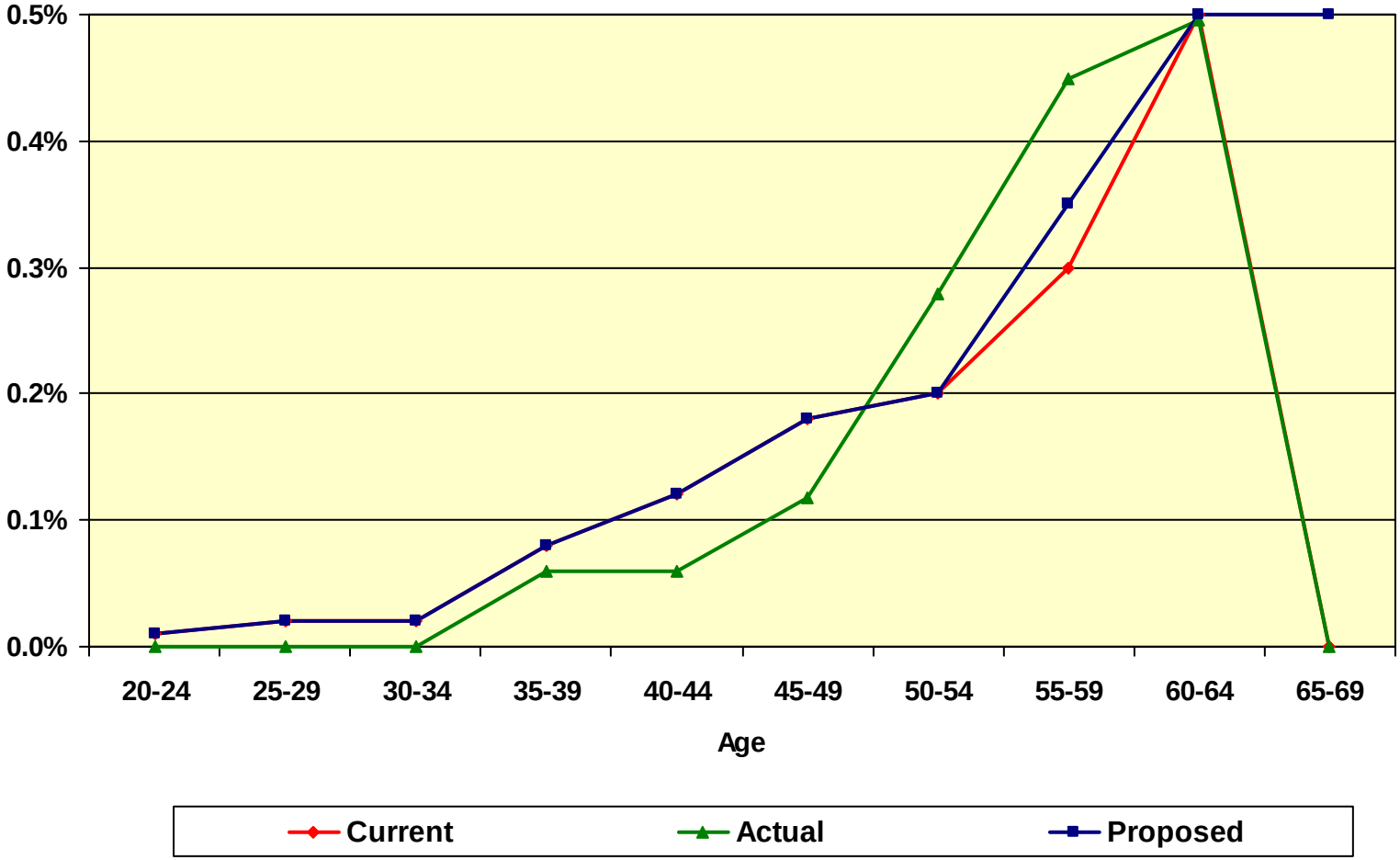
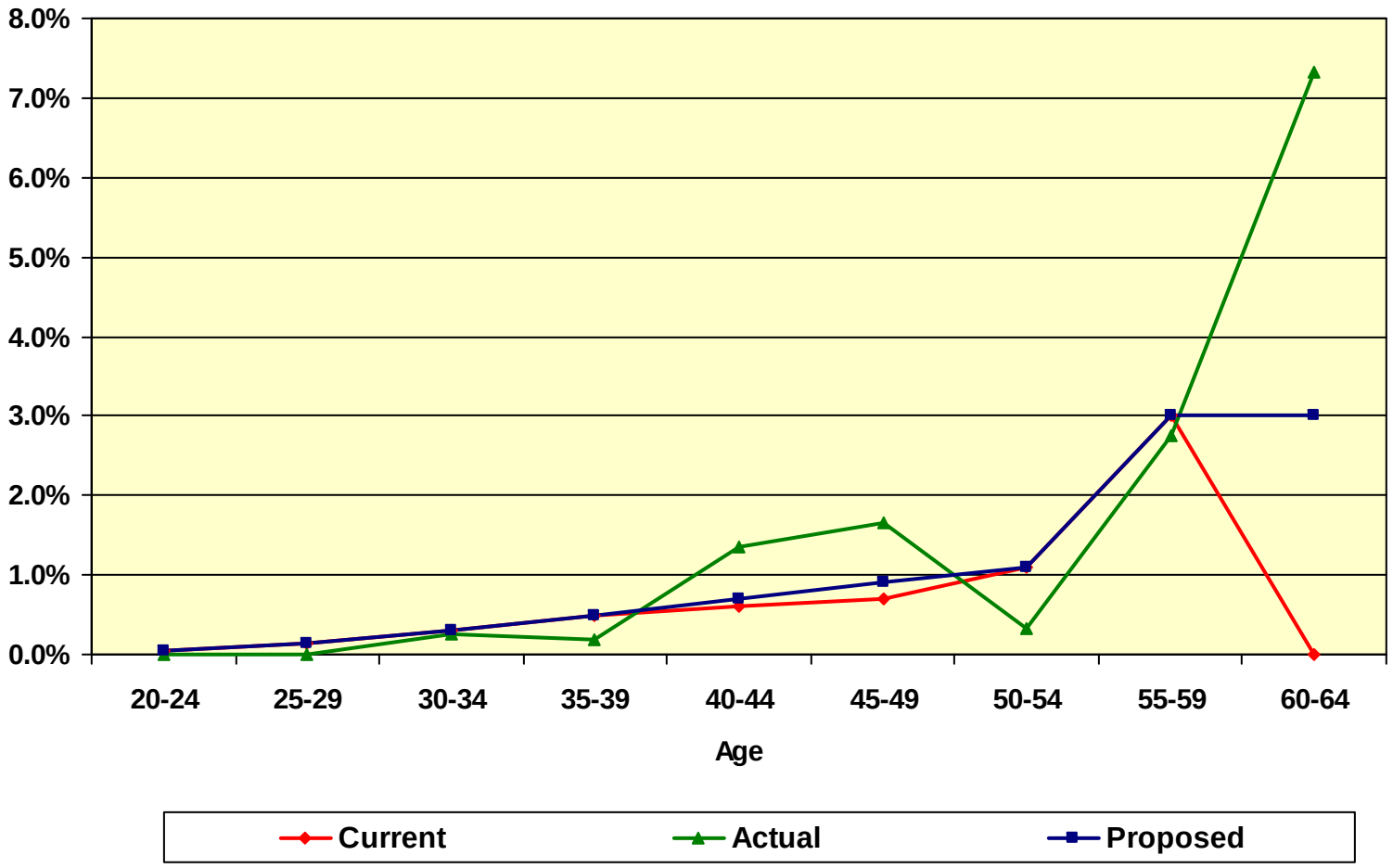


Chart 22
Disablement Rates for Safety Members



G. MERIT AND PROMOTIONAL SALARY INCREASES

The Association's retirement benefits are determined in large part by a member's compensation just prior to retirement. For that reason it is important to anticipate salary increases that employees will receive over their careers. These salary increases are made up of three components:

- Inflationary increases;
- Real "across the board" increases; and
- Merit and promotional increases.

The inflationary increases are assumed to follow the general inflation assumption discussed in our separate economic assumption report, where we recommended a 3.25% inflation assumption. We also discussed in that report our recommended assumption of 0.50% "across the board" pay increases. Therefore, the total inflation and real "across the board" increase of 3.75% is used as the assumed annual rate of payroll growth at which payments to the UAAL are assumed to increase.

The merit and promotional increases are determined by measuring the actual increases received by members over the experience period, net of the actual average inflationary and real "across the board" pay increases. Increases are measured separately for General and Safety members. This is accomplished by:

- Measuring each member's actual salary increase over each year of the experience period;
- Categorizing these increases into service groups;
- Removing the wage inflation component from these increases (assumed equal to the increase in the members' average salary during the year);
- Averaging the remaining individual annual increases over the three year experience period; and
- Modifying current assumptions to reflect some portion of these measured increases reflective of their "credibility."

We are recommending minor changes in the merit and promotional assumptions for General members and minor decreases for Safety members. Note that the changes for General members are somewhat offsetting with respect to the overall salary increases assumed over the employee's career.

The following table shows the average increases over the three-year experience period (July 1, 2009 through June 30, 2012) before removing the actual inflationary and real wage increase component:

Average Increase (%)

Years of Service	General Members	Safety Members
0	4.90	N/A
1	7.70	1.12
2	5.88	-0.16
3	3.77	5.41
4	2.44	3.93
5	1.88	2.31
6	0.73	1.95
7	1.11	1.76
8 or more	-0.40	-0.09

The annual increase/(decrease) in average salary over this three-year period[1] was about -1.15% for General members and -1.10% for Safety members. The following table shows the average merit and promotional increases for the current three-year period, after removing the increases/(decreases) in average salary in each service category[2]. For reference purposes, we have also included the average merit and promotional increase from the last three-year period.

Average Merit and Promotional Salary Increase (%)

	General Members		Safety Members	
Years of Service	Current Study	Last Study	Current Study	Last Study
0	6.82	11.15	N/A	9.62
1	6.29	8.44	-3.49	12.24
2	5.42	6.69	-1.69	11.29
3	4.87	5.40	4.63	7.40
4	4.08	4.20	3.04	5.19
5	3.53	4.19	4.32	5.01
6	2.39	3.03	2.49	4.67
7	1.11	2.17	1.99	3.85
8 or more	0.73	1.44	0.99	2.72

1 *The above decrease was reported on a weighted basis taking into consideration the number of active employees included in each of the three one-year periods.*

2 *This was done by first removing the annual increase/(decrease) in average salary for each one-year period from the average increase in salary over that same one-year period and then calculating an average on a weighted basis taking into consideration the number of active employees included in each of the three one-year periods for each service category.*

The following table shows the current and the proposed merit and promotional assumptions based on this recent experience:

Current vs. Proposed Merit and Promotional Salary Increase (%)

	General Members		Safety Members	
Years of Service	**Current**	**Proposed**	**Current**	**Proposed**
0	7.00	7.00	7.00	7.00
1	6.00	6.00	6.00	6.00
2	5.50	5.50	5.75	5.50
3	5.00	5.00	5.25	5.25
4	4.25	4.00	4.35	4.25
5	2.00	2.25	3.75	3.75
6	1.50	1.50	3.75	3.50
7	1.25	1.25	3.50	3.25
8 or more	1.00	1.00	1.50	1.50

Charts 23 and 24 provide a graphical comparison of the current, the actual and the proposed merit and promotional increases.

Chart 23
Merit and Promotional Salary Increase Rates for General Members

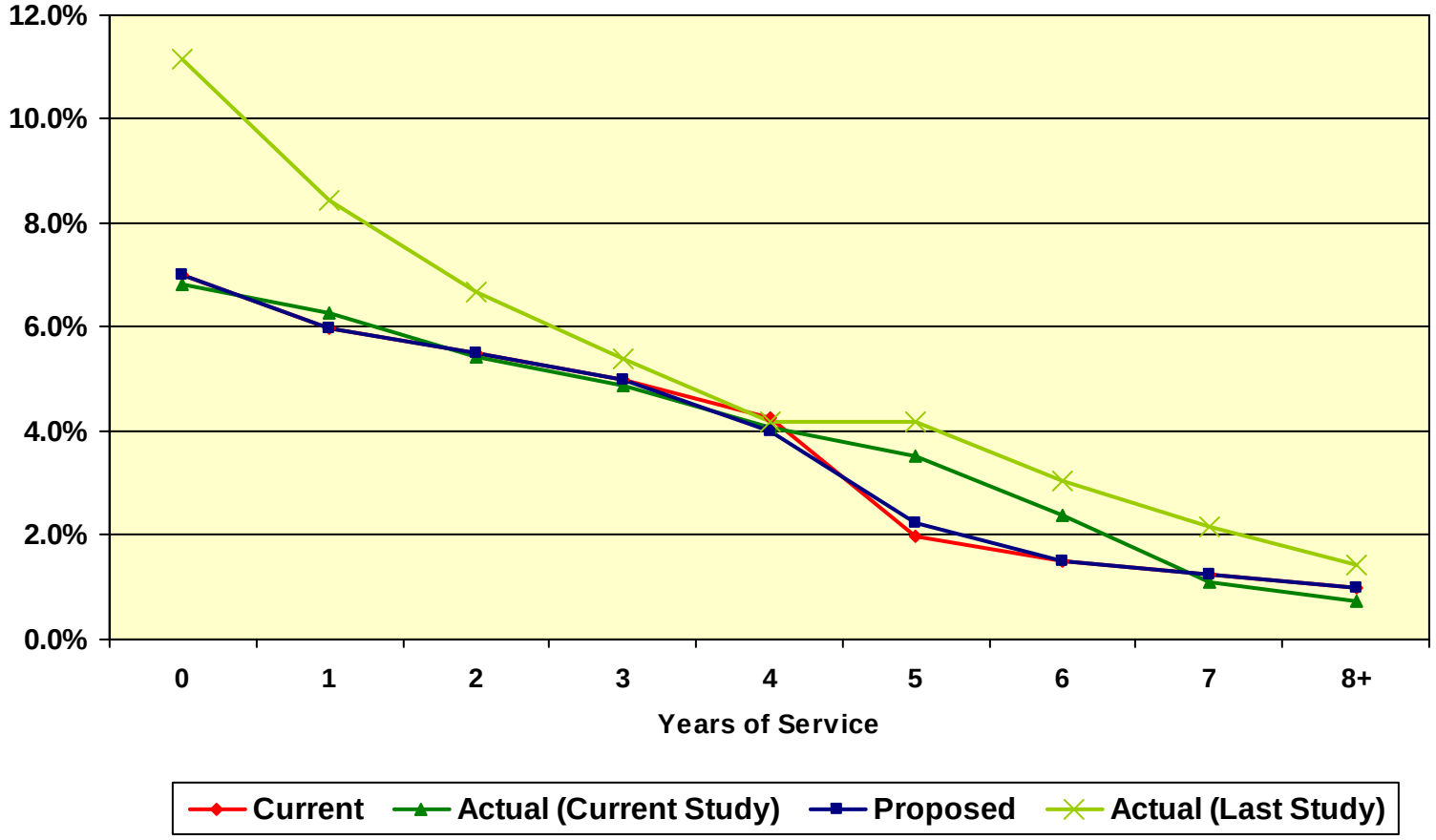
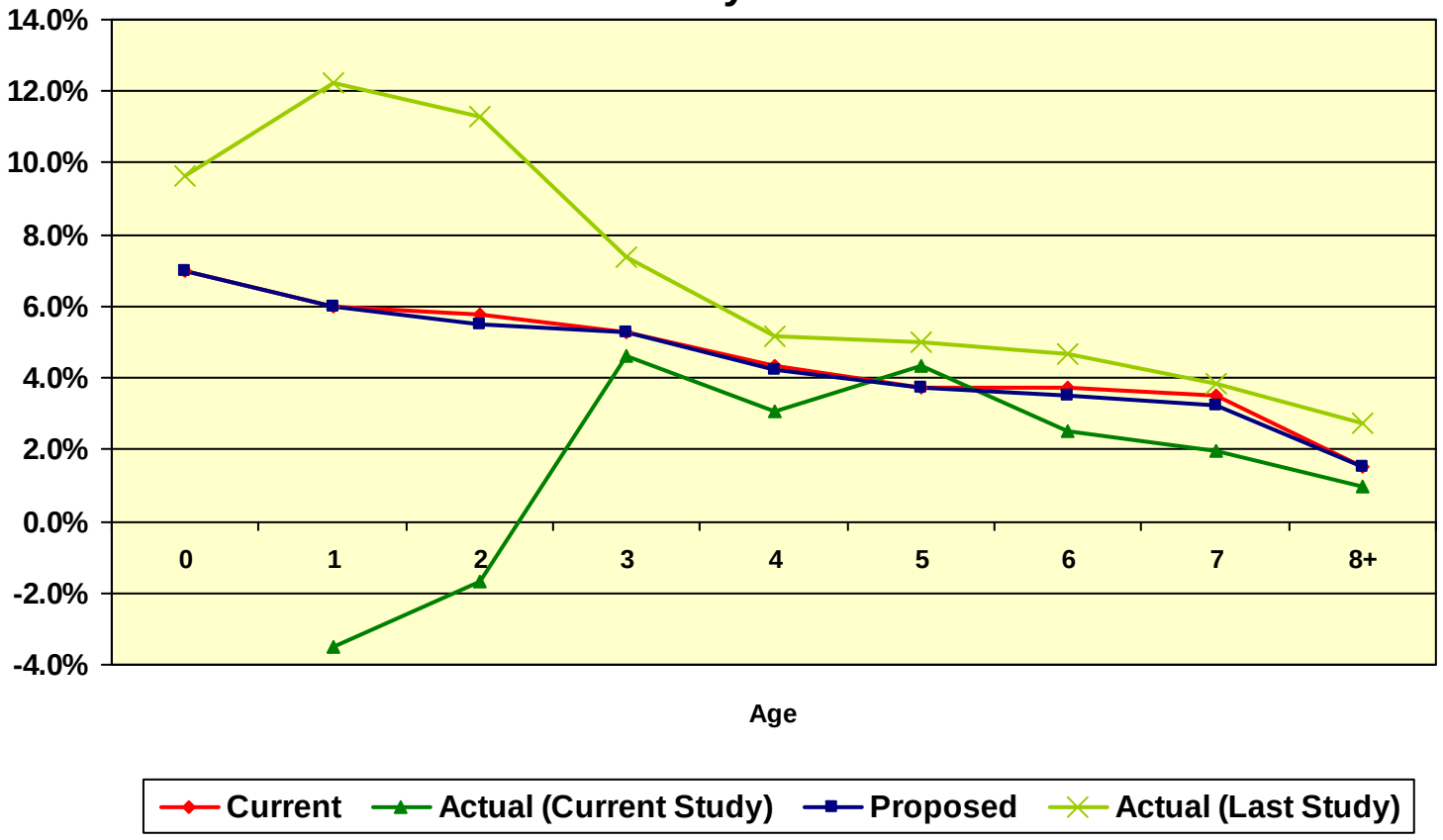


Chart 24
Merit and Promotional Salary Increase Rates for Safety Members



H. ANNUAL LEAVE CONVERSION

At retirement, members can convert their unused annual leave to increase the service credit used in the calculation of their retirement benefit. The actuarial valuation anticipates this additional benefit using an assumption to estimate the number of hours of annual leave that will be converted at retirement.

We collected information on the actual amount of annual leave balance for actives as of June 30, 2012. Consistent with the structure of the current assumption, the actual annual leave balance was expressed as a number of hours per year of service.

The tables below show the actual hours of accumulated annual leave available at retirement and the number of active members currently eligible for each plan.

	Number of Members Reported	Current	Actual	Proposed
New Annual Leave Plan (5Y)	150	40.00	36.00	40.00
Annual Leave Plan II (5Y)	307	35.00	27.56	30.00
Vacation/Sick Leave Plan (General: 5Q, 5S and 5W)	54	20.00	35.15	35.00
Vacation/Sick Leave Plan (Safety: 5Q, 5S and 5W)	207	45.00	38.20	40.00

We understand that members in the Annual Leave Plan IV (5P) and Annual Leave Plan V (5N) are allowed to transfer hours to their Time Off Bank (5O). Since the hours in the Time Off Bank are frozen, with the exception of some one-time adjustments, we will continue to assume no future addition to the Time Off Bank hours and a member will only convert his/her frozen Time Off hours to service credit.

APPENDIX A

CURRENT ACTUARIAL ASSUMPTIONS

Mortality Rates:

Healthy: For General Members and all Beneficiaries: RP-2000 Healthy Annuitant Mortality Table, with adjustment for white collar workers set back two years.

For Safety Members: RP-2000 Healthy Annuitant Mortality Table, with adjustment for blue collar workers set back three years.

Disabled: For General Members: RP-2000 Healthy Annuitant Mortality Table, with adjustment for white collar workers set forward four years.

For Safety Members: RP-2000 Healthy Annuitant Mortality Table, with adjustment for white blue collar workers set back three years.

Member Contribution Rates: For General Members: RP-2000 Healthy Annuitant Mortality Table, with adjustment for white collar workers set back two years weighted 35% male and 65% female.

For Safety Members: RP-2000 Healthy Annuitant Mortality Table with adjustment for blue collar workers set back three years weighted 80% male and 20% female.

Termination Rates Before Retirement:

Rate (%)

Mortality

	General[1]		Safety[1]	
Age	**Male**	**Female**	**Male**	**Female**
25	0.04	0.02	0.04	0.02
30	0.04	0.02	0.04	0.02
35	0.05	0.04	0.09	0.04
40	0.08	0.06	0.12	0.06
45	0.11	0.08	0.15	0.11
50	0.17	0.13	0.20	0.16
55	0.27	0.21	0.30	0.22
60	0.45	0.37	0.56	0.34
65	0.85	0.68	1.08	0.68

[1] All pre-retirement deaths are assumed to be non-service connected deaths.

Termination Rates Before Retirement (continued):

Age	Rate (%) Disability		
	General[(1)]		Safety[(2)]
	Male	Female	Male and Female
20	0.01	0.01	0.01
25	0.01	0.02	0.11
30	0.02	0.02	0.24
35	0.03	0.06	0.42
40	0.05	0.10	0.56
45	0.18	0.16	0.66
50	0.28	0.19	0.94
55	0.36	0.26	2.24
60	0.76	0.42	1.20

(1) *One-third of General disabilities are assumed to be duty disabilities. The other two-thirds are assumed to be ordinary disabilities.*

(2) *100% of Safety disabilities are assumed to be duty disabilities.*

Termination Rates Before Retirement (continued):

Rate (%)

Total Termination (< 5 Years of Service)

Years of Service	General		Safety
	Male	Female	Male and Female
0	17.00	17.00	17.00
1	6.00	6.00	4.00
2	6.00	6.00	4.00
3	6.00	6.00	4.00
4	6.00	6.00	4.00

Rate (%)

Total Termination (5+ Years of Service)

Age	General		Safety
	Male	Female	Male and Female
20	6.00	7.50	4.00
25	6.00	7.50	4.00
30	5.40	7.20	3.70
35	4.70	5.80	3.20
40	4.35	4.70	2.70
45	4.10	4.20	1.60
50	3.70	3.70	1.00
55	3.20	3.20	1.00
60	3.00	3.00	0.00

Proportion of Total Termination Assumed to Receive Refunds and Deferred Vested Benefits (%)

Years of Service	Refunds	Deferred Vested Benefits
0-4	90.00	10.00
5-9	30.00	70.00
10-14	30.00	70.00
15-19	30.00	70.00
20 or more	30.00	70.00

Retirement Rates:

	Rate (%)				
Age	General Tier 1 Male	General Tier 1 Female	General Tier 2 Male & Female	General Tier 3 Male & Female	General Tier 4 Male & Female
45	0.00	0.00	0.00	0.00	0.00
46	0.00	0.00	0.00	0.00	0.00
47	0.00	0.00	0.00	0.00	0.00
48	0.00	0.00	0.00	0.00	0.00
49	0.00	0.00	0.00	0.00	0.00
50	3.00	4.00	3.00	3.00	2.00
51	3.00	4.00	3.00	3.00	2.00
52	3.00	4.00	3.60	3.60	2.50
53	4.00	4.00	3.60	3.60	2.50
54	4.00	5.00	4.20	4.20	3.00
55	9.00	10.00	8.40	8.40	4.00
56	13.00	12.00	10.00	10.00	5.00
57	17.00	13.00	10.00	10.00	6.00
58	20.00	15.00	10.00	10.00	7.00
59	20.00	16.00	10.00	15.00	8.00
60	30.00	18.00	15.00	19.20	9.00
61	30.00	22.00	15.00	19.20	11.00
62	30.00	25.00	25.00	34.20	17.00
63	30.00	25.00	24.00	23.70	16.00
64	30.00	25.00	24.00	23.70	20.00
65	40.00	35.00	35.00	43.30	25.00
66	50.00	35.00	34.00	33.30	21.00
67	50.00	40.00	34.00	33.30	21.00
68	50.00	45.00	35.00	40.00	25.00
69	50.00	50.00	35.00	46.70	30.00
70	100.00	100.00	100.00	100.00	100.00

Retirement Rates (continued):

	Rate (%)			
Age	General Tier 5 Male & Female	Safety Tiers 1 and 2 Male & Female	Safety Tier 4 Male & Female	Safety Tier 5 Male & Female
45	0.00	1.00	1.00	0.00
46	0.00	1.00	1.00	0.00
47	0.00	1.00	1.00	0.00
48	0.00	1.00	1.00	0.00
49	0.00	3.00	2.00	0.00
50	0.00	5.00	4.00	4.00
51	0.00	5.00	4.00	4.00
52	4.50	8.00	5.00	5.00
53	2.00	15.00	6.00	6.00
54	2.50	25.00	11.00	11.00
55	3.50	35.00	20.00	20.00
56	4.50	25.00	20.00	20.00
57	5.50	25.00	20.00	20.00
58	6.50	25.00	20.00	20.00
59	7.50	30.00	23.00	23.00
60	8.50	100.00	56.00	56.00
61	10.50	100.00	58.00	58.00
62	16.00	100.00	62.00	62.00
63	15.00	100.00	64.00	64.00
64	19.00	100.00	70.00	70.00
65	24.00	100.00	100.00	100.00
66	21.00	100.00	100.00	100.00
67	21.00	100.00	100.00	100.00
68	25.00	100.00	100.00	100.00
69	30.00	100.00	100.00	100.00
70	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:	For current deferred vested members, we make the following retirement assumption: General: Age 58 Safety: Age 55 We assume that 40% of future General and 60% of future Safety deferred vested members will continue to work for a reciprocal employer. For these members, we assume 5.00% and 5.50% compensation increases per annum for General and Safety members, respectively.
Future Benefit Accruals:	1.0 year of service per year of employment.
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	80% of male members; 55% of female members.
Age of Spouse:	Wives are 3 years younger than their husbands.
Annual Leave Conversion:	The following assumptions for service from unused annual leave balance at retirement are used:
New Annual Leave Plan	40 hours per year of service.
Annual Leave Plan II	35 hours per year of service.
Vacation/Sick Leave Plans	20 hours per year of service for General and 45 hours per year of service for Safety.
Annual Leave IV Plan or the Old Annual Leave Plan	Based on actual hours in a member's frozen time off bank.
Net Investment Return:	7.75%; net of administration and investment expenses.
Employee Contribution Crediting Rate:	3.00%, compounded semi-annually.
Consumer Price Index:	Increase of 3.50% per year, retiree COLA increases due to CPI subject to a 3.00% maximum charge per year for General Tiers 1, 2 and 3 and Safety Tiers 1 and 2. General and Safety Tiers 4 and 5 receive no COLA increases.

Salary Increases:

Annual Rate of Compensation Increase (%)

Inflation: 3.50%; plus "across the board" salary increases of 0.50% per year; plus the following merit and promotional increases.

Service	General	Safety
0	7.00	7.00
1	6.00	6.00
2	5.50	5.75
3	5.00	5.25
4	4.25	4.35
5	2.00	3.75
6	1.50	3.75
7	1.25	3.50
8 or more	1.00	1.50

APPENDIX B

PROPOSED ACTUARIAL ASSUMPTIONS

Mortality Rates:

Healthy: For General Members and all Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with scale AA to 2015, set back one year for males and set back two years for females.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected with scale AA to 2015, set back one year.

Disabled: For General Members: RP-2000 Combined Healthy Mortality Table projected with scale AA to 2015, set forward six years for males and set forward five years for females.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected with scale AA to 2015, set forward one year.

Member Contribution Rates: For General Members: RP-2000 Combined Healthy Mortality Table projected with scale AA to 2015, set back one year for males and set back two years for females weighted 35% male and 65% female.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected with scale AA to 2015, set back one year weighted 80% male and 20% female.

Termination Rates Before Retirement:

	Rate (%) Mortality			
	General[(1)]		Safety[(1)]	
Age	Male	Female	Male	Female
25	0.03	0.02	0.03	0.02
30	0.04	0.02	0.04	0.02
35	0.07	0.03	0.07	0.04
40	0.09	0.05	0.09	0.05
45	0.12	0.07	0.12	0.08
50	0.15	0.11	0.15	0.12
55	0.24	0.18	0.24	0.21
60	0.47	0.36	0.47	0.41
65	0.91	0.71	0.91	0.80

(1) All pre-retirement deaths are assumed to be non-service connected deaths.

Termination Rates Before Retirement (continued):

	Rate (%)		
	Disability		
Age	General[(1)]		Safety[(2)]
	Male	Female	Male and Female
20	0.01	0.01	0.01
25	0.01	0.02	0.11
30	0.02	0.02	0.24
35	0.03	0.06	0.42
40	0.04	0.10	0.62
45	0.17	0.16	0.82
50	0.28	0.19	1.02
55	0.39	0.29	2.24
60	0.78	0.44	3.00
65	1.00	0.50	3.00

(1) *One-third of General disabilities are assumed to be duty disabilities. The other two-thirds are assumed to be ordinary disabilities.*

(2) *100% of Safety disabilities are assumed to be duty disabilities.*

Termination Rates Before Retirement (continued):

Rate (%)

Total Termination (< 5 Years of Service)

Years of Service	General		Safety
	Male	Female	Male and Female
0	17.00	15.00	17.00
1	8.00	7.00	6.00
2	7.00	6.50	5.00
3	6.00	5.00	4.75
4	6.00	5.00	4.50

Rate (%)

Total Termination (5+ Years of Service)

Age	General		Safety
	Male	Female	Male and Female
20	5.50	5.00	3.75
25	5.50	5.00	3.75
30	4.90	5.00	3.30
35	4.20	4.70	2.70
40	3.88	4.20	2.20
45	3.68	3.70	1.40
50	3.54	3.35	1.00
55	3.35	3.10	1.00
60	3.10	3.00	0.40
65	2.10	2.10	0.00

Proportion of Total Termination Assumed to Receive Refunds and Deferred Vested Benefits (%)

Years of Service	Refunds	Deferred Vested Benefits
0-4	90.00	10.00
5-9	30.00	70.00
10-14	30.00	70.00
15-19	15.00	85.00
20 or more	15.00	85.00

Retirement Rates:

Age	General Tier 1 Male	General Tier 1 Female	General Tier 2 Male & Female	General Tier 3 Male & Female	General Tier 4 Male & Female
	Rate (%)				
45	0.00	0.00	0.00	0.00	0.00
46	0.00	0.00	0.00	0.00	0.00
47	0.00	0.00	0.00	0.00	0.00
48	0.00	0.00	0.00	0.00	0.00
49	0.00	0.00	0.00	0.00	0.00
50	4.00	5.00	3.00	3.00	2.00
51	3.00	5.00	3.00	3.00	2.00
52	3.00	5.00	3.60	3.60	2.50
53	4.00	5.00	3.60	3.60	2.50
54	5.00	6.00	4.20	4.20	3.00
55	8.00	9.00	8.40	8.40	4.00
56	11.00	12.00	10.00	10.00	5.00
57	16.00	14.00	10.00	10.00	6.00
58	21.00	15.00	10.00	10.00	7.00
59	22.00	18.00	10.00	15.00	8.00
60	25.00	19.00	15.00	19.20	9.00
61	25.00	23.00	15.00	19.20	11.00
62	27.00	27.00	25.00	34.20	17.00
63	27.00	25.00	24.00	23.70	16.00
64	30.00	27.00	24.00	23.70	20.00
65	40.00	40.00	35.00	43.30	25.00
66	50.00	40.00	34.00	33.30	21.00
67	50.00	40.00	34.00	33.30	21.00
68	50.00	45.00	35.00	40.00	25.00
69	50.00	50.00	35.00	46.70	30.00
70	100.00	100.00	100.00	100.00	100.00

Retirement Rates (continued):

	Rate (%)			
Age	General Tier 5 Male & Female	Safety Tiers 1 and 2 Male & Female	Safety Tier 4 Male & Female	Safety Tier 5 Male & Female
45	0.00	1.00	1.00	0.00
46	0.00	1.00	1.00	0.00
47	0.00	1.00	1.00	0.00
48	0.00	1.00	1.00	0.00
49	0.00	3.00	2.00	0.00
50	0.00	6.00	4.00	4.00
51	0.00	6.00	4.00	4.00
52	4.50	9.00	5.00	5.00
53	2.00	18.00	6.00	6.00
54	2.50	30.00	11.00	11.00
55	3.50	40.00	20.00	20.00
56	4.50	25.00	20.00	20.00
57	5.50	25.00	20.00	20.00
58	6.50	25.00	20.00	20.00
59	7.50	25.00	23.00	23.00
60	8.50	50.00	50.00	50.00
61	10.50	50.00	50.00	50.00
62	16.00	50.00	50.00	50.00
63	15.00	50.00	50.00	50.00
64	19.00	50.00	50.00	50.00
65	24.00	100.00	100.00	100.00
66	21.00	100.00	100.00	100.00
67	21.00	100.00	100.00	100.00
68	25.00	100.00	100.00	100.00
69	30.00	100.00	100.00	100.00
70	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:	For current deferred vested members, we make the following retirement assumption: General: Age 58 Safety: Age 55 We assume that 40% of future General and 65% of future Safety deferred vested members will continue to work for a reciprocal employer. For these members, we assume 4.75% and 5.25% compensation increases per annum for General and Safety members, respectively.
Future Benefit Accruals:	1.0 year of service per year of employment.
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married:	75% of male members; 55% of female members.
Age of Spouse:	Wives are 3 years younger than their husbands.
Annual Leave Conversion:	The following assumptions for service from unused annual leave balance at retirement are used:
New Annual Leave Plan	40 hours per year of service.
Annual Leave Plan II	30 hours per year of service.
Vacation/Sick Leave Plans	35 hours per year of service for General and 40 hours per year of service for Safety.
Annual Leave IV Plan or the Old Annual Leave Plan	Based on actual hours in a member's frozen time off bank.
Net Investment Return:	7.50%; net of administration and investment expenses.
Employee Contribution Crediting Rate:	3.00%, compounded semi-annually.
Consumer Price Index:	Increase of 3.25% per year, retiree COLA increases due to CPI subject to a 3.00% maximum charge per year for General Tiers 1, 2 and 3 and Safety Tiers 1 and 2. General and Safety Tiers 4 and 5 receive no COLA increases.

Salary Increases:

Annual Rate of Compensation Increase (%)		
Inflation: 3.25%; plus "across the board" salary increases of 0.50% per year; plus the following merit and promotional increases.		
Service	**General**	**Safety**
0	7.00	7.00
1	6.00	6.00
2	5.50	5.50
3	5.00	5.25
4	4.00	4.25
5	2.25	3.75
6	1.50	3.50
7	1.25	3.25
8 or more	1.00	1.50

FRESNO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

Review of Economic Actuarial Assumptions for the June 30, 2013 Actuarial Valuation

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San Francisco, CA 94104

AUGUST 2013

SEGAL

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August 9, 2013

Board of Retirement
Fresno County Employees' Retirement Association
1111 H Street
Fresno, CA 93721

Re: Review of Economic Actuarial Assumptions for the June 30, 2013 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit this report of our review of the June 30, 2013 economic actuarial assumptions for the Fresno County Employees' Retirement Association. This report includes our recommendations and the analysis supporting their development.

Please note that we have also reviewed the non-economic actuarial experience for the three-year period from July 1, 2009 to June 30, 2012. Based on that review, the results and the associated assumptions recommended for the June 30, 2013 valuation are provided in a separate report.

We are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

We look forward to reviewing this report with you and answering any questions you may have.

Sincerely,

Paul Angelo, FSA, EA, MAAA, FCA
Senior Vice President and Actuary

Andy Yeung, ASA, EA, MAAA
Vice President and Associate Actuary

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I. INTRODUCTION, SUMMARY, AND RECOMMENDATIONS

To project the cost and liabilities of the Pension Fund, assumptions are made about all future events that could affect the amount and timing of the benefits to be paid and the assets to be accumulated. Each year actual experience is compared against the projected experience, and to the extent there are differences, the future contribution requirement is adjusted.

If assumptions are changed, contribution requirements are adjusted to take into account a change in the projected experience in all future years. There is a great difference in both philosophy and cost impact between recognizing the actuarial deviations as they occur annually and changing the actuarial assumptions. Taking into account one year's gains or losses without making a change in the assumptions in effect assumes that experience was temporary and that, over the long run, experience will return to what was originally assumed. Changing assumptions reflects a basic change in thinking about the future, and it has a much greater effect on the current contribution requirements than recognizing gains or losses as they occur.

The use of realistic actuarial assumptions is important to maintain adequate funding, while fulfilling benefit commitments to participants already retired and to those near retirement. The actuarial assumptions do not determine the "actual cost" of the plan. The actual cost is determined solely by the benefits and administrative expenses paid out, offset by investment income received. However, it is desirable to estimate as closely as possible what the actual cost will be so as to permit an orderly method for setting aside contributions today to provide benefits in the future, and to maintain equity among generations of participants and taxpayers.

This study was undertaken in order to review the economic actuarial assumptions. The study was performed in accordance with Actuarial Standard of Practice (ASOP) No. 27, "Selection of Economic Assumptions for Measuring Pension Obligations." This Standard of Practice puts forth guidelines for the selection of the economic actuarial assumptions utilized in a pension plan actuarial valuation.

We are recommending changes in the assumptions for investment return and inflation. Our recommendations for the economic actuarial assumptions for the June 30, 2013 Actuarial Valuation are as follows:

Inflation – Future increases in the Consumer Price Index (CPI) which drive investment returns and active member salary increases, as well as COLA increases to retired employees.

Recommendation: Reduce the current inflation assumption from 3.50% per annum to 3.25% per annum.

Investment Return – The estimated average future net rate of return on current and future assets of the Association as of the valuation date. This rate is used to discount liabilities.

Recommendation: Reduce the current investment return assumption from 7.75% per annum to 7.50% per annum. As the 7.50% recommendation would result in a significant decrease in the margin for adverse deviation under the risk-adjusted model used by Segal to evaluate this assumption, we are also making an alternative recommendation for a 7.25% assumption that is more consistent with the practice followed in the last review of this assumption, for the June 30, 2010 valuation.

Individual Salary Increases – Increases in the salary of a member between the date of the valuation and the date of separation from active service. This assumption has three components:

- Inflationary salary increases,
- Real "across the board" salary increases, and
- Merit and promotional increases.

Recommendation: Reduce the current inflationary salary increase assumption from 3.50% per annum to 3.25% per annum consistent with our recommended general inflation assumption and maintain the real "across the board" salary increase assumption at 0.50%. This means that the combined inflationary and real "across the

board" salary increases will decrease from 4.00% to 3.75% per annum. The review of the merit and promotional increase assumptions is provided in the triennial non-economic actuarial experience study report as of June 30, 2012.

Section II provides some background on basic principles and the methodology used for the review of the economic actuarial assumptions. A detailed discussion of each of the economic assumptions and reasons behind the recommendations is found in Section III.

II. BACKGROUND AND METHODOLOGY

In this report, we analyzed the "economic" assumptions only. The "non-economic" assumptions were reviewed as part of the June 30, 2012 triennial non-economic actuarial experience study report. The primary economic assumptions reviewed are inflation, investment return and salary increases.

Economic Assumptions

Economic assumptions consist of:

Inflation – Increases in the price of goods and services. The inflation assumption reflects the basic return that investors expect from securities markets. It also reflects the expected basic salary increase for active employees and drives increases in the allowances of retired members.

Investment Return – Expected long term rate of return on the Association's investments after expenses. This assumption has a significant impact on contribution rates.

Salary Increases – In addition to inflationary increases, it is assumed that salaries will also grow by "across the board" real pay increases in excess of price inflation. It is also assumed that employees will receive raises above these average increases as they advance in their careers. These are commonly referred to as merit and promotional increases. Payments to amortize any Unfunded Actuarial Accrued Liability (UAAL) are assumed to increase each year by the price inflation rate plus any "across the board" pay increases that are assumed.

The setting of these assumptions is described in Section III.

III. ECONOMIC ASSUMPTIONS

A. INFLATION

Unless an investment grows at least as fast as prices increase, investors will experience a reduction in the inflation-adjusted value of their investment. There may be times when "riskless" investments return more or less than inflation, but over the long term, investment market forces will generally require an issuer of fixed income securities to maintain a minimum return which protects investors from inflation.

The inflation assumption is long term in nature, so it is set using primarily historical information. Following is an analysis of 15-year and 30-year moving averages of historical inflation rates:

Historical Consumer Price Index – 1930 to 2012

(U.S. City Average - All Urban Consumers)

	25th Percentile	Median	75th Percentile
15-year moving averages	2.6%	3.4%	4.8%
30-year moving averages	3.2%	4.2%	4.9%

The average inflation rates have continued to decline gradually over the last several years due to the relatively low inflationary period over the past two decades. Also, the later of the 15-year averages during the period are lower as they do not include the high inflation years of the mid-1970s and early 1980s.

In the 2011 public fund survey published by the National Association of State Retirement Administrators, the median inflation assumption used by 126 large public retirement funds in their 2010 valuations has decreased to 3.25% from the 3.50% used in the 2009 valuations. In California, CalPERS and LACERA have recently reduced their inflation assumptions to 2.75% and 3.25%, respectively.

FCERA's investment consultant, Wurts & Associates, anticipates an annual inflation rate of 2.60%. Note that, in general, investment consultants use a time horizon for this assumption that is shorter than the time horizon we use for the actuarial valuation.

To find a forecast of inflation based on a longer time horizon, we referred to the 2013 report on the financial status of the Social Security program. The projected average increase in the Consumer Price Index (CPI) over the next 75 years under the intermediate cost assumptions used in that report was 2.80%. We also compared the yields on the thirty-year inflation indexed U. S. Treasury bonds to comparable traditional U. S. Treasury bonds. As of May 2013, the difference in yields is 2.39%, which provides a measure of market expectations of inflation.

Based on all of the above information, we recommend that the current 3.50% annual inflation assumption be reduced to 3.25% for the June 30, 2013 actuarial valuation.

Retiree Cost-of-Living Increases

In our last review of the economic assumptions as of June 30, 2010, consistent with the 3.50% annual inflation assumption adopted by the Board for that valuation, the Board adopted a 3.00% retiree cost-of-living adjustment for all General and Safety tiers that provide a statutory COLA.

We are recommending that the current retiree cost-of-living assumption (i.e., 3.00% per year) be continued in the June 30, 2013 valuation for those tiers that provide a statutory COLA.

Note that in developing the COLA assumption, we also considered the results of a stochastic approach that would attempt to account for the possible impact of low inflation that could occur before COLA banks are able to be established for the member. Although the results of this type of analysis might justify the use of a lower COLA assumption, we are not recommending that at this time. The reasons for this conclusion include the following:

- The results of the stochastic modeling are significantly dependent on assuming that lower levels of inflation will persist in the early years of the projections. If this is not assumed, then the stochastic modeling will produce results similar to our proposed COLA assumption.

- Using a lower long-term COLA assumption based on a stochastic analysis would mean that an actuarial loss would occur even when the inflation assumption of 3.25% is met in a year. We question the reasonableness of this result.

We do not see the stochastic possibility of COLAs averaging less than those predicted by the assumed rate of inflation as a reliable source of cost savings that should be anticipated in our COLA assumption. Therefore, we continue to recommend setting the COLA assumption based on the long-term annual inflation assumption, as we have in prior years.

B. INVESTMENT RETURN

The investment return assumption is comprised of two primary components, inflation and real rate of investment return, with adjustments for expenses and risk.

Real Rate of Investment Return

This component represents the portfolio's incremental investment market returns over inflation. Theory has it that as an investor takes a greater investment risk, the return on the investment is expected to also be greater, at least in the long run. This additional return is expected to vary by asset class and empirical data supports that expectation. For that reason, the real rate of return assumptions are developed by asset class. Therefore, the real rate of return assumption for a retirement association's portfolio will vary with the Board's asset allocation among asset classes.

Following is the Association's current target asset allocation and the assumed real rate of return assumptions by asset class. The first column of real rate of return assumptions are determined by netting Wurts' total 2013 return assumptions by their assumed 2.60% inflation rate. The second column of returns (except for Hedge Funds and Private Equity) represents the average of a sample of real rate of return assumptions. The sample includes the expected annual real rates of return provided to us by Wurts and by eight other investment advisory firms retained by Segal's California public sector retirement clients. We believe these averages are a reasonable forecast of long term future market returns.[1]

[1] Note that, just as for the inflation assumption, in general the time horizon used by the investment consultants in determining the real rate of return assumptions is shorter than the time horizon we use for the actuarial valuation.

FCERA's Target Asset Allocation and Assumed Arithmetic Real Rate of Return Assumptions by Asset Class and for the Portfolio

Asset Class	Percentage of Portfolio	Wurts' Assumed Real Rate of Return[(1)]	Average Real Rate of Return from a Sample of Consultants to Segal's Public Sector Clients[(2)]
Large Cap U.S. Equity	24%	5.11%	6.10%
Small Cap U.S. Equity	5%	6.53%	6.88%
Developed International Equity	19%	7.45%	6.87%
Emerging Markets Equity	5%	10.81%	8.22%
U.S. Core Fixed Income	19%	-0.53%	0.63%
TIPS	4%	-0.29%	-0.11%
Emerging Market Debt	3%	3.74%	3.85%
Real Estate	6%	3.59%	4.93%
Commodities	4%	3.08%	3.93%
Hedge Funds	4%	3.46%	3.46%[(3)]
Private Equity	7%	12.68%	12.68%[(3)]
Total Portfolio	100%	4.87%	5.23%

(1) *Derived by reducing Wurts' total rate of return assumptions by their assumed 2.60% inflation rate.*

(2) *These are based on the projected arithmetic returns provided by the investment advisory firms serving the county retirement associations of Fresno, Sonoma, Sacramento, Contra Costa, Mendocino, the City of Fresno Retirement Systems, the LA City Employees' Retirement System, the Los Angeles Department of Water and Power Retirement Plan and the LA Fire & Police Pensions. These return assumptions are gross of any applicable investment expenses.*

(3) *For these asset classes, the Wurts' assumption is applied in lieu of the average because there is a larger disparity in returns for these asset classes among firms surveyed and because using Wurts' assumption should more closely reflect the underlying investments made specifically for FCERA.*

Please note that the above are representative of "indexed" returns and do not include any additional returns ("alpha") from active management. This is consistent with the Actuarial Standard of Practice No. 27, Section 3.6.3.e, which states:

> "Investment Manager Performance - Anticipating superior (or inferior) investment manager performance may be unduly optimistic (pessimistic). Few investment managers consistently achieve significant above-market returns net of expenses over long periods."

The following are some observations about the returns provided above:

1. The investment consultants to our California public sector clients have each provided us with their expected real rates of return for each asset class, over various future periods of time. However, in general, the returns available from investment consultants are projected over time periods shorter than the duration of a retirement plan's liabilities.

2. Using a sample average of expected real rates of return allows the Association's investment return assumption to reflect a broader range of capital market information and should help reduce year to year volatility in the Association's investment return assumption.

3. Therefore, we recommend that the 5.23% portfolio real rate of return be used to determine the Association's investment return assumption. This is 0.62% lower than the return that was used three years ago to prepare the recommended investment return assumption for the June 30, 2010 valuation. This difference is primarily due to lower expected real returns by asset classes provided to us by the investment advisory firms.

Association Expenses

The real rate of return assumption for the portfolio needs to be adjusted for administrative and investment expenses expected to be paid from investment income.

The following table provides these expenses in relation to the actuarial value of assets for the five years ending June 30, 2012.

Administrative and Investment Expenses as a Percentage of Actuarial Value of Assets
(All dollars in 000's)

FYE	Actuarial Value of Assets[(1)]	Administrative and Other Expenses	Investment Expenses	Administrative %	Investment %	Total %
2008	$2,942,900	$3,569	$13,191	0.12	0.45	0.57
2009	2,940,486	3,855	10,092	0.13	0.34	0.47
2010	3,028,181	3,570	12,724	0.12	0.42	0.54
2011	3,151,541	4,108	14,934	0.13	0.47	0.60
2012	3,333,856	3,598	14,817	0.11	0.44	0.55
			Average	0.12%	0.43%	0.55%

(1) *As of the beginning of the plan year.*

(2) *Excludes securities lending expenses. Because we do not assume any additional net return for this program, we effectively assume that any securities lending expenses will be offset by related income.*

The average expenses percentage over this five-year period is 0.55%. Based on this experience, we believe a future expense assumption of 0.55% is reasonable. This is the same as the 0.55% assumption used in our last review and will be re-examined in future studies as new data becomes available.

Adjustment to Exclude Administrative Expenses in Developing Investment Return Assumption for use in GASB Financial Reporting

GASB has recently adopted Statements 67 and 68 that replace Statements 25 and 27 for financial reporting purposes. GASB Statements 67 and 68 are effective for plan year 2013/2014 for the Retirement Association and fiscal year 2014/2015 for the employer.[2]

According to GASB, the investment return assumption for use in the financial reporting purposes should be based on the long-term expected rate of return on a retirement system's investments and should be net of investment expenses but not of administrative expenses (i.e., without reduction for administrative expenses). As can be observed from the above

[2] The new Statements (67 and 68) will require more rapid recognition for investment gains or losses and much shorter amortization for actuarial gains or losses. Because of the more rapid recognition of those changes, retirement systems that have generally utilized the previous Statements (25 and 27) as a guideline to establish the employer's contribution amounts for both funding and financial reporting purposes would now have to prepare two sets of cost results, one for contributions and one for financial reporting under the new Statements.

development of the expense assumption, if the Board would wish to develop a single investment return assumption for both funding and financial reporting purposes, then it would be necessary to exclude the roughly 0.12% administrative expense from the above development and to develop a separate treatment of administrative expenses.

However, there are some complications associated with eliminating the administrative expense in developing the investment return assumption used for funding:

1. Even though GASB requires the exclusion of the administrative expense from the investment return assumption, such expense would continue to accrue for a retirement system. For private sector retirement plans, where the investment return is developed using an approach similar to that required by GASB (i.e., without deducting administrative expenses), contribution requirements are increased explicitly by the anticipated annual administrative expense.

2. Under the current approach of subtracting the administrative expense in the development of the investment return assumption, such annual administrative expense is accounted for implicitly by many public sector retirement systems by effectively deducting it from future expected investment returns.

   Since an investment return assumption net of investment and administrative expenses has been used historically to establish both the employer's and the employee's contribution requirements, such expense has been paid for implicitly by both the employer and the employees.

3. A switch from the method described in (2) to the method described in (1) may require a new discussion on how to allocate administrative expenses between employers and employees, including possibly establishing a new method to allocate the anticipated annual administrative expense between them.

4. As the Board may be aware, legislative changes under AB 340 impose major modifications to both the level of benefits and the funding of those benefits for

county employees' retirement systems. Included in such modifications is the requirement to fund the Normal Cost on a 50:50 basis between the employer and the employee.

Based on all these considerations, it is our recommendation that a decision to adopt a single investment return assumption for both funding and financial reporting purposes be deferred until more analysis can be performed on the allocation of administrative expense. For that reason, this report continues to treat administrative expenses as an offset to future expected investment returns.

Risk Adjustment

The real rate of return assumption for the portfolio is adjusted to reflect the potential risk of shortfalls in the return assumptions. The Association's asset allocation determines this portfolio risk, since risk levels are driven by the variability of returns for the various asset classes and the correlation of returns among those asset classes. This portfolio risk is incorporated into the real rate of return assumption through a risk adjustment.

The purpose of the risk adjustment (as measured by the corresponding confidence level) is to increase the likelihood of achieving the actuarial investment return assumption in the long term.[3] The 5.23% expected real rate of return developed earlier in this report was based on expected mean or average arithmetic returns. This means there is a 50% chance of the actual return in each year being at least as great as the average (assuming a symmetrical distribution of future returns). The risk adjustment is intended to increase that probability. This is consistent with our experience that retirement plan fiduciaries would generally prefer that returns exceed the assumed rate more often than not.

Three years ago, the Board adopted an investment return assumption of 7.75%. That return implied a risk adjustment of 1.05%, reflecting a confidence level of 64% that the actual

[3] This type of risk adjustment is sometimes referred to as a "margin for adverse deviation".

average return over 15 years would not fall below the assumed return, assuming that the distribution of returns over that period follows the normal statistical distribution.[4]

In our model, the confidence level associated with a particular risk adjustment represents the likelihood that the actual average return would equal or exceed the assumed value over a 15-year period. For example, if we set our real rate of return assumption using a risk adjustment that produces a confidence level of 60%, then there would be a 60% chance (6 out of 10) that the average return over 15 years will be equal to or greater than the assumed value. The 15-year time horizon represents an approximation of the "duration" of the fund's liabilities, where the duration of a liability represents the sensitivity of that liability to interest rate variations.

If we use the same 64% confidence level to set this year's risk adjustment, based on the current long-term portfolio standard deviation of 10.80% provided by Wurts, the corresponding risk adjustment would be 1.05%. Together with the other investment return components, this would result in an investment return assumption of 6.88%, which is substantially lower than the current assumption of 7.75%.

Because this would be such a substantial change in this long-term assumption, we evaluated the effect on the confidence level of alternative investment return assumptions. In particular, a net investment return assumption of 7.50%, together with the other investment return components, would produce a risk adjustment of 0.43%, which corresponds to a confidence level of 56%. However, because there is no "correct" confidence level and because we believe that the use and the level of a risk adjustment are matters for the Board to evaluate and decide, we are also making a recommendation for a 7.25% assumption. A net investment return assumption of 7.25%, together with the other investment return components, would produce a risk adjustment of 0.68% which corresponds to a confidence level of 59%.

[4] Based on an annual portfolio return standard deviation of 10.77% provided by Wurts in 2010. Strictly speaking, future compounded long-term investment returns will tend to follow a log-normal distribution. However, we believe the Normal distribution assumption is reasonable for purposes of setting this type of risk adjustment.

The table below shows FCERA's investment return assumptions and for the years when this analysis was performed, the risk adjustments and corresponding confidence levels compared to the values for prior studies.

Historical Investment Return Assumptions, Risk Adjustments and Confidence Levels Based on Assumptions Adopted by the Board

Year Ending June 30	Investment Return	Risk Adjustment	Corresponding Confidence Level
2006	8.16%	1.25%	66%
2007	8.00%	1.16%	65%
2008	8.00%	N/A	N/A
2009	8.00%	N/A	N/A
2010	7.75%	1.05%	64%
2011	7.75%	N/A	N/A
2012	7.75%	N/A	N/A
2013 (recommended)	7.50%	0.43%	56%
2013 (alternative)	7.25%	0.68%	59%

As we have discussed in prior years, the risk adjustment model and associated confidence level is most useful as a means for comparing how the Association has positioned itself over periods of time.[5] The use of either a 56% or 59% confidence level should be considered in context with other factors, including:

1. As noted above, the confidence level is more of a relative measure than an absolute measure, and so can be reevaluated and reset for future comparisons.

2. The confidence level is based on the standard deviation of the portfolio that is determined and provided to us by Wurts. The standard deviation is a statistical measure of the future volatility of the portfolio and so is itself based on

[5] In particular, it would not be appropriate to use this type of risk adjustment as a measure of determining an investment return rate that is "risk-free."

assumptions about future portfolio volatility and can be considered somewhat of a "soft" number.

3. A lower level of inflation should reduce the overall risk of failing to meet the investment return assumption. Lowering the confidence level to some extent could be justified as consistent with the change in the inflation assumption.

4. A confidence level of 56% (which is associated with a 7.50% investment return assumption) is still above the middle of the range of about 50% to 60% that corresponds to the risk adjustments used by most of Segal's other California public retirement system clients. Most public retirement systems that have recently reviewed their investment return assumptions have considered adopting more conservative investment return assumptions for their valuations, mainly to maintain the likelihood that future actual market return will meet or exceed the investment return assumption. While this may provide argument for a confidence level of 59% (which is associated with a 7.25% investment return assumption), we would also note that a 0.50% reduction in the investment return assumption is a significant reduction in a long-term assumption.

5. As with any model, the results of the risk adjustment model should be evaluated for reasonableness and consistency. One measure of reasonableness is discussed in the following section that presents a comparison with assumptions adopted by similarly situated public sector retirement sections.

Taking into account the factors above, our recommendation is to reduce the net investment return assumption from 7.75% to 7.50%. As noted above, this return implies a risk adjustment of 0.43%, reflecting a confidence level of 56% that the actual average return over 15 years would not fall below the assumed return. Since a 56% confidence level is a substantially smaller confidence level when compared to a confidence level in the range of 64% to 66% used by the Board during our tenure as actuary for the Retirement Association, the Board should also consider our alternative recommendation of 7.25% with its associated confidence level of 59%.

Recommended Investment Return Assumption

The following table summarizes the components of the investment return assumption developed in the previous discussion. For comparison purposes, we have also included similar values from the last study.

Calculation of Net Investment Return Assumption

Assumption Component	June 30, 2013 Recommended Value	June 30, 2013 Alternative Recommendation	June 30, 2010 Adopted Value
Inflation	3.25%	3.25%	3.50%
Plus Portfolio Real Rate of Return	5.23%	5.23%	5.85%
Minus Expense Adjustment	(0.55%)	(0.55%)	(0.55%)
Minus Risk Adjustment	(0.43%)	(0.68%)	(1.05%)
Total	7.50%	7.25%	7.75%
Confidence Level	56%	59%	64%

Based on this calculation, we recommend that the investment return assumption be decreased from 7.75% to 7.50% per annum with an alternative recommendation for a 7.25% assumption should the Board decide to maintain the confidence level associated with this assumption at a level more consistent with the prior practice.

Comparing with Other Public Retirement Systems

One final test of the recommended investment return assumption is to compare it against those used by other public retirement systems, both in California and nationwide.

We note that a 7.50% investment return assumption is emerging as the common assumption among those California public sector retirement systems that have studied this assumption recently. In particular two of the largest California systems, CalPERS and

LACERA, recently adopted a 7.50% earnings assumption.[6] Note that CalPERS uses a lower inflation assumption of 2.75% while LACERA uses an inflation assumption of 3.25%.

The following table compares the FCERA recommended net investment return assumptions against those of the nationwide public retirement systems that participated in the National Association of State Retirement Administrators (NASRA) 2011 Public Fund Survey:

Assumption	**FCERA**	**NASRA 2011 Public Fund Survey**		
		Low	Median	High
Net Investment Return	7.50%	7.00%	8.00%	8.50%

The detailed survey results show that of the systems that have an investment return assumption in the range of 7.50% to 7.90%, over a third of those systems have used an assumption of 7.50%. The survey also notes that several plans have reduced their investment return assumption during the last year, and others are considering doing so. State systems outside of California tend to change their economic assumptions slowly and so may lag behind emerging practices in this area.

While the recommended assumption of 7.50% provides for a substantially lower confidence level within the risk adjustment model, it is consistent with the Association's current practice relative to other public systems.

[6] The approach adopted by LACERA was to phase in the reduction from their current 7.75% assumption to their 7.50% over a three-year period.

C. SALARY INCREASE

Salary increases impact plan costs in two ways: (i) by increasing members' benefits (since benefits are a function of the members' highest average pay) and future normal cost collections; and (ii) by increasing total active member payroll which in turn generates lower UAAL contribution rates. These two impacts are discussed separately below.

As an employee progresses through his or her career, increases in pay are expected to come from three sources:

1. Inflation – Unless pay grows at least as fast as consumer prices grow, employees will experience a reduction in their standard of living. There may be times when pay increases lag or exceed inflation, but over the long term, labor market forces will require an employer to maintain its employees' standards of living.

   As discussed earlier in this report, we are recommending that the assumed rate of inflation be reduced from 3.50% per annum to 3.25% per annum. This inflation component is used as part of the salary increase assumption.

2. Real "Across the Board" Pay Increases – These increases are sometimes termed productivity increases since they are considered to be derived from the ability of an organization or an economy to produce goods and services in a more efficient manner. As that occurs, at least some portion of the value of these improvements can provide a source for pay increases. These increases are typically assumed to extend to all employees "across the board." The State and Local Government Workers Employment Cost Index produced by the Department of Labor provides evidence that real "across the board" pay increases have averaged about 0.50% - 0.75% annually during the last ten to twenty years.

   We also referred to the annual report on the financial status of the Social Security program published in May 2013. In that report, real "across the board" pay increases are forecast to be 1.1% per year under the intermediate assumptions.

The real pay increase assumption is generally considered a more "macroeconomic" assumption, that is not necessarily based on individual plan experience. However, we note that the actual average inflation plus "across the board" increase (i.e., wage inflation) over the past five years was 1.2%. Note that there was a large reduction in average salary observed for the June 30, 2012 valuation. For informational purposes, if we exclude the experience from the June 30, 2012 valuation, the actual average wage inflation over the four-year period was 3.3%.

Valuation Date	Actual Average Increase[(1)]	Actual Change in CPI[(2)]
June 30, 2008	5.74%	3.49%
June 30, 2009	4.11%	-0.38%
June 30, 2010	3.19%	1.09%
June 30, 2011	0.22%	2.84%
June 30, 2012	-7.19%	2.15%
Average	1.21%	1.84%
Average (excluding June 30, 2012)	3.32%	1.76%

(1) *Reflects the increase in average salary for members at the beginning of the year versus those at the end of the year. It does not reflect the average salary increases received by members who worked the full year.*

(2) *Based on the change in the annual average CPI for the Western Region compared to the prior year.*

Considering these factors, we recommend maintaining the real "across the board" salary increase assumption at 0.50%. This means that the combined inflation and "across the board" salary increase assumption will decrease from 4.00% to 3.75%.

3. Merit and Promotional Increases – As the name implies, these increases come from an employee's career advances. This form of pay increase differs from the previous two, since it is specific to the individual. For FCERA, there are service-specific merit and promotional increases. These assumptions have been reviewed as part of our triennial experience study as of June 30, 2012.

Recommended promotional and merit assumptions are provided as part of our triennial experience study as of June 30, 2012.

All three of these forces are incorporated into a salary increase assumption that is applied in the actuarial valuation to project future benefits and future normal cost contribution collections.

Active Member Payroll

Projected active member payrolls are used to develop the UAAL contribution rate. Future values are determined as a product of the number of employees in the workforce and the average pay for all employees. The average pay for all employees is assumed to increase only by inflation and real "across the board" pay increases. The merit and promotional increases are not an influence, because this average pay is not specific to an individual.

For the June 30, 2013 valuation, we recommend that the active member payroll increase assumption be reduced from 4.00% to 3.75% annually, consistent with the combined inflation and "across the board" salary increase assumptions.