Contra Costa County Employees' Retirement Association

ACTUARIAL EXPERIENCE STUDY

Analysis of Actuarial Experience During the Period January 1, 2010 through December 31, 2012

SEGAL

THE SEGAL COMPANY
100 Montgomery Street Suite 500 San Francisco, CA 94104-4308
T 415.263.8200 F 415.263.8290 www.segalco.com

May 14, 2013

Board of Retirement
Contra Costa County Employees' Retirement Association
1355 Willow Way, Suite 221
Concord, CA 94520

Re: Review of Non-economic Actuarial Assumptions for the December 31, 2012 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit this report of our review of the actuarial experience of the Contra Costa County Employees' Retirement Association. This study utilizes the census data of the last four actuarial valuations to review plan experience during the period from January 1, 2010 through December 31, 2012. The study develops the proposed actuarial assumptions to be used in future actuarial valuations starting with the December 31, 2012 actuarial valuation.

Please note that we have also reviewed the economic assumptions. The economic actuarial assumption recommendations for the December 31, 2012 valuation were provided in a separate report issued on February 19, 2013.

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, EA, MAAA, FCA
Senior Vice President and Actuary

John Monroe, ASA, EA, MAAA
Vice President and Associate Actuary

AW/kek

5228843v1/05337.001

TABLE OF CONTENTS

Page

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 modified, 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 fulfilling benefit commitments 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 January 1, 2010 through December 31, 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 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 are recommending various changes in the current actuarial assumptions.

We are recommending changes in the assumptions for retirement from active employment, deferred vested retirement age, pre-retirement mortality, healthy life mortality, disabled life mortality, turnover, disability (ordinary and duty), promotional and merit salary increases, terminal pay and sick leave conversion.

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

Ref: Pg. 6 **Retirement Rates** - The probability of retirement at each age at which participants are eligible to retire.

Recommendation: For active members, adjust the current retirement rates to those developed in Section III(B). Active members in all tiers are assumed to retire at slightly earlier ages overall.

Ref: Pg. 23 **Mortality Rates** - The probability of dying at each age. Mortality rates are used to project life expectancies.

Recommendation: All pre- and post-retirement mortality rates for General and Safety non-disabled members have been decreased as developed in Section III(C). Mortality rates for General and Safety disabled members have been increased as developed in Section III(D).

Ref: Pg. 37 **Termination Rates** - The probability of leaving employment at each age and receiving either a refund of contributions or a deferred vested retirement benefit.

Recommendation: Change the termination rates for both General and Safety members to those developed in Section III(E). Overall, the termination rates have been decreased.

Ref: Pg. 45 **Disability Incidence Rates** - The probability of becoming disabled at each age.

Recommendation: Decrease the current disability rates for General Tier 1, General Tier 3 and Safety members to those developed in Section III(F).

Ref: Pg. 51 **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: Change the promotional and merit increases to those developed in Section III(G). Overall, future salary increases due to promotional and merit increases are slightly higher under the new assumptions for both General and Safety members.

Ref: Pg. 57 **Terminal Pay** – Additional pay elements that are expected to be received during the member's final average earnings period.

Recommendation: Adjust the current terminal pay assumptions to those developed in Section III(H). Overall, the terminal pay assumptions are slightly higher under the new assumptions.

Ref: Pg. 62 **Service From Unused Sick Leave Conversion** – Additional service that is expected to be received when the member retires due to conversion of unused sick leave.

Recommendation: Adjust the current sick leave conversion assumptions to those developed in Section III(I). The sick leave conversion assumptions have been decreased for Safety non-disabled members and General disabled members.

We have estimated the impact of proposed assumption changes as if they were applied to the December 31, 2011 actuarial valuation. If all of the proposed demographic assumption changes were implemented, the Plan's average employer rate would have increased by 2.28% of compensation. The average member rate would have increased by 0.35% of compensation. Of the various demographic assumption changes, the most significant cost impact is from the healthy mortality assumption change.

The estimated cost impact of the economic assumptions previously adopted by the Board in March were an increase of 5.55% of compensation for the average employer rate and 1.00% of compensation for the average member rate.

Therefore, the estimated cost impact of all proposed assumption changes (both demographic and economic) is 7.83% of compensation for the average employer rate, where the Normal Cost rate increased by 2.39% and the UAAL amortization rate increased by 5.44%. The average member rate would have increased by 1.35% of compensation.

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

II. BACKGROUND AND METHODOLOGY

In this report, we analyzed the "demographic" or "non-economic" assumptions only. Our analysis of the "economic" assumptions for the December 31, 2012 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 promotional and merit 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 currently reviewed every three years at the same time as the non-economic assumptions. See the separate reported titled “Review of Economic Actuarial Assumptions for the December 31, 2012 Actuarial Valuation” that was issued on February 19, 2013.

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 table on the following page shows the observed service retirement rates for General Enhanced Tier 1 members based on the actual experience over the three-year period. The observed service retirement rates were determined by comparing those members who actually retired from service to those eligible to retire from service. This same methodology is followed throughout this report and was described in Section II. Also shown are the current rates assumed and the rates we propose:

General Enhanced Tier 1

Age	Current Rate of Retirement	Actual Rate of Retirement	Proposed Rate of Retirement
Under 50	0.00%	0.00%	0.00%
50	4.00	6.45	5.00
51	4.00	3.17	4.00
52	4.00	10.84	6.00
53	5.00	8.79	6.00
54	10.00	16.36	12.00
55	15.00	31.36	20.00
56	15.00	19.32	20.00
57	17.00	33.33	20.00
58	20.00	25.61	22.00
59	20.00	36.26	25.00
60	20.00	42.19	30.00
61	30.00	37.29	35.00
62	30.00	47.92	35.00
63	30.00	42.11	35.00
64	30.00	43.48	35.00
65	35.00	45.45	40.00
66	35.00	45.45	40.00
67	35.00	55.56	40.00
68	35.00	60.00	40.00
69	35.00	0.00	40.00
70 & Over	100.00	50.00	100.00

As shown above, we are recommending increases in the retirement rates for General Enhanced Tier 1 members.

Chart 1 that follows later in this section compares actual experience with the current and proposed rates of retirement for General Enhanced Tier 1 members.

We observed that there were a significant number of retirements during 2011 and at the end of 2012. This was true for virtually all of CCCERA's tiers. We believe that at least some of this experience was the result of the county-wide pay decreases as well as the passage of AB 197 and may not be representative

of long-term retirement patterns. Our proposed retirement rates account for this by giving relatively less weight to the actual experience.

The following table shows the observed retirement rates for General Enhanced Tier 3 members over the three-year period. Also shown are the current rates assumed and the rates that we propose:

General Enhanced Tier 3

Age	Current Rate of Retirement	Actual Rate of Retirement	Proposed Rate of Retirement
Under 50	0.00%	55.56%	0.00%
50	4.00	4.52	4.00
51	3.00	4.25	3.00
52	3.00	2.92	3.00
53	3.00	7.47	5.00
54	5.00	5.51	5.00
55	10.00	12.99	10.00
56	10.00	9.37	10.00
57	10.00	13.19	10.00
58	10.00	15.54	12.00
59	10.00	20.42	12.00
60	15.00	17.07	15.00
61	17.00	24.73	20.00
62	25.00	30.77	27.00
63	25.00	33.80	27.00
64	27.00	34.32	30.00
65	35.00	45.38	40.00
66	35.00	52.63	40.00
67	35.00	50.00	40.00
68	35.00	42.50	40.00
69	35.00	50.00	40.00
70	40.00	40.74	40.00
71	40.00	29.41	40.00
72	40.00	12.50	40.00
73	40.00	18.18	40.00
74	40.00	40.00	40.00
75 & over	100.00	46.15	100.00

As shown above, we are recommending increases in the retirement rates for General Enhanced Tier 3 members.

Chart 2 compares actual experience with the current and proposed rates of retirement for General Enhanced Tier 3 members.

The following table shows the observed retirement rates for Safety Enhanced Tier A members over the three-year period. Also shown are the current rates assumed and the rates we propose:

Safety Enhanced Tier A

Age	Current Rate of Retirement	Actual Rate of Retirement	Proposed Rate of Retirement
Under 45	0.00%	2.25%	0.00%
45	2.00	5.48	2.00
46	2.00	1.25	2.00
47	2.00	12.20	7.00
48	2.00	14.44	7.00
49	10.00	39.81	20.00
50	25.00	32.38	25.00
51	17.00	37.36	25.00
52	20.00	25.00	25.00
53	20.00	34.33	25.00
54	20.00	37.84	25.00
55	30.00	30.77	30.00
56	25.00	30.43	25.00
57	25.00	23.53	25.00
58	30.00	47.62	35.00
59	30.00	41.67	35.00
60	40.00	53.33	40.00
61	40.00	57.14	40.00
62	40.00	33.33	40.00
63	40.00	0.00	40.00
64	40.00	66.67	40.00
65 & over	100.00	33.33	100.00

We are recommending increases in the retirement rates for Safety Enhanced Tier A members.

Chart 3 compares actual experience with the current and proposed rates of retirement for Safety Enhanced Tier A members.

The following table shows the current rates assumed and the rates we propose for Safety Enhanced Tier C members:

Safety Enhanced Tier C

Age	Current Rate of Retirement	Proposed Rate of Retirement
Under 45	0.00%	0.00%
45	1.00	1.00
46	1.00	1.00
47	1.00	3.00
48	1.00	3.00
49	5.00	10.00
50	15.00	15.00
51	10.00	15.00
52	12.00	15.00
53	12.00	15.00
54	12.00	15.00
55	20.00	20.00
56	15.00	15.00
57	15.00	15.00
58	20.00	25.00
59	20.00	25.00
60	30.00	35.00
61	30.00	35.00
62	30.00	35.00
63	30.00	35.00
64	30.00	35.00
65 & over	100.00	100.00

We recommend increasing retirement rates for some ages for Safety Enhanced Tier C members. There were no actual retirements during this period for members in this tier. We have based our recommended rates on a combination of the current assumption used for Safety Enhanced Tier C and the greater than expected actual retirement experience that occurred for Safety Enhanced Tier A members.

Chart 4 compares the current rates with the proposed rates of retirement for Safety Enhanced Tier C members.

For General members not covered under the enhanced benefit formulas, we are recommending that the current retirement rates be left unchanged. There is only a small group of members covered by the non-enhanced formulas and there is insufficient data to support a modification of the rates.

The following table shows the current and proposed rates as well as the observed rates for General Non-enhanced members:

	General Non-enhanced	
Age	Current and Proposed Rate of Retirement	Actual Rate of Retirement
Under 50	0.00%	0.00%
50	3.00	0.00
51	3.00	0.00
52	3.00	0.00
53	3.00	0.00
54	3.00	0.00
55	10.00	0.00
56	10.00	0.00
57	10.00	0.00
58	10.00	0.00
59	10.00	0.00
60	25.00	0.00
61	15.00	0.00
62	40.00	50.00
63	25.00	50.00
64	30.00	0.00
65	40.00	0.00
66	35.00	0.00
67	35.00	0.00
68	35.00	0.00
69	35.00	0.00
70 & Over	100.00	0.00

.

The following table shows the observed retirement rates for Safety Non-enhanced members. Also shown are the current rates assumed and the rates that we propose:

	Safety Non-enhanced		
Age	Current Rate of Retirement	Actual Rate of Retirement	Proposed Rate of Retirement
Under 50	0.00%	0.00%	0.00%
50	1.00	0.00	5.00
51	1.00	33.33	4.00
52	1.00	0.00	4.00
53	1.00	0.00	5.00
54	1.00	33.33	5.00
55	2.00	50.00	6.00
56	2.00	0.00	8.00
57	3.00	0.00	12.00
58	4.00	100.00	18.00
59	20.00	50.00	20.00
60	17.00	100.00	20.00
61	17.00	0.00	20.00
62	18.00	0.00	20.00
63	20.00	0.00	20.00
64	100.00	0.00	100.00
65 & over	100.00	0.00	100.00

We recommend increasing the retirement rates for Safety Non-enhanced members.

Chart 5 compares the current rates with the proposed rates of retirement for Safety Non-enhanced members.

Note that effective January 1, 2013, new PEPRA formulas were implemented for General and Safety. For these new tiers we do not have any experience from the past three years to propose new rates based on actual retirements from members of those tiers. However, similar to Safety Enhanced Tier C, we have based our recommended rates on a combination of the current assumption and the greater than expected actual retirement experience that occurred for General Tier 3 Enhanced and Safety Tier A Non-enhanced members.

The following are the current and proposed rates of retirement for PEPRA members:

PEPRA General and PEPRA Safety

Rate (%)

Age	Current PEPRA General	Proposed PEPRA General	Current PEPRA Safety	Proposed PEPRA Safety
50	0.00%	0.00%	5.00%	5.00%
51	0.00	0.00	3.00	4.00
52	2.00	2.00	3.00	4.00
53	2.00	3.00	4.00	5.00
54	3.00	3.00	4.00	5.00
55	5.00	5.00	6.00	6.00
56	5.00	5.00	8.00	8.00
57	6.00	6.00	12.00	12.00
58	7.00	8.00	18.00	18.00
59	8.00	9.00	20.00	20.00
60	10.00	10.00	17.00	20.00
61	12.50	14.00	17.00	20.00
62	20.00	21.00	18.00	20.00
63	20.00	21.00	20.00	20.00
64	20.00	21.00	100.00	100.00
65	25.00	27.00	100.00	100.00
66	30.00	33.00	100.00	100.00
67	30.00	33.00	100.00	100.00
68	30.00	33.00	100.00	100.00
69	30.00	33.00	100.00	100.00
70	50.00	50.00	100.00	100.00
71	50.00	50.00	100.00	100.00
72	50.00	50.00	100.00	100.00
73	50.00	50.00	100.00	100.00
74	50.00	50.00	100.00	100.00
75 & Over	100.00	100.00	100.00	100.00

Chart 6 compares the current rates with the proposed rates of retirement for PEPRA General members.

Chart 7 compares the current rates with the proposed rates of retirement for PEPRA Safety 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 59 for General and 53 for Safety. We recommend increasing the General assumption from age 58 to 59 and decreasing the Safety assumption from age 55 to 54.

It was also assumed that 40% of inactive General and 60% of Safety deferred vested members would be covered under a reciprocal retirement system and receive 5.50% salary increases from termination until their date of retirement. Based on the actual experience that 39% of all current General deferred vested members and 66% of all current Safety deferred vested members went on to be covered by a reciprocal retirement system, we recommend keeping the current reciprocal assumption of 40% for General members and 60% for Safety members. Based on our recommended salary increase assumptions, we propose that the 5.50% salary increase assumption, which is used to anticipate salary increases from termination from CCCERA to the expected date of retirement, be reduced to 5.25%.

In prior valuations, it was assumed that 75% of all active male members and 50% of all active female members would be married or have an eligible domestic partner when they retired. We reviewed new retirees during the three-year period and determined the actual percentage of these new retirees that had an eligible spouse or eligible domestic partner at the time of retirement. The results of that analysis are shown below.

New Retirees – Actual Percent with Eligible Spouse or Domestic Partner

Year	Male	Female
2010	78%	51%
2011	80%	57%
2012	71%	56%
Total	76%	55%

According to experience of members who retired during the last three years, about 76% of all male members and 55% of all female members were married or had a domestic partner at retirement. We recommend maintaining this assumption at 75% for male members and 50% for female members.

Since the value of the survivor's benefit is dependent on the survivor's age and sex, we must also have assumptions for the age and sex of the survivor. Based on the experience during the three-year period and studies done for other retirement systems, we believe that it is reasonable to continue to assume a three-year age difference for the survivor's age as compared to the member's age.

The recommended assumption for the age of the survivor is shown below:

	Survivor's Age as Compared to Member's Age
Beneficiary Sex	**Recommended Assumption**
Male	3 years older
Female	3 years younger

Since the majority of survivors are of the opposite sex, we will continue to assume that the survivor's sex is the opposite of the member. These assumptions will continue to be monitored in future experience studies.

Chart 1
Retirement Rates - General Enhanced Tier 1 Members

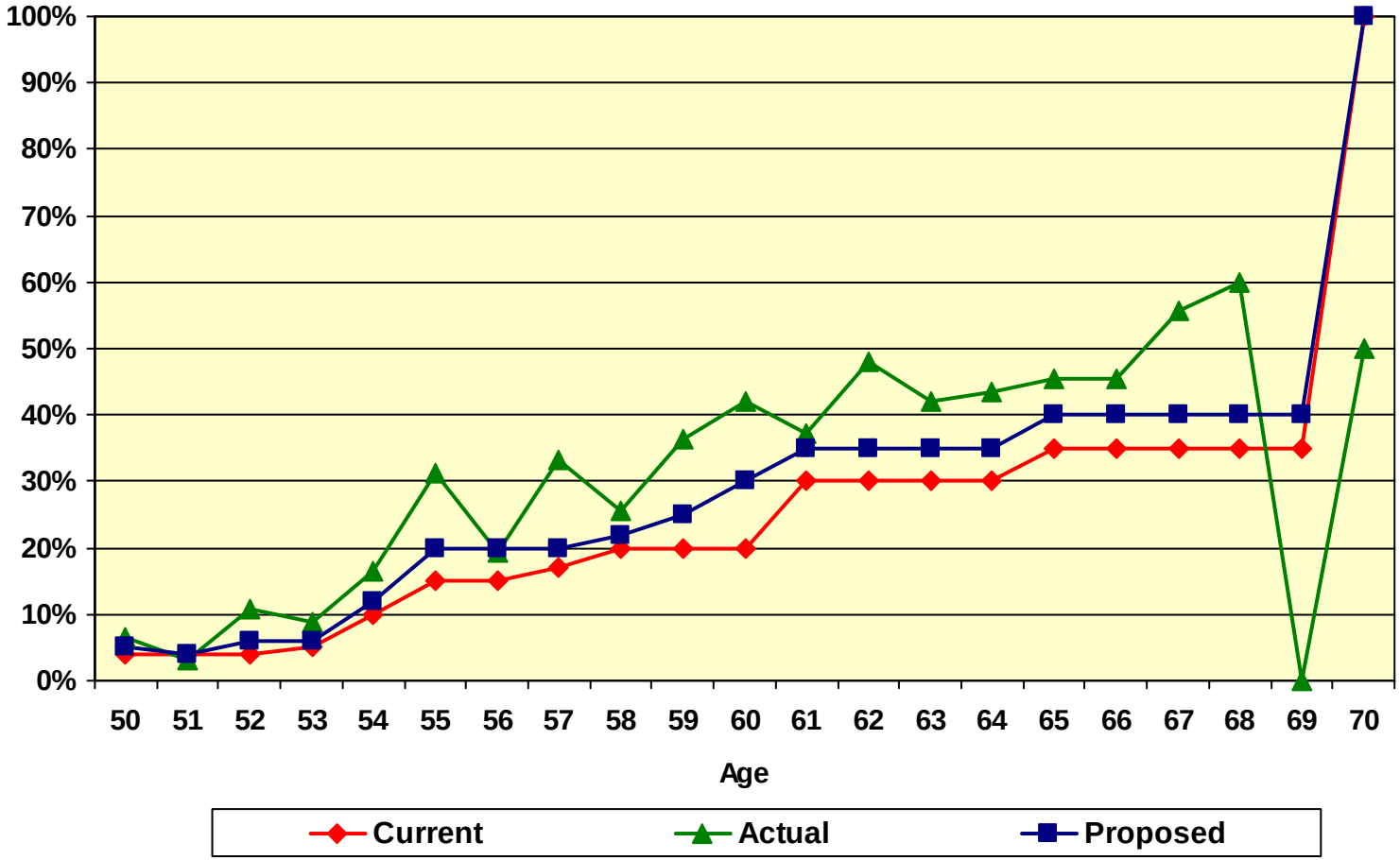


Chart 2
Retirement Rates - General Enhanced Tier 3 Members

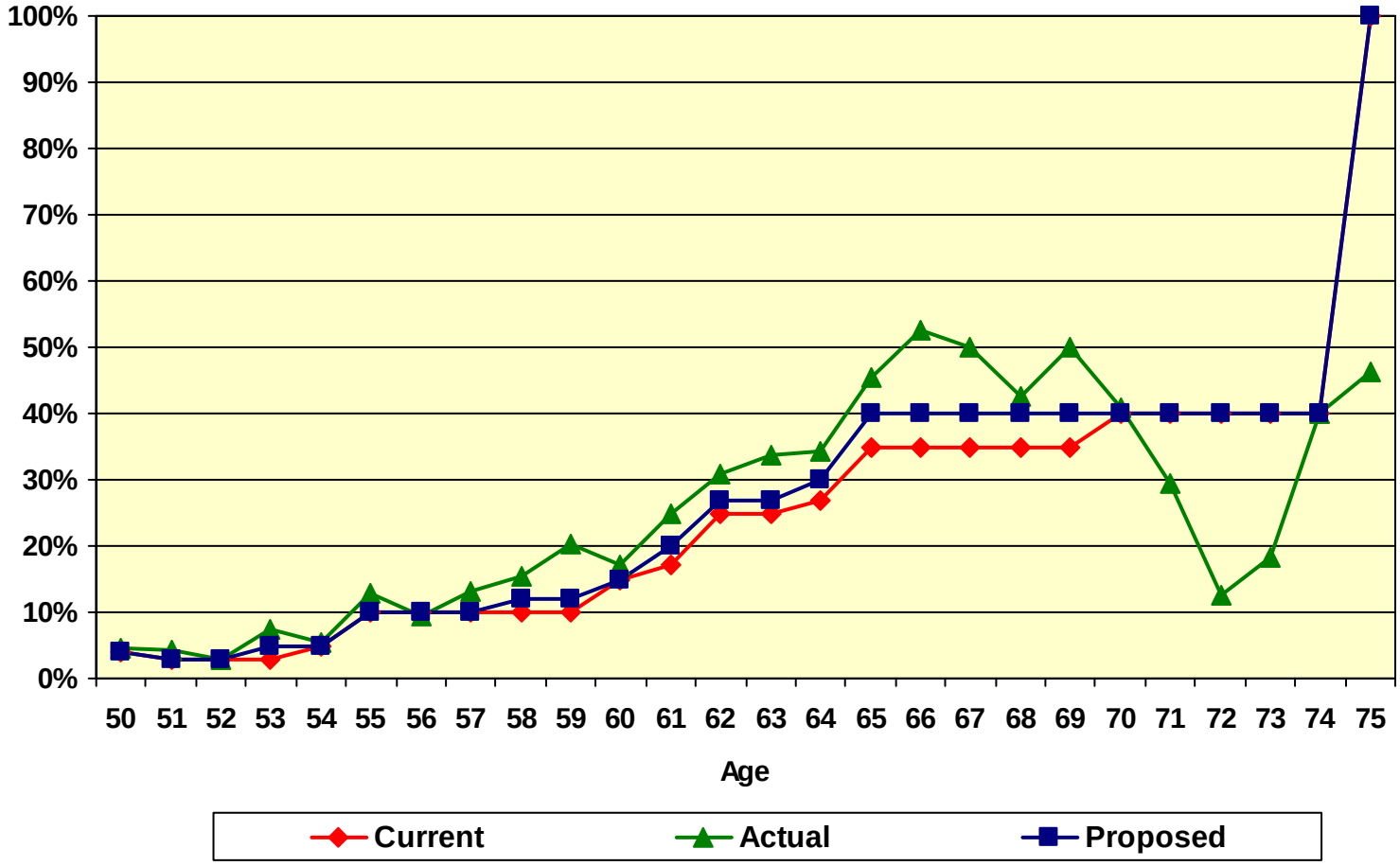


Chart 3
Retirement Rates - Safety Enhanced Tier A Members

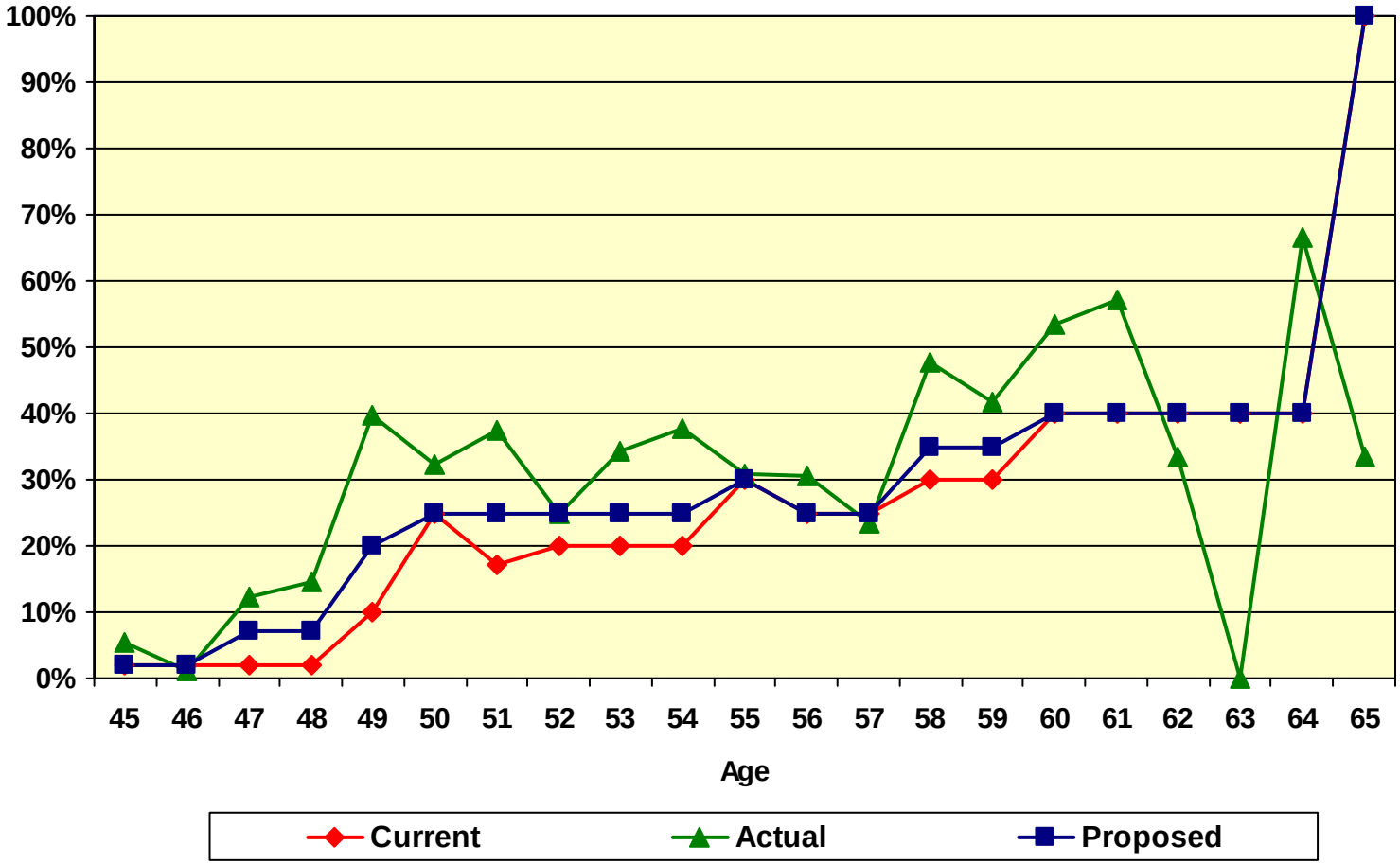


Chart 4
Retirement Rates - Safety Enhanced Tier C Members

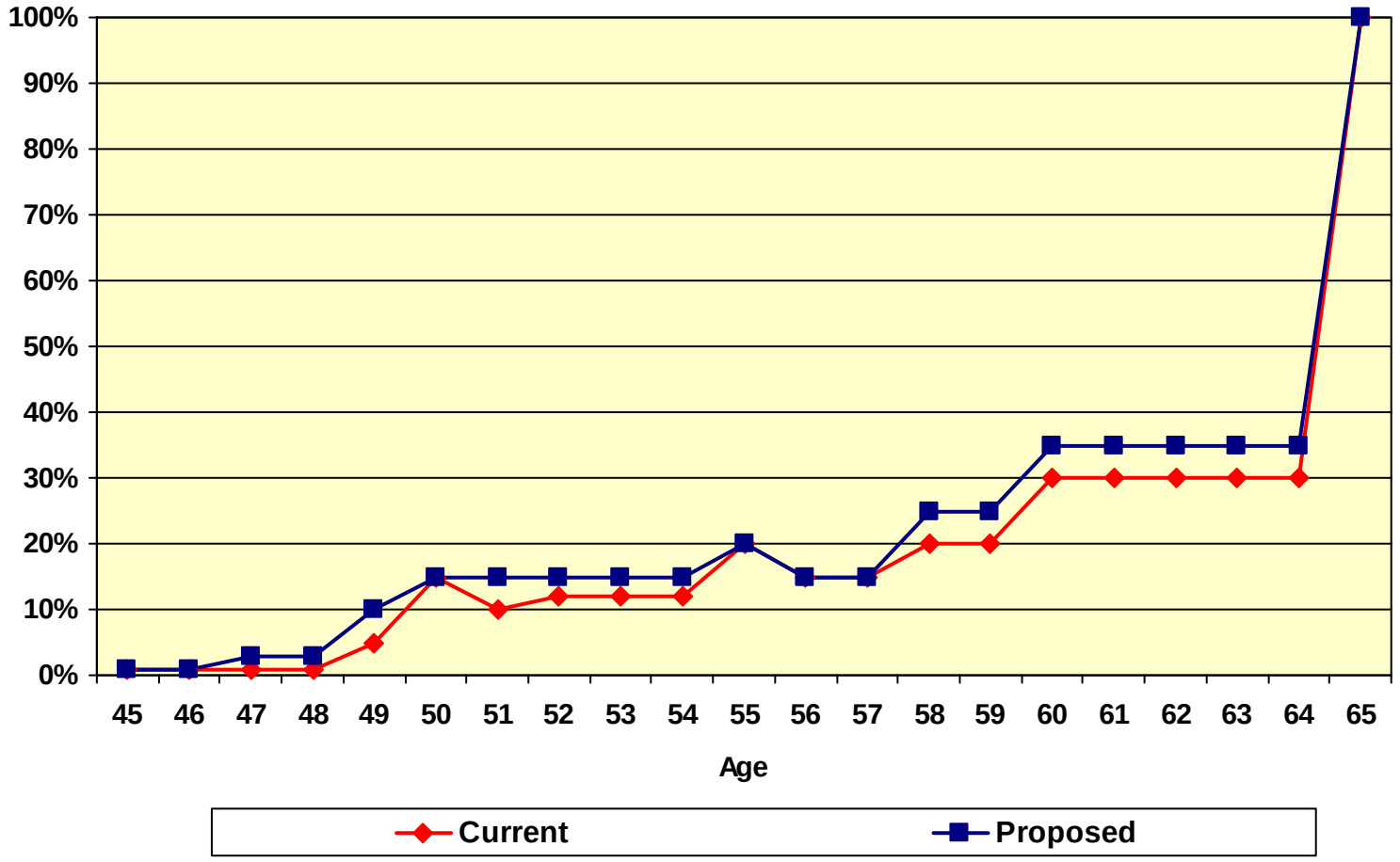


Chart 5
Retirement Rates - Safety Non-enhanced Members

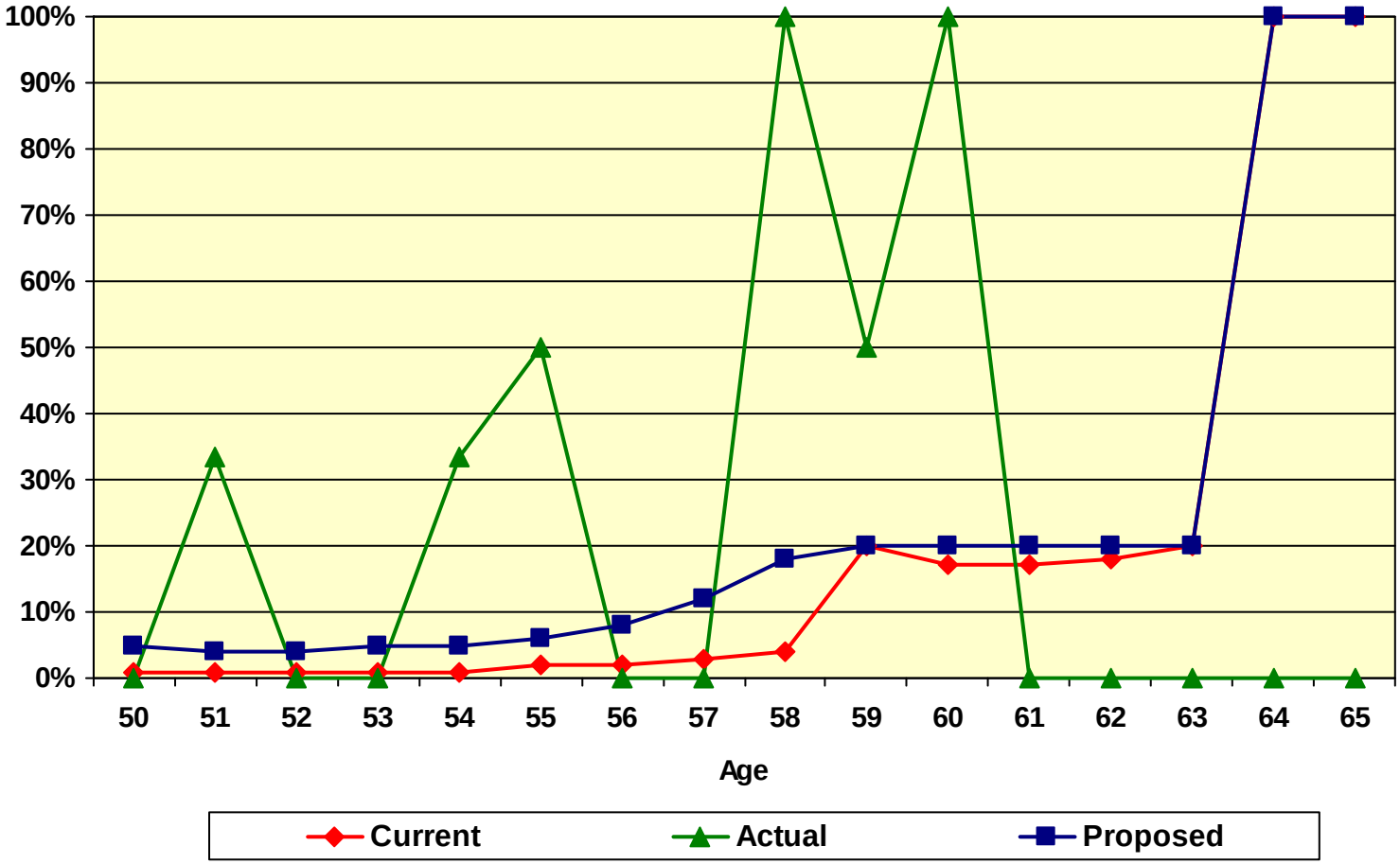


Chart 6
Retirement Rates - PEPRA General Members

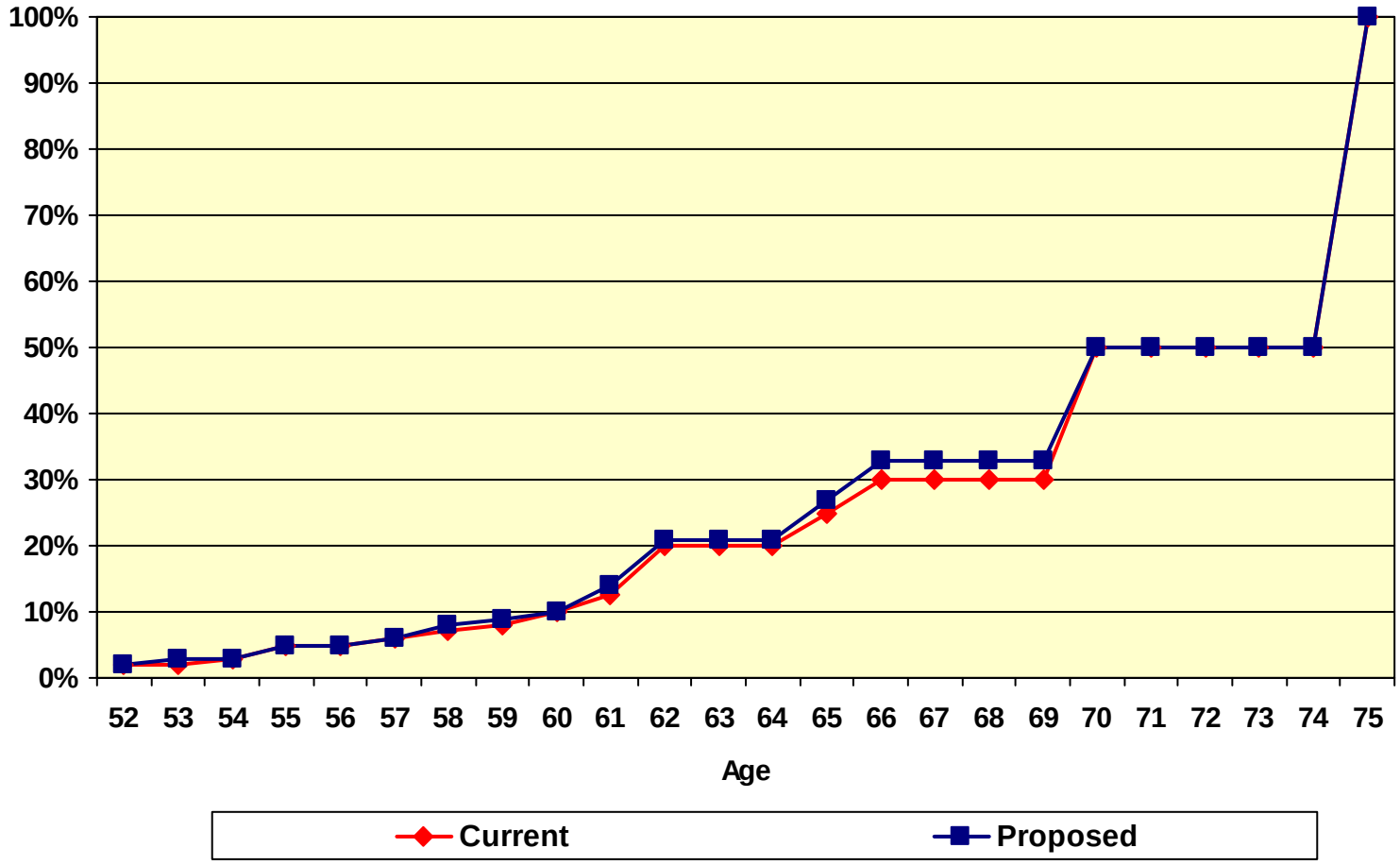
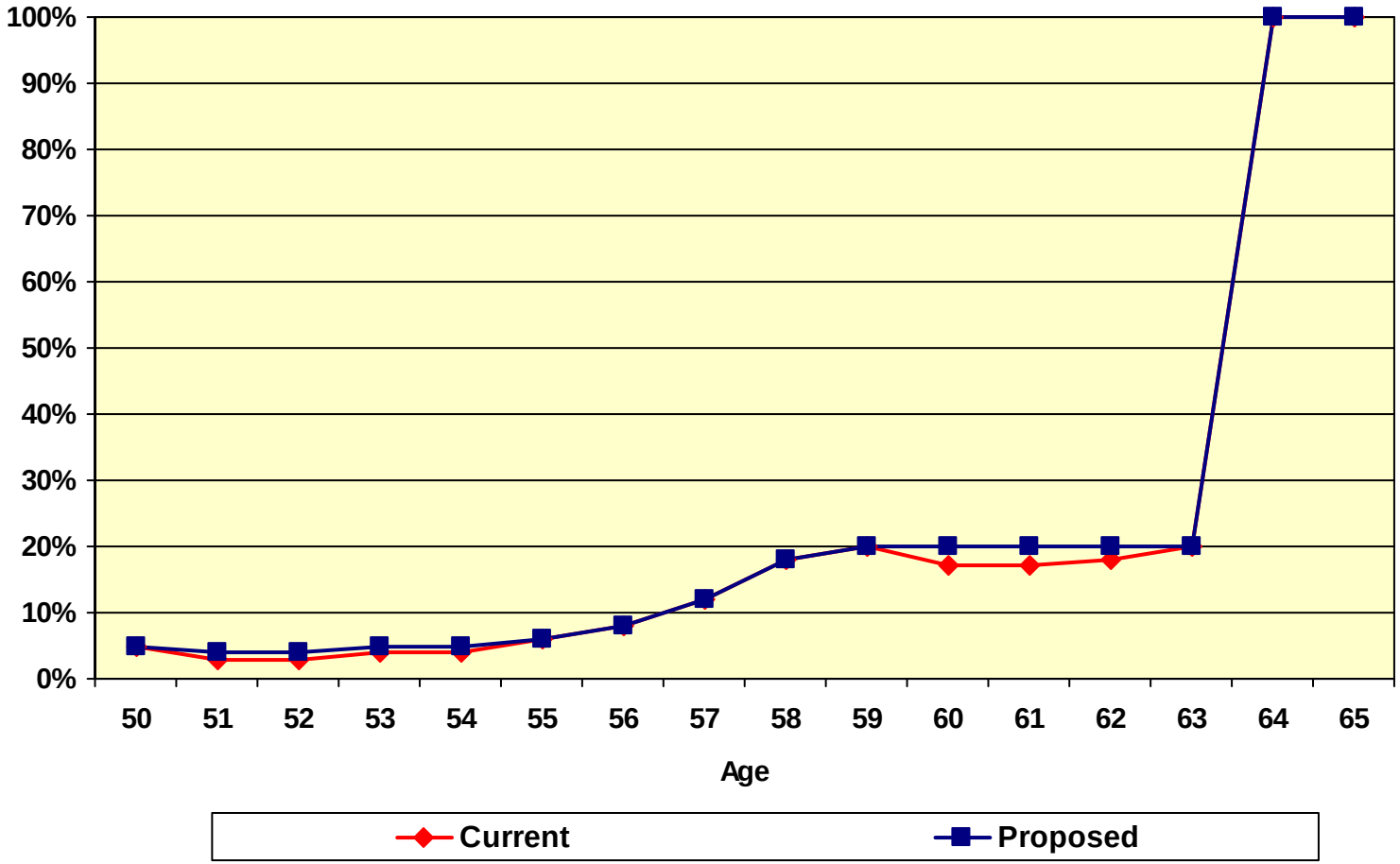


Chart 7
Retirement Rates - PEPRA Safety Members



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 Combined Healthy Mortality Table for males and females, with ages set back three years for males and two years for females.

Recent changes to ASOP 35 have increased the actuary's responsibility to reflect and to disclose an allowance for future mortality improvement in this assumption. Ways to reflect anticipated future mortality improvement include:

- Mortality of a longer-lived group – The table in use, without projection, forecasts fewer deaths than the current experience level, thus implicitly allowing for future mortality improvement.

- Projection to a future year – The same mortality table is used for everyone, but that table is intended to be reflective of mortality at a future date, not as of today.

- Generational mortality – Each year of birth has its own mortality table that reflects the forecasted improvements. Thus, younger participants have more future mortality improvement built in than older participants do.

Historically, we have used the approach described in the first bullet when setting mortality assumptions for CCCERA. Generally, we have set the mortality assumption so that actual deaths will be at least 10% greater than those assumed.

Pre-Retirement Mortality

The number of deaths among active and deferred vested members is not large enough to provide a statistically credible basis for a specific pre-retirement mortality analysis. Therefore, we continue to propose that pre-retirement mortality follow the same tables used for post-retirement mortality. All pre-retirement deaths are assumed to be ordinary (non-duty).

Post-Retirement Mortality (Service Retirements)

Our analysis starts with a table that shows, among all retired members, the actual deaths compared to the expected deaths under the current assumptions for the last three years. We also

show the deaths under proposed assumptions based on using a methodology generally consistent with prior years. As noted above, in prior years we have generally set the mortality assumption so that actual deaths will be at least 10% greater than those assumed. We are recommending continuation of that methodology in this experience study. However, as discussed later in this section, the Board should be aware that a future recommendation may include the use of a generational mortality table.

	General – Healthy			Safety – Healthy		
Year	Expected Deaths	Actual Deaths	Proposed Expected Deaths	Expected Deaths	Actual Deaths	Proposed Expected Deaths
2010	115	128	108	15	8	12
2011	119	130	112	17	15	13
2012	126	115	119	18	16	14
Total	360	373	339	50	39	39
Actual / Expected	104%		110%	78%		100%

Chart 8 compares actual to expected deaths for General members under the current and proposed assumptions over the last three years. Experience shows that there were more deaths than predicted by the current table.

Chart 9 has the same comparison for Safety members. Experience shows that there were fewer deaths than predicted by the current table.

For General service retirees the ratio of actual to expected deaths was 104%. We recommend updating the current table to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) projected to 2030 with Scale AA, with ages set back one year. This will bring the actual to expected ratio to 110%. This is consistent with ASOP 35 as we are continuing to include about a 10% margin in the mortality rates to anticipate expected future improvement in life expectancy.

For Safety service retirees the ratio of actual to expected deaths was 78%. We recommend updating the current table to the RP-2000 Combined Healthy Mortality table (separate tables for males and females) projected to 2030 with Scale AA, with ages set back to two years. This will bring the actual to expected ratio to 100%. Note that there is considerably less mortality experience available for Safety service retirees as compared to General retirees. Our recommended mortality table for Safety members anticipates longer life expectancies than that

recommended for General members. However, the actual to expected ratio under the recommended assumption is only 100% for Safety members and will be monitored in the next experience study.

Chart 10 shows the life expectancies (i.e. expected future lifetime) under the current and the proposed tables for General members.

Chart 11 has the same information for Safety members.

As mentioned earlier, we want to make the Board aware that a future recommendation might be for the use of a generational mortality table. While the use of generational mortality tables is under considerable discussion as an emerging practice within the actuarial profession, to date it is still uncommon for public sector retirement plans to actually use a generational mortality table. However, we anticipate that actuarial practice will continue to move in this direction, for reasons we will now discuss.

A generational mortality table provides dynamic projections of mortality experience for each cohort of retirees. For example, the mortality rate for someone who is 65 next year will be slightly less than for someone who is 65 this year. In general, using generational mortality anticipates increases in the cost of the Plan over time as participants' life expectancies are projected to increase. This is in contrast to updating a static mortality assumption with each experience study as we have proposed in this and prior experience studies.

Using generational mortality rather than static mortality incorporates a more explicit assumption for future mortality improvement. Accordingly, the goal is to start with a mortality table that closely matches the current experience (without a margin for future mortality improvement), and then reflecting mortality improvement by projecting lower mortality rates in future years. That is why, for an illustrative generational mortality table that we developed for the Plan, the current actual to expected ratio shown in the tables below is only slightly above 100%. In future years these ratios would remain around 100%, as long as actual mortality improved at the same rates as anticipated in the generational mortality tables.

	General – Healthy			Safety – Healthy		
Year	Expected Deaths	Actual Deaths	Proposed Expected Deaths*	Expected Deaths	Actual Deaths	Proposed Expected Deaths**
2010	115	128	116	15	8	11
2011	119	130	120	17	15	13
2012	126	115	128	18	16	14
Total	360	373	364	50	39	38
Actual / Expected	104%		102%	78%		103%

* *For illustration purposes only and shown for the RP-2000 Combined Healthy Mortality Table projected to 2011 (middle year of the experience study period) with Scale BB, with ages set back one year for males and females.*

** *For illustration purposes only and shown for the RP-2000 Combined Healthy Mortality Table projected to 2011 (middle year of the experience study period) with Scale BB, with ages set back four years for males and females.*

Note that using generational mortality increases current liabilities and costs more than using static mortality but should result in fewer changes (and cost increases) in later years. For example, the generational mortality table developed above would increase the total (employer and employee) contribution rate by about 4% of compensation more than the updated static table that we are recommending.[1]

Note that there are currently unresolved issues regarding how generational mortality tables would be used in determining member contribution rates, optional forms of payments and reserve values. These issues would need to be addressed for CCCERA before using a generational mortality table.

Mortality Table for Member Contributions

We recommend that the mortality table used for determining contributions for General members be updated from the RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females weighted 30% male and 70% female to the RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA set back one year, weighted 30% male and 70% female. This is based on the proposed valuation mortality tables for General members and the actual sex distribution of General members.

1 These cost increases reflect the hypothetical adoption of generational mortality for both healthy and disabled retirees.

For Safety members, we recommend the mortality table used for determining member contributions be changed from the RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females weighted 85% male and 15% female to the RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA set back two years, weighted 85% male and 15% female. This is based on the proposed valuation mortality tables for Safety members and the actual sex distribution of Safety members.

Chart 8
Post - Retirement Deaths
Non - Disabled General Members

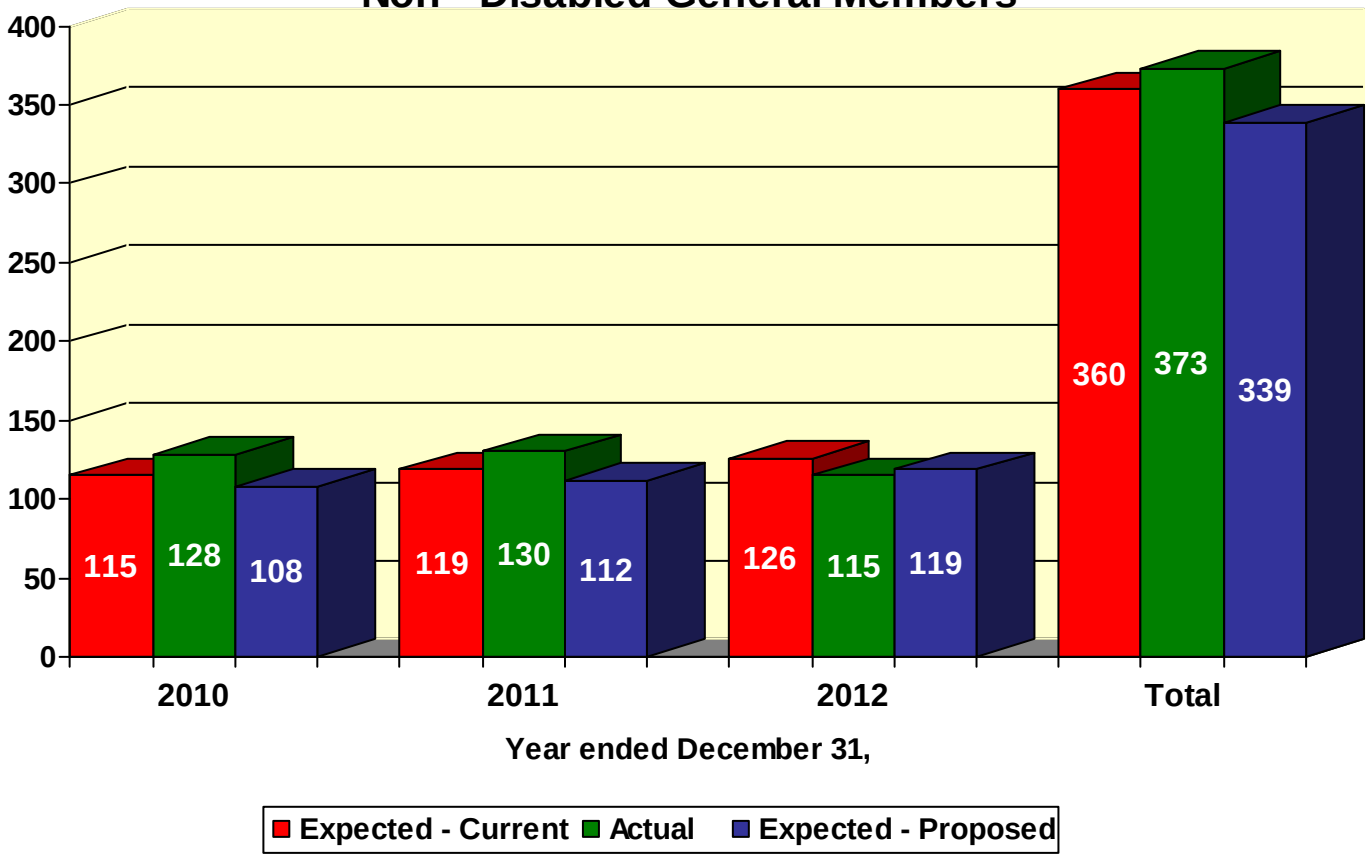


Chart 9
Post - Retirement Deaths
Non - Disabled Safety Members

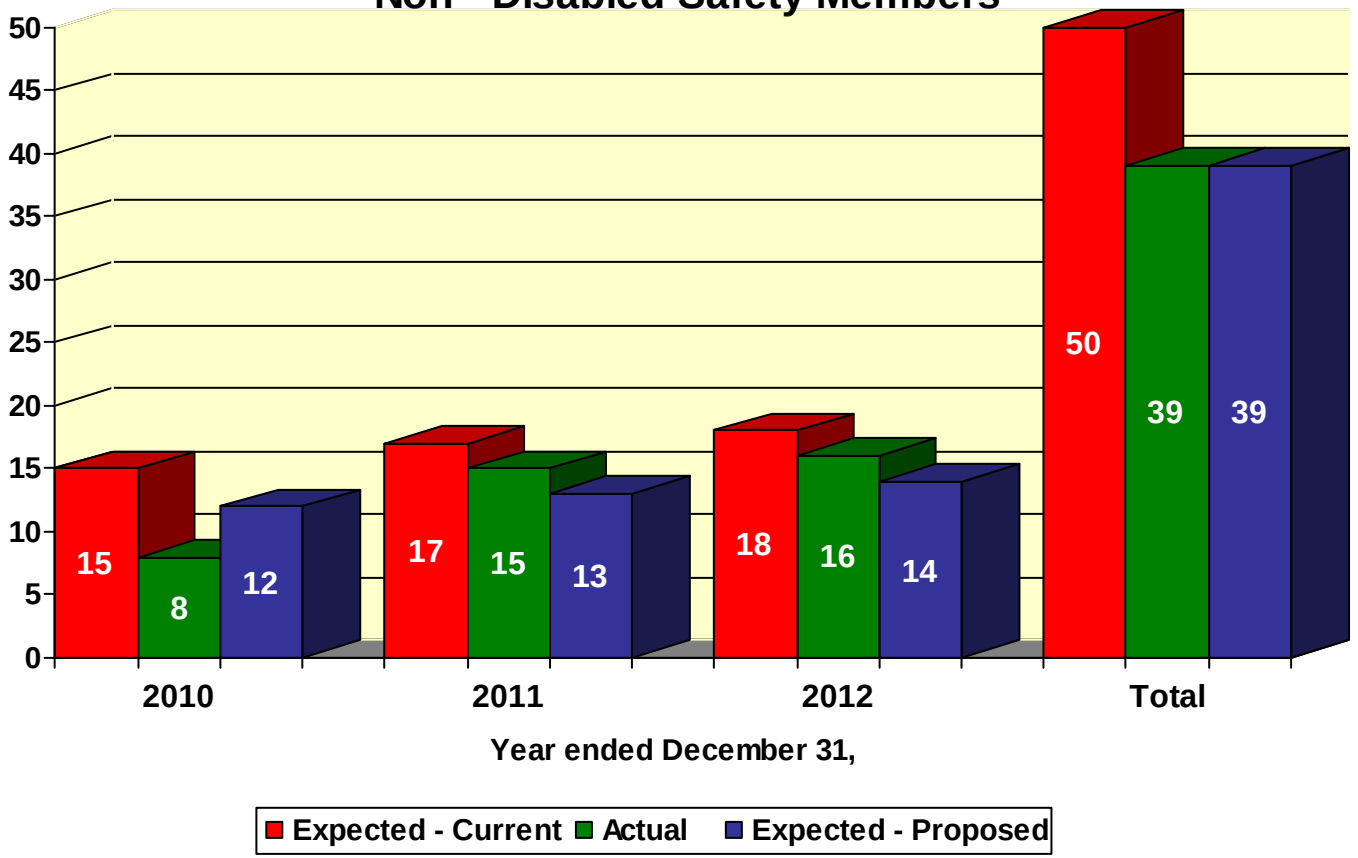


Chart 10
Life Expectancies
Non - Disabled General Members

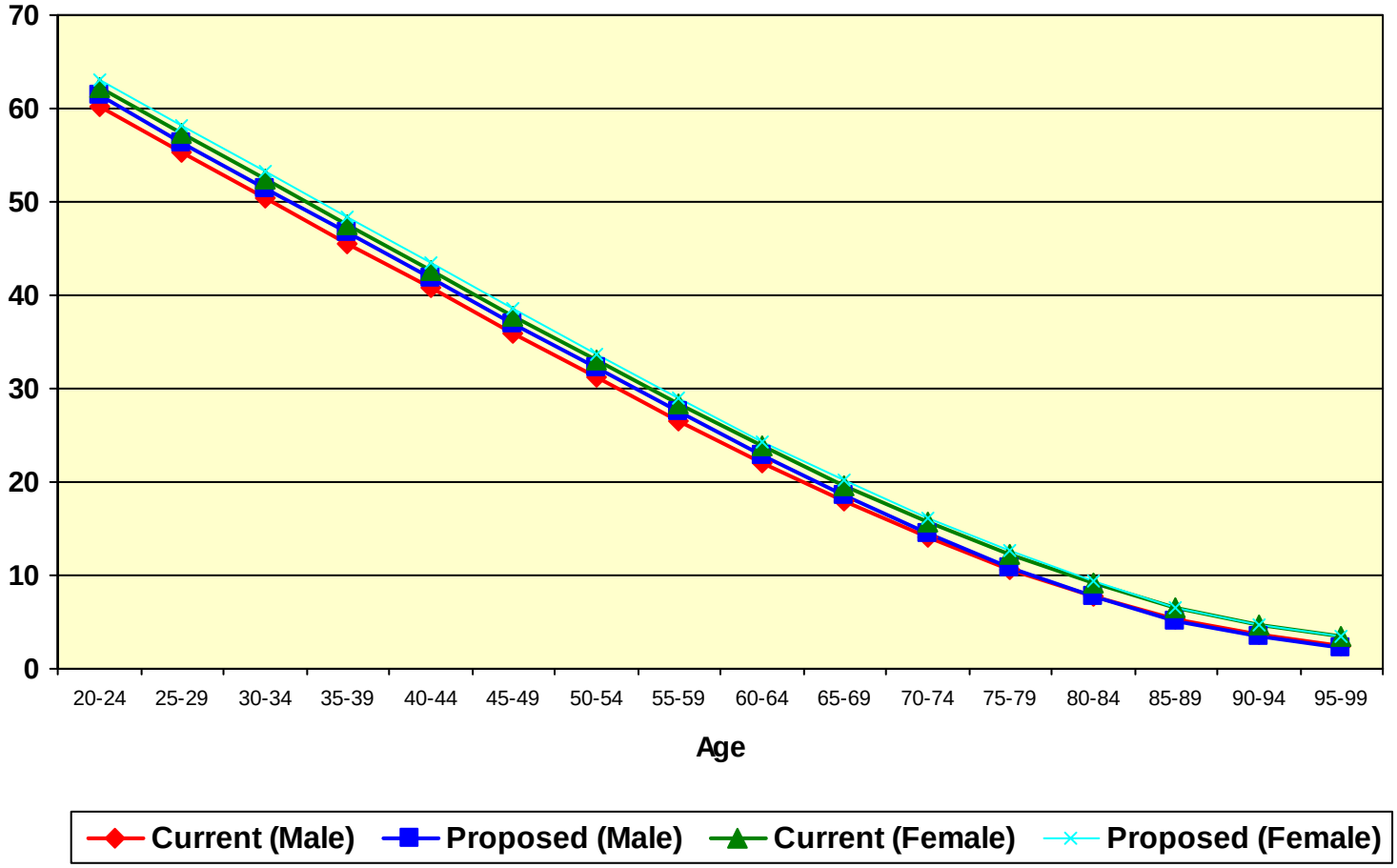
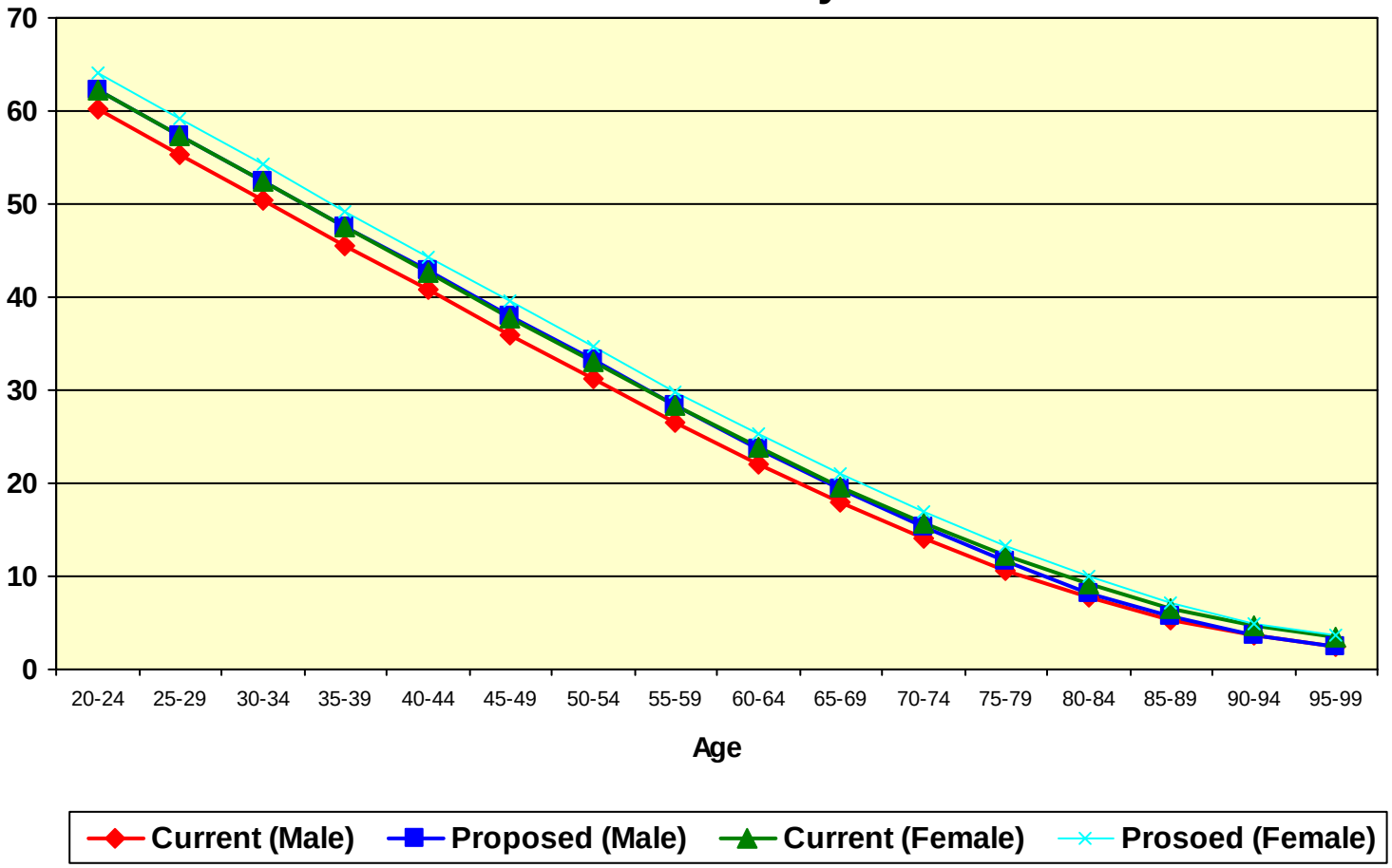


Chart 11
Life Expectancies
Non - Disabled Safety Members



D. MORTALITY RATES - DISABLED

Since mortality rates for disabled members can vary from those of healthy members, a different mortality assumption is often used. The table currently being used for General members is the RP-2000 Combined Healthy Mortality Table with ages set forward four years. For Safety members, the RP-2000 Combined Healthy Mortality Table with ages set back two years is used.

The number of actual deaths compared to the number expected for the last three years has been as follows:

	General – Disabled			Safety – Disabled		
	Expected Deaths	Actual Deaths	Proposed Expected Deaths	Expected Deaths	Actual Deaths	Proposed Expected Deaths
2010	15	23	16	6	11	8
2011	16	16	17	6	8	7
2012	16	18	17	6	7	7
Total	47	57	50	18	26	22
Actual / Expected	121%		114%	144%		118%

Based on this experience, we recommend updating the current table for General disabled members to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females), projected to 2030 with Scale AA, with ages set forward six years for males and seven years for females. For Safety disabled members we recommend updating the current table to the RP-2000 Combined Healthy Mortality Table, projected to 2030 with Scale AA, set forward three years for males and females.

Chart 12 compares actual to expected deaths under both the current and proposed assumptions for disabled General members over the last three years. Experience shows that there were more deaths than predicted by the current table. Our recommendation adjusts for this difference and still incorporates at least a 10% margin for future mortality improvement.

Chart 13 has the same comparison for Safety members. Experience shows that there were more deaths than predicted by the current table. Similarly, our recommended assumption adjusts for this difference, but still incorporates a margin for future mortality improvement.

Chart 14 shows the life expectancies under both the current and proposed tables for General members. Chart 15 shows the same information for Safety members.

Chart 12
Post - Retirement Deaths
Disabled General Members

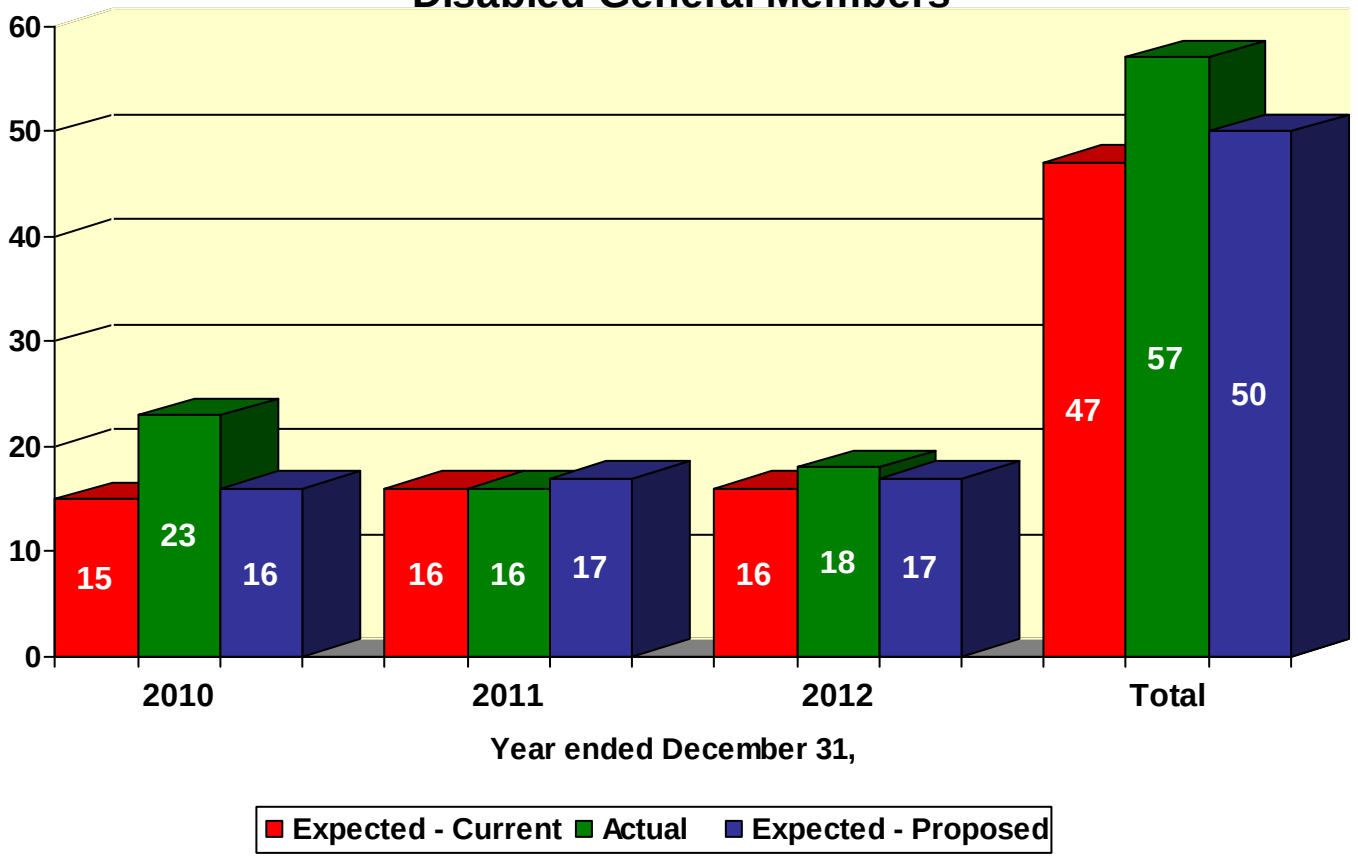


Chart 13
Post - Retirement Deaths
Disabled Safety Members

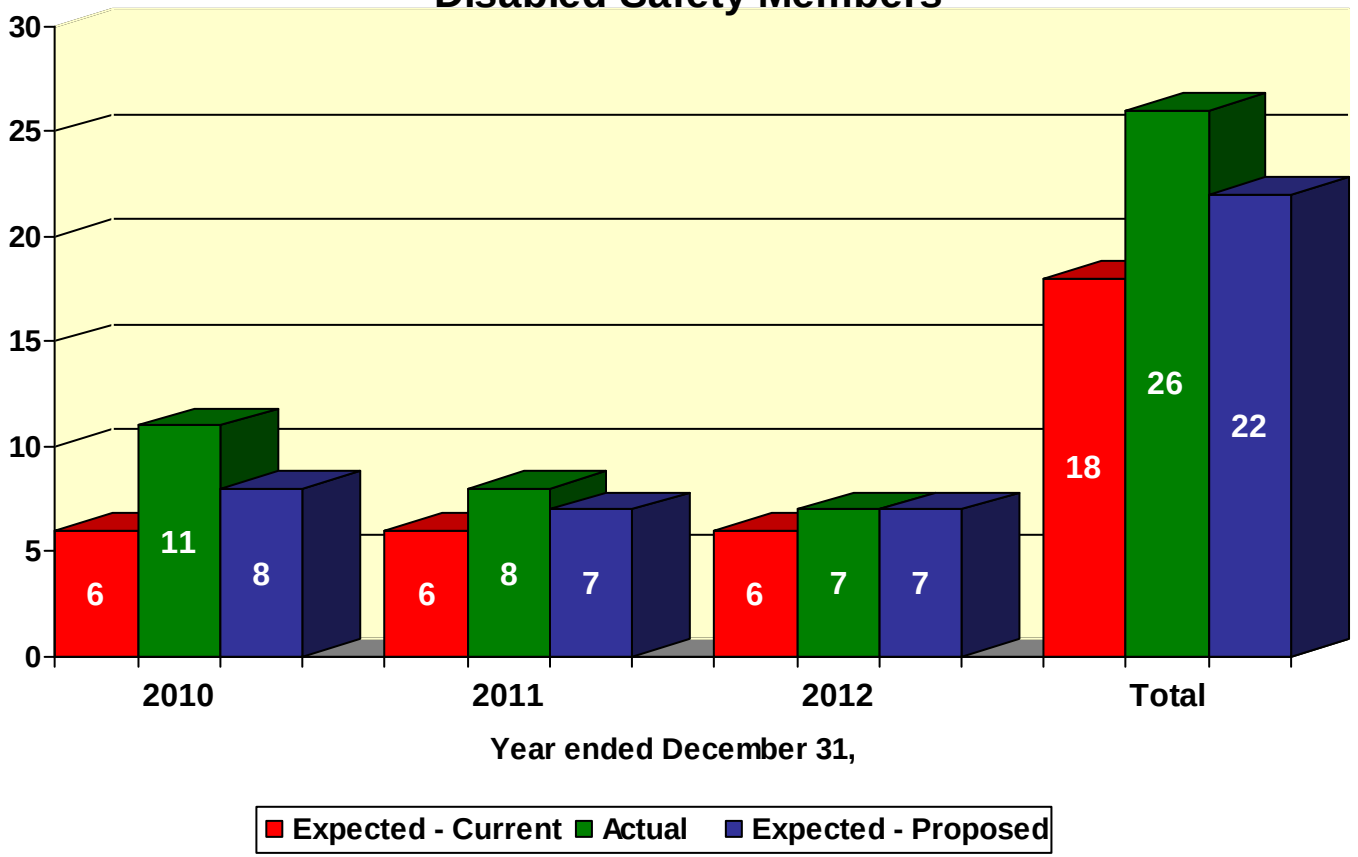


Chart 14
Life Expectancies
Disabled General Members

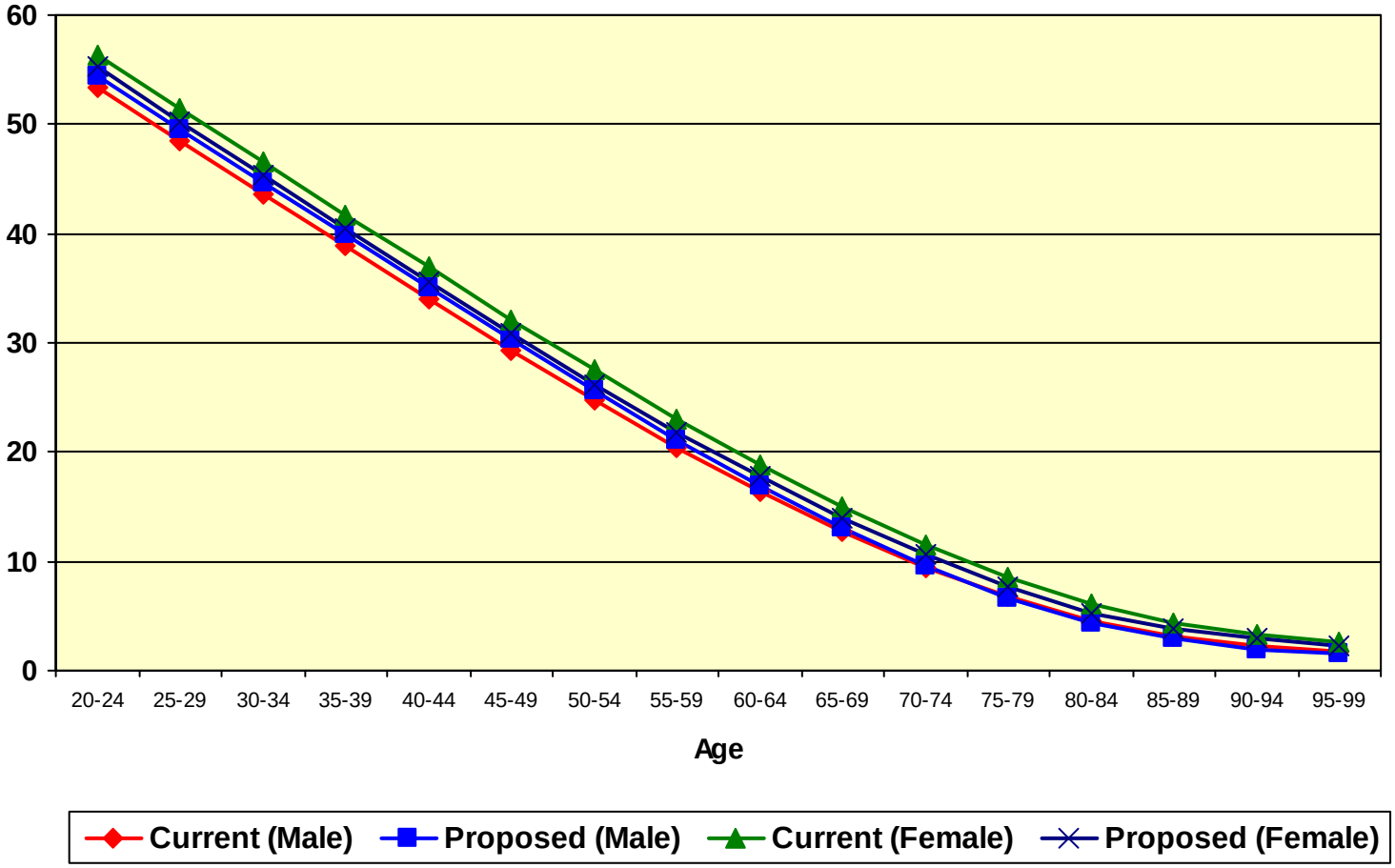
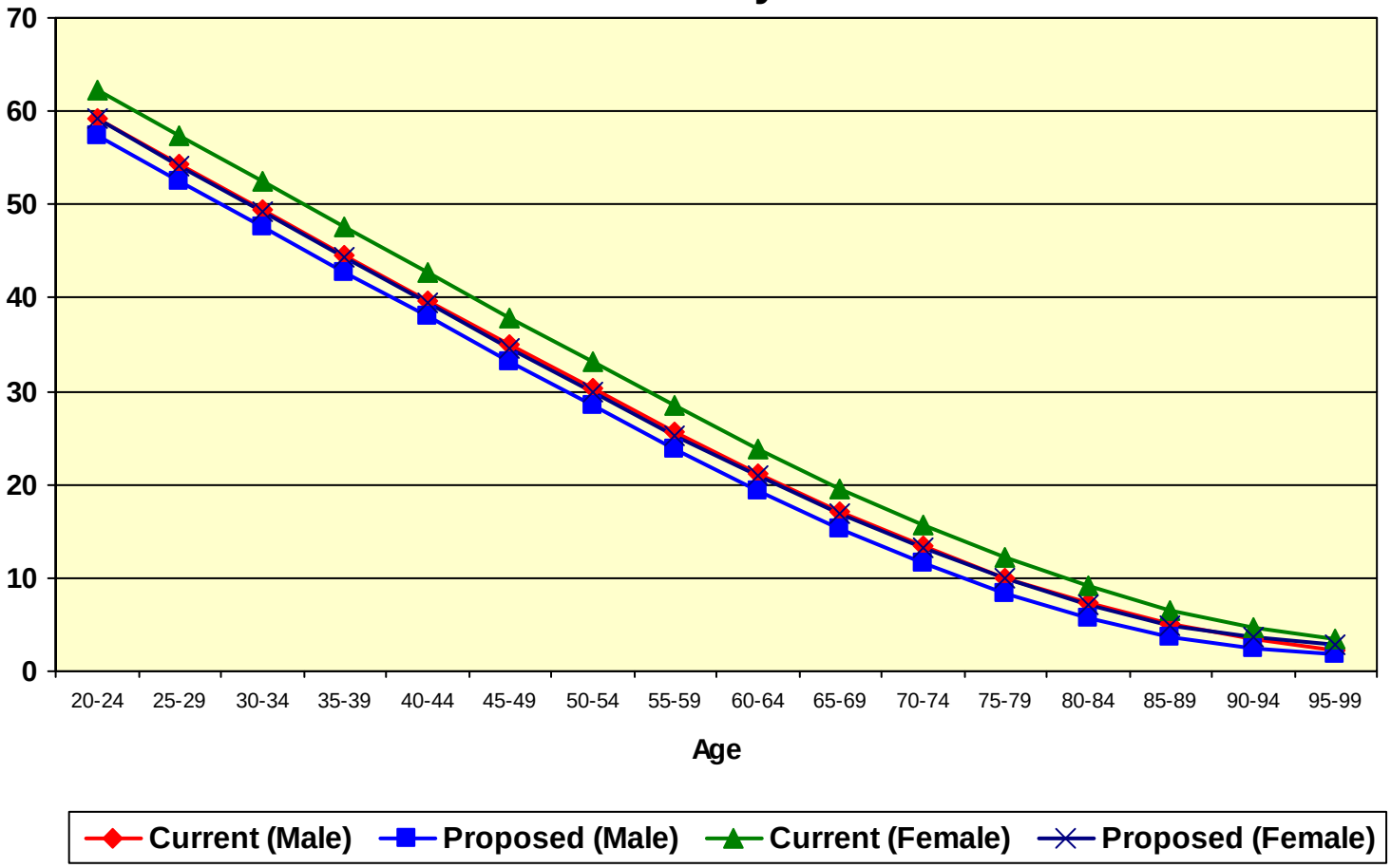


Chart 15
Life Expectancies
Disabled Safety Members



E. TERMINATION RATES

Termination rates include all terminations for reasons other than death, disability, or retirement. Under the current assumptions there is an overall incidence of termination assumed, combined with an assumption that a member will choose between a refund of contributions and deferred vested benefit based on which option is more valuable. With this study, we continue to recommend that this same assumption structure be used.

Currently, the assumed termination rates are a function of a member's age for members with five or more years of service. Our experience review analyzed terminations both as a function of age and as a function of years of service. Our review found that while termination rates correlate with both years of service and age, we believe there is a stronger correlation with years of service. This is consistent with our experience from other systems.

As a result of this review, we recommend that the termination rate assumption be structured solely as a function of years of service.

The termination experience over the last three years for General and Safety members is shown by years of service in the following tables. Please note that we have excluded any members that were eligible for retirement. We also show the current and proposed assumptions.

Rates of Termination (General)

Years of Service	Current Rate*	Observed Rate	Proposed Rate
Less than 1	15.00%	11.00%	13.50%
1	9.00	8.88	9.00
2	9.00	8.46	9.00
3	6.00	4.97	6.00
4	5.00	3.16	4.50
5	3.33	4.19	4.00
6	3.10	3.45	3.75
7	2.95	3.60	3.50
8	2.85	3.31	3.25
9	3.33	1.78	3.00
10	3.95	2.94	2.75
11	3.89	1.72	2.50
12	3.77	2.25	2.40
13	3.56	2.07	2.30
14	3.46	1.12	2.20
15	3.28	1.47	2.10
16	3.22	4.90	2.00
17	3.12	1.56	2.00
18	3.11	2.36	2.00
19	3.05	0.59	2.00
20 or more	2.86	0.75	2.00

* *The rate shown for five years of service and higher is an average rate developed from the current age based assumption for members in that service category.*

Rates of Termination (Safety)

Years of Service	Current Rate*	Observed Rate	Proposed Rate
Less than 1	11.00%	12.58%	11.50%
1	7.00	3.45	6.50
2	5.00	4.72	5.00
3	4.00	4.20	4.00
4	4.00	2.16	3.50
5	2.93	1.12	3.00
6	2.67	0.64	2.75
7	2.64	1.35	2.50
8	2.50	0.37	2.25
9	2.57	3.07	2.00
10	2.53	0.00	1.90
11	2.48	1.49	1.80
12	2.38	1.19	1.70
13	2.25	0.00	1.60
14	2.13	0.00	1.50
15	2.04	0.00	1.40
16	1.95	0.00	1.30
17	1.95	2.82	1.20
18	1.96	1.52	1.10
19	1.82	0.00	1.00
20 or more	1.33	0.00	1.00

* *The rate shown for five years of service and higher is an average rate developed from the current age based assumption for members in that service category.*

Chart 16 compares actual to expected terminations over the past three years for both the current and proposed assumptions for General members.

Chart 17 graphs the same information as Chart 16, but for Safety members.

Chart 18 shows the current, along with the proposed termination rates for General members.

Chart 19 shows the same information as Chart 18, but for Safety members.

The experience during the period showed significantly lower rates of termination than expected. This may be due to the economic circumstances that occurred during the period of this study. For that reason, while we are proposing reductions in the termination rates for both General and Safety members, we have given relatively less weight to the actual experience that occurred during the period. We will also continue to assume that all termination rates are zero at any age where members are assumed to retire. In other words, at those ages, members will either retire (and commence receiving a benefit) or continue working.

Chart 16
Actual Number of Terminations Compared to Expected - General Members

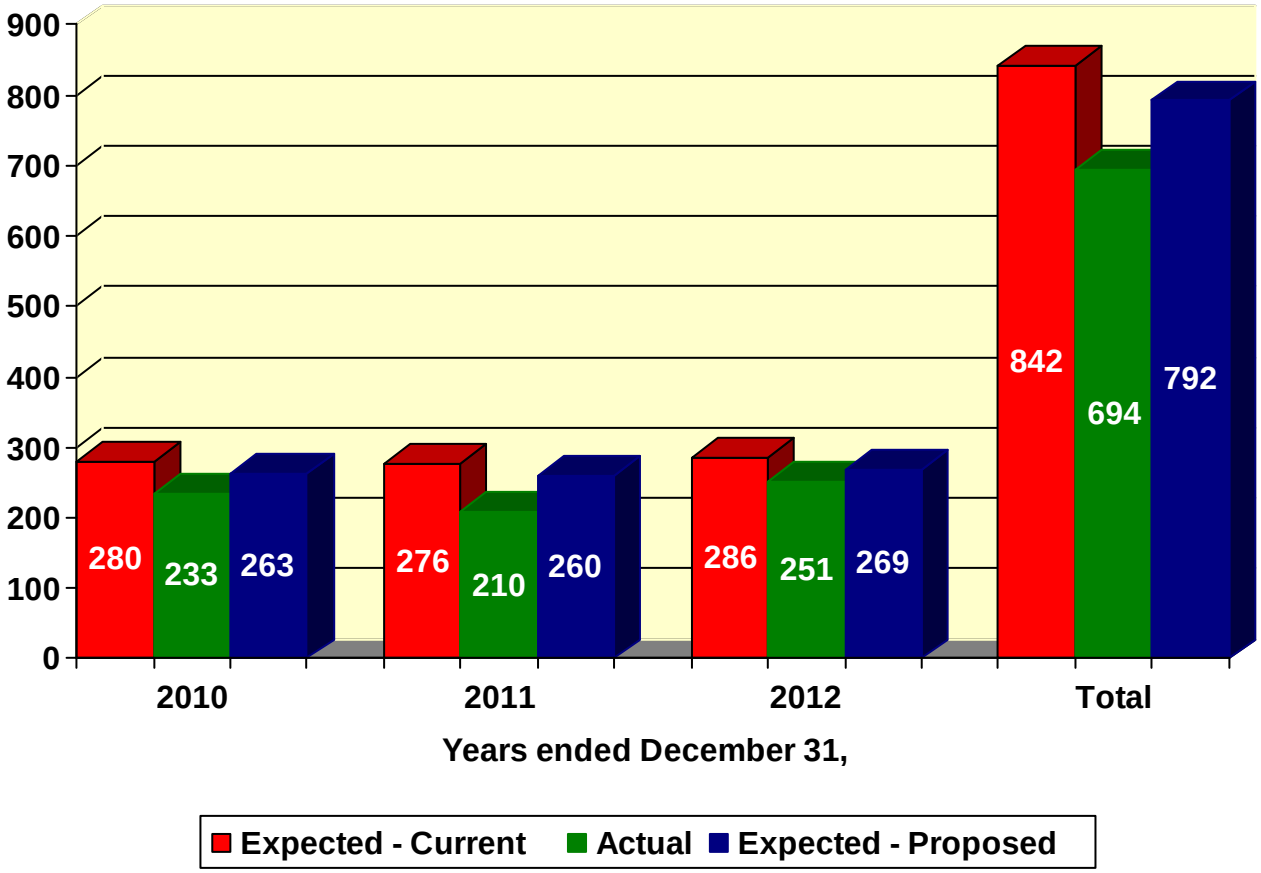


Chart 17
Actual Number of Terminations Compared to Expected - Safety Members

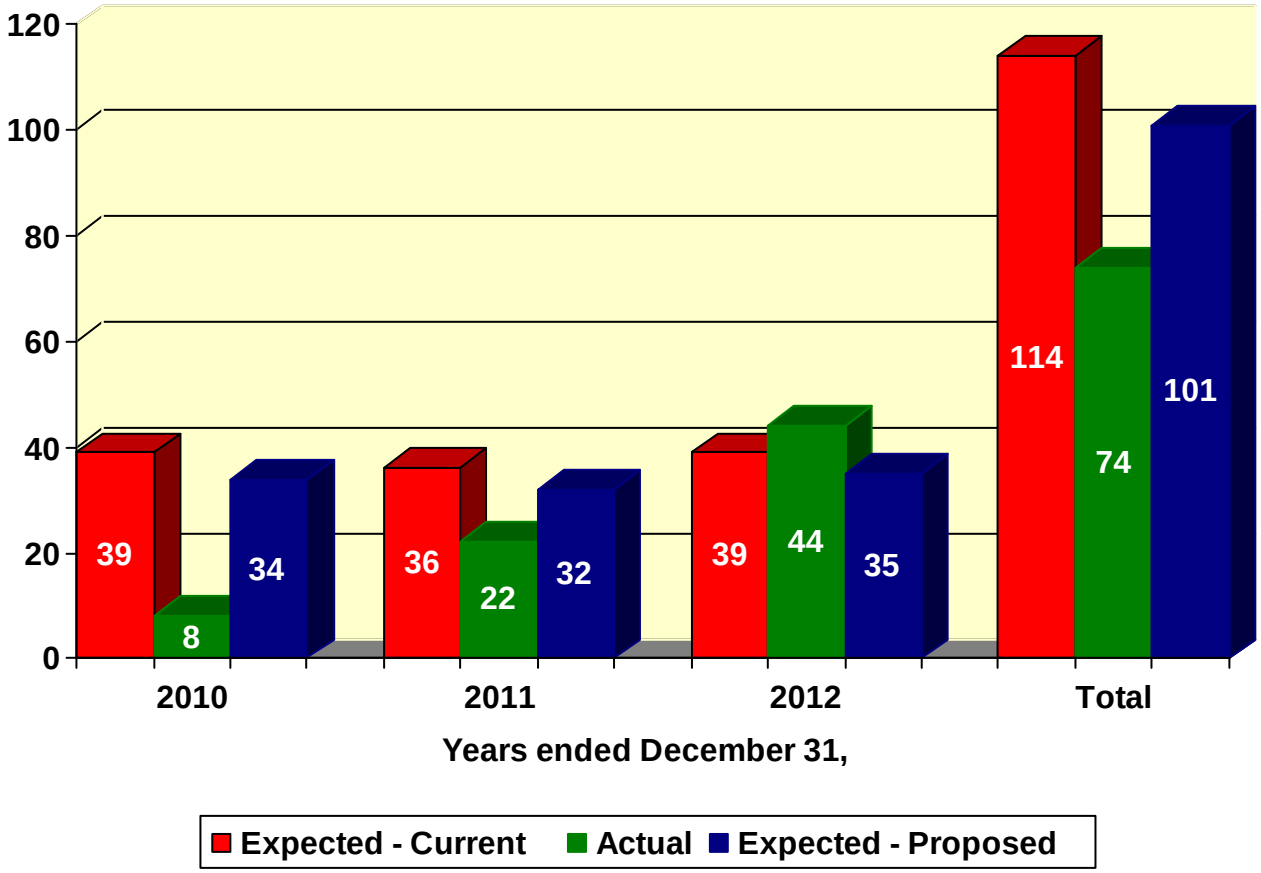


Chart 18
Termination Rates - General Members

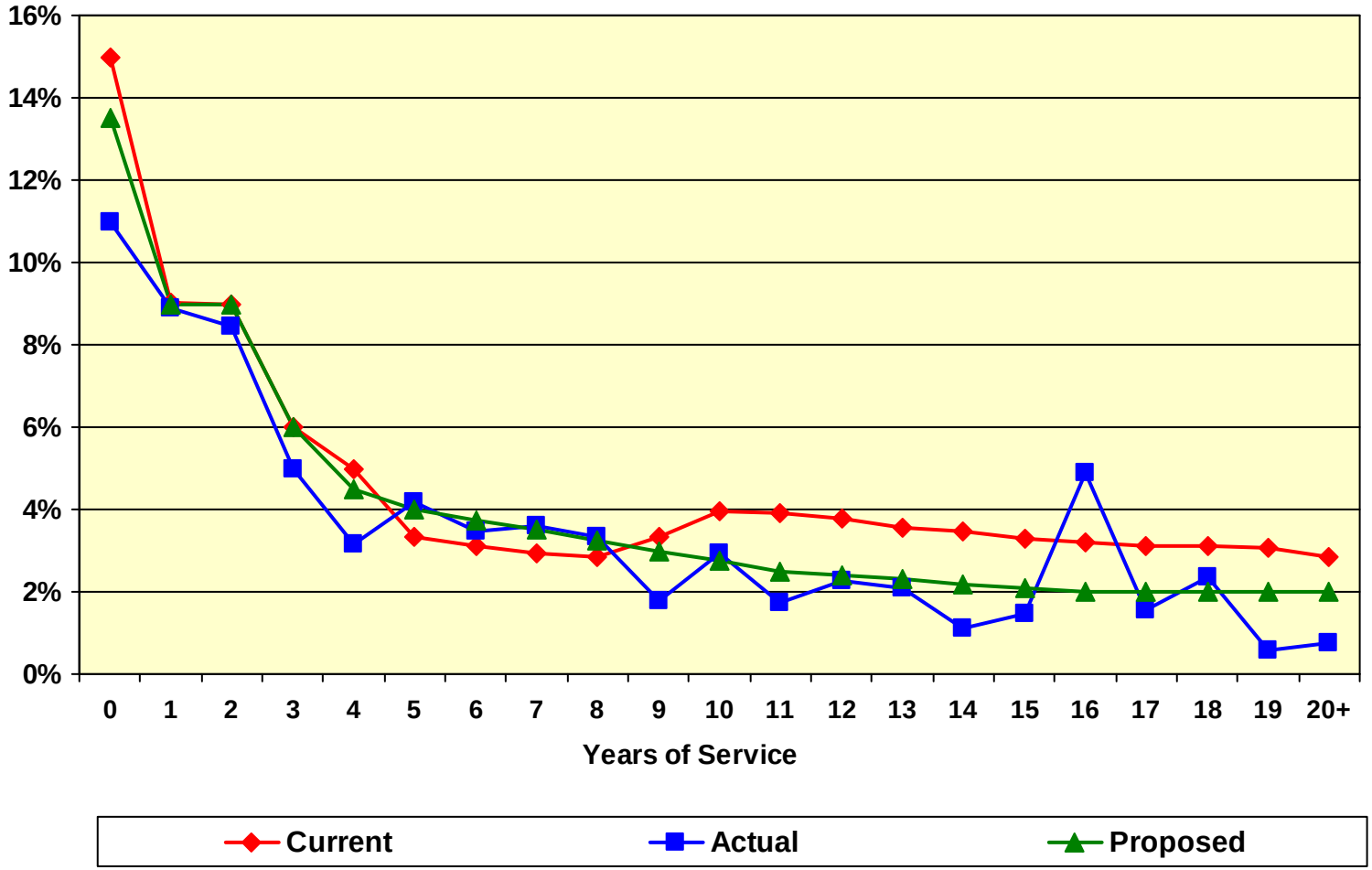
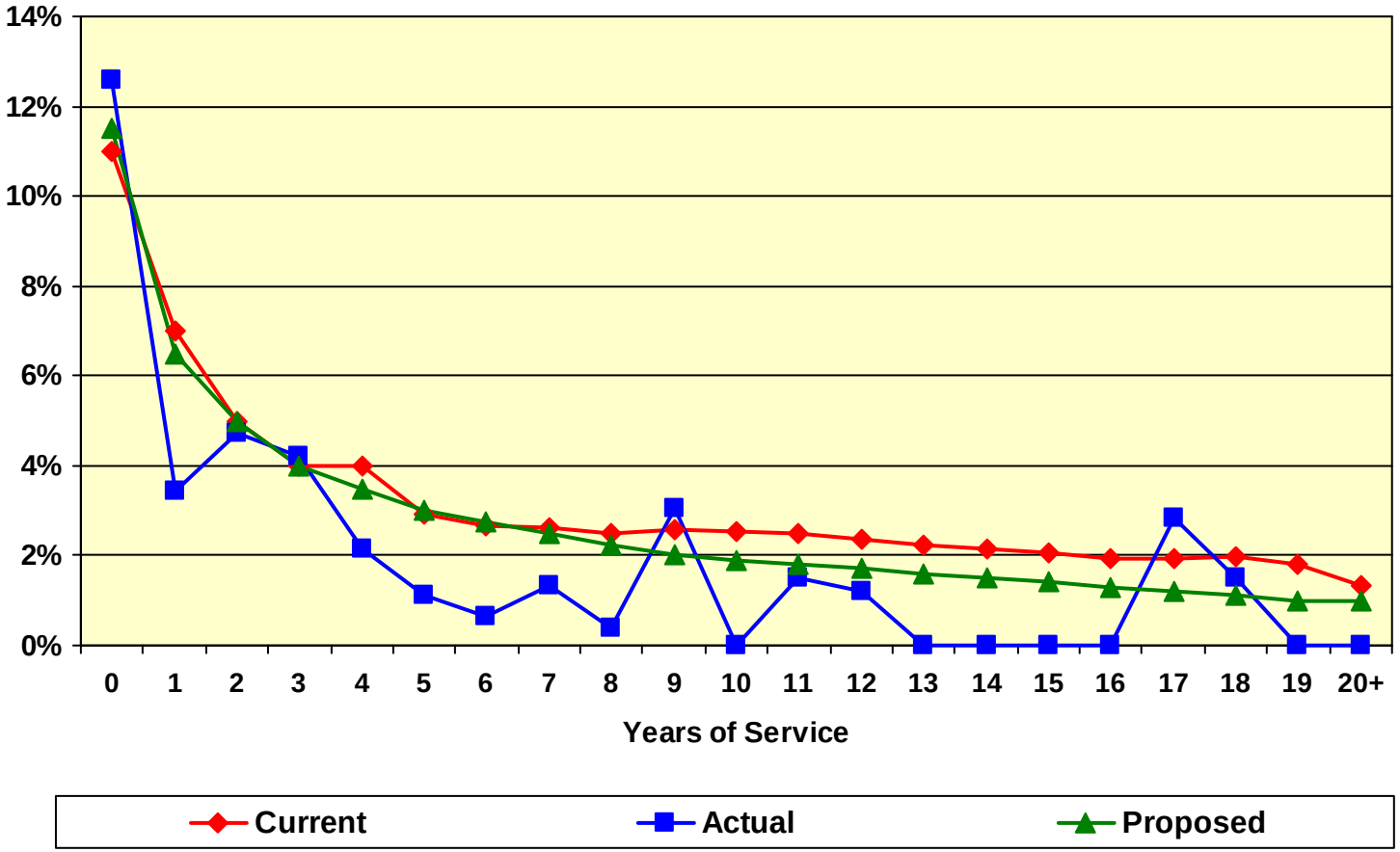


Chart 19
Termination Rates - Safety Members



F. DISABILITY INCIDENCE RATES

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

Rates of Disability Incidence (General Tier 1)

Age	Current Rate*	Observed Rate*	Proposed Rate*
20 – 24	0.03%	0.00%	0.01%
25 – 29	0.05	0.00	0.02
30 – 34	0.15	0.00	0.05
35 – 39	0.20	0.00	0.10
40 – 44	0.30	0.00	0.20
45 – 49	0.50	0.25	0.40
50 – 54	0.60	0.59	0.60
55 – 59	0.75	0.52	0.70
60 – 64	0.75	0.67	0.70
65 – 69	0.75	0.00	0.70

* Total rates for service and non-service connected disabilities.

Rates of Disability Incidence (General Tier 3)

Age	Current Rate*	Observed Rate*	Proposed Rate*
20 – 24	0.01%	0.00%	0.01%
25 – 29	0.03	0.00	0.02
30 – 34	0.05	0.00	0.04
35 – 39	0.07	0.00	0.06
40 – 44	0.10	0.00	0.10
45 – 49	0.15	0.16	0.15
50 – 54	0.20	0.03	0.18
55 – 59	0.25	0.03	0.23
60 – 64	0.30	0.42	0.30
65 – 69	0.50	0.00	0.40

* Total rates for service and non-service connected disabilities.

Rates of Disability Incidence (Safety)

Age	Current Rate*	Observed Rate*	Proposed Rate*
20 – 24	0.10%	0.00%	0.10%
25 – 29	0.30	0.00	0.30
30 – 34	0.50	0.64	0.50
35 – 39	0.75	0.36	0.60
40 – 44	1.00	0.20	0.70
45 – 49	1.25	0.90	1.10
50 – 54	3.50	3.30	3.50
55 – 59	5.00	3.80	4.50
60 – 64	5.00	1.54	5.00

* Total rates for service and non-service connected disabilities.

Chart 20 compares the actual number of non-service connected and service connected disabilities over the past three years to that expected under both the current and proposed assumptions. The proposed disability rates were adjusted to reflect the past three years' experience. Overall, there are decreases proposed for General Tier 1, General Tier 3 and Safety.

Chart 21 shows actual disablement rates, compared to the assumed and proposed rates for General Tier 1 members. Since 67% of disabled General Tier 1 members received a service connected disability, we recommend maintaining the current assumption that 70% of disabilities will receive a service connected disability retirement. The remaining 30% of General Tier 1 disabled members will be assumed to receive a non-service connected disability.

Chart 22 graphs the same information as Chart 21, but for General Tier 3 members. Since 44% of disabled General Tier 3 members received a service connected disability, we recommend increasing the assumed proportion of members who will receive a service connected disability from 25% to 35%. The remaining 65% of General Tier 3 disabled members will be assumed to receive a non-service connected disability.

Chart 23 graphs the same information as Charts 21 and 22, but for Safety members. Since 93% of disabled Safety members received a service connected disability, we recommend maintaining the current assumption that 100% of disabilities will receive a service connected disability retirement. This means that no non-service connected disabilities will be assumed for Safety members.

Chart 20
Actual Number of Disabilities Compared to Expected

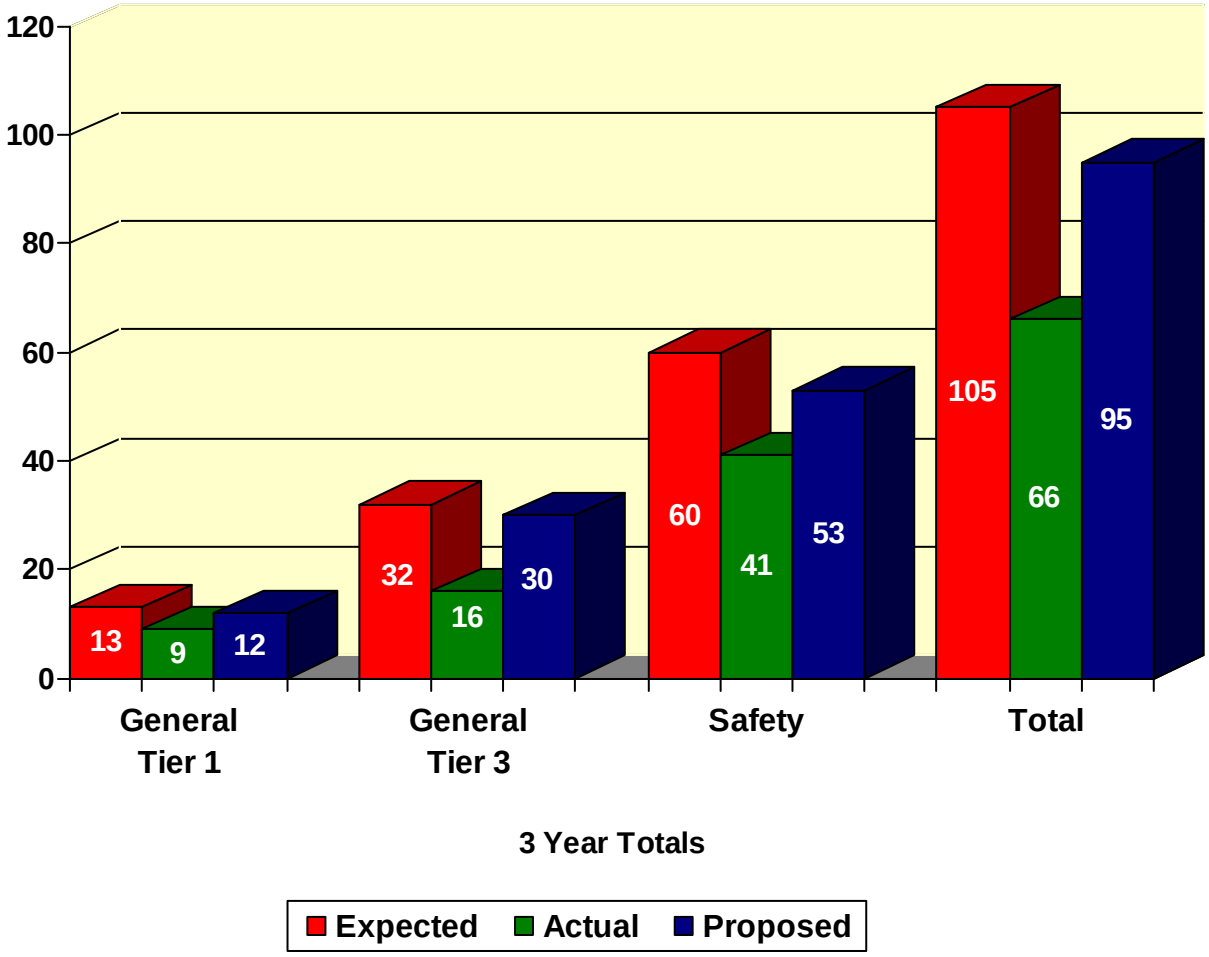


Chart 21
Disablement Rates for General Tier 1 Members

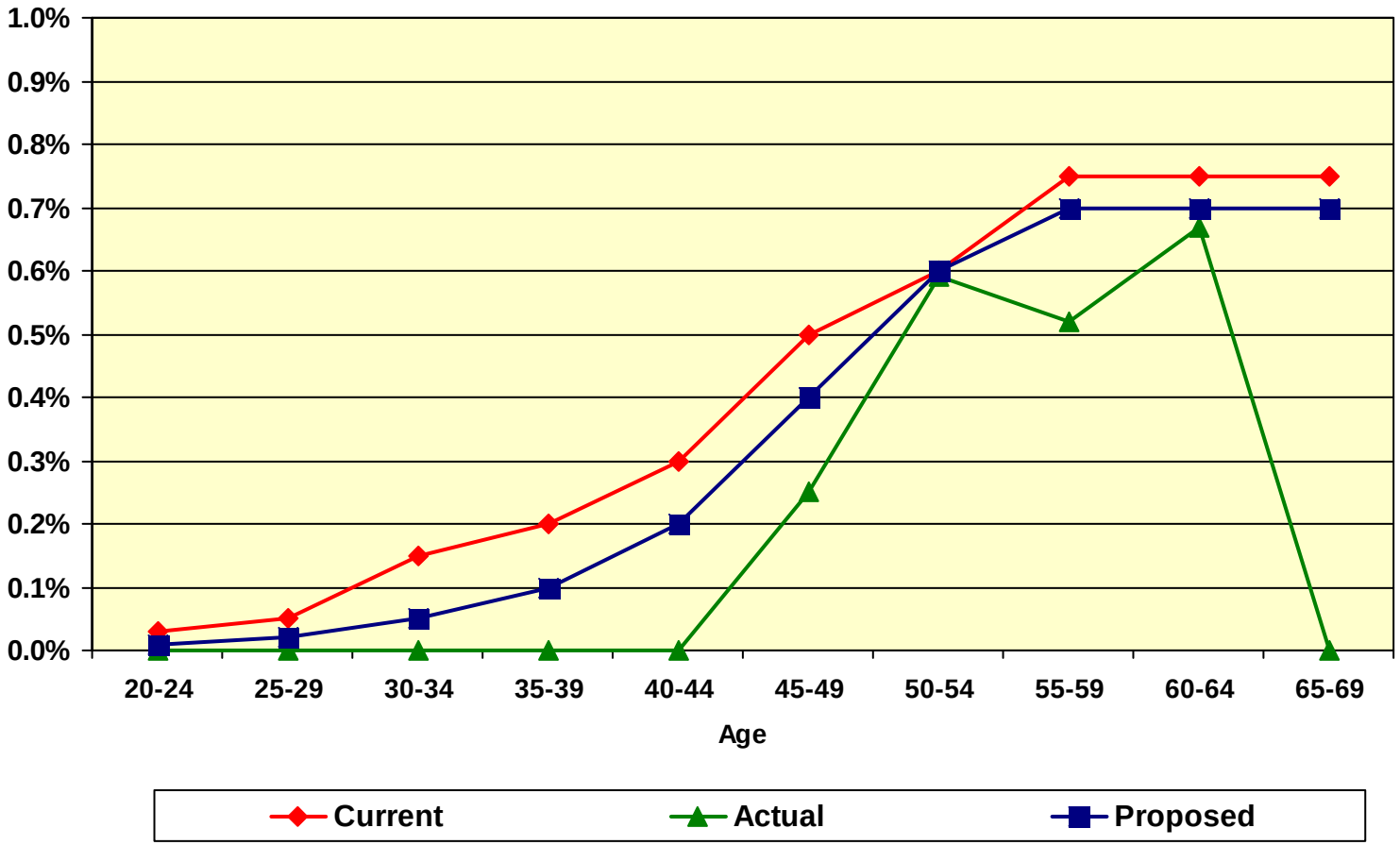


Chart 22
Disablement Rates for General Tier 3 Members

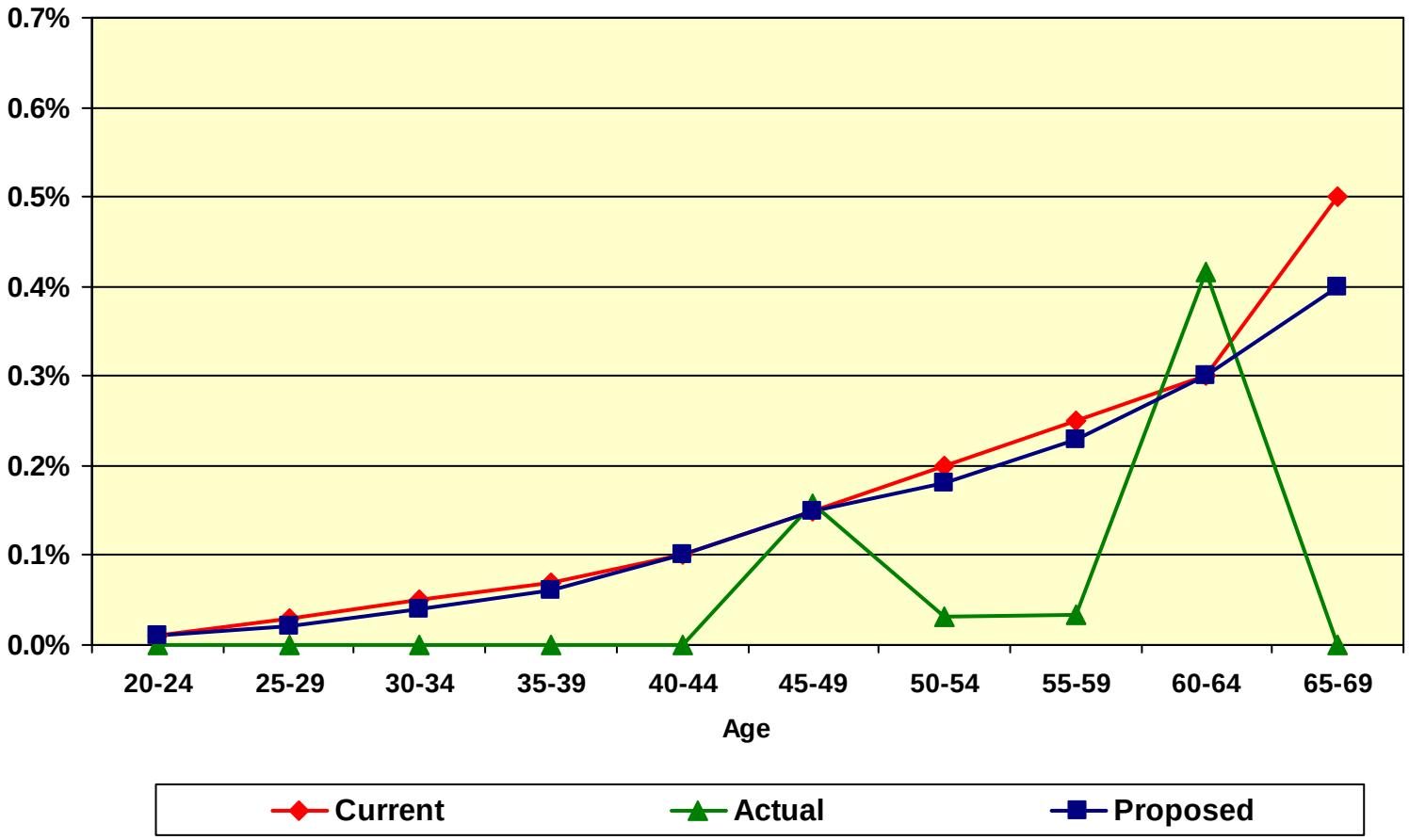
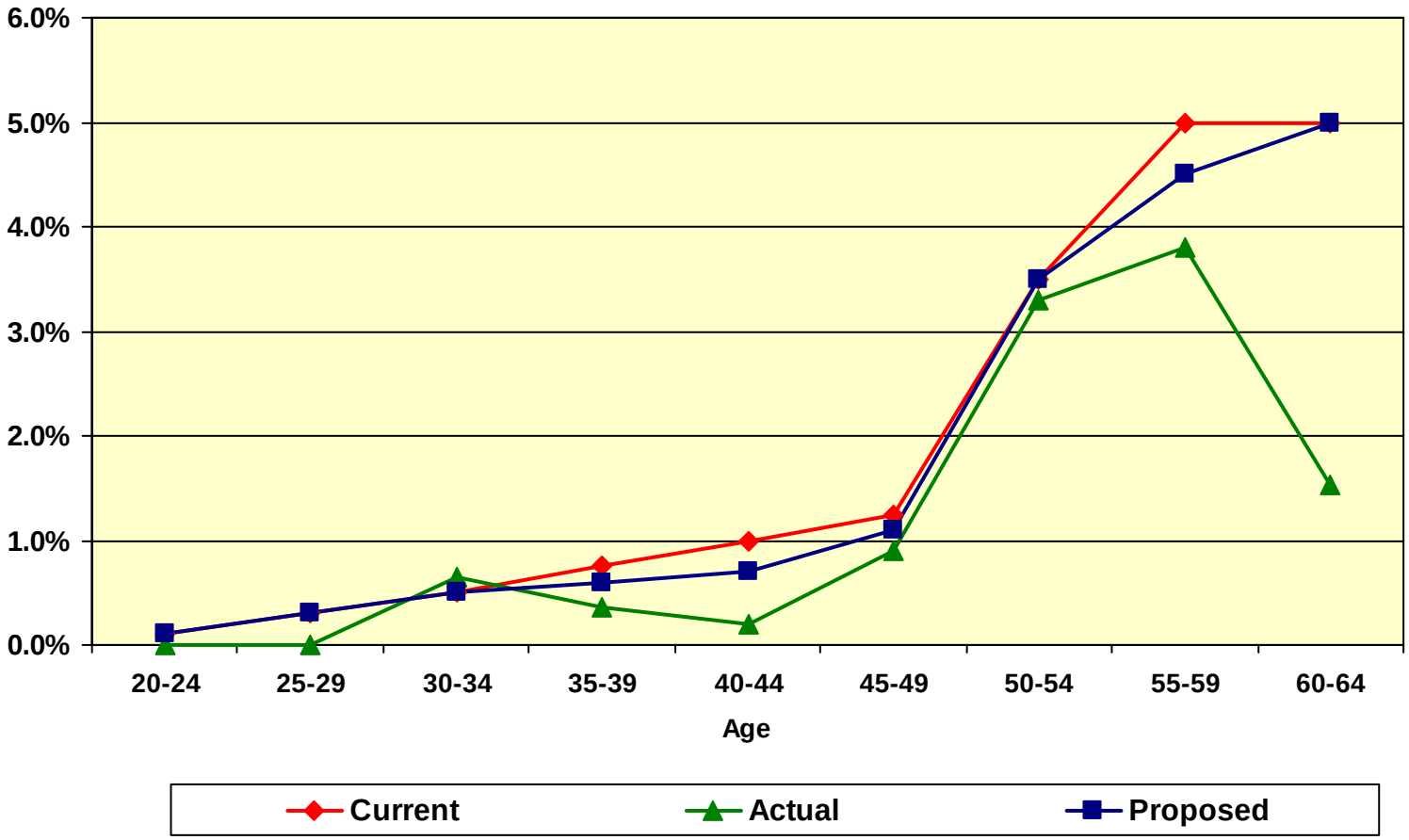


Chart 23
Disablement Rates for Safety Members



G. PROMOTIONAL AND MERIT 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
- Promotional and merit increases.

The inflationary increases are assumed to follow the general annual price inflation assumption discussed in our separate economic assumption report where we recommended a decrease from 3.50% to 3.25%. We also discussed in that report maintaining the annual "across the board" real pay increase assumption at 0.75%. Therefore, the total assumed inflation and real "across the board" pay increase (i.e. wage inflation) decreases from 4.25% to 4.00%. This is the annual rate of payroll growth at which payments to amortize the Unfunded Actuarial Accrued Liability (UAAL) are assumed to increase.

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

- Measuring each continuing member's actual salary increase over each year of the experience period;
- Excluding any members with increases of more than 50% or decreases of more than 25% during any particular year;
- Categorizing these increases according to member demographics;
- Removing the wage inflation component from these increases (assumed to be equal to the increase in the members' average salary during the year);
- Averaging these annual increases over the three-year experience period; and
- Modifying current assumptions to reflect some portion of these measured increases reflective of their "credibility."

Note that, to be consistent with the other economic assumptions, these merit and promotional assumptions should be used in combination with the 4.00% assumed inflation and real "across the board" increases.

The following table shows the General members' actual average promotional and merit increases by years of service over the three-year period from January 1, 2010 through December 31, 2012 along with the actual average increases based on the current and prior three-year periods. The current and proposed assumptions are also shown. The actual increases for the most recent three-year period were reduced by the actual average inflation plus "across the board" increase (i.e., wage inflation, estimated as the increase in average salaries) for each year over the current three-year experience period (-0.4% on average). Since the actual increases were reduced by a negative number, this results in a 0.4% addition to the actual promotional and merit increases.

General

Years of Service	Current Assumptions	January 1, 2010 Through December 31, 2012 Average General Promotional and Merit Increases	Actual Average Increases from Current and Prior Study	Proposed Assumptions
Less than 1	9.00%	20.78%	17.40%	9.50%
1	6.00	12.71	9.09	6.50
2	4.75	6.50	5.33	4.75
3	3.25	5.46	3.70	3.25
4	2.25	4.58	3.03	2.25
5	1.50	3.27	1.85	1.50
6	1.25	2.92	1.78	1.25
7	1.00	2.45	1.22	1.00
8	0.75	1.72	0.92	0.75
9	0.75	2.33	1.50	0.75
10	0.75	2.64	1.39	0.75
11	0.75	1.69	1.19	0.75
12	0.75	1.65	1.16	0.75
13	0.75	1.52	1.10	0.75
14	0.75	2.27	1.71	0.75
15	0.75	1.81	1.17	0.75
16	0.75	1.88	1.23	0.75
17	0.75	1.62	0.93	0.75
18	0.75	2.04	1.36	0.75
19	0.75	2.08	1.37	0.75
20 or more	0.75	1.34	1.09	0.75

The following table provides the same information for Safety members. The actual average promotional and merit increases were determined by reducing the actual average total salary increases by the actual average inflation plus real "across the board" increase (i.e. wage inflation) for each year over the three-year period (-0.9% on average). Since the actual increases were reduced by a negative number, this results in a 0.9% addition to the actual promotional and merit increases.

Safety

Years of Service	Current Assumptions	January 1, 2010 Through December 31, 2013 Average Safety Promotional and Merit Increases	Actual Average Increases from Current and Prior Study	Proposed Assumptions
Less than 1	9.50%	17.34%	16.60%	10.00%
1	6.25	12.00	8.81	6.50
2	5.25	6.50	5.60	5.25
3	4.00	5.29	4.27	4.00
4	2.00	3.90	2.80	2.25
5	0.75	2.55	1.33	1.00
6	0.75	1.74	1.09	0.75
7	0.75	1.48	0.43	0.75
8	0.75	1.51	1.00	0.75
9	0.75	1.59	0.71	0.75
10	0.75	1.90	1.26	0.75
11	0.75	1.58	1.20	0.75
12	0.75	1.39	0.90	0.75
13	0.75	1.20	1.05	0.75
14	0.75	1.91	2.61	0.75
15	0.75	2.64	1.51	0.75
16	0.75	2.71	1.97	0.75
17	0.75	2.09	1.69	0.75
18	0.75	2.08	1.30	0.75
19	0.75	2.06	1.42	0.75
20 or more	0.75	2.14	1.39	0.75

Charts 24 and 25 provide a graphical comparison of the actual promotional and merit increases, compared to the proposed assumptions. Chart 24 shows this information for General members and Chart 25 is for Safety members.

We realize that the most recent three-year experience period may not be indicative of typical future long-term promotional and merit salary increases. This appears to be the case as members received no “across the board” salary increases (based on the decrease in average wages). Note that in this situation our model may lead to higher estimated promotional and merit increases. Therefore, we also examined the promotional and merit salary experience used in the prior experience study. We believe that combining the experience from the last two studies into an average result provides a more reasonable representation of expected future promotional and merit salary increases over the long term. However, in our proposed changes to the promotional and merit increases, we have given relatively less weight to the actual average increase experience during the last two studies.

Based on this experience, we are proposing slight overall increases in the promotional and merit salary increases for both General and Safety members. Overall, salary increases are assumed to be lower for both General and Safety members due to the lower price inflation assumption.

Chart 24
Promotional and Merit Salary Increase Rates - General Members

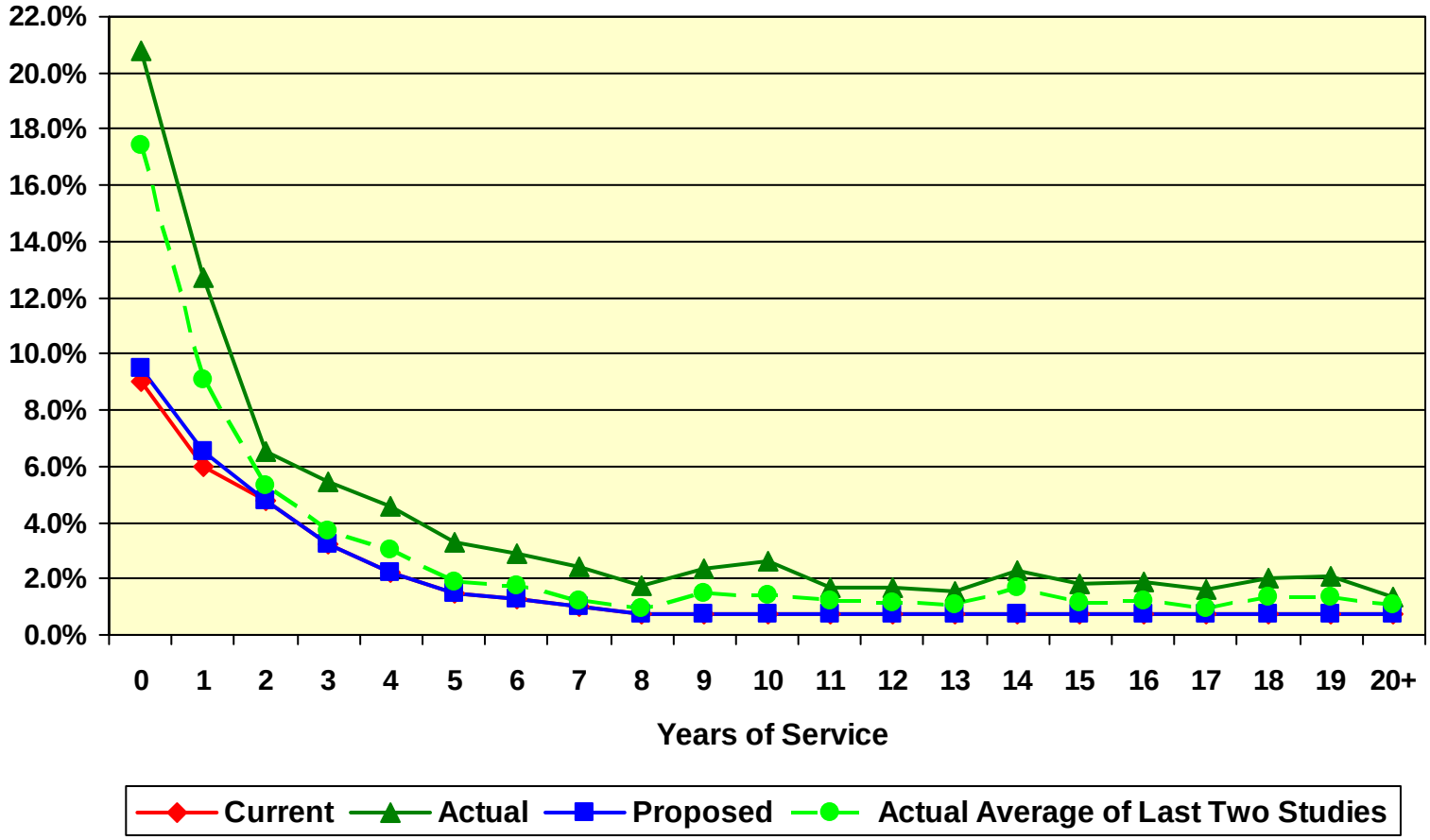
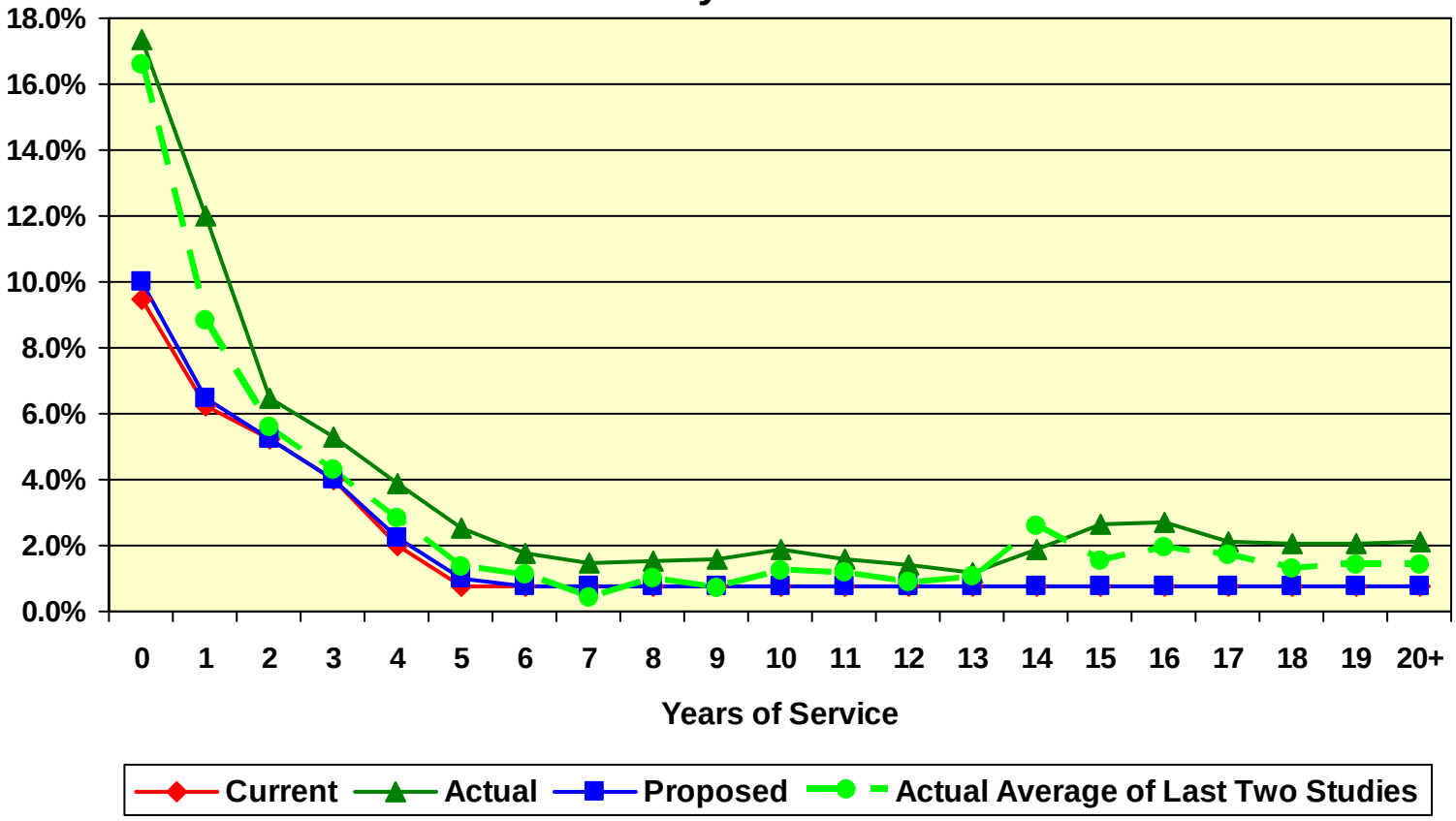


Chart 25
Promotional and Merit Salary Increase Rates - Safety Members



H. TERMINAL PAY

In 1998, the Board of Retirement, in the course of actions related to the Paulson Settlement, determined that several additional pay elements should be included as Earnable Compensation. These additional pay elements fall into two categories:

- Ongoing Pay Elements – Those that are expected to be received relatively uniformly over a member's employment years; and

- Terminal Pay Elements – Those that are expected to be received only during the member's final average earnings pay period.

The first category is recognized in the actuarial calculations by virtue of being included in the current pay of active members. The second category requires a separate actuarial assumption to anticipate its impact on a member's retirement benefit. Note that members in the PEPRA tiers do not have a terminal pay assumption, because terminal pay elements are not included in pensionable compensation under the PEPRA formulas.

In this study, we have collected data for the last three years to estimate terminal pay for non-PEPRA members as a percentage of current pay. We were provided both:

- The amount of terminal pay the member actually received at retirement under the policy that applies to members with membership dates before January 1, 2011.

- The amount of terminal pay the member would hypothetically have received at retirement under the new policy that applies to members with membership dates on or after January 1, 2011.

The results are summarized in the table on the following page (which is followed by a key showing the employers in each cost group).

Note that AB 197 may require CCCERA to apply a policy to members with membership dates before January 1, 2011 that is similar to that which currently applies to members with membership dates on or after January 1, 2011. Currently, a court "stay" prevents CCCERA from implementing AB 197. Our proposed assumptions do not reflect any potential changes due to AB 197 pending a decision by the Contra Costa County Superior Court.

Terminal Pay as a Percentage of Final Average Pay (Excluding Such Terminal Pay) by Cost Group

Year	Cost Group #1 Average Terminal Pay	Tier 2 Cost Group #2 Average Terminal Pay	Tier 3 Cost Group #2 Average Terminal Pay	Cost Group #3 Average Terminal Pay	Cost Group #4 Average Terminal Pay	Cost Group #5 Average Terminal Pay	Cost Group #6 Average Terminal Pay	Cost Group #7 Average Terminal Pay	Cost Group #8 Average Terminal Pay	Cost Group #9 Average Terminal Pay	Cost Group #10 Average Terminal Pay	Cost Group #11 Average Terminal Pay	Cost Group #12 Average Terminal Pay
						Actual Terminal Pay under Old Policy							
2010	13.94%	3.19%	6.84%	24.55%	5.24%	10.97%	0.00%	13.30%	12.45%	0.00%	10.37%	12.72%	18.27%
2011	13.75%	4.38%	8.89%	24.18%	7.38%	11.35%	4.67%	13.36%	10.06%	0.00%	14.25%	11.77%	14.35%
2012	9.16%	4.50%	8.32%	22.99%	5.33%	8.45%	0.00%	12.53%	9.02%	0.00%	9.95%	13.43%	13.42%
Average	12.93%	4.19%	8.33%	23.88%	5.53%	11.05%	3.50%	13.13%	10.33%	0.00%	11.81%	12.71%	14.98%
						Hypothetical Terminal Pay under New Policy							
2010	3.68%	N/A	0.87%	8.39%	0.00%	3.54%	0.00%	1.47%	2.40%	0.00%	0.00%	6.61%	8.46%
2011	3.28%	N/A	1.42%	10.21%	0.00%	2.39%	0.00%	1.46%	1.32%	0.00%	3.16%	3.74%	4.02%
2012	1.11%	N/A	0.97%	10.19%	0.81%	1.91%	0.00%	1.17%	0.40%	0.00%	0.00%	3.32%	1.42%
Average	2.99%	N/A	1.18%	9.58%	0.45%	2.66%	0.00%	1.39%	1.29%	0.00%	1.32%	3.58%	4.15%
Retiring Member Count	259	668	934	79	9	15	4	188	77	0	12	40	8
						Applies to members with membership date before January 1, 2011							
Current Assumptions	12.00%	3.50%	7.50%	24.00%	6.00%	12.00%	12.00%	11.25%	10.50%	3.75%	14.00%	15.00%	16.00%
						Applies to members with membership date on or after January 1, 2011							
Current Assumptions	3.00%	N/A	1.00%	8.00%	0.75%	3.00%	3.00%	1.50%	1.25%	0.50%	1.75%	3.50%	8.00%
						Applies to members with membership date before January 1, 2011							
Proposed Assumptions	12.50%	4.00%	8.00%	24.00%	5.75%	11.50%	9.00%	12.00%	10.50%	4.00%	13.00%	14.00%	15.50%
						Applies to members with membership date on or after January 1, 2011							
Proposed Assumptions	3.00%	N/A	1.00%	8.75%	0.75%	2.75%	2.25%	1.50%	1.25%	0.50%	1.50%	3.50%	6.25%

For retiring members with service in more than one tier, their terminal pay is determined separately for each tier's benefit and these amounts are allocated to each applicable cost group separately in this exhibit.

Summary of Cost Groups and Employers

GENERAL

Cost Group	Employer Name	Benefit Structure
(1)	County General	Tier 1 Enhanced
	Local Agency Formation Commission	Tier 1 Enhanced
	CC Mosquito and Vector Control District	Tier 1 Enhanced
	Bethel Island Municipal District	Tier 1 Enhanced
	First 5 - Children & Families Commission	Tier 1 Enhanced
	Contra Costa County Employees' Retirement Association	Tier 1 Enhanced
	Superior Court	Tier 1 Enhanced
	East Contra Costa Fire Protection District	Tier 1 Enhanced
	Moraga-Orinda Fire District	Tier 1 Enhanced
	Rodeo-Hercules Fire Protection District	Tier 1 Enhanced
	San Ramon Valley Fire District	Tier 1 Enhanced
(2)	County General	Tier 3 Enhanced
	In-Home Supportive Services Authority	Tier 3 Enhanced
	Contra Costa Mosquito and Vector Control District	Tier 3 Enhanced
	Superior Court	Tier 3 Enhanced
(3)	Central Contra Costa Sanitary District	Tier 1 Enhanced
(4)	Contra Costa Housing Authority	Tier 1 Enhanced
(5)	Contra Costa County Fire Protection District	Tier 1 Enhanced
(6)	Rodeo Sanitary District	Tier 1 Non-Enhanced
	Byron Brentwood Cemetery	Tier 1 Non-Enhanced

Summary of Cost Groups and Employers (continued)

SAFETY

Cost Group	Employer Name	Benefit Structure
(7)	County Safety	Tier A Enhanced
(8)	Contra Costa County Fire Protection District	Tier A Enhanced
	East Contra Costa Fire Protection District	Tier A Enhanced
(9)	County Safety	Tier C Enhanced (Deputy Sheriff new hires)
(10)	Moraga-Orinda Fire District	Tier A Enhanced
(11)	San Ramon Valley Fire District	Tier A Enhanced
(12)	Rodeo-Hercules Fire Protection District	Tier A Non-Enhanced

Note that there is no actual experience during the period for members in Cost Group #9 (Safety Tier C) since this tier was created on January 1, 2007 and there have been no retirements since its inception. The proposed assumption was based on the actual experience for Cost Group #7, taking into account the different definitions of final compensation between Safety Tier A and Safety Tier C.

Based on the data in the above table, we are recommending adjustments in the terminal pay assumptions for the December 31, 2012 valuation for most cost groups. Overall, the terminal pay assumptions are slightly higher under the new assumptions..

For determining the cost of the basic benefit (i.e., non-COLA component), the cost of this pay element is currently recognized in the valuation as an employer only cost and does not affect member contribution rates.

I. SERVICE FROM UNUSED SICK LEAVE CONVERSION

At retirement, members can convert their unused sick 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 proportional increase in service that will occur due to unused sick leave conversions.

In this study, we have collected data for the last three years to estimate sick leave converted to service credit as a percentage of total service credit (before including the sick leave converted to service credit) at retirement separately for General and Safety members as well as non-disabled and disabled members. The results are summarized in the following table:

	Non-Disabled Retirees		Disabled Retirees	
Year	General	Safety	General	Safety
2010	1.22%	2.03%	0.05%	1.66%
2011	1.16%	2.27%	0.02%	0.47%
2012	1.25%	1.81%	0.10%	1.85%
Weighted Average	1.20%	2.06%	0.08%	1.21%
Current Assumption	1.25%	2.25%	0.25%	1.25%
Proposed Assumption	1.25%	2.00%	0.10%	1.25%

Based on the data in the above table, we recommend that the current sick leave conversion assumptions be decreased for Safety non-disabled and General disabled members.

Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.

IV. COST IMPACT OF ASSUMPTION CHANGES

The table on the following page shows the changes in key valuation results due to the recommended demographic assumption changes as if they were applied in the December 31, 2011 actuarial valuation along with the changes in economic assumptions already adopted by the Board. If all of the proposed demographic assumption changes were implemented, the Plan's average employer rate would have increased by 2.28% of compensation. The average member rate would have increased by 0.35% of compensation. Of the various demographic assumption changes, the most significant cost impact is from the healthy mortality assumption change.

The estimated cost impact of the economic assumptions previously adopted by the Board in March were an increase of 5.55% of compensation for the average employer rate and 1.00% of compensation for the average member rate.

Therefore, the estimated cost impact of all proposed assumption changes (both demographic and economic) is 7.83% of compensation for the average employer rate, where the Normal Cost rate increased by 2.39% and the UAAL amortization rate increased by 5.44%. The average member rate would have increased by 1.35% of compensation. The Plan's Unfunded Actuarial Accrued Liability would have increased by $526 million, causing the funded ratio to decrease from 78.5% to 72.9%.

Charts 26 through 37 show the member contribution rates from the December 31, 2011 actuarial valuation along with the member rates based on the proposed assumptions and methods.

Summary of Key Valuation Results as of December 31, 2011

	Current Assumptions		Proposed Assumptions	
Average Employer Contribution Rates[(1)]:		Estimated		Estimated
General	Total Rate	Annual Amount	Total Rate	Annual Amount
Cost Group #1 – County and Small Districts (Tier 1)	32.53%	$9,389,219	38.19%	$11,015,090
Cost Group #2 – County and Small Districts (Tier 3)	28.78%	130,861,297	34.53%	157,516,762
Cost Group #3 – Central Contra Costa Sanitary District	58.36%	14,435,891	66.46%	16,437,995
Cost Group #4 – Contra Costa Housing Authority	35.26%	1,983,485	40.68%	2,285,710
Cost Group #5 – Contra Costa County Fire Protection District	30.75%	1,080,023	38.32%	1,343,805
Cost Group #6 – Small Districts (Tier 1 Non-Enhanced)	24.88%	189,265	28.24%	216,890
Safety				
Cost Group #7 – County (Tier A)	66.42%	47,810,154	81.44%	58,554,906
Cost Group #8 – Contra Costa and East Fire Protection Districts	59.05%	22,204,573	74.84%	28,175,331
Cost Group #9 – County (Tier C)	59.19%	6,001,376	73.12%	7,578,813
Cost Group #10 – Moraga-Orinda Fire District	52.94%	3,979,298	67.28%	5,065,927
Cost Group #11 – San Ramon Valley Fire District	68.39%	12,968,849	81.23%	15,399,055
Cost Group #12 – Rodeo-Hercules Fire Protection District	72.53%	1,433,817	86.16%	1,699,933
All Employers combined	37.87%	$252,337,247	45.70%	$305,290,216
Average Member Contribution Rates[(1)]:		Estimated		Estimated
General	Total Rate	Annual Amount	Total Rate	Annual Amount
Cost Group #1 – County and Small Districts (Tier 1)	9.55%	$2,756,922	10.72%	$3,091,955
Cost Group #2 – County and Small Districts (Tier 3)	9.75%	44,337,350	10.88%	49,631,693
Cost Group #3 – Central Contra Costa Sanitary District	10.03%	2,481,328	11.23%	2,777,591
Cost Group #4 – Contra Costa Housing Authority	10.44%	587,382	11.63%	653,461
Cost Group #5 – Contra Costa County Fire Protection District	9.85%	345,958	11.03%	386,800
Cost Group #6 – Small Districts (Tier 1 Non-Enhanced)	11.34%	86,275	12.39%	95,158
Safety				
Cost Group #7 – County (Tier A)	15.85%	11,411,285	18.04%	12,970,659
Cost Group #8 – Contra Costa and East Fire Protection Districts	15.26%	5,737,116	17.38%	6,543,122
Cost Group #9 – County (Tier C)	12.49%	1,265,845	14.07%	1,458,341
Cost Group #10 – Moraga-Orinda Fire District	15.34%	1,153,050	17.53%	1,319,942
Cost Group #11 – San Ramon Valley Fire District	14.54%	2,756,394	16.61%	3,148,816
Cost Group #12 – Rodeo-Hercules Fire Protection District	14.10%	278,737	15.92%	314,101
All Categories Combined	10.98%	$73,197,642	12.33%	$82,391,640
Funded Status:				
Actuarial accrued liability	$6,915,311,649		$7,441,259,320	
Valuation value of assets	$5,426,719,066		$5,426,719,066	
Funded percentage	78.5%		72.9%	
Unfunded Actuarial Accrued Liability (UAAL)	$1,488,592,583		$2,014,540,254	

(1) *Based on projected payroll of $666,394,146 under the current assumptions and $668,015,487 under the proposed assumptions. These rates do not include any employer subvention of member contributions or any member subvention of employer contributions. The rates shown are averages based on all members regardless of their membership date.*

Chart 26
General Non-enhanced Tier 1 Member Contribution Rates
For Members with Membership Dates before January 1, 2011

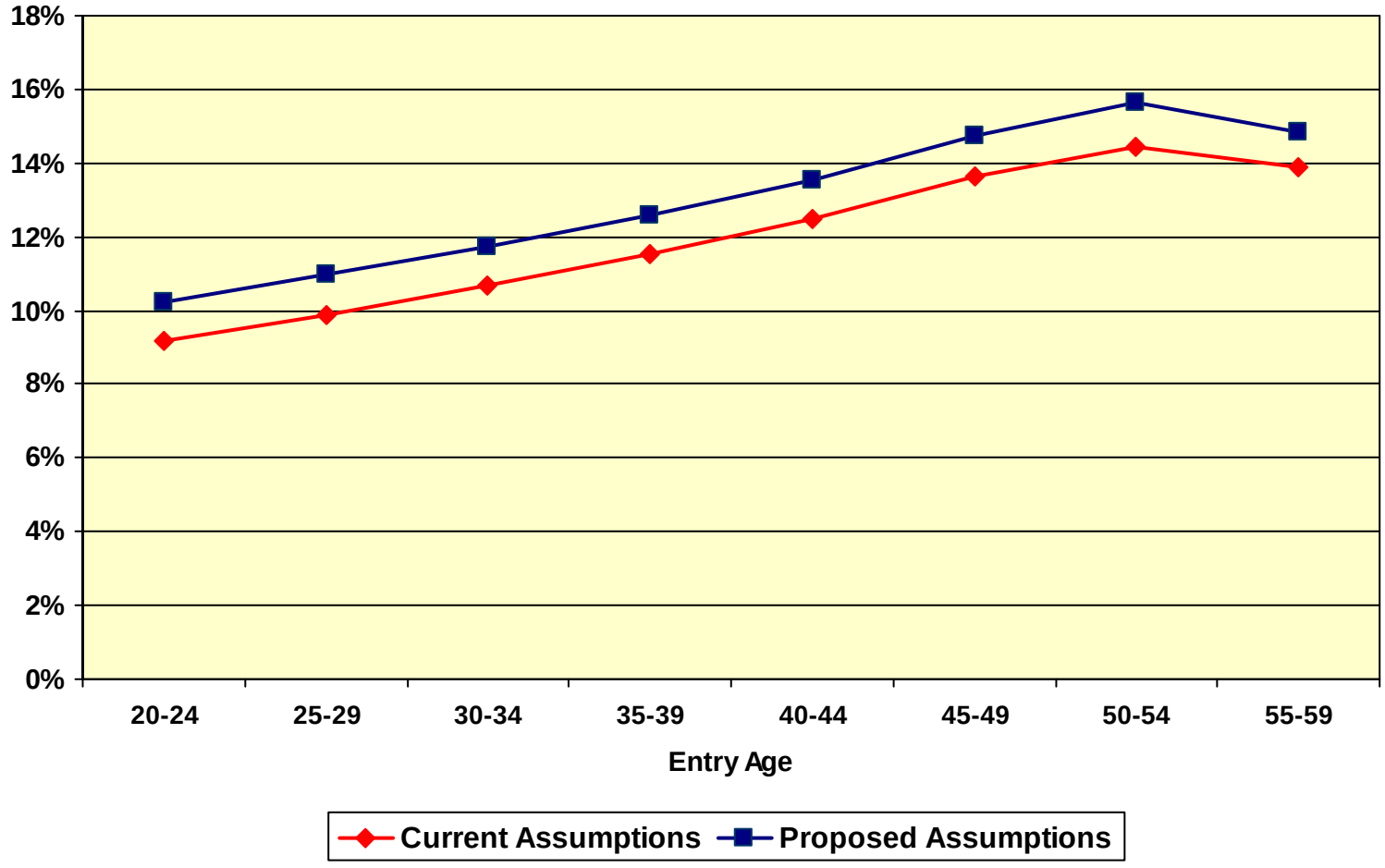


Chart 27
General Enhanced Tier 1 Member Contribution Rates For Members with Membership Dates before January 1, 2011

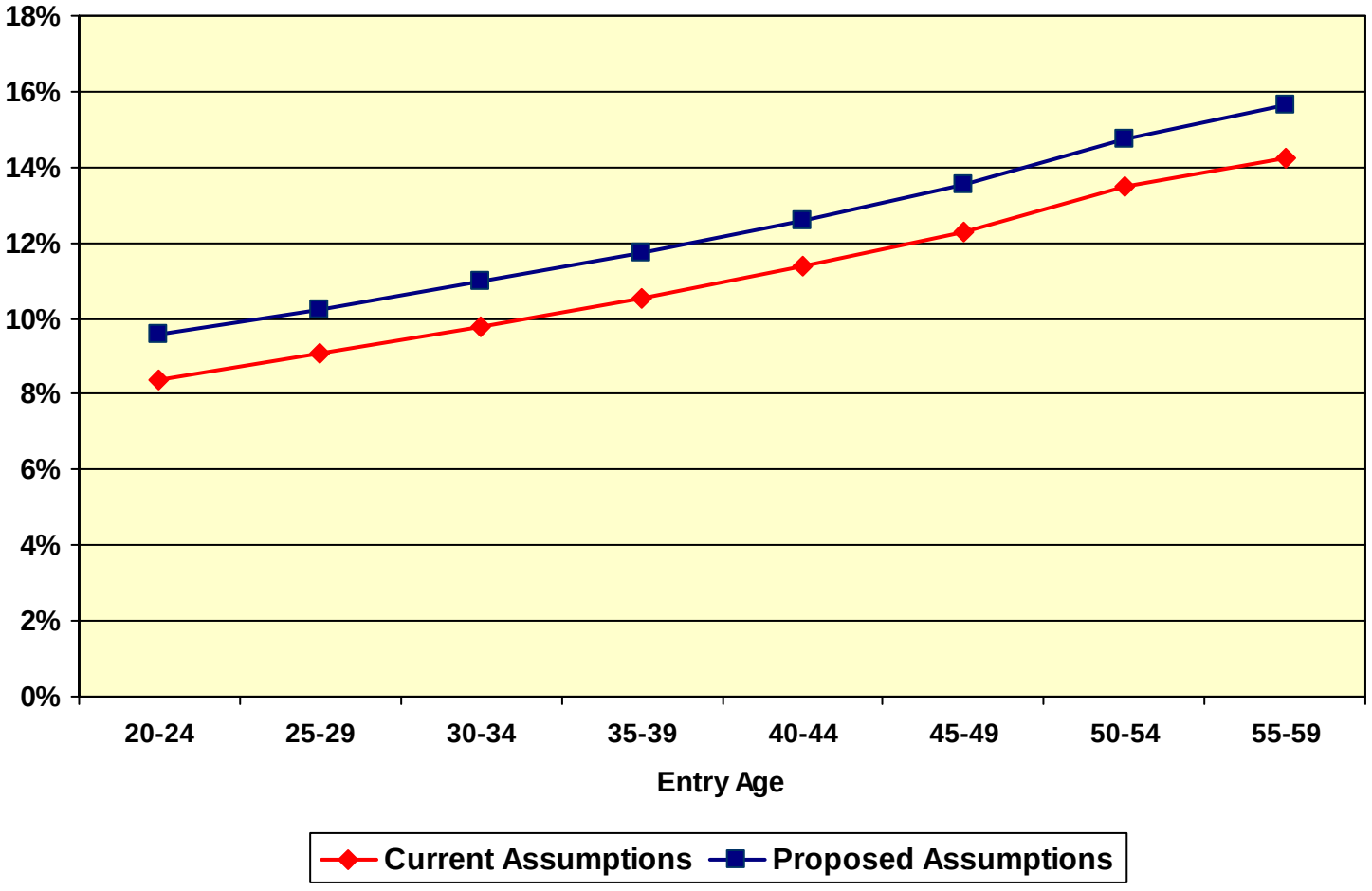


Chart 28
General Enhanced Tier 3 Member Contribution Rates For Members with Membership Dates before January 1, 2011

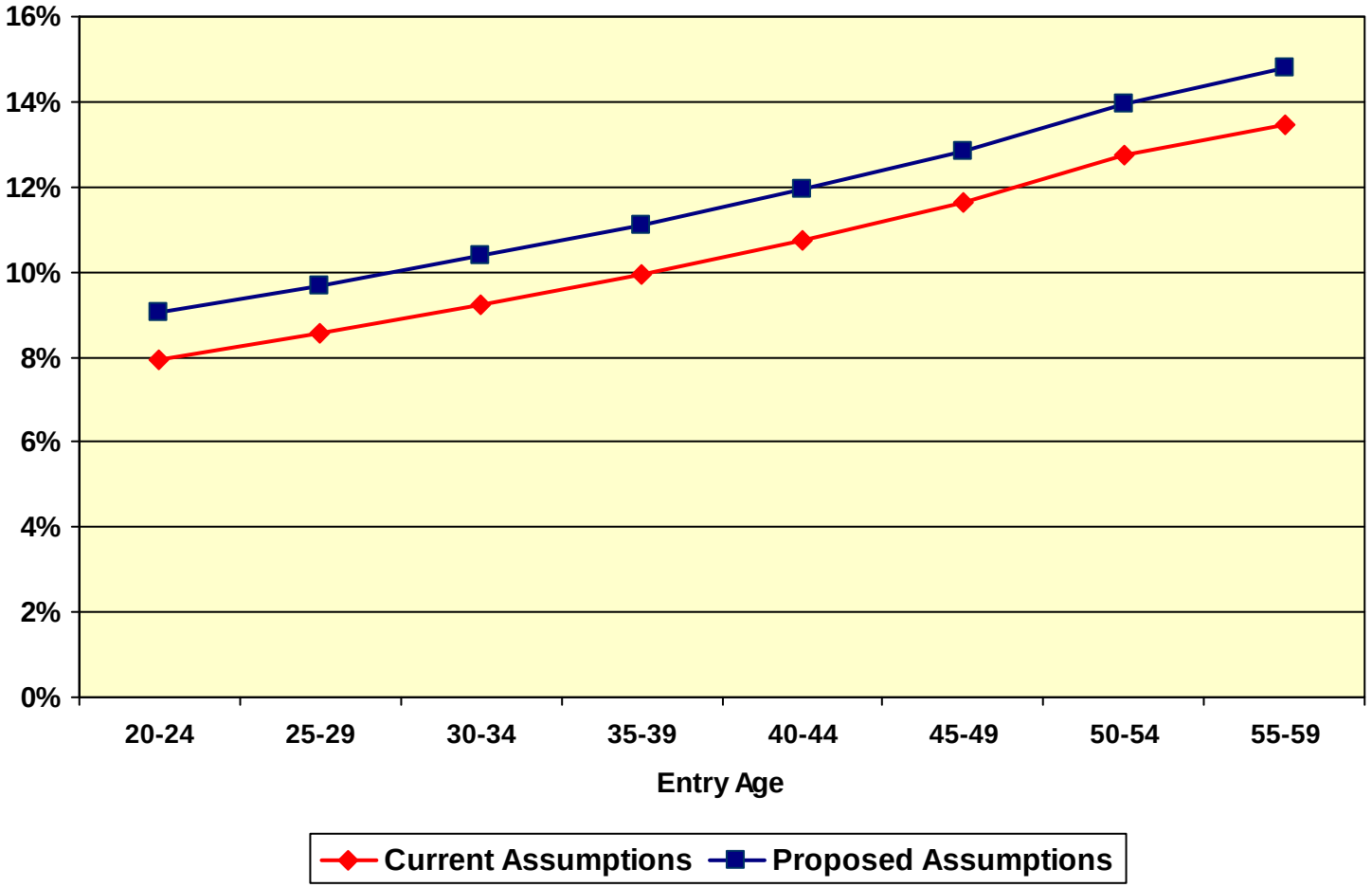


Chart 29
Safety Non-enhanced Tier A Member Contribution Rates For Members with Membership Dates before January 1, 2011

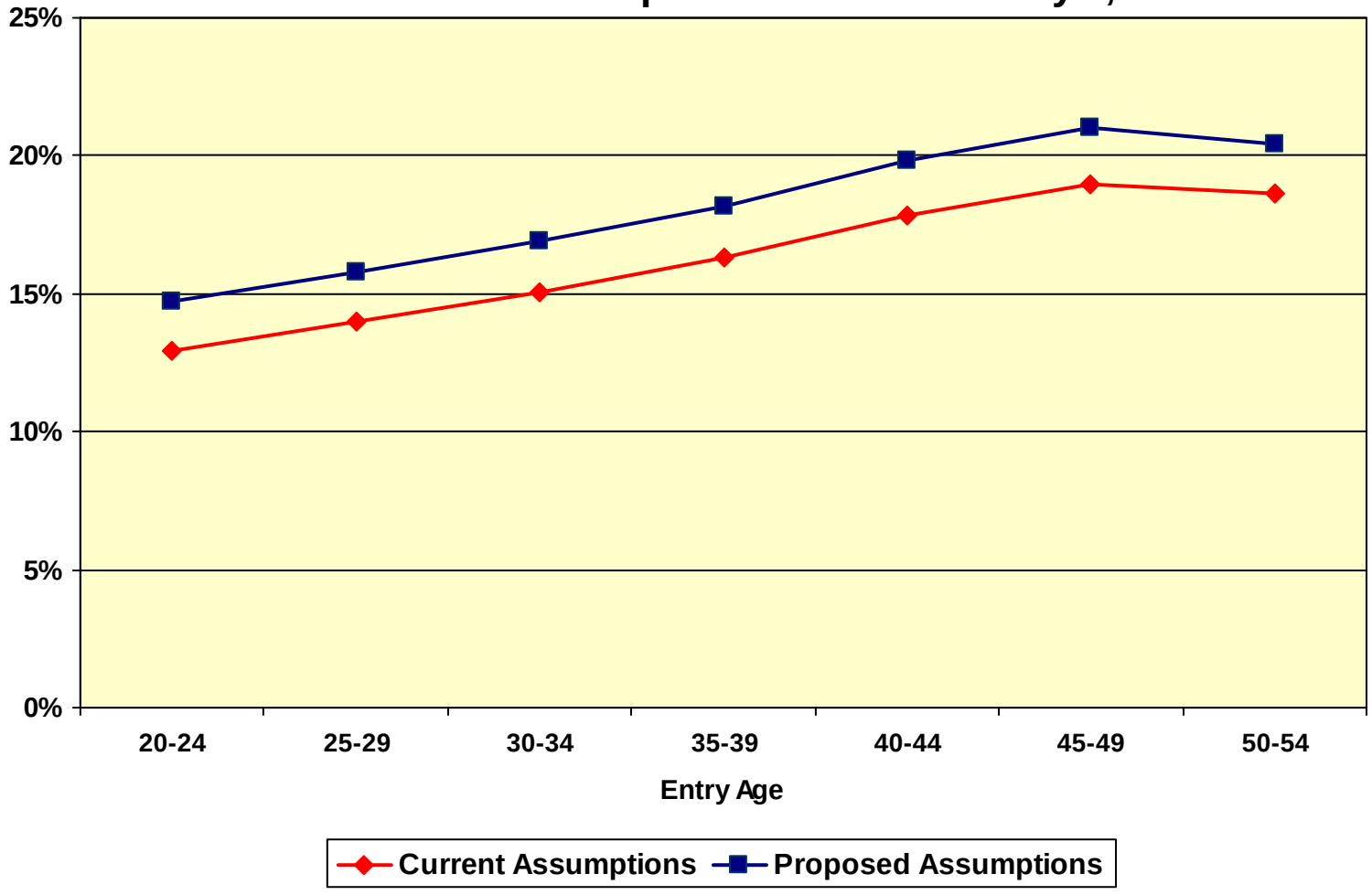


Chart 30
Safety Enhanced Tier A Member Contribution Rates For Members with Membership Dates before January 1, 2011

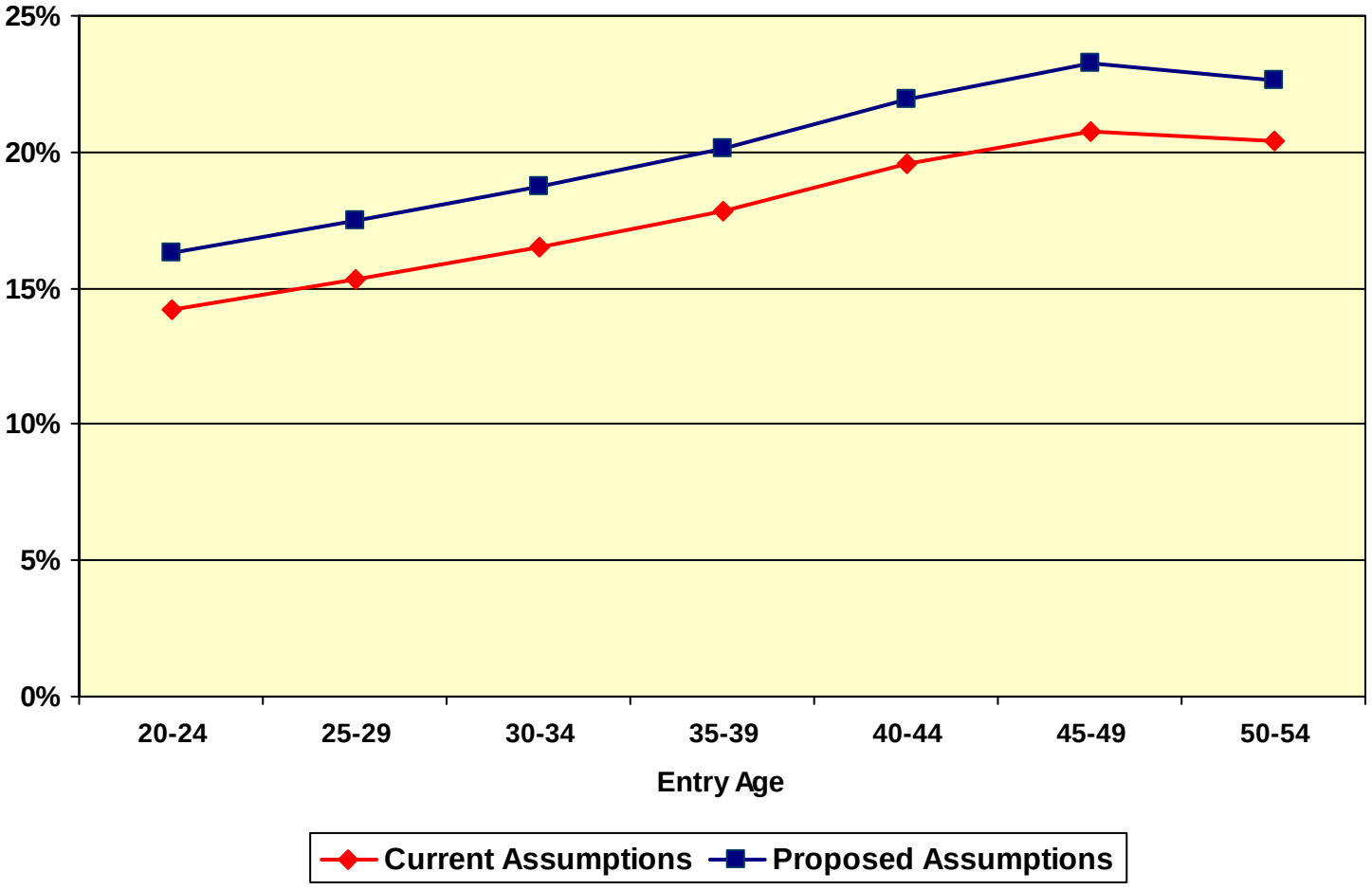


Chart 31
Safety Enhanced Tier C Member Contribution Rates For Members with Membership Dates before January 1, 2011

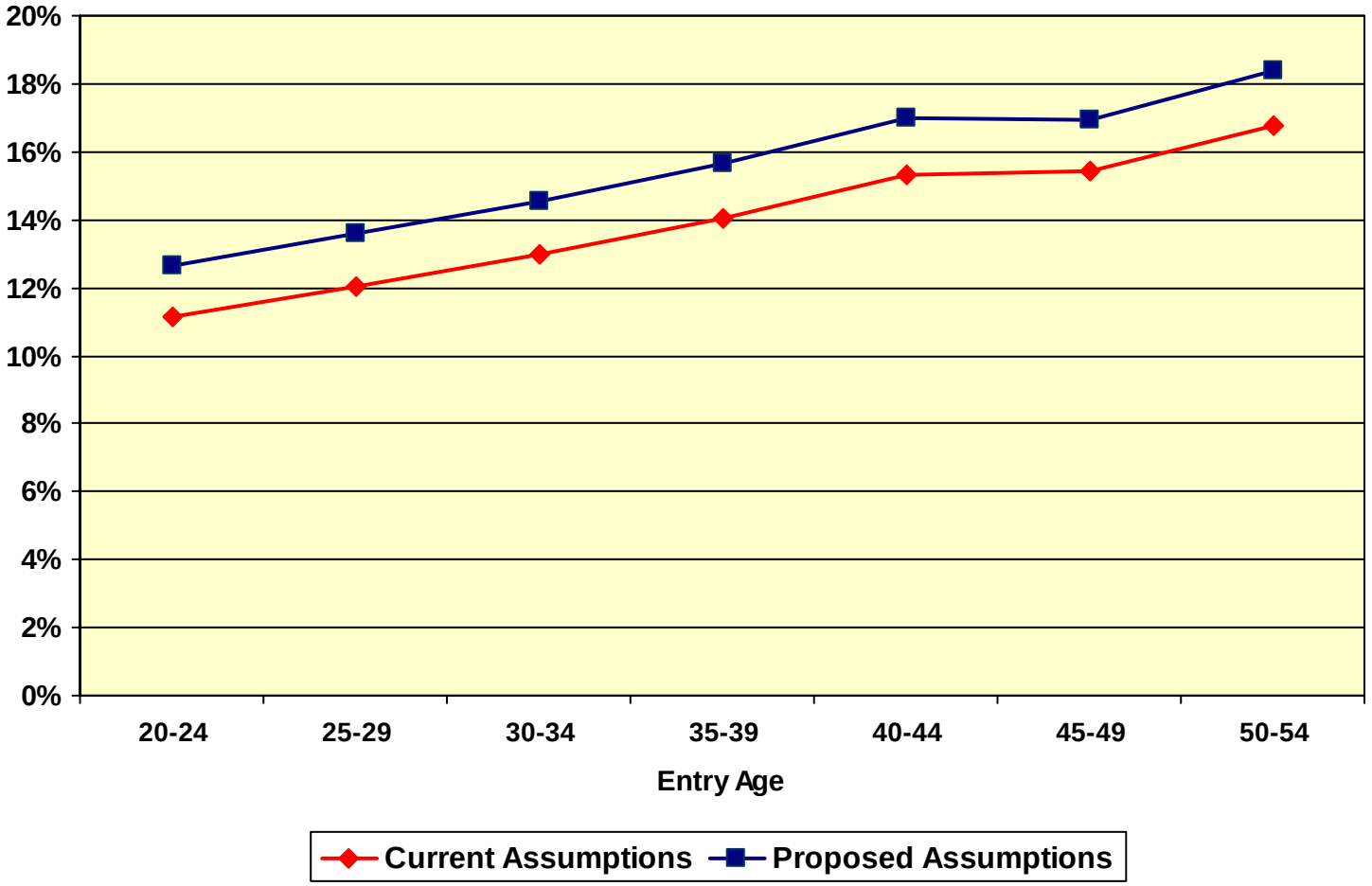


Chart 32
General Non-enhanced Tier 1 Member Contribution Rates For Members with Membership Dates on or after January 1, 2011

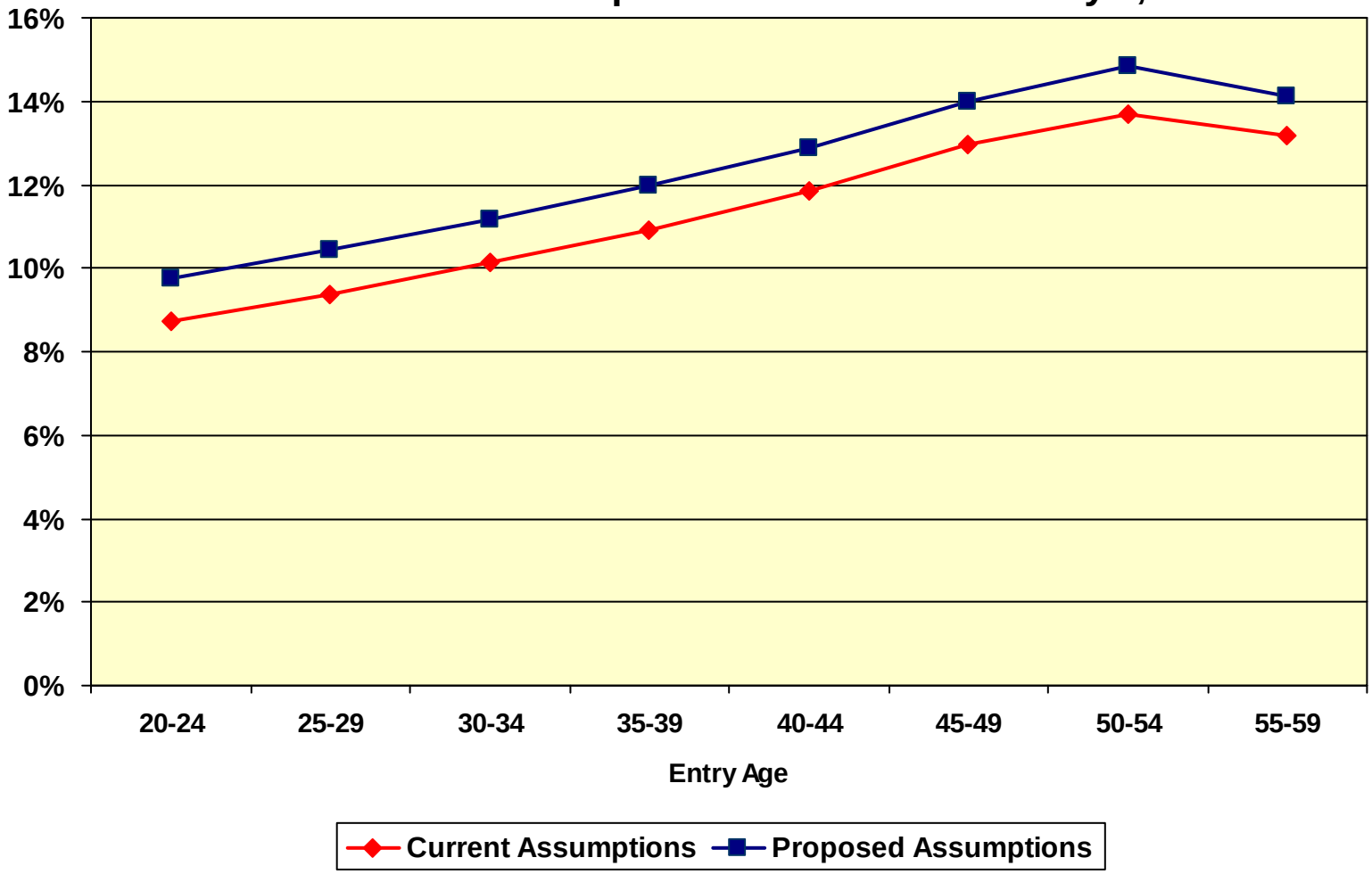


Chart 33
General Enhanced Tier 1 Member Contribution Rates For Members with Membership Dates on or after January 1, 2011

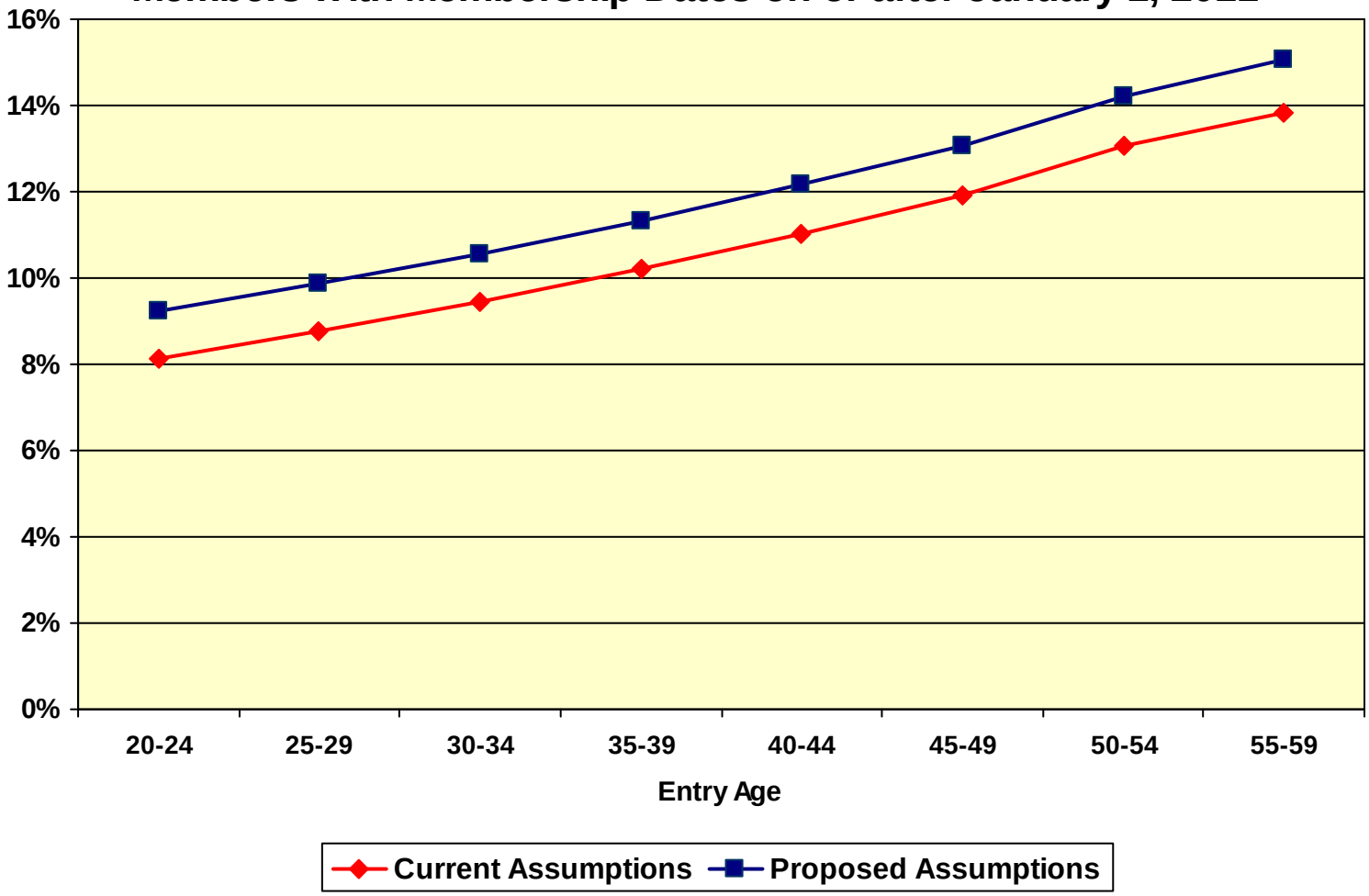


Chart 34
General Enhanced Tier 3 Member Contribution Rates For Members with Membership Dates on or after January 1, 2011

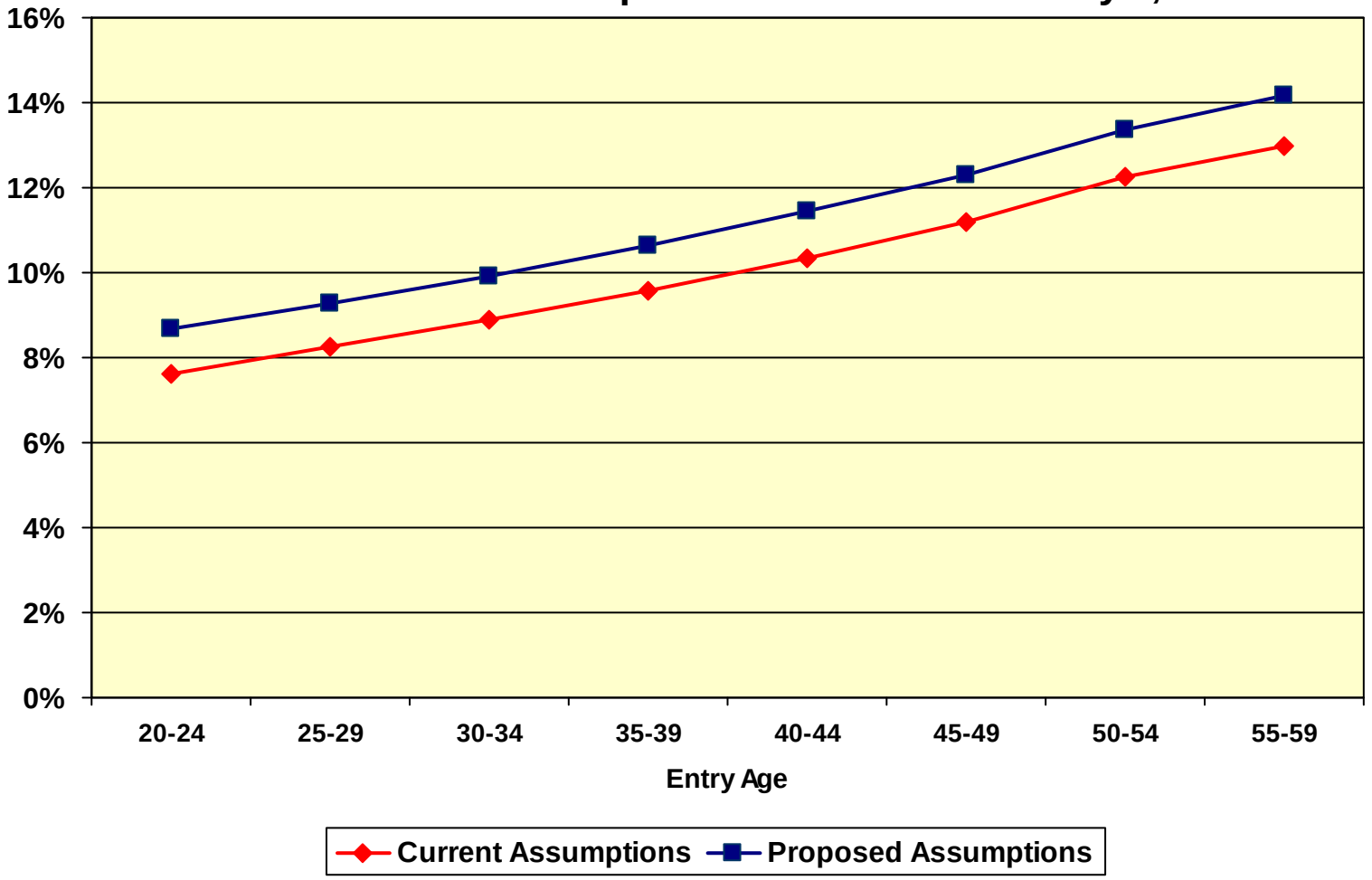


Chart 35
Safety Non-enhanced Tier A Member Contribution Rates with Membership Dates on or after January 1, 2011

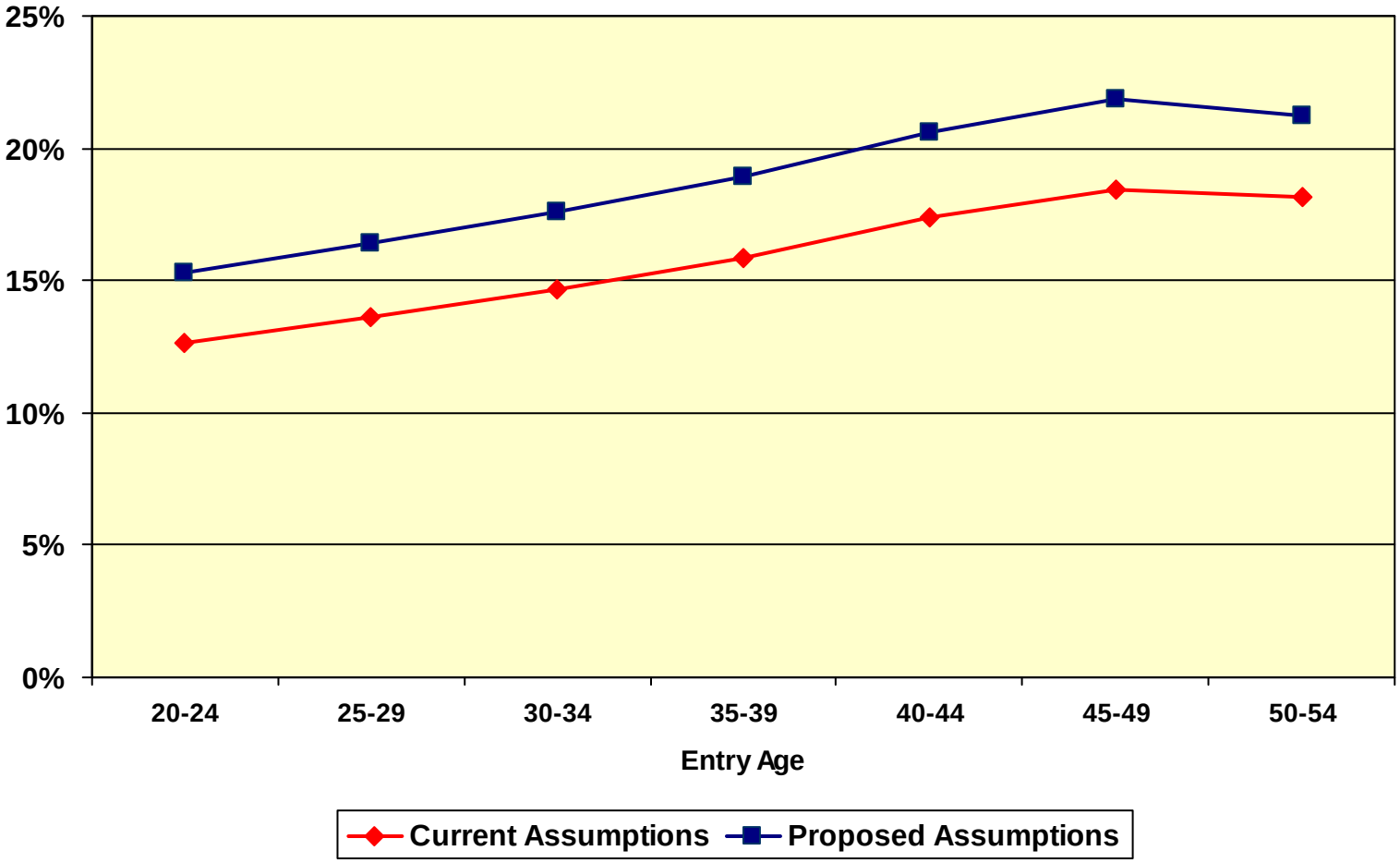


Chart 36
Safety Enhanced Tier A Member Contribution Rates For Members with Membership Dates on or after January 1, 2011

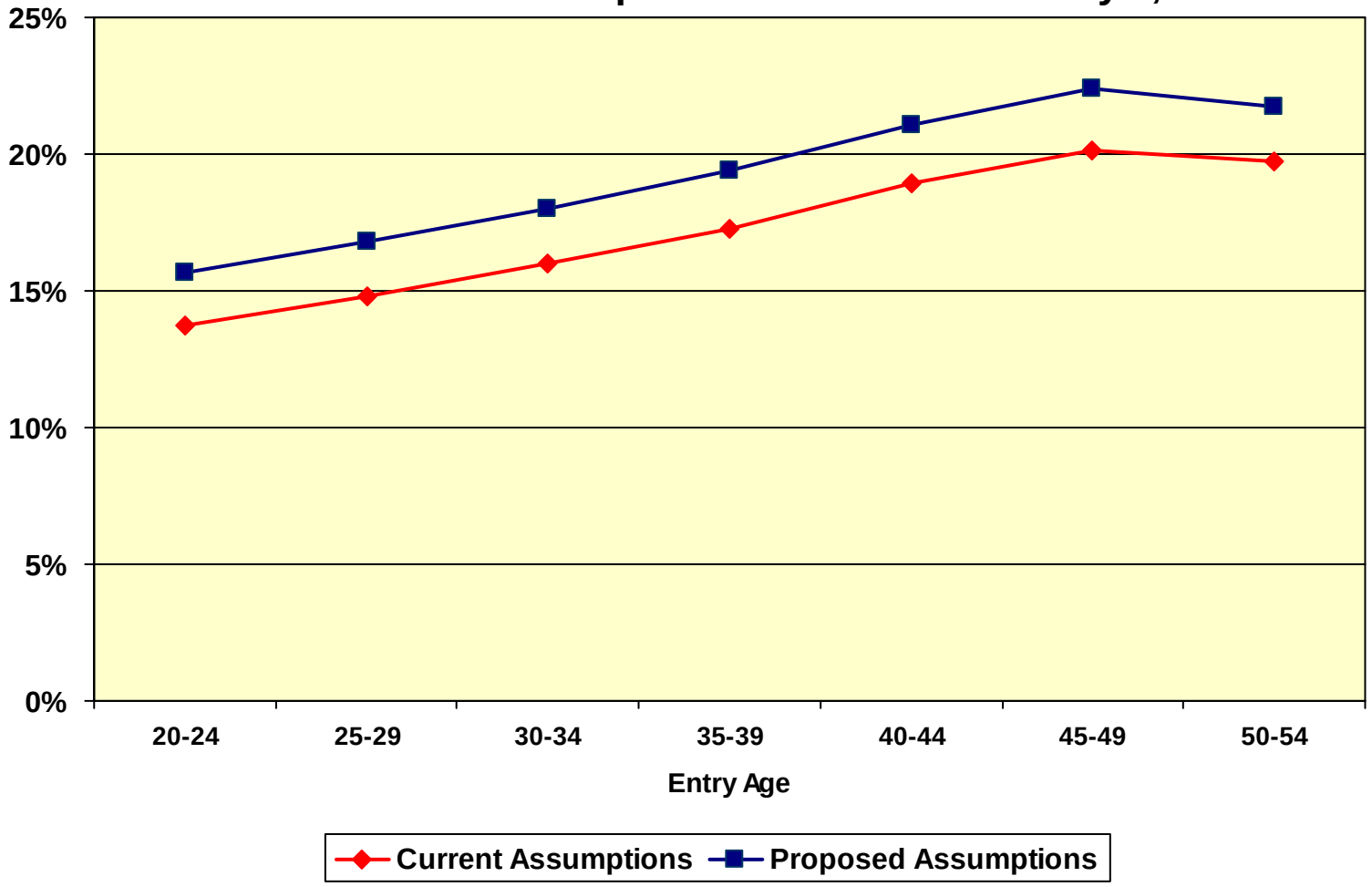
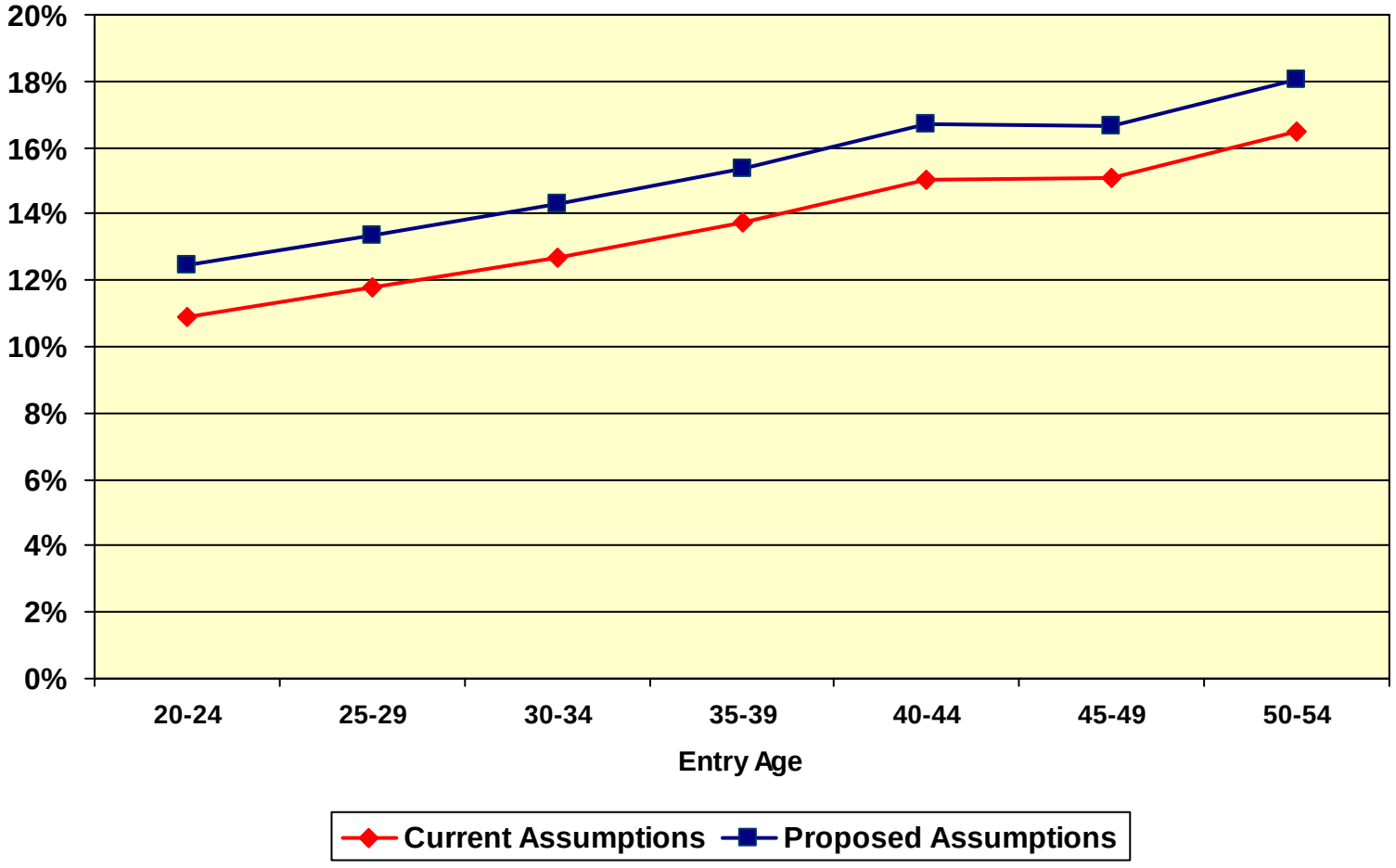


Chart 37
Safety Enhanced Tier C Member Contribution Rates For Members with Membership Dates on or after January 1, 2011



APPENDIX A

CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

Mortality Rates:

Healthy: For General Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females.

For Safety Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females.

Disabled: For General Members: RP-2000 Combined Healthy Mortality Table set forward four years.

For Safety Members: RP-2000 Combined Healthy Mortality Table set back two years.

Beneficiaries: Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who has taken a service (non-disability) retirement.

Member Contribution Rates: For General Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females weighted 30% male and 70% female.

For Safety Members: RP-2000 Combined Healthy Mortality Table set back three years for males and set back two years for females weighted 85% male and weighted 15% female.

Termination Rates Before Retirement:

Rate (%)

Mortality

	General		Safety	
Age	**Male**	**Female**	**Male**	**Female**
25	0.04	0.02	0.04	0.02
30	0.04	0.02	0.04	0.02
35	0.06	0.04	0.06	0.04
40	0.09	0.06	0.09	0.06
45	0.12	0.09	0.12	0.09
50	0.17	0.14	0.17	0.14
55	0.27	0.22	0.27	0.22
60	0.47	0.39	0.47	0.39
65	0.88	0.76	0.88	0.76

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

Termination Rates Before Retirement (continued):

	Rate (%)		
	Disability		
Age	General Tier 1[(1)]	General Tier 3[(2)]	Safety[(3)]
20	0.02	0.00	0.02
25	0.04	0.02	0.22
30	0.11	0.04	0.42
35	0.18	0.06	0.65
40	0.26	0.09	0.90
45	0.42	0.13	1.15
50	0.56	0.18	2.60
55	0.69	0.23	4.40
60	0.75	0.28	5.00
65	0.75	0.42	5.00
70	0.75	0.58	5.00

(1) 70% of General Tier 1 disabilities are assumed to be duty disabilities. The other 30% are assumed to be ordinary disabilities.

(2) 25% of General Tier 3 disabilities are assumed to be duty disabilities. The other 75% are assumed to be ordinary disabilities.

(3) 100% of Safety disabilities are assumed to be duty disabilities.

Termination Rates Before Retirement (continued):

Rate (%)

Withdrawal (Less than Five Years of Service)

Years of Service	General	Safety
0	15.00	11.00
1	9.00	7.00
2	9.00	5.00
3	6.00	4.00
4	5.00	4.00

Withdrawal (Five or more Years of Service)*

Age	General	Safety
20	5.00	4.00
25	5.00	4.00
30	5.00	4.00
35	5.00	3.14
40	4.73	2.39
45	3.05	1.80
50	2.42	1.24
55	1.68	0.81
60	0.00	0.00

* The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No withdrawal is assumed after a member is first assumed to retire.

Retirement Rates :

	Rates (%)			
Age	General Tier 1 (Enhanced)	General Tier 3 (Enhanced)	General Tier 1 (Non-enhanced)	PEPRA General Tiers 4 and 5
50	4.00	4.00	3.00	0.00
51	4.00	3.00	3.00	0.00
52	4.00	3.00	3.00	2.00
53	5.00	3.00	3.00	2.00
54	10.00	5.00	3.00	3.00
55	15.00	10.00	10.00	5.00
56	15.00	10.00	10.00	5.00
57	17.00	10.00	10.00	6.00
58	20.00	10.00	10.00	7.00
59	20.00	10.00	10.00	8.00
60	20.00	15.00	25.00	10.00
61	30.00	17.00	15.00	12.50
62	30.00	25.00	40.00	20.00
63	30.00	25.00	25.00	20.00
64	30.00	27.00	30.00	20.00
65	35.00	35.00	40.00	25.00
66	35.00	35.00	35.00	30.00
67	35.00	35.00	35.00	30.00
68	35.00	35.00	35.00	30.00
69	35.00	35.00	35.00	30.00
70	100.00	40.00	100.00	50.00
71	100.00	40.00	100.00	50.00
72	100.00	40.00	100.00	50.00
73	100.00	40.00	100.00	50.00
74	100.00	40.00	100.00	50.00
75	100.00	100.00	100.00	100.00

Retirement Rates :

	Rates (%)			
Age	Safety Tier A (Enhanced)	Safety Tier C (Enhanced)	Safety Tier A (Non-enhanced)	PEPRA Safety Tiers D and E
45	2.00	1.00	0.00	0.00
46	2.00	1.00	0.00	0.00
47	2.00	1.00	0.00	0.00
48	2.00	1.00	0.00	0.00
49	10.00	5.00	0.00	0.00
50	25.00	15.00	1.00	5.00
51	17.00	10.00	1.00	3.00
52	20.00	12.00	1.00	3.00
53	20.00	12.00	1.00	4.00
54	20.00	12.00	1.00	4.00
55	30.00	20.00	2.00	6.00
56	25.00	15.00	2.00	8.00
57	25.00	15.00	3.00	12.00
58	30.00	20.00	4.00	18.00
59	30.00	20.00	20.00	20.00
60	40.00	30.00	17.00	17.00
61	40.00	30.00	17.00	17.00
62	40.00	30.00	18.00	18.00
63	40.00	30.00	20.00	20.00
64	40.00	30.00	100.00	100.00
65	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:

For deferred vested benefits, we make the following retirement assumption:

General Age:	Age 58
Safety Age:	Age 55

We assume that 40% and 60% of future General and Safety deferred vested members, respectively, will continue to work for a reciprocal employer. For reciprocals, we assume 5.50% compensation increases per annum.

Future Benefit Accruals:

1.0 year of service per year for the full-time employees. Continuation of current partial service accrual for part-time employees.

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 and 50% of female members are assumed to be married at pre-retirement death or retirement. There is no explicit assumption for children's benefits.

Age of Spouse:

Females are 3 years younger than their spouses.

Offsets by Other Plans of the Employer for Disability Benefits:

The Plan requires members who retire because of disability from General Tier 3 and PEPRA General Tier 4 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.

Terminal Pay Assumptions:

The following assumptions for terminal pay as a percentage of final average pay are used:

General Tiers 1, 2 and 3
Safety Tiers A and C

	Membership Date before January 1, 2011	Membership Date on or after January 1, 2011
Cost Group 1:	12.00%	3.00%
Cost Group 2:	3.50% for Tier 2 7.50% for Tier 3	1.00%
Cost Group 3:	24.00%	8.00%
Cost Group 4:	6.00%	0.75%
Cost Group 5:	12.00%	3.00%
Cost Group 6:	12.00%	3.00%
Cost Group 7:	11.25%	1.50%
Cost Group 8:	10.50%	1.25%
Cost Group 9:	3.75%	0.50%
Cost Group 10:	14.00%	1.75%
Cost Group 11	15.00%	3.50%
Cost Group 12:	16.00%	8.00%

For determining the cost of the basic benefit (i.e. non-COLA component), the cost of this pay element is currently recognized in the valuation as an employer only cost and does not affect member contribution rates.

PEPRA General Tiers 4 and 5
PEPRA Safety Tiers D and E None

Service From Unused Sick Leave Conversion: The following assumptions for service converted from unused sick leave as a percentage of service at retirement are used:

Service Retirements:

General:	1.25%
Safety:	2.25%

Disability Retirements:

General:	0.25%
Safety:	1.25%

Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.

Net Investment Return: 7.75%, net of adminstration and investment expenses

Employee Contribution Crediting Rate: 7.75%

Consumer Price Index: Increase of 3.50% per year; retiree COLA increases due to CPI subject to a 3.00% maximum change per year except for Tier 3 disability benefits and Tier 2 benefits which are subject to a 4.00% maximum change per year (valued as a 3.50% increase). Safety Tier C benefits are subject to a 2.00% maximum change per year.

Salary Increases:

Annual Rate of Compensation Increase

Inflation: 3.50% per year, plus "across the board" salary increases of 0.75% per year, plus the following merit and promotional increases:

Years of Service	General	Safety
Less than 1	9.00%	9.50%
1	6.00%	6.25%
2	4.75%	5.25%
3	3.25%	4.00%
4	2.25%	2.00%
5	1.50%	0.75%
6	1.25%	0.75%
7	1.00%	0.75%
8	0.75%	0.75%
9	0.75%	0.75%
10	0.75%	0.75%
11	0.75%	0.75%
12	0.75%	0.75%
13	0.75%	0.75%
14	0.75%	0.75%
15	0.75%	0.75%
16	0.75%	0.75%
17	0.75%	0.75%
18	0.75%	0.75%
19	0.75%	0.75%
20 & over	0.75%	0.75%

Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized semi-annually over a five-year period.
Valuation Value of Assets:	Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is calculated as age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percent of compensation, with Normal Cost determined as if the current benefit accrual rate had always been in effect.

APPENDIX B

PROPOSED ACTUARIAL ASSUMPTIONS AND METHODS

Mortality Rates:

Healthy: For General Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back one year.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back two years.

Disabled: For General Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set forward six years for males and set forward seven years for females.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set forward three years.

Beneficiaries: Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who has taken a service (non-disability) retirement.

Member Contribution Rates: For General Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back one year, weighted 30% male and 70% female.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back two years, weighted 85% male and weighted 15% female.

Termination Rates Before Retirement:

	Rate (%) Mortality			
	General		Safety	
Age	Male	Female	Male	Female
25	0.03	0.01	0.02	0.01
30	0.04	0.02	0.03	0.02
35	0.06	0.03	0.05	0.03
40	0.08	0.04	0.08	0.04
45	0.10	0.07	0.09	0.06
50	0.12	0.09	0.11	0.08
55	0.17	0.18	0.16	0.15
60	0.37	0.38	0.33	0.34
65	0.74	0.74	0.66	0.66

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

Termination Rates Before Retirement (continued):

	Rate (%)		
	Disability		
Age	General Tier 1[(1)]	General Tier 3[(2)]	Safety[(3)]
20	0.01	0.01	0.02
25	0.02	0.02	0.22
30	0.04	0.03	0.42
35	0.08	0.05	0.56
40	0.16	0.08	0.66
45	0.32	0.13	0.94
50	0.52	0.17	2.54
55	0.66	0.21	4.10
60	0.70	0.27	4.80
65	0.70	0.36	5.00
70	0.70	0.44	5.00

(1) 70% of General Tier 1 disabilities are assumed to be duty disabilities. The other 30% are assumed to be ordinary disabilities.

(2) 35% of General Tier 3 disabilities are assumed to be duty disabilities. The other 65% are assumed to be ordinary disabilities.

(3) 100% of Safety disabilities are assumed to be duty disabilities.

Termination Rates Before Retirement (continued):

	Rate (%) Withdrawal	
Years of Service	**General**	**Safety**
Less than 1	13.50	11.50
1	9.00	6.50
2	9.00	5.00
3	6.00	4.00
4	4.50	3.50
5	4.00	3.00
6	3.75	2.75
7	3.50	2.50
8	3.25	2.25
9	3.00	2.00
10	2.75	1.90
11	2.50	1.80
12	2.40	1.70
13	2.30	1.60
14	2.20	1.50
15	2.10	1.40
16	2.00	1.30
17	2.00	1.20
18	2.00	1.10
19	2.00	1.00
20 or more	2.00	1.00

Retirement Rates :

	Rates (%)			
Age	General Tier 1 (Enhanced)	General Tier 3 (Enhanced)	General Tier 1 (Non-enhanced)	PEPRA General Tiers 4 and 5
50	5.00	4.00	3.00	0.00
51	4.00	3.00	3.00	0.00
52	6.00	3.00	3.00	2.00
53	6.00	5.00	3.00	3.00
54	12.00	5.00	3.00	3.00
55	20.00	10.00	10.00	5.00
56	20.00	10.00	10.00	5.00
57	20.00	10.00	10.00	6.00
58	22.00	12.00	10.00	8.00
59	25.00	12.00	10.00	9.00
60	30.00	15.00	25.00	10.00
61	35.00	20.00	15.00	14.00
62	35.00	27.00	40.00	21.00
63	35.00	27.00	25.00	21.00
64	35.00	30.00	30.00	21.00
65	40.00	40.00	40.00	27.00
66	40.00	40.00	35.00	33.00
67	40.00	40.00	35.00	33.00
68	40.00	40.00	35.00	33.00
69	40.00	40.00	35.00	33.00
70	100.00	40.00	100.00	50.00
71	100.00	40.00	100.00	50.00
72	100.00	40.00	100.00	50.00
73	100.00	40.00	100.00	50.00
74	100.00	40.00	100.00	50.00
75	100.00	100.00	100.00	100.00

Retirement Rates :

	Rates (%)			
Age	Safety Tier A (Enhanced)	Safety Tier C (Enhanced)	Safety Tier A (Non-enhanced)	PEPRA Safety Tiers D and E
45	2.00	1.00	0.00	0.00
46	2.00	1.00	0.00	0.00
47	7.00	3.00	0.00	0.00
48	7.00	3.00	0.00	0.00
49	20.00	10.00	0.00	0.00
50	25.00	15.00	5.00	5.00
51	25.00	15.00	4.00	4.00
52	25.00	15.00	4.00	4.00
53	25.00	15.00	5.00	5.00
54	25.00	15.00	5.00	5.00
55	30.00	20.00	6.00	6.00
56	25.00	15.00	8.00	8.00
57	25.00	15.00	12.00	12.00
58	35.00	25.00	18.00	18.00
59	35.00	25.00	20.00	20.00
60	40.00	35.00	20.00	20.00
61	40.00	35.00	20.00	20.00
62	40.00	35.00	20.00	20.00
63	40.00	35.00	20.00	20.00
64	40.00	35.00	100.00	100.00
65	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:

For deferred vested benefits, we make the following retirement assumption:

General Age:	Age 59
Safety Age:	Age 54

We assume that 40% and 60% of future General and Safety deferred vested members, respectively, will continue to work for a reciprocal employer. For reciprocals, we assume 5.25% compensation increases per annum.

Future Benefit Accruals:

1.0 year of service per year for the full-time employees. Continuation of current partial service accrual for part-time employees.

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 and 50% of female members are assumed to be married at pre-retirement death or retirement. There is no explicit assumption for children's benefits.

Age of Spouse:

Female are 3 years younger than their spouses.

Offsets by Other Plans of the Employer for Disability Benefits:

The Plan requires members who retire because of disability from General Tier 3 and PEPRA General Tier 5 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.

Terminal Pay Assumptions:

The following assumptions for terminal pay as a percentage of final average pay are used:

General Tiers 1, 2 and 3
Safety Tiers A and C

	Membership Date before January 1, 2011	Membership Date on or after January 1, 2011
Cost Group 1:	12.50%	3.00%
Cost Group 2:	4.00% for Tier 2 8.00% for Tier 3	1.00%
Cost Group 3:	24.00%	8.75%
Cost Group 4:	5.75%	0.75%
Cost Group 5:	11.50%	2.75%
Cost Group 6:	9.00%	2.25%
Cost Group 7:	12.00%	1.50%
Cost Group 8:	10.50%	1.25%
Cost Group 9:	4.00%	0.50%
Cost Group 10:	13.00%	1.50%
Cost Group 11	14.00%	3.50%
Cost Group 12:	15.50%	6.25%

For determining the cost of the basic benefit (i.e. non-COLA component), the cost of this pay element is currently recognized in the valuation as an employer only cost and does not affect member contribution rates.

These assumptions do not reflect any potential changes due to AB 197 pending a decision by the Contra Costa County Superior Court.

PEPRA General Tiers 4 and 5
PEPRA Safety Tiers D and E

None

Service From Unused Sick Leave Conversion:

The following assumptions for service converted from unused sick leave as a percentage of service at retirement are used:

Service Retirements:

General:	1.25%
Safety:	2.00%

Disability Retirements:

General:	0.10%
Safety:	1.25%

Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.

Net Investment Return:

7.25%, net of administration and investment expenses

Employee Contribution Crediting Rate:

7.25%

Consumer Price Index:

Increase of 3.25% per year; retiree COLA increases due to CPI subject to a 3.00% maximum change per year except for Tier 3 and PEPRA Tier 5 disability benefits and Tier 2 benefits which are subject to a 4.00% maximum change per year (valued as a 3.25% increase). Safety Tier C benefits are subject to a 2.00% maximum change per year.

Salary Increases:

Annual Rate of Compensation Increase		
Inflation: 3.25% per year, plus "across the board" salary increases of 0.75% per year, plus the following merit and promotional increases:		
Years of Service	General	Safety
Less than 1	9.50%	10.00%
1	6.50	6.50
2	4.75	5.25
3	3.25	4.00
4	2.25	2.25
5	1.50	1.00
6	1.25	0.75
7	1.00	0.75
8	0.75	0.75
9	0.75	0.75
10	0.75	0.75
11	0.75	0.75
12	0.75	0.75
13	0.75	0.75
14	0.75	0.75
15	0.75	0.75
16	0.75	0.75
17	0.75	0.75
18	0.75	0.75
19	0.75	0.75
20 or more	0.75	0.75

Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized semi-annually over a five-year period.
Valuation Value of Assets:	Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is calculated as age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percent of compensation, with Normal Cost determined as if the current benefit accrual rate had always been in effect.

5228843v1/05337.001