

**City of Los Angeles Fire and Police
Pension Plan**

ACTUARIAL EXPERIENCE STUDY

**Analysis of Actuarial Experience
During the Period
July 1, 2010 through June 30, 2013**



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San Francisco, CA 94104

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100 Montgomery Street Suite 500 San Francisco, CA 94104-4308
T 415.263.8200 www.segalco.com

July 3, 2014

Board of Fire and Police Pension Commissioners
City of Los Angeles Fire and Police Pension Plan
360 East Second Street, Suite 400
Los Angeles, CA 90012-4203

**Re: Review of Non-economic Actuarial Assumptions for the June 30, 2014
Actuarial Valuation**

Dear Members of the Board:

We are pleased to submit this report of our review of the actuarial experience of the City of Los Angeles Fire and Police Pension Plan. This study utilizes the census data for the period July 1, 2010 to June 30, 2013 and provides the proposed actuarial assumptions to be used effective with the June 30, 2014 valuation.

Please note that we have also reviewed the economic assumptions. The economic actuarial assumption recommendations for the June 30, 2014 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,

A handwritten signature in black ink, appearing to read "Paul Angelo", written over a horizontal line.

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

A handwritten signature in black ink, appearing to read "Andy Yeung", written over a horizontal line.

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 adequate 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, 2010 to June 30, 2013. 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." This Standard of Practice puts 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, pre-retirement mortality, healthy life mortality, disabled life mortality, termination rates, disability incidence rates, and salary increases.

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 Fire and Police members in Tiers 2-5 to anticipate generally earlier retirement with later retirements at higher ages for Police Tiers 3 and 5. While we recommend no change in the retirement rates for Fire Tier 6 until actual experience becomes available, we recommend the same reductions in retirement rates at the later retirement ages for Police Tier 6 to maintain consistency with those we recommend for Police Tiers 3 and 5, since the rates for Police Tier 6 were originally set equal to the rates for Police Tiers 3 and 5.

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

Recommendation: We recommend adjusting the rates as developed in Section III (C) to reflect decreased life expectancy. We recommend using the same tables for the pre-retirement mortality assumption as used for the post-retirement mortality and assuming that all pre-retirement deaths are service connected.

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 reducing the current rates to better reflect recent experience.

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

Recommendation: We recommend changing the current probability of disability retirement to reflect decreased disability rates. We also recommend maintaining the current level of disability benefit payable upon disability retirement and the current assumption that 90% of all disability retirements will be duty disability retirements.

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 adjusting the merit and promotion component of this assumption to reflect lower merit and promotional increases.

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, 2014 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., withdrawal from service, disability retirement, service retirement, and death after retirement. We also reviewed 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 withdrawal from service, we compare the number of employees who actually withdraw in a certain age and/or service category (i.e., the number of “decrements”) with those who could have withdrawn (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 left during the year, we would say the probability of withdrawal in that age group is $50 \div 500$ 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 withdrawal 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

Our recommendations are provided in a separate report titled “Review of Economic Actuarial Assumptions for the June 30, 2014 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.

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 Fire and Police members in Tiers 3 – 5. For Fire Tier 6, we are not recommending any changes in the retirement rates until actual experience becomes available. Even though there is no actual experience available for Police Tier 6, we are recommending reductions to some of the rates for ages 57 – 63. This is to maintain consistency with those we recommend for Police Tiers 3 and 5 as the rates for Police Tiers 6 were originally set equal to the rates for Police Tiers 3 and 5, and it would not be reasonable to assume higher rates of retirement for Tier 6 than for Tier 5.

For this experience study, consistent with prior practice, retirement experience for those members who retire after having participated in the DROP is combined with those members who have never participated in the DROP. This is based on the notion that DROP participants are considered active members until they leave DROP and begin receiving retirement benefits. However, at the date of retirement, there is an assumption that we apply to project the probability that a member has elected DROP before retirement, and if so, how many years the member has been in the DROP.

The following rates are the current, actual and proposed rates of retirement for Fire Tiers 2 and 4:

Rates of Retirement

Age	Current	Actual	Proposed
41	1.00%	0.00%	1.00%
42	1.00	0.00	1.00
43	1.00	0.00	1.00
44	1.00	0.00	1.00
45	1.00	0.00	1.00
46	1.00	0.00	1.00
47	1.00	14.29	1.00
48	2.00	0.00	2.00
49	2.00	11.11	2.00
50	3.00	0.00	3.00
51	3.00	6.67	4.00
52	4.00	0.00	5.00
53	5.00	8.57	10.00
54	5.00	31.03	15.00
55	10.00	41.18	20.00
56	15.00	14.29	20.00
57	15.00	28.57	20.00
58	15.00	60.00	20.00
59	15.00	0.00	20.00
60	20.00	0.00	20.00
61	20.00	14.29	20.00
62	20.00	40.00	25.00
63	25.00	50.00	25.00
64	30.00	0.00	30.00
65	100.00	66.67	100.00

The following rates are the current, actual and the proposed rates of retirement for Fire Tiers 3 and 5.

Rates of Retirement

Age	Current	Actual	Proposed
41	0.00%	0.00%	0.00%
42	0.00	0.00	0.00
43	0.00	0.00	0.00
44	0.00	0.00	0.00
45	0.00	0.00	0.00
46	0.00	0.00	0.00
47	0.00	0.00	0.00
48	0.00	0.00	0.00
49	0.00	0.00	0.00
50	5.00	1.77	3.00
51	5.00	0.84	3.00
52	5.00	1.01	3.00
53	5.00	1.34	3.00
54	8.00	6.09	7.00
55	10.00	18.87	12.00
56	12.00	15.38	14.00
57	15.00	16.32	16.00
58	18.00	23.35	20.00
59	20.00	26.96	25.00
60	25.00	29.58	25.00
61	30.00	30.00	30.00
62	30.00	34.21	35.00
63	35.00	59.09	40.00
64	40.00	40.00	40.00
65	100.00	58.33	100.00

The following rates are the current, actual and the proposed rates of retirement for Fire Tier 6.

Rates of Retirement

Age	Current	Actual	Proposed
41	0.00%	N/A	0.00%
42	0.00	N/A	0.00
43	0.00	N/A	0.00
44	0.00	N/A	0.00
45	0.00	N/A	0.00
46	0.00	N/A	0.00
47	0.00	N/A	0.00
48	0.00	N/A	0.00
49	0.00	N/A	0.00
50	3.00	N/A	3.00
51	3.00	N/A	3.00
52	4.00	N/A	4.00
53	5.00	N/A	5.00
54	5.00	N/A	5.00
55	10.00	N/A	10.00
56	12.00	N/A	12.00
57	15.00	N/A	15.00
58	18.00	N/A	18.00
59	20.00	N/A	20.00
60	25.00	N/A	25.00
61	30.00	N/A	30.00
62	30.00	N/A	30.00
63	35.00	N/A	35.00
64	40.00	N/A	40.00
65	100.00	N/A	100.00

The following rates are the current, actual and the proposed rates of retirement for Police Tiers 2 and 4.

Rates of Retirement

Age	Current	Actual	Proposed
41	8.00%	100.00%	10.00%
42	8.00	14.29	10.00
43	10.00	26.92	10.00
44	10.00	8.89	10.00
45	10.00	3.51	10.00
46	8.00	1.79	7.00
47	8.00	2.00	7.00
48	8.00	4.44	7.00
49	8.00	4.08	7.00
50	8.00	12.50	12.00
51	10.00	17.31	12.00
52	10.00	13.21	12.00
53	15.00	11.76	15.00
54	15.00	20.00	20.00
55	20.00	42.86	20.00
56	20.00	41.38	25.00
57	20.00	15.38	25.00
58	25.00	44.44	25.00
59	25.00	50.00	25.00
60	25.00	100.00	25.00
61	25.00	0.00	25.00
62	25.00	0.00	25.00
63	30.00	0.00	30.00
64	40.00	100.00	40.00
65	100.00	0.00	100.00

The following rates are the current, actual and the proposed rates of retirement for Police Tiers 3 and 5.

Rates of Retirement

Age	Current	Actual	Proposed
41	0.00%	0.00%	0.00%
42	0.00	0.00	0.00
43	0.00	0.00	0.00
44	0.00	0.00	0.00
45	0.00	0.00	0.00
46	0.00	0.00	0.00
47	0.00	0.00	0.00
48	0.00	0.00	0.00
49	0.00	0.00	0.00
50	10.00	5.90	7.00
51	10.00	2.62	6.00
52	10.00	2.97	6.00
53	10.00	4.51	6.00
54	13.00	7.45	10.00
55	16.00	20.92	18.00
56	18.00	17.30	18.00
57	22.00	18.07	20.00
58	25.00	18.40	22.00
59	30.00	19.67	25.00
60	30.00	20.93	25.00
61	30.00	21.54	25.00
62	30.00	17.65	25.00
63	30.00	20.00	25.00
64	30.00	23.08	30.00
65	100.00	20.00	100.00

The following rates are the current, actual and the proposed rates of retirement for Police Tier 6.

Rates of Retirement

Age	Current	Actual	Proposed
41	0.00%	N/A	0.00%
42	0.00	N/A	0.00
43	0.00	N/A	0.00
44	0.00	N/A	0.00
45	0.00	N/A	0.00
46	0.00	N/A	0.00
47	0.00	N/A	0.00
48	0.00	N/A	0.00
49	0.00	N/A	0.00
50	8.00	N/A	8.00
51	10.00	N/A	10.00
52	10.00	N/A	10.00
53	15.00	N/A	15.00
54	15.00	N/A	15.00
55	18.00	N/A	18.00
56	18.00	N/A	18.00
57	22.00	N/A	20.00
58	25.00	N/A	22.00
59	30.00	N/A	25.00
60	30.00	N/A	25.00
61	30.00	N/A	25.00
62	30.00	N/A	25.00
63	30.00	N/A	25.00
64	30.00	N/A	30.00
65	100.00	N/A	100.00

Chart 1 compares actual experience with the current and proposed assumed rates of retirement for Fire Tier 2 and Tier 4 members. Chart 2 has similar data for Fire Tier 3 and Tier 5 members. Chart 3 has similar data for Police Tier 2 and Tier 4 members. Chart 4 has similar data for Police Tier 3 and Tier 5 members.

In prior valuations, deferred vested members were assumed to retire at age 50. The average age at retirement over the prior three years was 50.0 for all deferred vested members. (It is our understanding that the Pension Plan would pay retirement benefits retroactively to age 50.) We recommend maintaining the assumed retirement age for deferred vested participants.

In prior valuations, it was assumed that 86% of all active members would be married or have a domestic partner when they retired. According to experience of members who retired during the last three years, about 78% of all male members and 54% of all female members were married or had a domestic partner at retirement. We recommend lowering this assumption to assume that 80% of all male members and 60% of all female members will be married or have a domestic partner when they retire.

Based on observed experience from members who retired during the last three years where female spouses were 2.7 years younger than the male members and that the male spouses were 1.7 years older than the female members, we 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.

In prior valuations, of all members expected to retire with service retirement benefit, we assumed a 95% probability that members have elected DROP before retirement if they also satisfy the requirements for participating in the DROP for 5 years. The average participation rate over the prior three years was 97%. We recommend maintaining the DROP probability at 95% .

In prior valuations, members were assumed to remain in DROP for 5 years. According to experience for the last three years, the average period of participation in DROP was 4 years and 7 months. Based on this, we recommend maintaining the expected period of participation in DROP at 5 years.

Chart 1 Retirement Rates - Fire Tiers 2 & 4

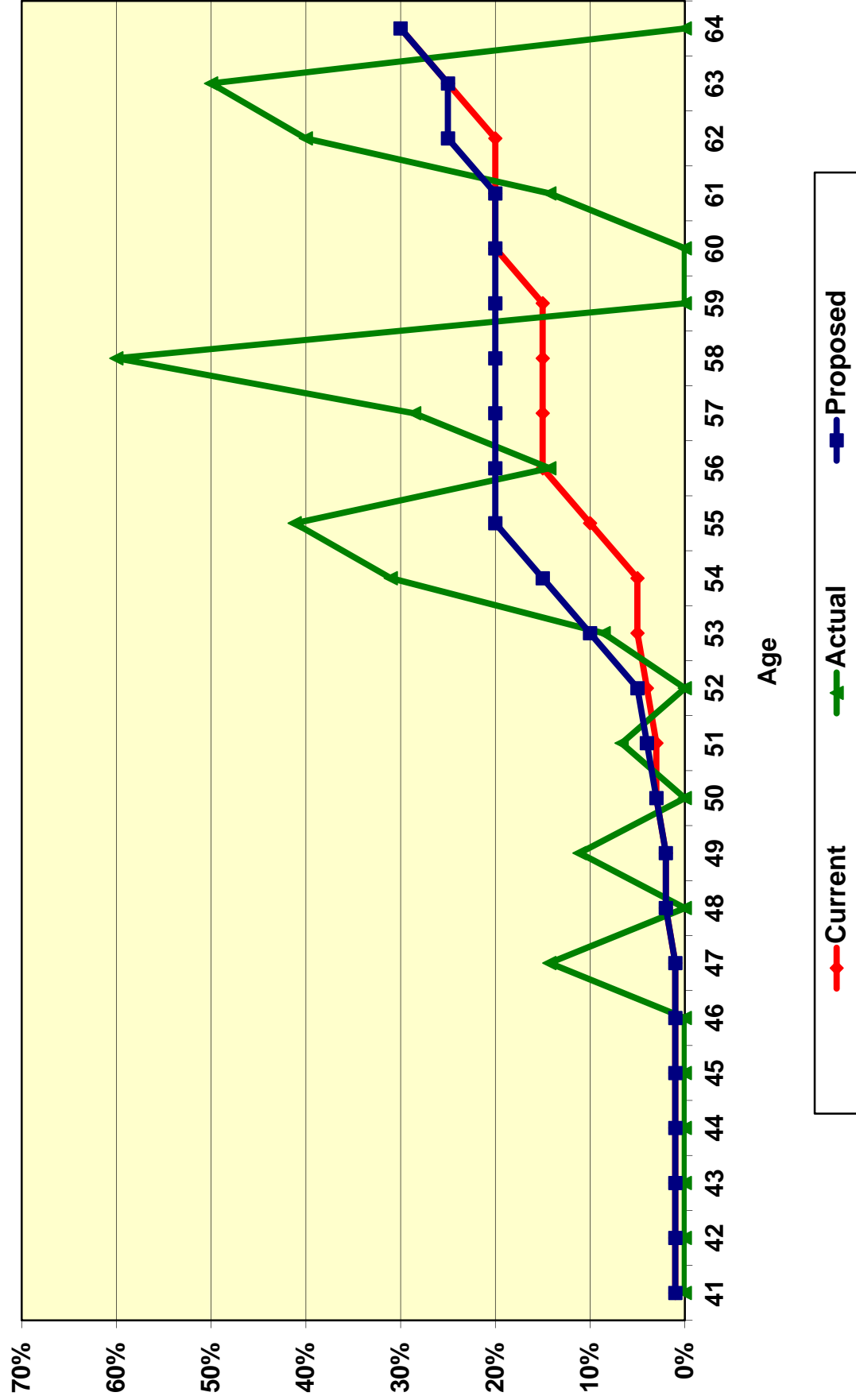


Chart 2 Retirement Rates - Fire Tiers 3 & 5

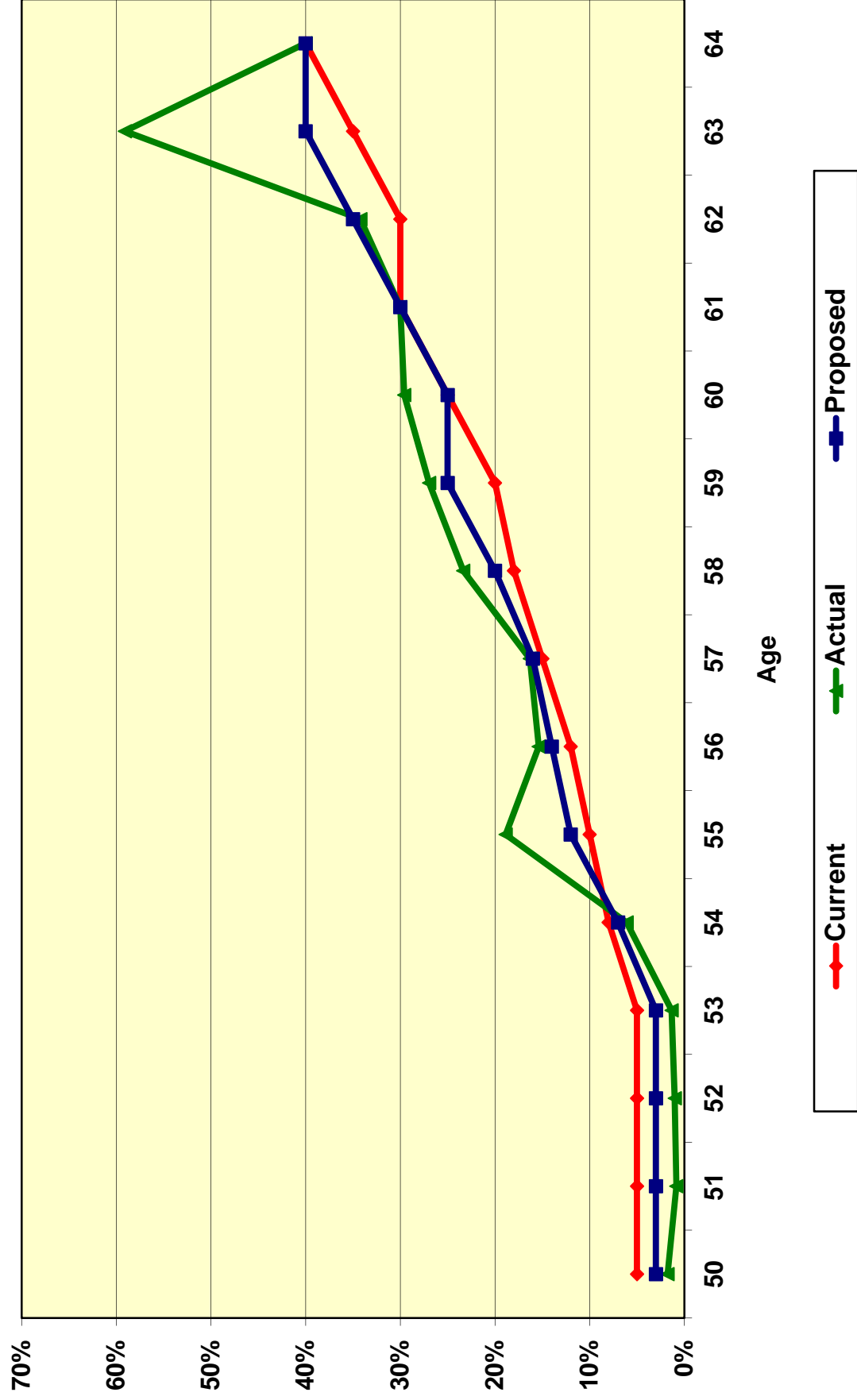


Chart 3 Retirement Rates - Police Tiers 2 & 4

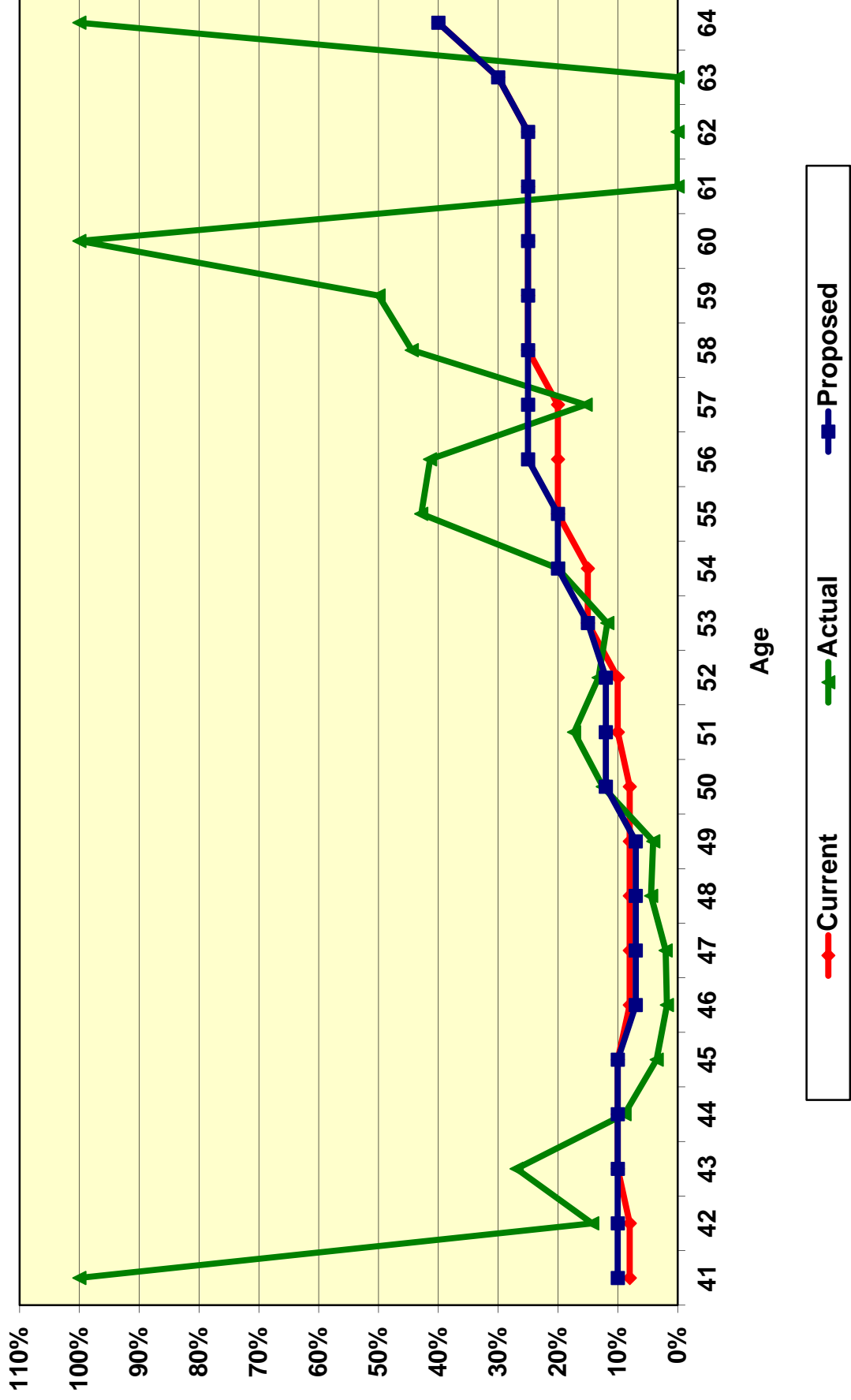
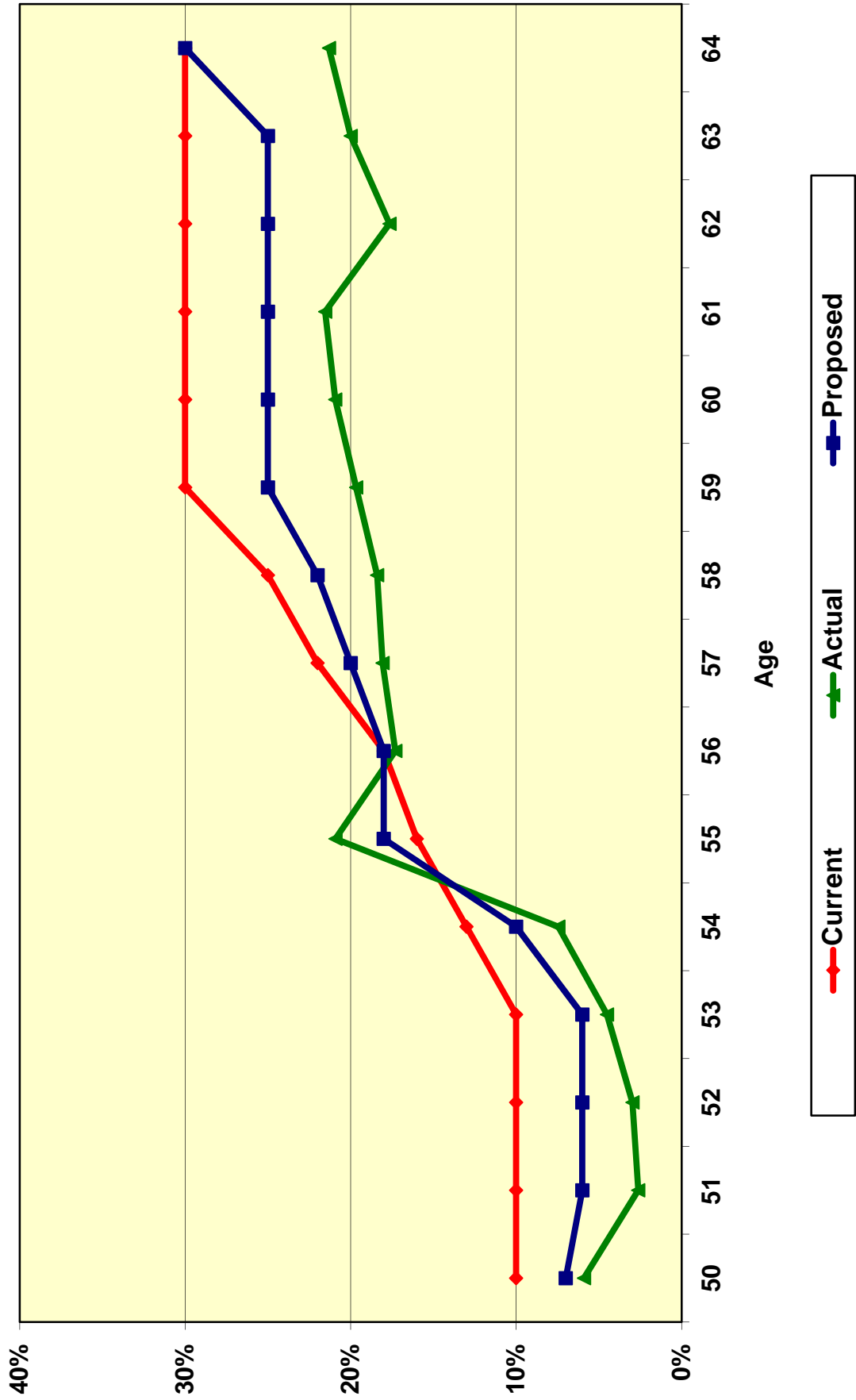


Chart 4 Retirement Rates - Police Tiers 3 & 5



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 for 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 (separate tables for males and females) set back four years for members and the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) set back two years for beneficiaries.

Pre-Retirement Mortality

The number of deaths among active members is not large enough to provide statistics credible enough to develop a separate table for active members. Therefore, it is assumed that pre-retirement mortality and post-retirement mortality will follow the same tables. We also assume that all pre-retirement deaths are service connected deaths.

Post-Retirement Mortality (Service Retirements)

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

Year Ended June 30	Healthy Retirees		
	Current Expected Deaths	Actual Deaths	Proposed Expected Deaths
2011	181	210	186
2012	184	229	190
2013	<u>184</u>	<u>214</u>	<u>191</u>
Total	549	653	567
Actual / Expected	119%		115%

Recent experience shows that there were more deaths than predicted by the current table. In the prior experience study, there were only 575 deaths. This means that the actual number of deaths when averaged over the 2 three-year experience study periods was 614. The ratio of actual to expected deaths under the current assumption and over the 2013 Experience Study Period was 119%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females), projected to 2022 with scale BB, set back one year. This will bring the actual to expected ratio over the 2013 Experience Study Period under the proposed assumption to 115% (or 108% when we use the actual deaths averaged over the 2 three-year

experience study periods of 614). Either the 115% or the 108% would provide an additional margin for future mortality improvements that is consistent with industry standards of practice. We will continue to monitor this assumption in future studies.

Chart 5 compares actual to expected deaths for all members under the current and proposed assumptions over the last three years.

Post-Retirement Mortality (Beneficiaries)

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

Year Ended June 30	Beneficiaries		
	Current Expected Deaths	Actual Deaths	Proposed Expected Deaths
2011	118	157	125
2012	120	153	128
2013	<u>119</u>	<u>136</u>	<u>127</u>
Total	357	446	380
Actual / Expected	125%		117%

Recent experience shows that there were more deaths than predicted by the current table. In the prior experience study, there were only 375 deaths. Again, this means that the actual number of deaths when averaged over the 2 three-year experience study periods was 411. The ratio of actual to expected deaths over the 2013 Experience Study Period under the current assumption was 125%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females), projected to 2022 with scale BB set forward one year. This will bring the actual to expected ratio under the proposed assumption and over the 2013 Experience Study Period to 117% (or 108% when we use the actual deaths averaged over the 2 three-year experience study periods of 411). We will continue to monitor this assumption in future studies.

Chart 6 compares actual to expected deaths for all beneficiaries under the current and proposed assumptions over the last three years.

Charts 7 and 8 shows the life expectancies under the current and the proposed tables for members and beneficiaries.

Chart 5
Post - Retirement Deaths
Service Retirements

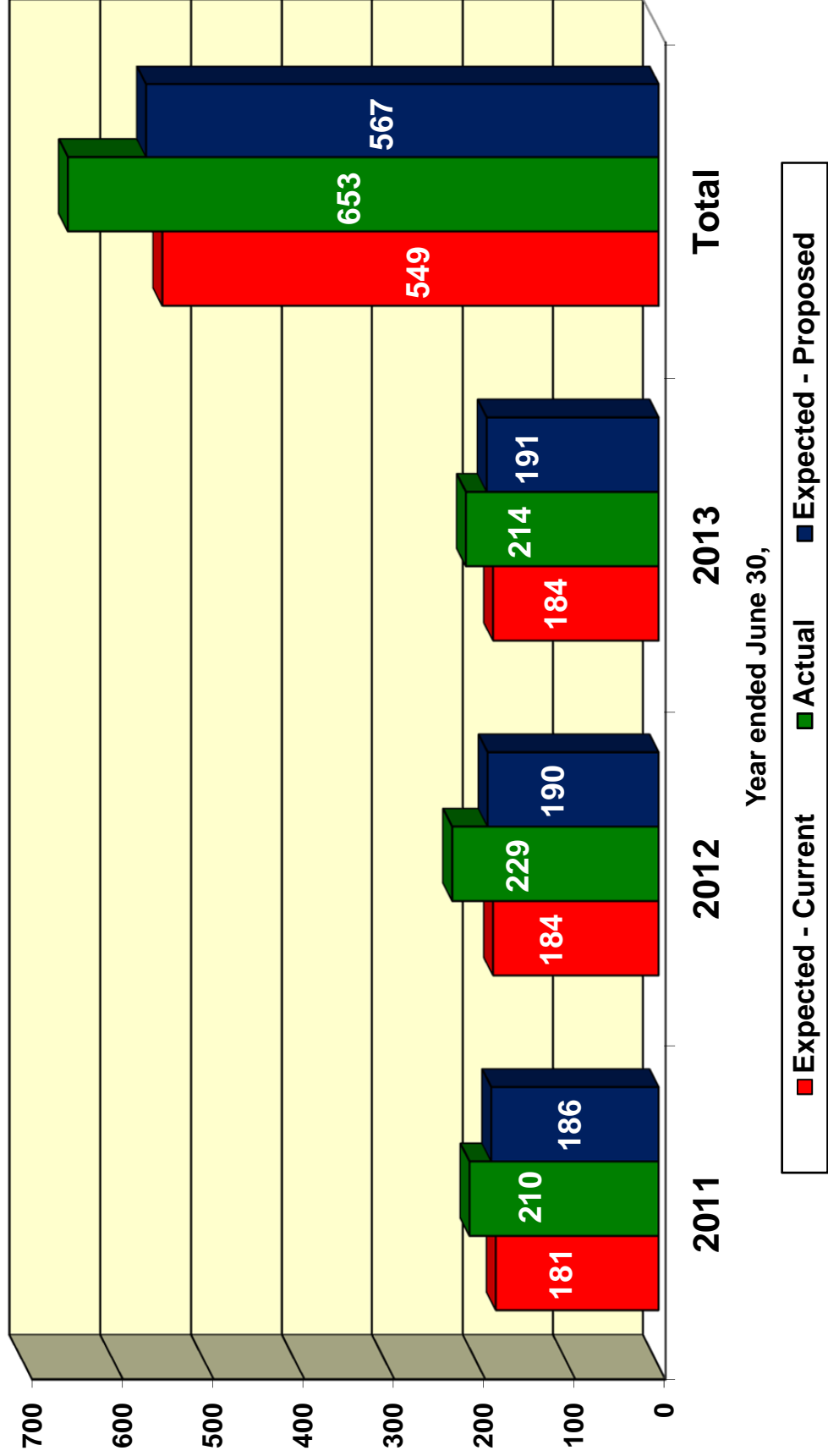


Chart 6
Post - Retirement Deaths
Beneficiaries

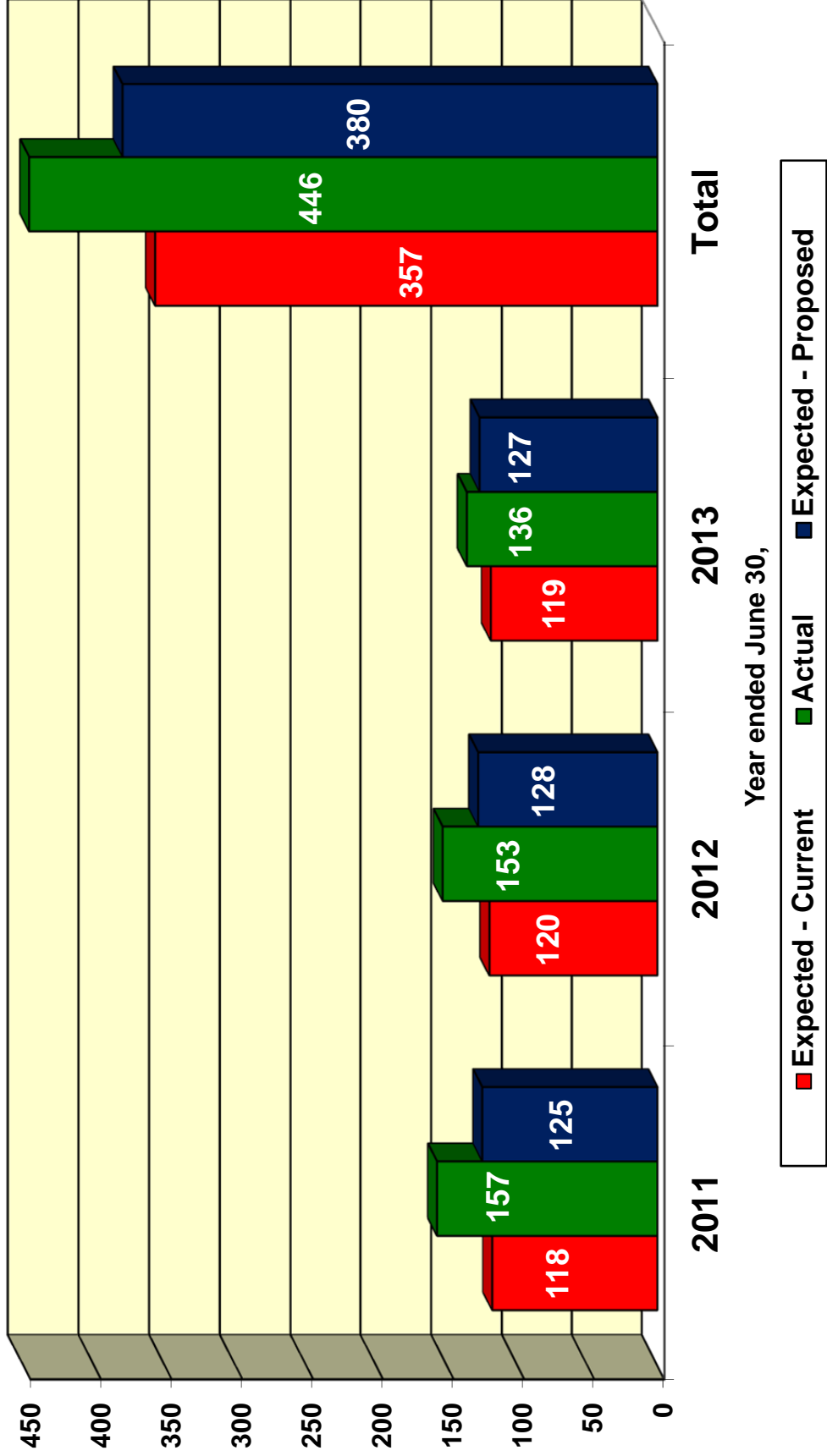


Chart 7

Life Expectancies

Non-Disabled Members

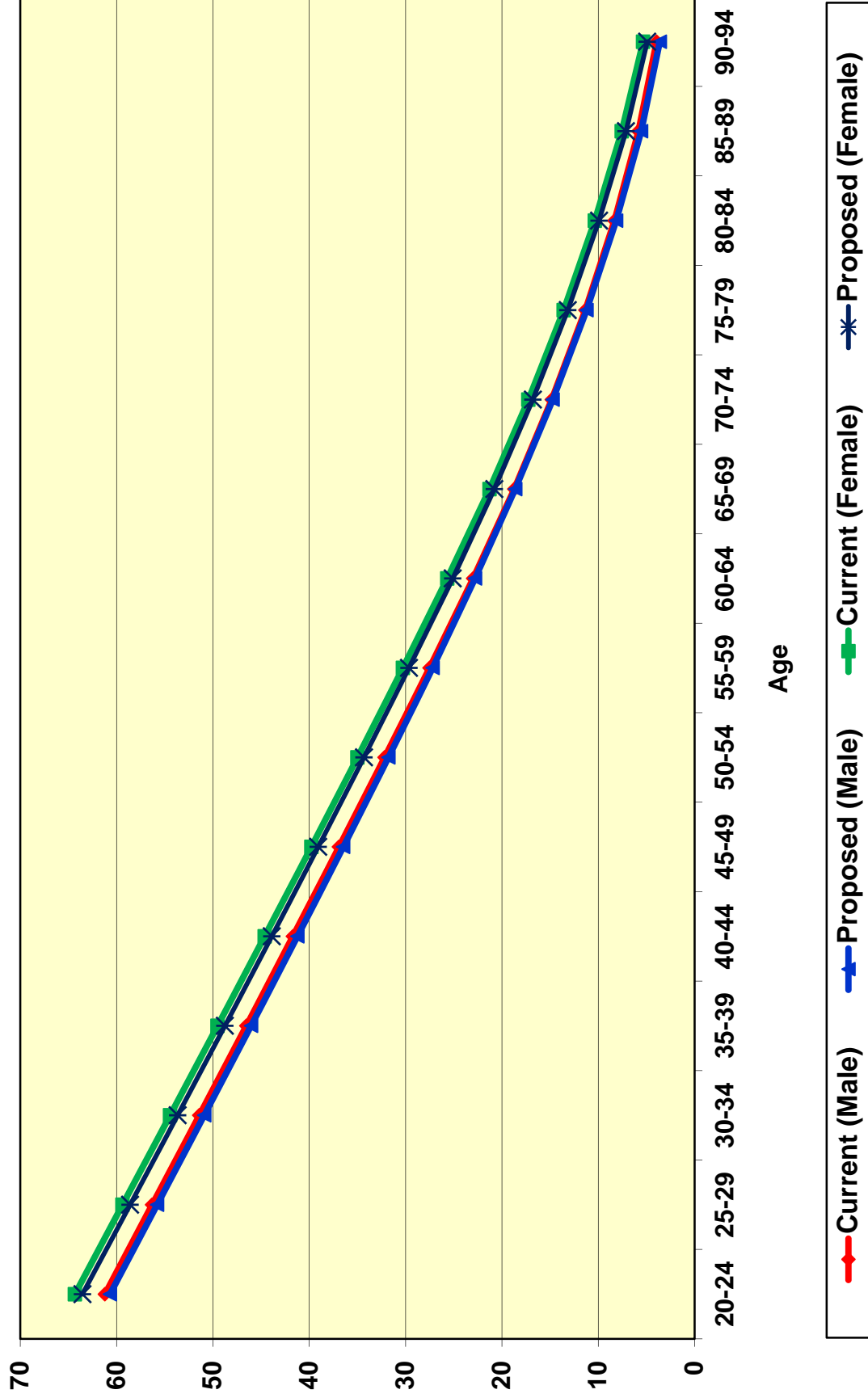
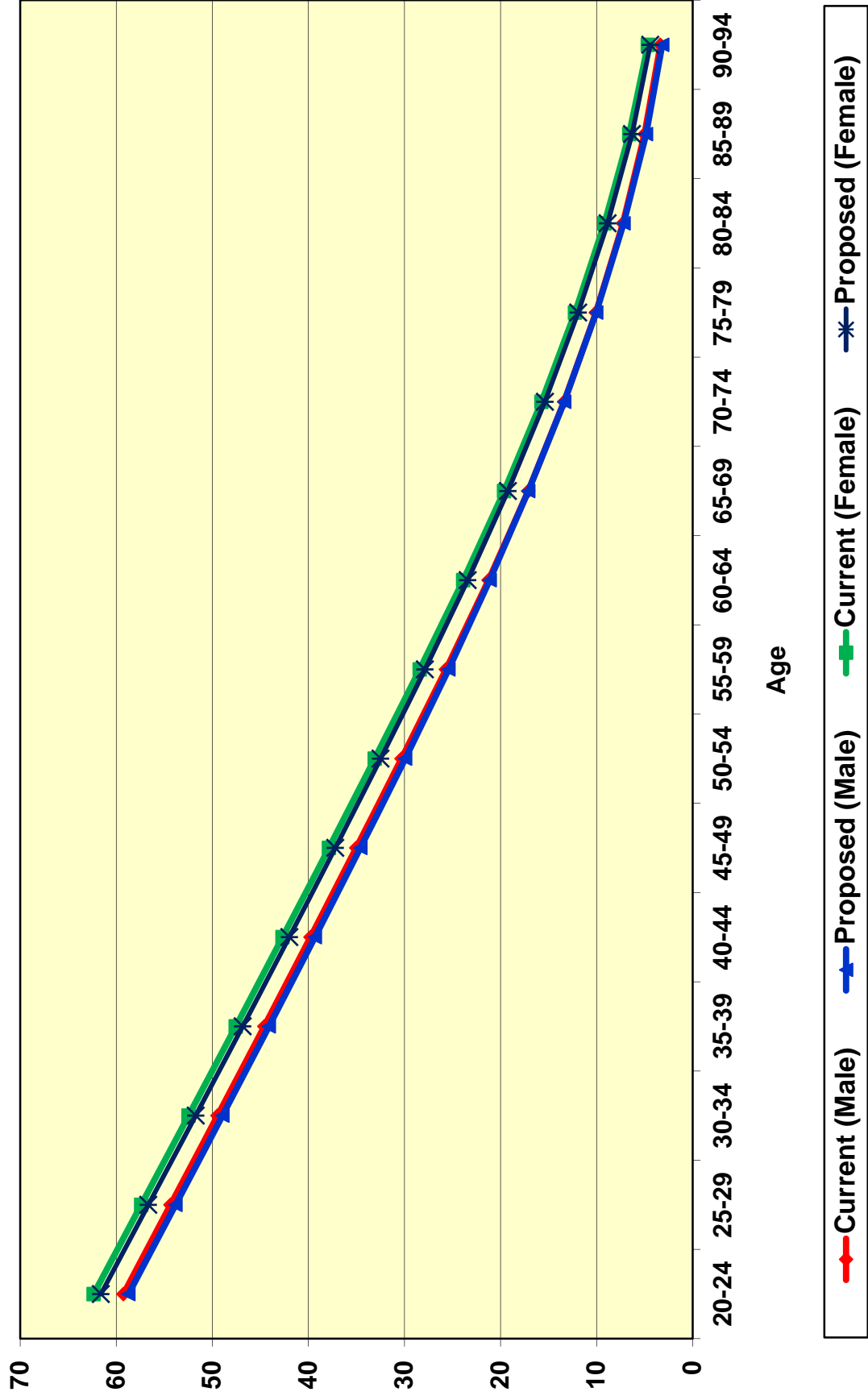


Chart 8 Life Expectancies Beneficiaries



D. MORTALITY RATES - DISABLED

Since mortality 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 Combined Healthy Mortality Table (separate tables for males and females) set back two years.

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

Year Ended June 30	Disabled		
	Current Expected Deaths	Actual Deaths	Proposed Expected Deaths
2011	50	52	51
2012	52	61	53
2013	<u>53</u>	<u>61</u>	<u>54</u>
Total	155	174	158
Actual / Expected	112%		110%

For disabled retirees, the ratio of actual to expected deaths under the current assumption was 112%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females), projected to 2022 with scale BB set forward one year. This will bring the actual to expected ratio to 110%, and will result in no material change in life expectancy. As there were only 136 actual deaths during the last experience study, we will continue to monitor the assumption for disableds closely to see if the mortality rates need to be adjusted in the future to reflect any possible improvements.

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

Chart 10 shows the life expectancies under the current and proposed tables for disabled members.

Chart 9
Post - Retirement Deaths
Disabled Members

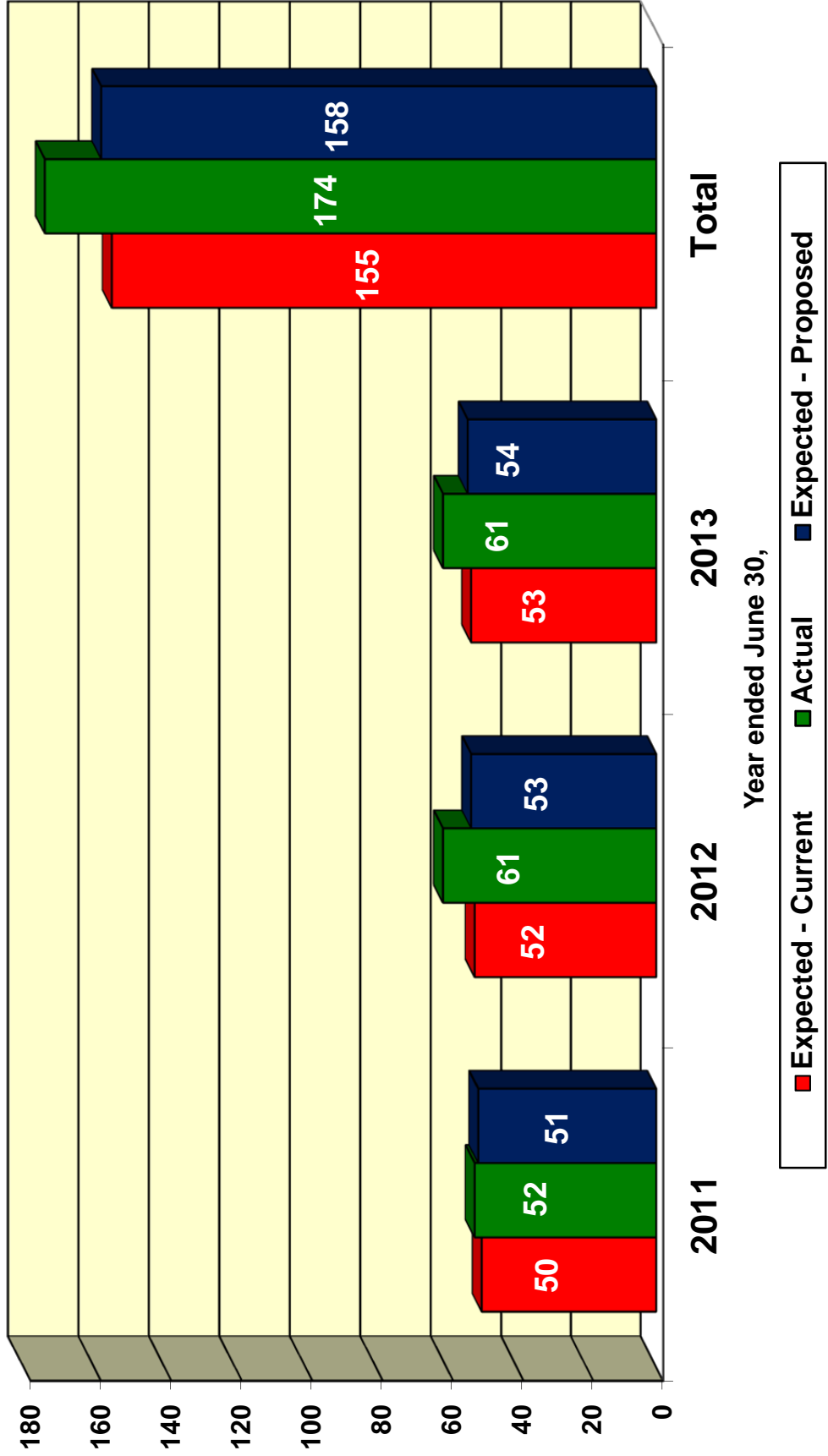
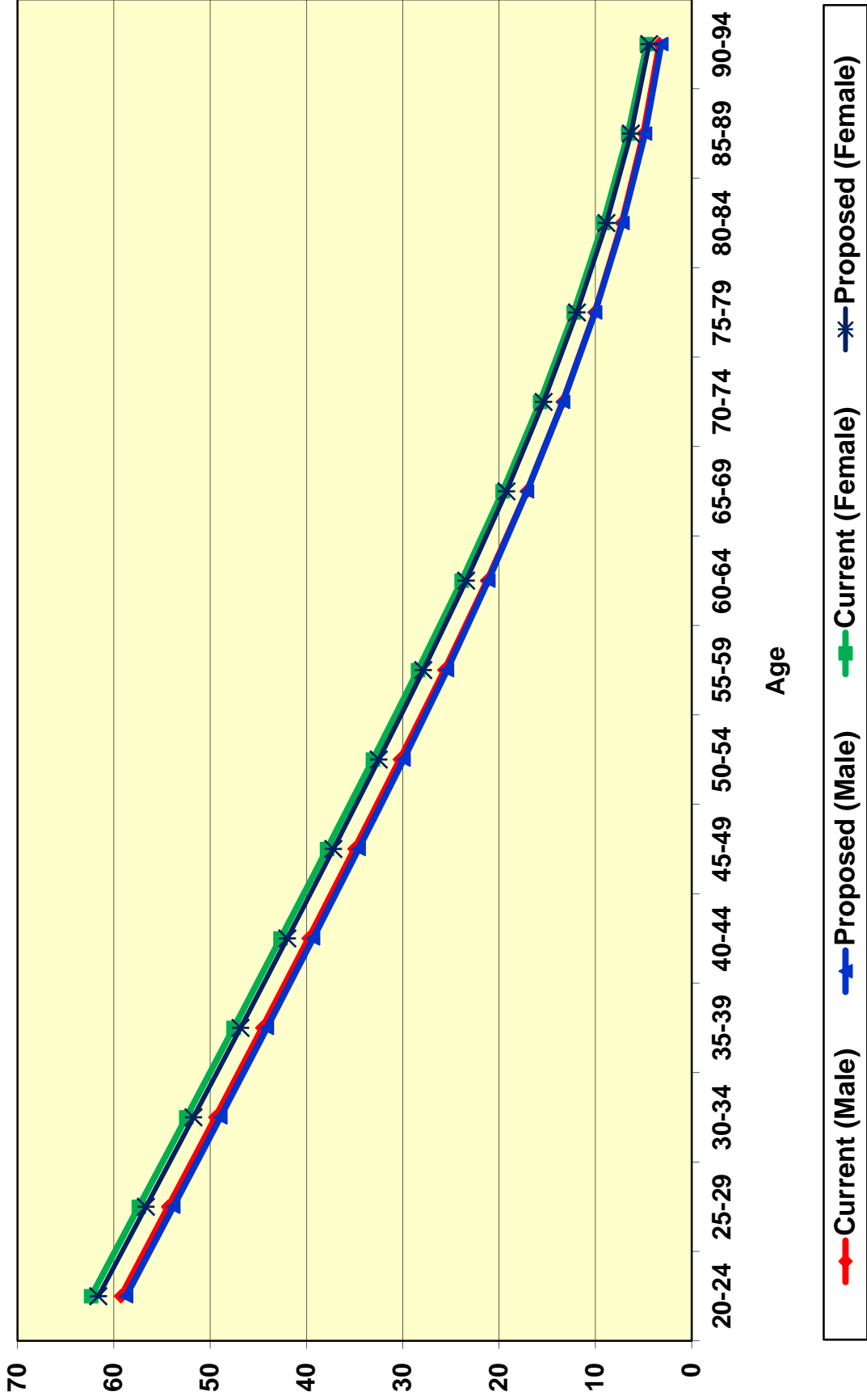


Chart 10
Life Expectancies
Disabled Members



E. TERMINATION RATES

Termination rates include all terminations for reasons other than death, disability, or retirement. Under the current assumptions, members who are not eligible to receive a deferred vested benefit are assumed to withdraw their contributions (except for Tier 4 members who are not eligible for a withdrawal). With this experience study, we are recommending changing the current assumptions.

The termination experience over the last three years for Fire and Police members is shown on the next two pages.

Rates of Termination (Fire)
(Fewer than Five Years of Service)

<u>Years of Service</u>	<u>Current Assumed Rates</u>	<u>Observed Rates</u>	<u>Proposed Assumed Rates</u>
0 - 1	8.00%	15.38%	8.00%
1 - 2	3.00	1.13	2.50
2 - 3	2.00	0.53	1.50
3 - 4	1.00	0.34	0.75
4 - 5	1.00	0.59	0.50

Rates of Termination (Fire)*
(More than Five Years of Service)

<u>Age</u>	<u>Current Assumed Rates</u>	<u>Observed Rates</u>	<u>Proposed Assumed Rates</u>
20 - 24	1.50%	0.00%	1.00%
25 - 29	1.50	0.00	1.00
30 - 34	1.00	0.32	0.75
35 - 39	0.50	0.25	0.40
40 - 44	0.35	0.39	0.35
45 - 49	0.10	0.00	0.05
50 - 54	0.00	0.00	0.00
55 - 59	0.00	0.00	0.00

** No termination is assumed after a member is eligible for retirement. Members who are not eligible to receive a deferred vested retirement benefit are assumed to receive refund of contributions.*

Rates of Termination (Police)
(Fewer than Five Years of Service)

<u>Years of Service</u>	<u>Current Assumed Rates</u>	<u>Observed Rates</u>	<u>Proposed Assumed Rates</u>
0 - 1	8.00%	8.45%	8.00%
1 - 2	4.00	1.66	3.00
2 - 3	3.00	0.96	2.50
3 - 4	3.00	1.73	2.50
4 - 5	2.50	1.21	1.75

Rates of Termination (Police)*
(More than Five Years of Service)

<u>Age</u>	<u>Current Assumed Rates</u>	<u>Observed Rates</u>	<u>Proposed Assumed Rates</u>
20 – 24	2.50%	0.00%	2.00%
25 – 29	2.50	0.96	2.00
30 – 34	2.00	0.88	1.50
35 – 39	1.50	0.69	1.00
40 – 44	1.00	0.45	0.75
45 – 49	0.70	0.48	0.60
50 – 54	0.00	0.97	0.00
55 – 59	0.00	0.99	0.00

** No termination is assumed after a member is eligible for retirement. Members who are not eligible to receive a deferred vested retirement benefit are assumed to receive refund of contributions.*

Chart 11 compares actual to expected total terminations over the past three years for both the current and proposed assumptions for Fire members.

Chart 12 shows the same information as Chart 11, but for Police members.

Chart 13 shows the current and proposed termination rates for Fire members with less than five years of service.

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

Chart 15 shows the current and proposed termination rates for Fire members with five or more years of service.

Chart 16 shows the same information as Chart 15, but for Police members.

Based upon the recent experience as captured in Charts 11 and 12, we recommend reducing the current assumptions for termination rates for both Fire and Police members.

Chart 11
Actual Number of Terminations
(Withdrawals plus Vested Terminations)
Compared to Expected (Fire)

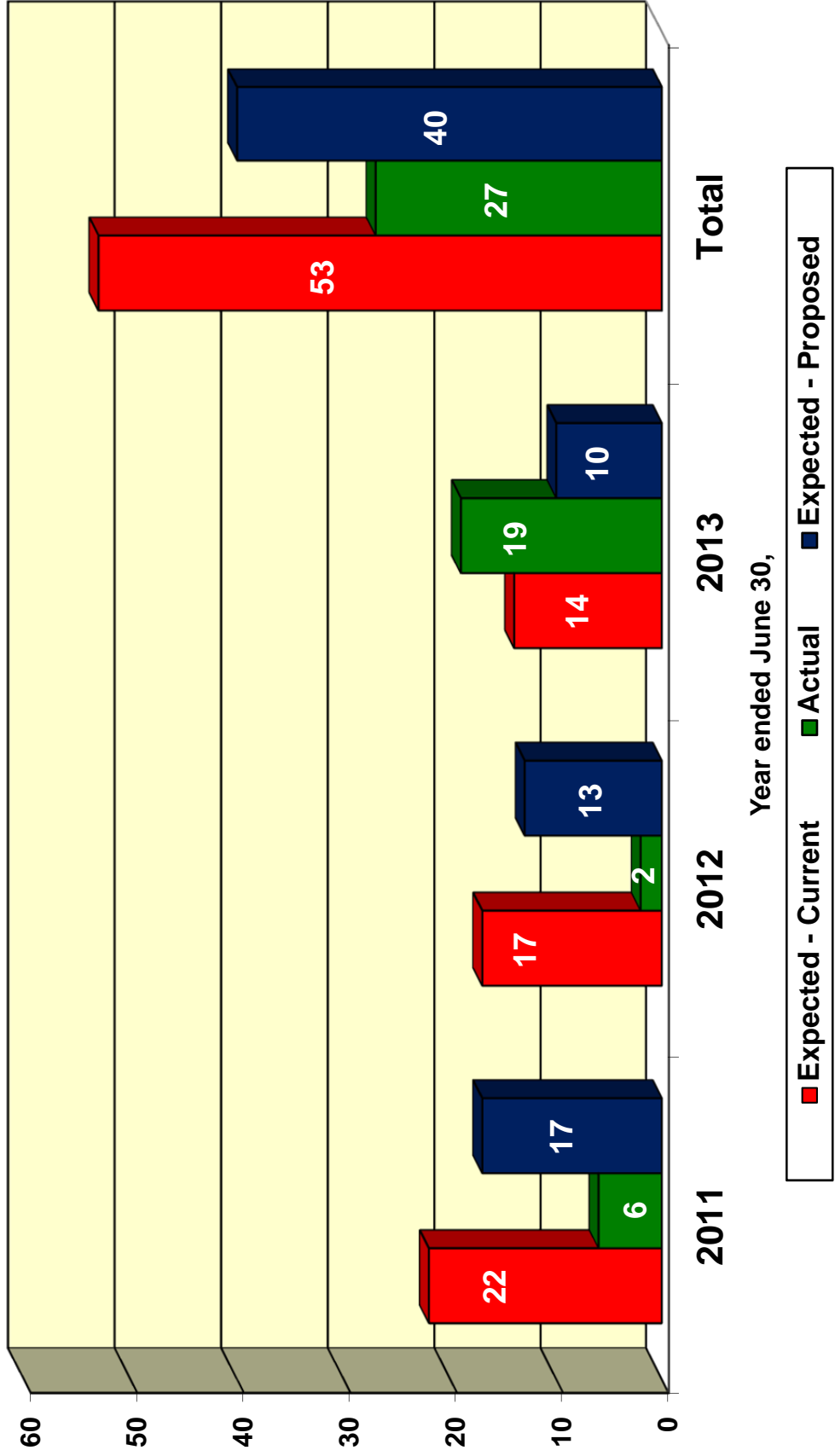


Chart 12
Actual Number of Terminations
(Withdrawals plus Vested Terminations)
Compared to Expected (Police)

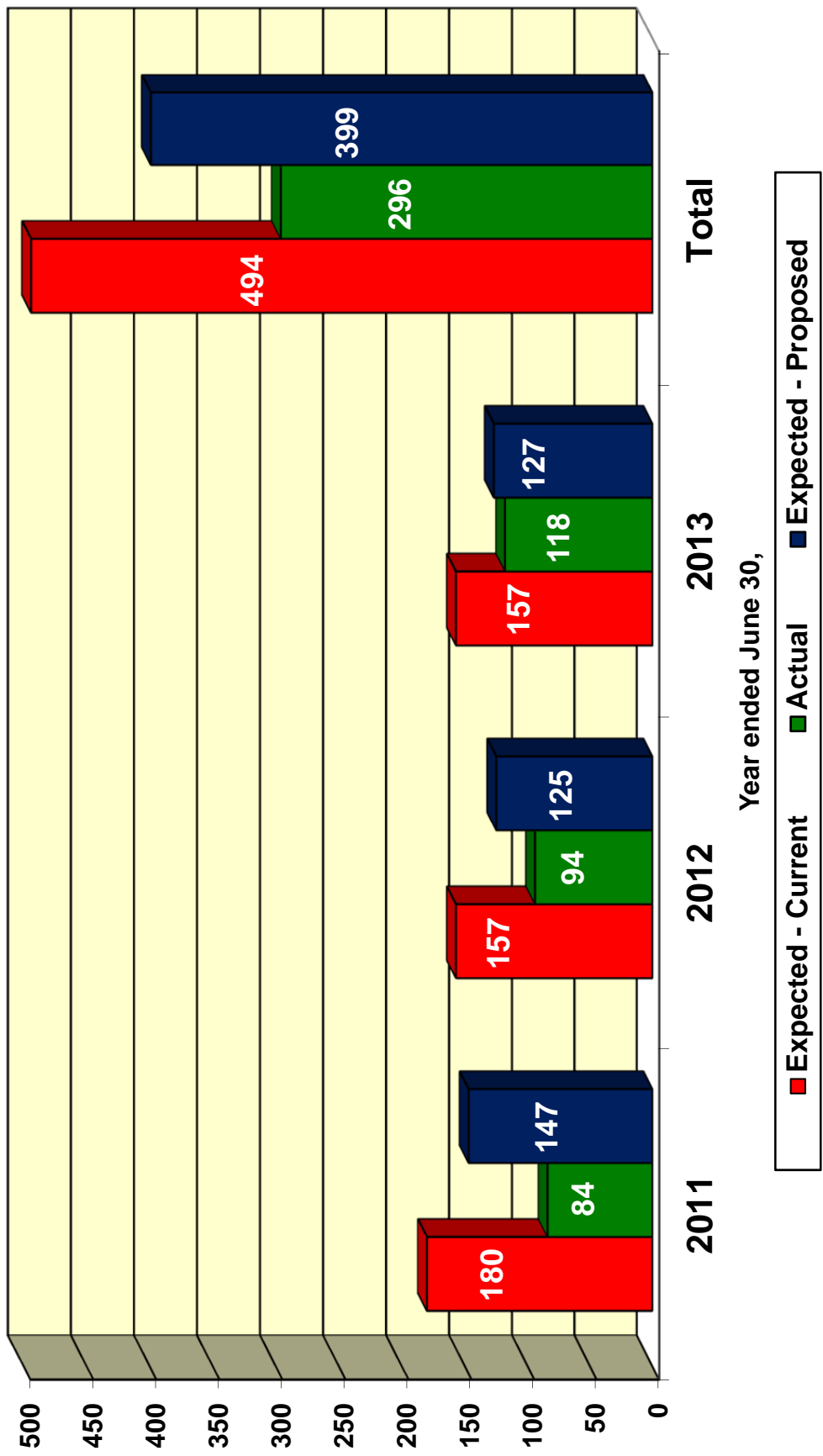


Chart 13
Termination Rates - Fire
(Less Than Five Years of Service)

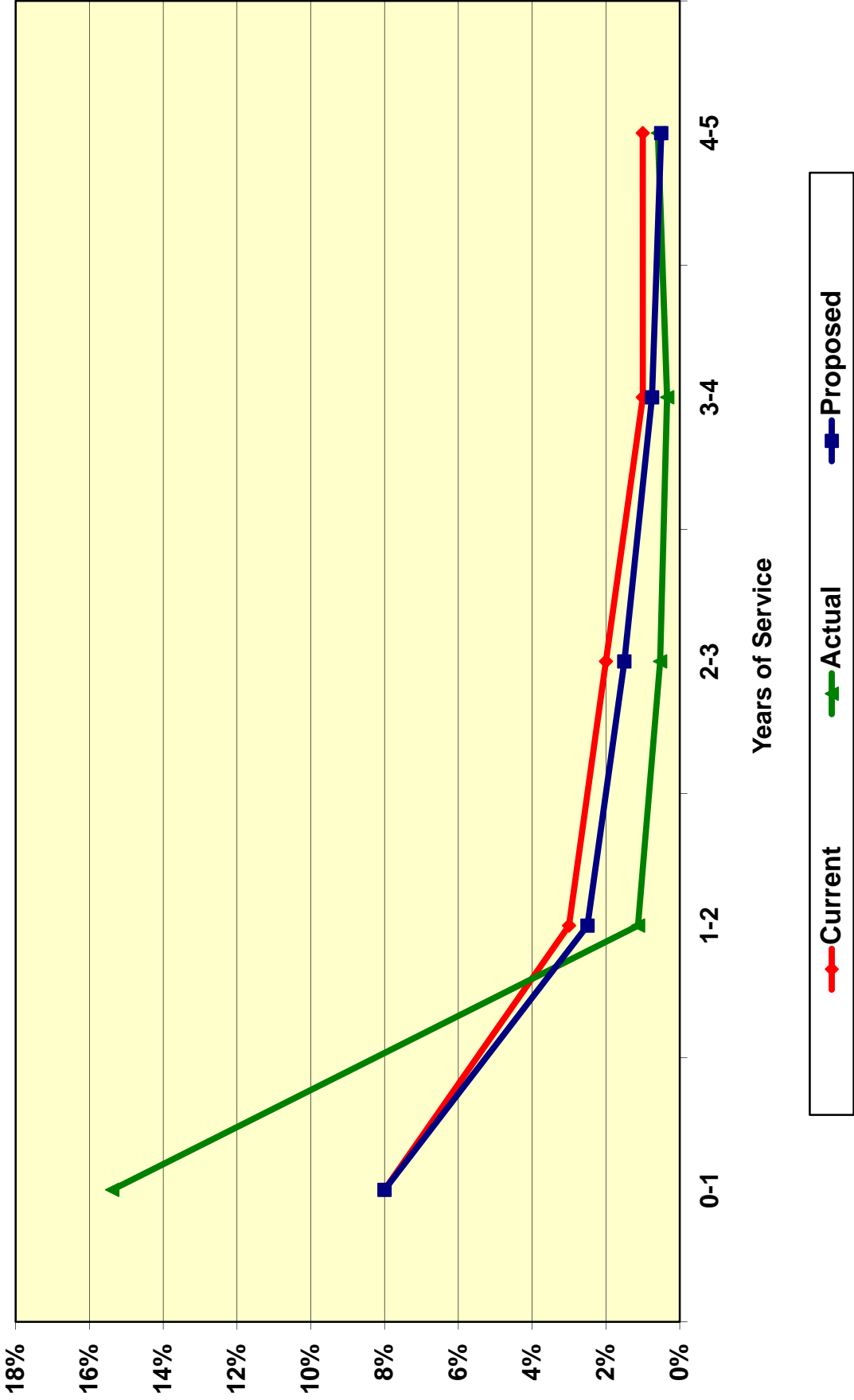


Chart 14
Termination Rates - Police
(Less Than Five Years of Service)

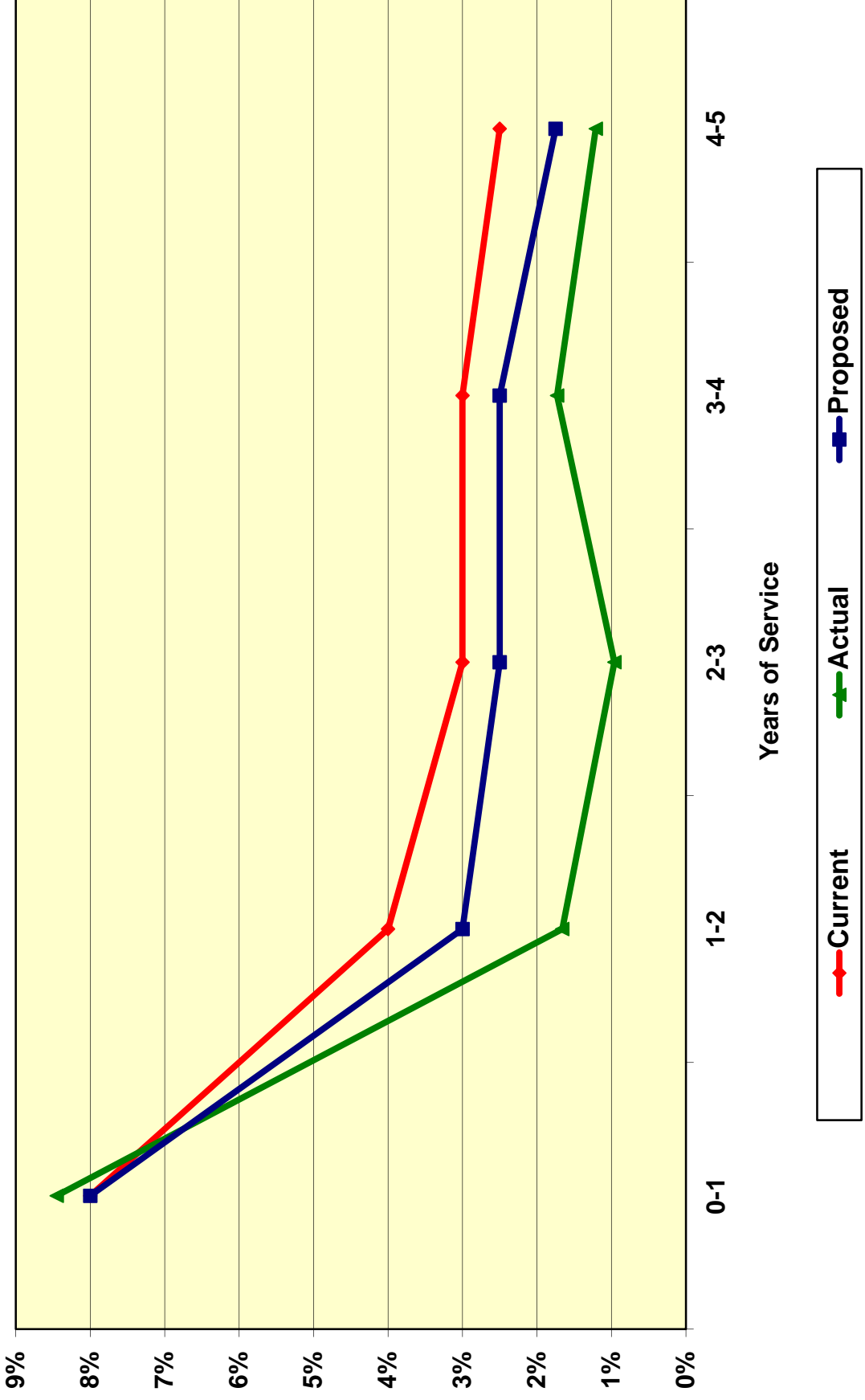


Chart 15
Termination Rates - Fire
(More Than Five Years of Service)

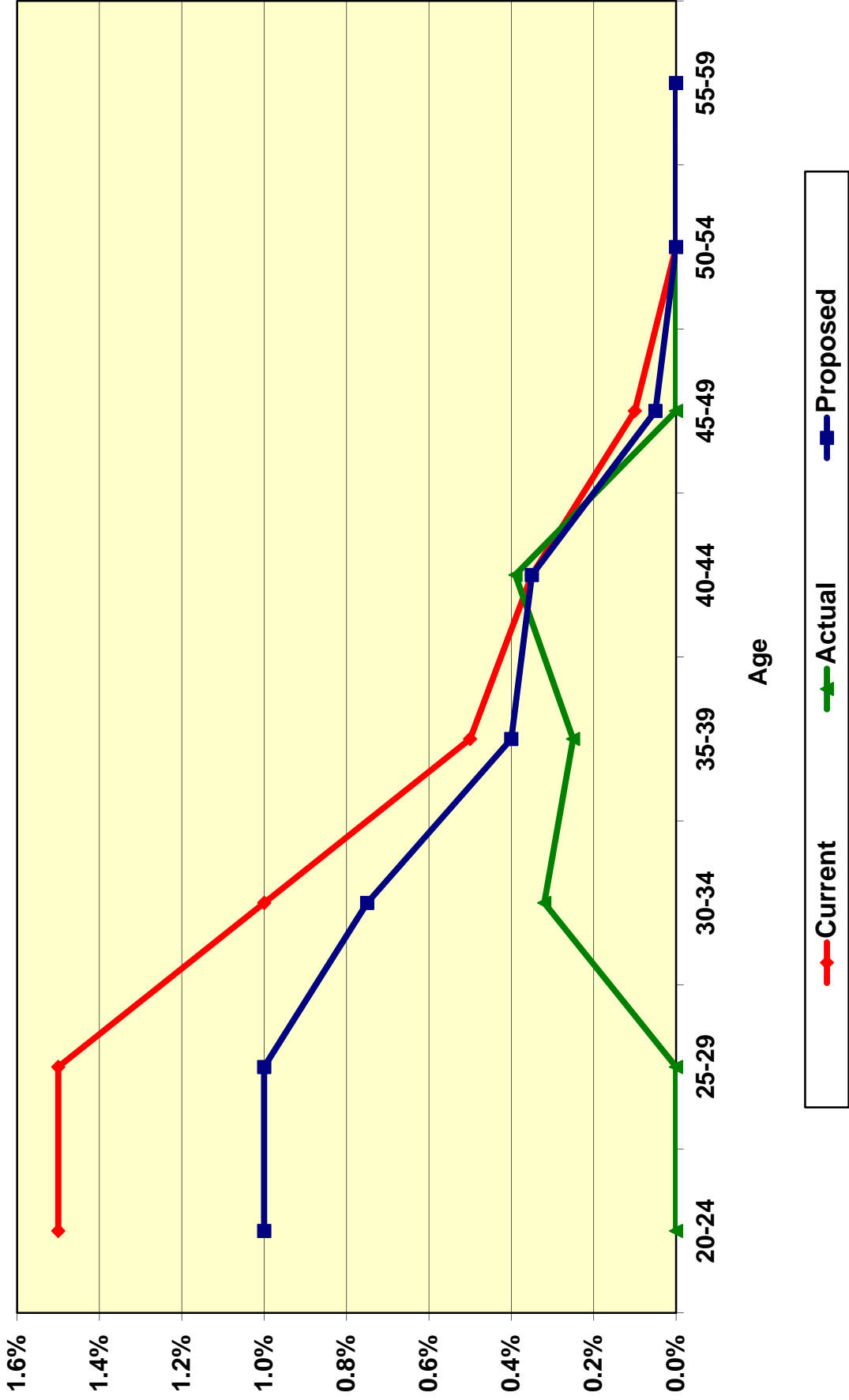
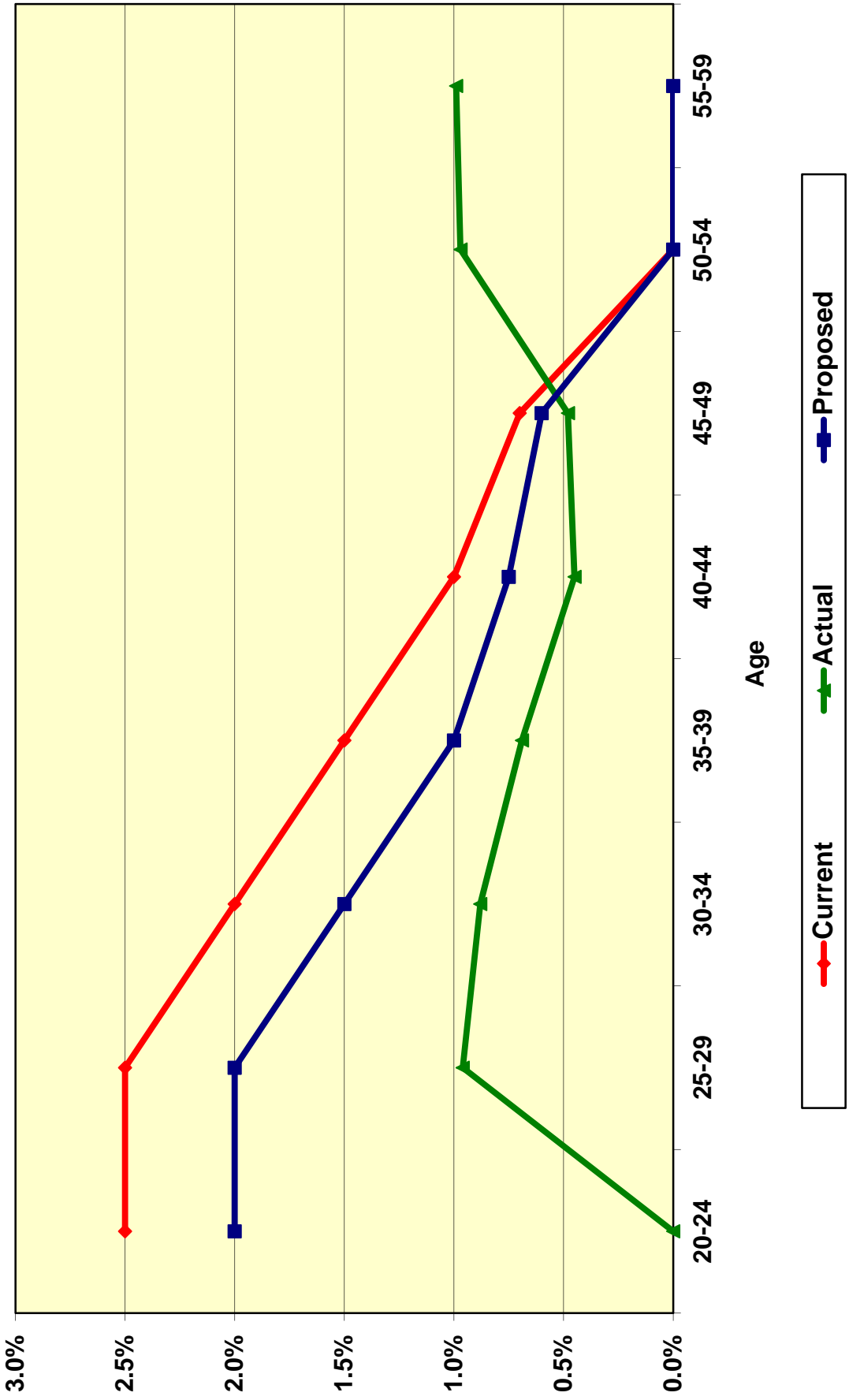


Chart 16
Termination Rates - Police
(More Than Five Years of Service)



F. DISABILITY INCIDENCE RATES

When a member becomes disabled, he or she may be entitled to a service connected disability benefit or a non-service connected disability benefit. The following summarizes the actual incidence of disabilities over the past three years compared to the current and proposed assumptions for disability incidence:

Rates of Disability Incidence (Fire)

<u>Age</u>	<u>Current Assumed Rates</u>	<u>Observed Rate*</u>	<u>Proposed Assumed Rates</u>
20 – 24	0.02%	0.00%	0.02%
25 – 29	0.02	0.00	0.02
30 – 34	0.04	0.00	0.03
35 – 39	0.08	0.07	0.08
40 – 44	0.19	0.29	0.19
45 – 49	0.30	0.06	0.25
50 – 54	0.50	0.15	0.30
55 – 59	2.00	1.11	1.50
60 – 64	6.00	0.00	4.00

Rates of Disability Incidence (Police)

<u>Age</u>	<u>Current Assumed Rates</u>	<u>Observed Rate*</u>	<u>Proposed Assumed Rates</u>
20 – 24	0.02%	0.00%	0.02%
25 – 29	0.03	0.03	0.03
30 – 34	0.07	0.02	0.06
35 – 39	0.13	0.04	0.09
40 – 44	0.40	0.20	0.30
45 – 49	0.50	0.14	0.40
50 – 54	0.60	0.23	0.50
55 – 59	1.40	0.00	1.00
60 – 64	1.50	0.00	1.30

** The current assumptions have been applied to members eligible for the DROP (including members in DROP). As there was only one DROP member who was reclassified as being disabled during the most recent experience study period, we recommend that the disability rates be applied only to members not eligible for the DROP. The observed rates shown above are calculated consistent with that recommendation.*

Chart 17 compares the actual number of disabilities for Fire members over the past three years to that expected under both the current and proposed assumptions. There were 8 actual disabilities in the current experience study period versus 14 actual disabilities in the last experience study period. The current disability rates were adjusted slightly to reflect the past three years experience.

Chart 18 graphs the same information as Chart 17, but for Police members. There were 27 actual disabilities in the current experience study period versus 65 actual disabilities in the last experience study period.

Chart 19 shows actual disablement rates, compared to the assumed and proposed rates for Fire members.

Chart 20 graphs the same information as Chart 19, but for Police members.

In prior valuations, it was assumed that 90% of all disabilities would be service connected disabilities. Since about 87% of disabled members received a service connected disability during the last three years, we recommend maintaining the assumption that 90% of all disabilities will be service connected disabilities.

The level of disability benefit (expressed as a percentage of Final Average Salary) is dependent on the severity of disability. For those members who started to receive a disability benefit during the last 3 years, we estimated the percentage of final average salary paid by dividing the disability benefit paid upon retirement by the approximate final average salary reported in the valuation data file immediately preceding the date of disability retirement. Based upon the recent experience, we recommend maintaining the current assumptions for percentage of final average salary for Service Connected disabilities and Nonservice Connected disabilities.

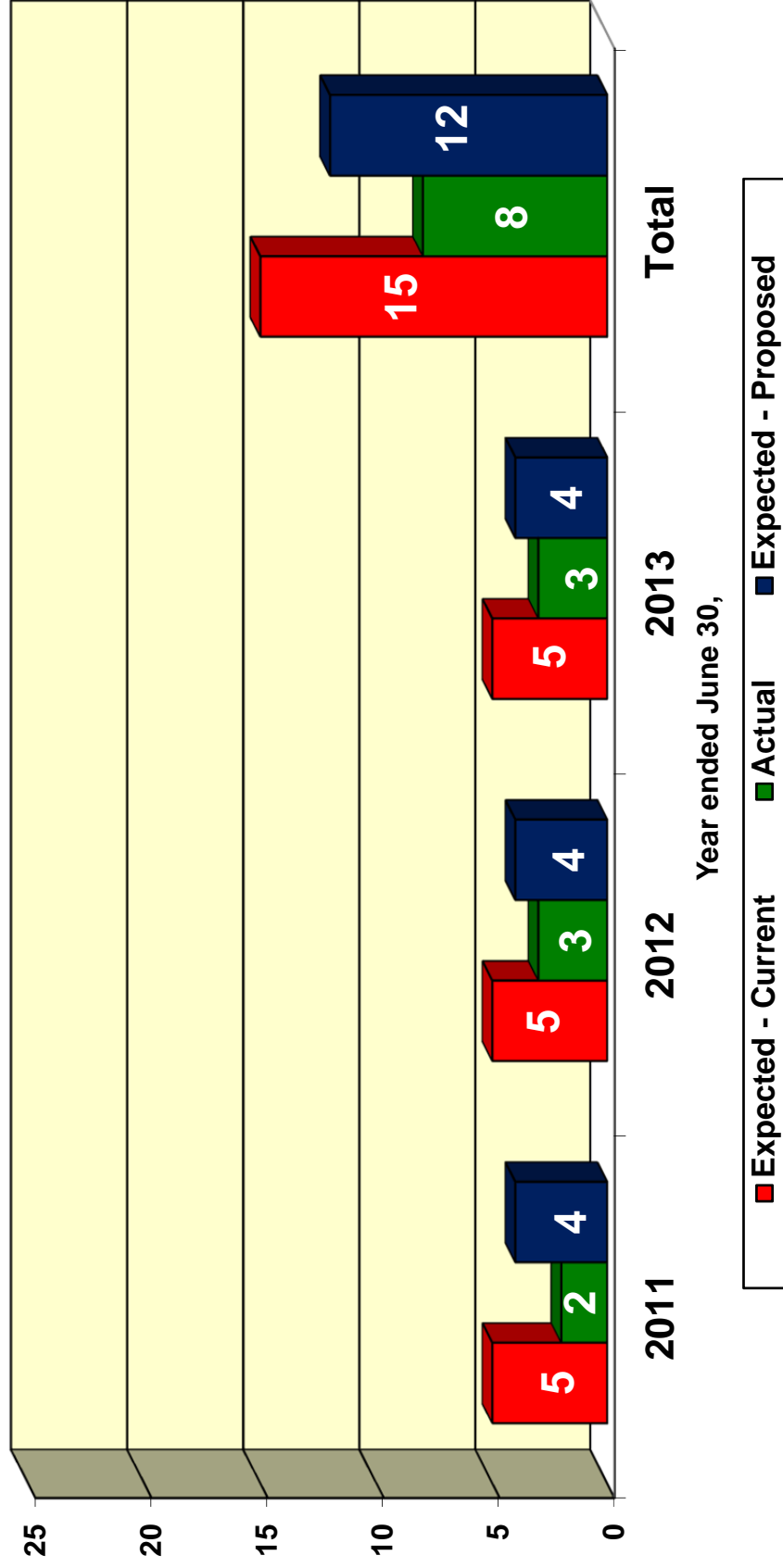
Service Connected Disabilities

<u>Years of Service</u>	<u>Current Assumed Percentage</u>	<u>Actual Percentage</u>	<u>Proposed Assumed Percentage</u>
< 20	55%	57%	55%
20 – 30	65%	68%	65%
> 30	75%	No Data	75%

Nonservice Connected Disabilities

<u>Years of Service</u>	<u>Current Assumed Percentage</u>	<u>Actual Percentage</u>	<u>Proposed Assumed Percentage</u>
All	40%	42%	40%

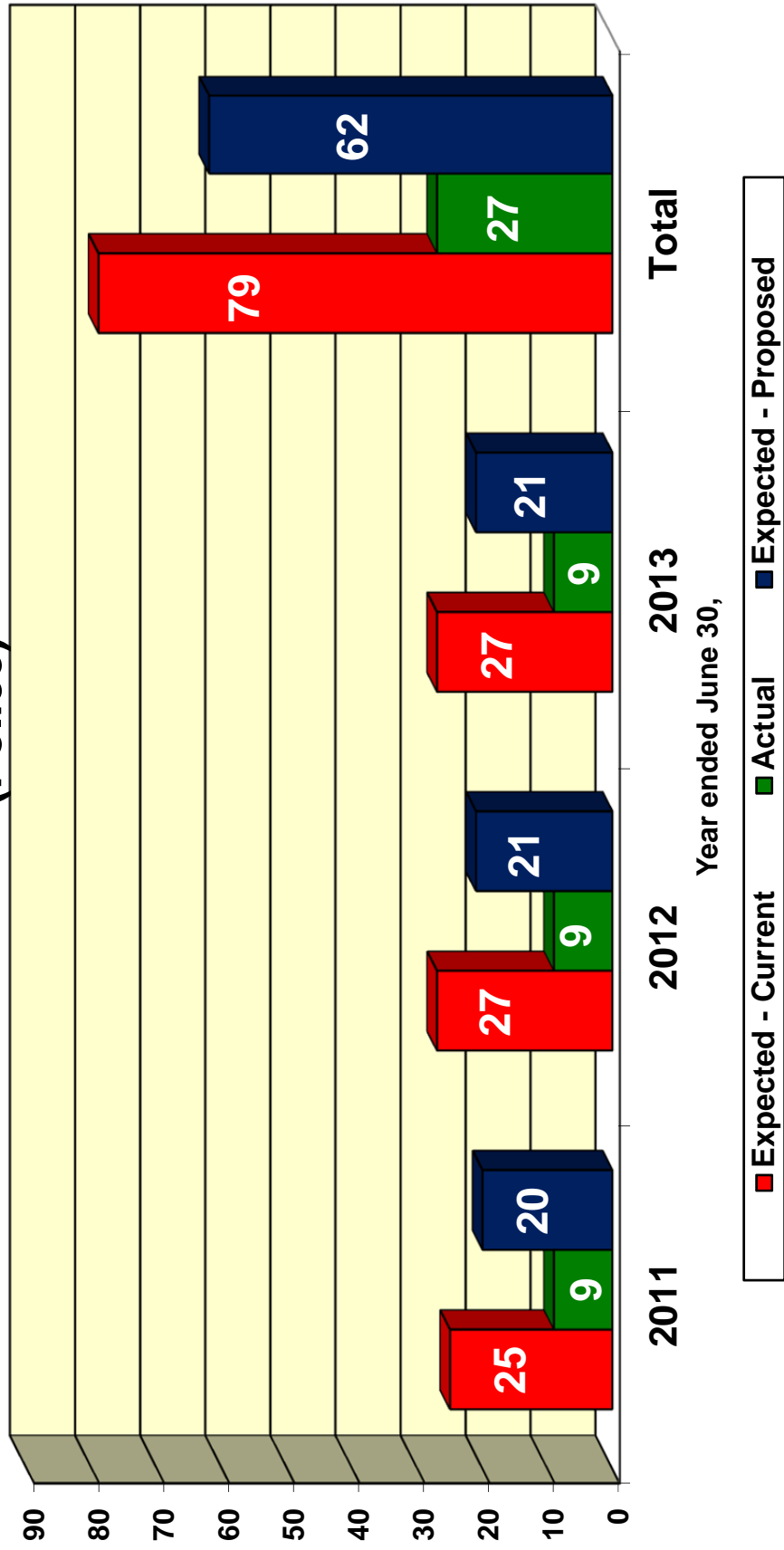
Chart 17
Actual Number of Disabilities Compared to Expected*
(Fire)



* Disability rates are not applied to members eligible for DROP program.

** Note: There were 14 actual disabilities in the last experience study period.

Chart 18
Actual Number of Disabilities Compared to Expected*
(Police)



* Disability rates are not applied to members eligible for DROP program.

** Note: There were 65 actual disabilities in the last experience study period

Chart 19 Disablement Rates - Fire

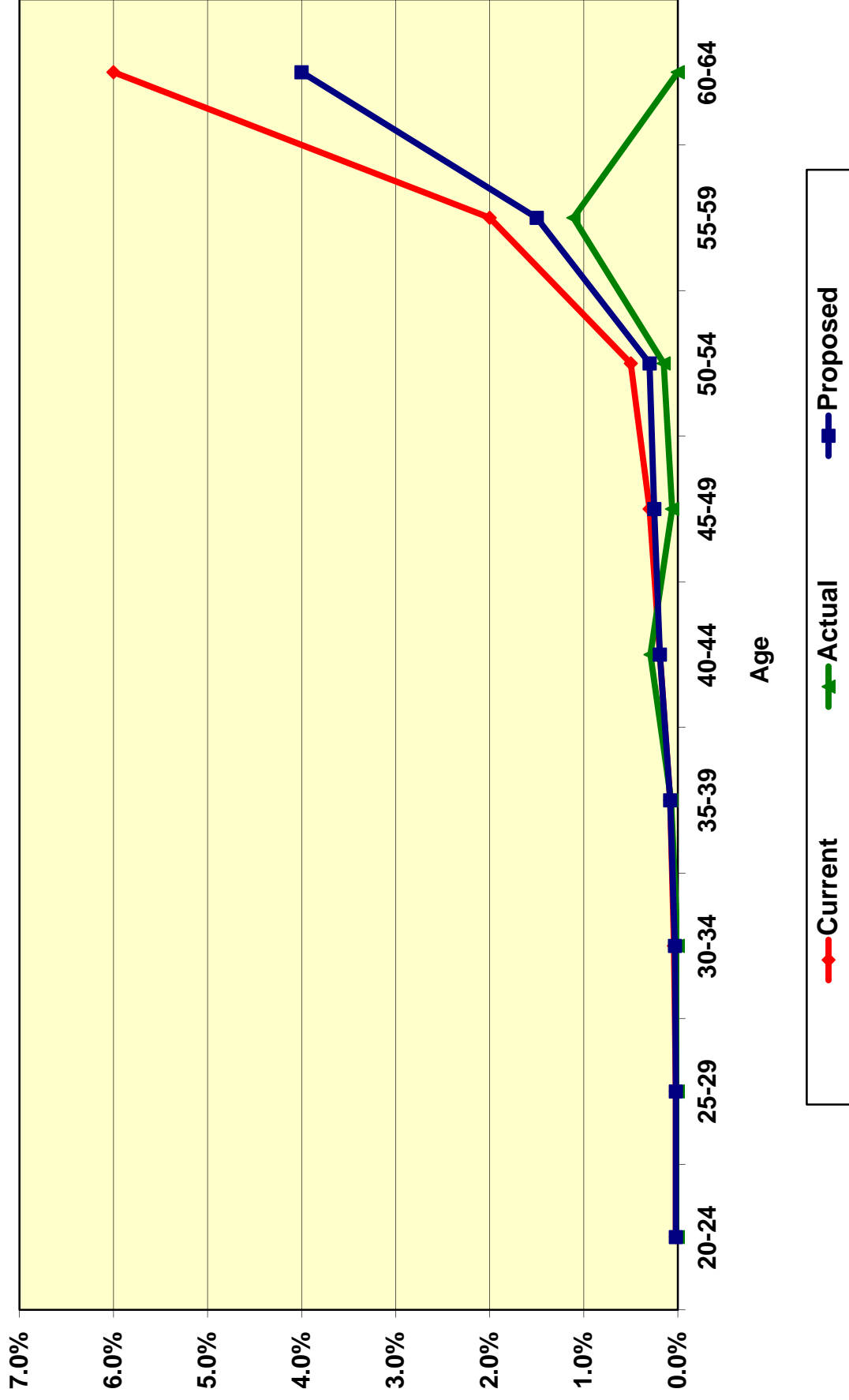
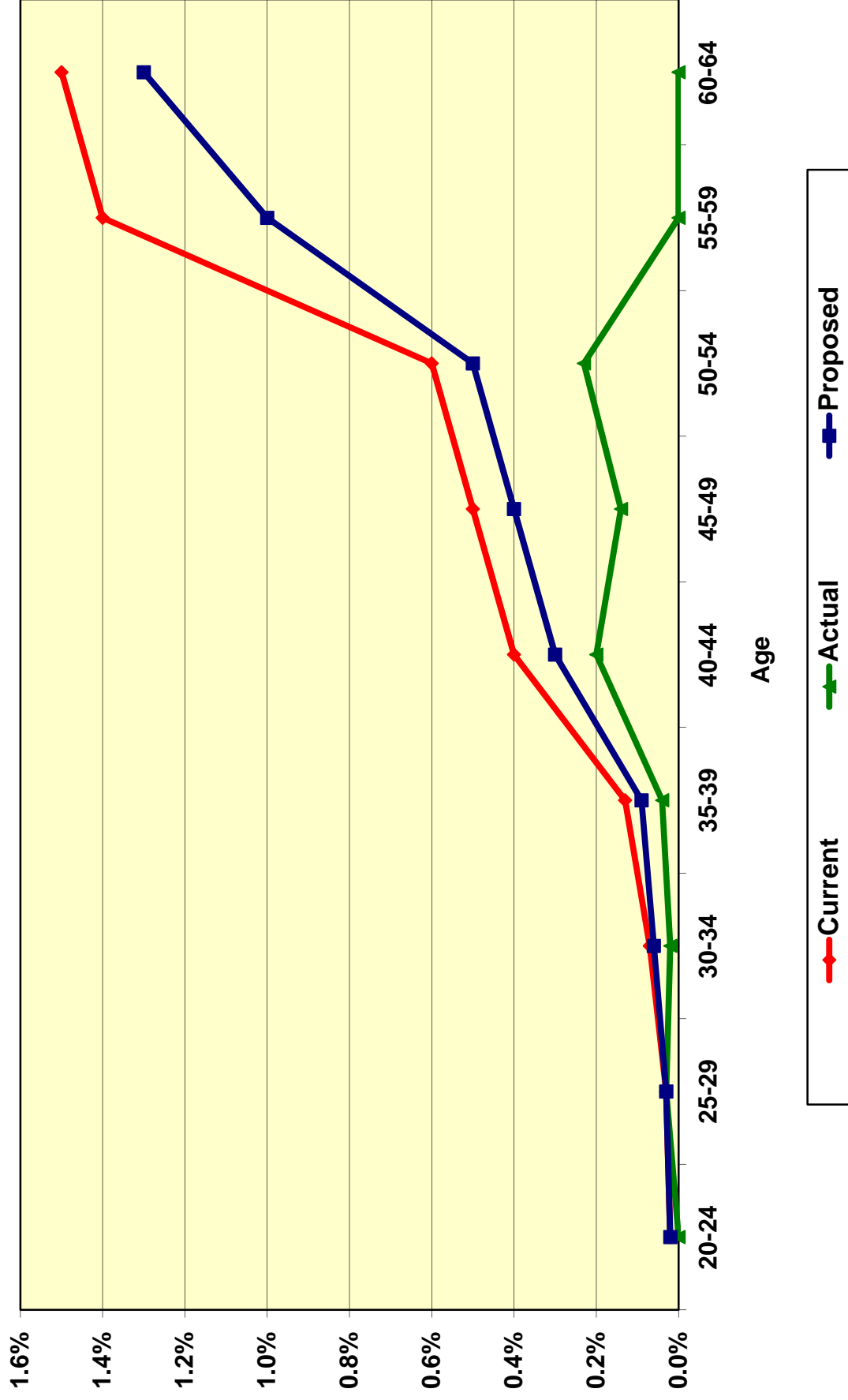


Chart 20 Disablement Rates - Police



G. MERIT AND PROMOTIONAL SALARY INCREASES

The Pension Plan'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 0.75% "across the board" pay increases. Therefore, the total inflation and real "across the board" increase of 4.00% 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 in combination for Fire and Police members. This is accomplished by:

- Measuring each member's actual salary increase over each year of the experience period;
- Categorizing these increases into groups by years of service;
- 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, as detailed below.

The following table shows the average increases over the three-year experience period (July 1, 2010 through June 30, 2013) before removing the wage inflation components:

<u>Years of Service</u>	<u>Average Increase</u>
0	8.88%
1	7.25
2	6.44
3	6.83
4	5.30
5	4.06
6	2.11
7	1.41
8	2.63
9	3.15
10	1.74
11 or more	1.70

The annual increase in average salary over this three -year period was about 1.4% for all members. The following table shows the average merit and promotional increases for the current three-year period, after removing increases in average salary in each service category.

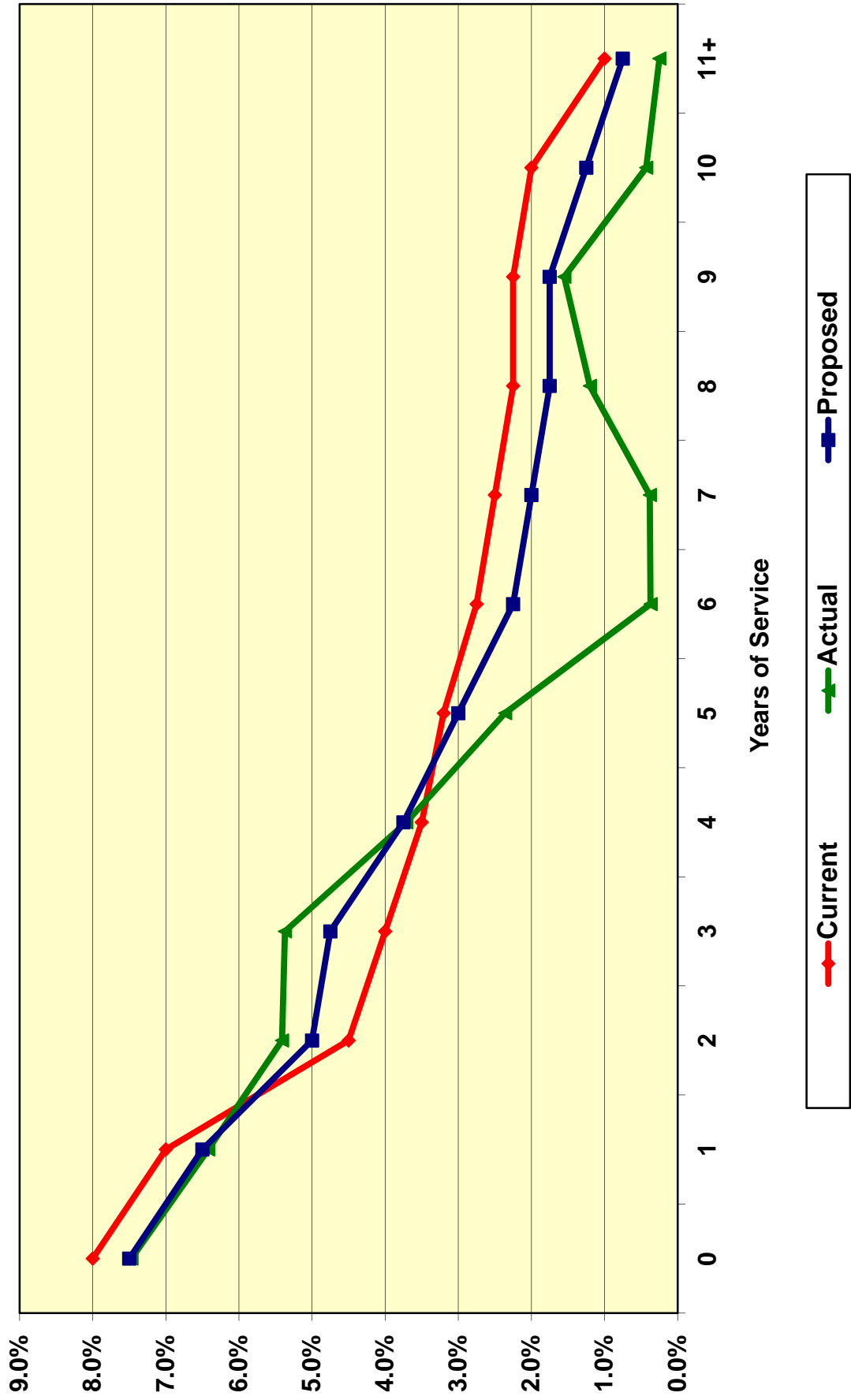
<u>Years of Service</u>	<u>Average Merit and Promotional Salary Increases</u>
0	7.47%
1	6.42
2	5.41
3	5.37
4	3.71
5	2.36
6	0.37
7	0.38
8	1.20
9	1.55
10	0.43
11 or more	0.25

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

Merit and Promotional Salary Increases (%)			
Years of Service	Current	Actual	Proposed
0	8.00%	7.47%	7.50%
1	7.00	6.42	6.50
2	4.50	5.41	5.00
3	4.00	5.37	4.75
4	3.50	3.71	3.75
5	3.20	2.36	3.00
6	2.75	0.37	2.25
7	2.50	0.38	2.00
8	2.25	1.20	1.75
9	2.25	1.55	1.75
10	2.00	0.43	1.25
11 or more	1.00	0.25	0.75

Chart 21 provides a graphical comparison of the current, the actual and the proposed merit and promotional increases.

Chart 21 Merit and Promotional Salary Increase Rates



APPENDIX A
CURRENT ACTUARIAL ASSUMPTIONS

Mortality Rates

Healthy:	RP-2000 Combined Healthy Mortality Table (separate for males and females) set back four years.
Disabled:	RP-2000 Combined Healthy Mortality Table (separate for males and females) set back two years.
Beneficiaries:	RP-2000 Combined Healthy Mortality Table (separate for males and females) set back two years.

Termination Rates Before Retirement:

Age	Rate (%)	
	Mortality	
	Male	Female
20	0.03	0.02
25	0.04	0.02
30	0.04	0.02
35	0.05	0.03
40	0.08	0.05
45	0.11	0.08
50	0.16	0.12
55	0.24	0.19
60	0.42	0.31

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

Termination Rates Before Retirement (continued):

Rate (%)		
Disability*		
Age	Fire	Police
20	0.02	0.02
25	0.02	0.03
30	0.03	0.05
35	0.06	0.11
40	0.15	0.29
45	0.26	0.46
50	0.42	0.56
55	1.40	1.08
60	4.40	1.48

* 90% of disabilities are assumed to be service connected.

Rate (%)		
Termination (< 5 Years of Service)		
Years of Service	Fire	Police
0 - 1	8.00	8.00
1 - 2	3.00	4.00
2 - 3	2.00	3.00
3 - 4	1.00	3.00
4 - 5	1.00	2.50

Rate (%)		
Termination (5+ Years of Service) *		
Age	Fire	Police
20	1.50	2.50
25	1.50	2.50
30	1.20	2.20
35	0.70	1.70
40	0.41	1.20
45	0.20	0.82
50	0.04	0.28
55	0.00	0.00
60	0.00	0.00

*No termination is assumed after a member is eligible for retirement. Members who are not eligible to receive a deferred vested retirement benefit are assumed to receive refund of contributions.

Retirement Rates:

Age	Rate(%)					
	Fire			Police		
	Tiers 2&4	Tiers 3&5	Tier 6	Tiers 2&4	Tiers 3&5	Tier 6
41	1.00	0.00	0.00	8.00	0.00	0.00
42	1.00	0.00	0.00	8.00	0.00	0.00
43	1.00	0.00	0.00	10.00	0.00	0.00
44	1.00	0.00	0.00	10.00	0.00	0.00
45	1.00	0.00	0.00	10.00	0.00	0.00
46	1.00	0.00	0.00	8.00	0.00	0.00
47	1.00	0.00	0.00	8.00	0.00	0.00
48	2.00	0.00	0.00	8.00	0.00	0.00
49	2.00	0.00	0.00	8.00	0.00	0.00
50	3.00	5.00	3.00	8.00	10.00	8.00
51	3.00	5.00	3.00	10.00	10.00	10.00
52	4.00	5.00	4.00	10.00	10.00	10.00
53	5.00	5.00	5.00	15.00	10.00	15.00
54	5.00	8.00	5.00	15.00	13.00	15.00
55	10.00	10.00	10.00	20.00	16.00	18.00
56	15.00	12.00	12.00	20.00	18.00	18.00
57	15.00	15.00	15.00	20.00	22.00	22.00
58	15.00	18.00	18.00	25.00	25.00	25.00
59	15.00	20.00	20.00	25.00	30.00	30.00
60	20.00	25.00	25.00	25.00	30.00	30.00
61	20.00	30.00	30.00	25.00	30.00	30.00
62	20.00	30.00	30.00	25.00	30.00	30.00
63	25.00	35.00	35.00	30.00	30.00	30.00
64	30.00	40.00	40.00	40.00	30.00	30.00
65	100.00	100.00	100.00	100.00	100.00	100.00

DROP Program:

DROP participants are considered active members until they leave DROP and begin receiving retirement benefits. Members are assumed to remain in the DROP for 5 years. Of all members expected to retire with a service retirement benefit, we project a 95% probability that members have elected DROP before retirement if they will have also satisfied the requirements for participating in the DROP for 5 years.

Retirement Age and Benefit for Inactive Vested Participants:	For deferred vested members, retirement assumption is age 50. We assume that all deferred vested members receive a deferred vested benefit.
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/Domestic Partner:	86%
Age of Spouse:	Wives are 3 years younger than their husbands.
Future Benefit Accruals:	1.0 year of service per year.
Consumer Price Index:	Increase of 3.50% per year; benefit increases due to CPI subject to a 3.0% maximum for Tiers 3 through 6.
Member Contribution and Matching Account Crediting Rate:	5.00%
Net Investment Return:	7.75%, net of investment and administrative expenses

Salary Increases:

Annual Rate of Compensation Increase

Inflation: 3.50% per year; plus 0.75% “across the board” salary increases; plus the following Merit and Longevity increases based on years of service.

Years of Service	Additional Salary Increase
0	8.00%
1	7.00
2	4.50
3	4.00
4	3.50
5	3.20
6	2.75
7	2.50
8	2.25
9	2.25
10	2.00
11 or more	1.00

Service Connected Disability Benefits:

Years of Service	Benefit
Less than 20	55% of Final Average Salary
20 – 30	65% of Final Average Salary
More than 30	75% of Final Average Salary

Nonservice Connected Disability Benefits:

40% of Final Average Salary

APPENDIX B

PROPOSED ACTUARIAL ASSUMPTIONS

Mortality Rates

- Healthy:** RP-2000 Combined Healthy Mortality Table (separate for males and females), projected to 2022 with scale BB set back one year.
- Disabled:** RP-2000 Combined Healthy Mortality Table (separate for males and females), projected to 2022 with scale BB set forward one year.
- Beneficiaries:** RP-2000 Combined Healthy Mortality Table (separate for males and females), projected to 2022 with scale BB set forward one year.

Termination Rates Before Retirement:

Rate (%)		
Mortality		
Age	Male	Female
20	0.03	0.02
25	0.04	0.02
30	0.04	0.02
35	0.07	0.04
40	0.10	0.06
45	0.13	0.10
50	0.19	0.15
55	0.30	0.22
60	0.52	0.36

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

Termination Rates Before Retirement (continued):

Rate (%)		
Disability*		
Age	Fire	Police
20	0.02%	0.02%
25	0.02	0.03
30	0.03	0.05
35	0.06	0.08
40	0.15	0.22
45	0.23	0.36
50	0.28	0.46
55	1.02	0.80
60	3.00	1.18

* 90% of disabilities are assumed to be service connected. Disability rates are not applied to members eligible to DROP.

Rate (%)		
Termination (< 5 Years of Service)		
Years of Service	Fire	Police
0 - 1	8.00%	8.00%
1 - 2	2.50	3.00
2 - 3	1.50	2.50
3 - 4	0.75	2.50
4 - 5	0.50	1.75

Rate (%)		
Termination (5+ Years of Service) *		
Age	Fire	Police
20	1.00%	2.00%
25	1.00	2.00
30	0.85	1.70
35	0.54	1.20
40	0.37	0.85
45	0.17	0.66
50	0.02	0.24
55	0.00	0.00
60	0.00	0.00

*No termination is assumed after a member is eligible for retirement. Members who are not eligible to receive a deferred vested retirement benefit are assumed to receive refund of contributions.

Termination Rates Before Retirement (continued):

Retirement Rates:

Age	Rate(%)					
	Fire			Police		
	Tiers 2&4	Tiers 3&5	Tier 6	Tiers 2&4	Tiers 3&5	Tier 6
41	1.00%	0.00%	0.00%	10.00%	0.00%	0.00%
42	1.00	0.00	0.00	10.00	0.00	0.00
43	1.00	0.00	0.00	10.00	0.00	0.00
44	1.00	0.00	0.00	10.00	0.00	0.00
45	1.00	0.00	0.00	10.00	0.00	0.00
46	1.00	0.00	0.00	7.00	0.00	0.00
47	1.00	0.00	0.00	7.00	0.00	0.00
48	2.00	0.00	0.00	7.00	0.00	0.00
49	2.00	0.00	0.00	7.00	0.00	0.00
50	3.00	3.00	3.00	12.00	7.00	8.00
51	4.00	3.00	3.00	12.00	6.00	10.00
52	5.00	3.00	4.00	12.00	6.00	10.00
53	10.00	3.00	5.00	15.00	6.00	15.00
54	15.00	7.00	5.00	20.00	10.00	15.00
55	20.00	12.00	10.00	20.00	18.00	18.00
56	20.00	14.00	12.00	25.00	18.00	18.00
57	20.00	16.00	15.00	25.00	20.00	20.00
58	20.00	20.00	18.00	25.00	22.00	22.00
59	20.00	25.00	20.00	25.00	25.00	25.00
60	20.00	25.00	25.00	25.00	25.00	25.00
61	20.00	30.00	30.00	25.00	25.00	25.00
62	25.00	35.00	30.00	25.00	25.00	25.00
63	25.00	40.00	35.00	30.00	25.00	25.00
64	30.00	40.00	40.00	40.00	30.00	30.00
65	100.00	100.00	100.00	100.00	100.00	100.00

DROP Program:

DROP participants are considered active members until they leave DROP and begin receiving retirement benefits. Members are assumed to remain in the DROP for 5 years. Of all members expected to retire with a service retirement benefit, we project a 95% probability that members have elected DROP before retirement if they will have also satisfied the requirements for participating in the DROP for 5 years.

Retirement Age and Benefit for Inactive Vested Participants: For deferred vested members, retirement assumption is age 50. We assume that all deferred vested members receive a deferred vested benefit.

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/Domestic Partner: 80% of male members, 60% of female members

Age of Spouse: Wives are 3 years younger than their husbands.

Future Benefit Accruals: 1.0 year of service per year.

Consumer Price Index: Increase of 3.25% per year; benefit increases due to CPI subject to a 3.0% maximum for Tiers 3 through 6.

Member Contribution and Matching Account Crediting Rate: 5.00%

Net Investment Return: 7.50%, net of investment and administrative expenses

Salary Increases:

Annual Rate of Compensation Increase

Inflation: 3.25% per year; plus 0.75% “across the board” salary increases; plus the following Merit and Longevity increases based on service.

Years of Service	Additional Salary Increase
0	7.50%
1	6.50
2	5.00
3	4.75
4	3.75
5	3.00
6	2.25
7	2.00
8	1.75
9	1.75
10	1.25
11+	0.75

Service Connected Disability Benefits:

Years of Service**Benefit**

Less than 20

55% of Final Average Salary

20 – 30

65% of Final Average Salary

More than 30

75% of Final Average Salary

**Nonservice Connected Disability
Benefits:**

40% of Final Average Salary

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