

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

**ACTUARIAL EXPERIENCE STUDY**

**Analysis of Actuarial Experience  
During the Period  
July 1, 2007 through June 30, 2010**

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June 24, 2011

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

**Re: Review of Proposed Non-economic Actuarial Assumptions for the June 30, 2011 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 from the last three actuarial valuations ending June 30, 2010. The study includes the proposed actuarial assumptions to be used effective with the June 30, 2011 and later valuations.

Please note that we have not reviewed the economic assumptions as those were reviewed with the Board in detail last year and revised for use in the June 30, 2010 valuation. We recommend continued use of the 2010 economic assumptions in the 2011 and later valuations.

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

Sincerely,

Handwritten signature of Paul Angelo in black ink.

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

Handwritten signature of Andy Yeung in black ink.

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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 the gain or loss for a single year.

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 compare the actual experience during this three-year period with that expected under the current assumptions. 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 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, 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:

**Economic Assumptions** – Inflation, investment return and salary increases, and medical trend. The inflation, investment return and salary increases assumptions were reviewed in detail in our August 26, 2010 “Review of Economic Actuarial Assumptions for the June 30, 2010 Actuarial Valuation” report. The medical trend assumptions were reviewed in our October 18, 2010 report. That report also recommended assumption changes which were adopted for use in the June 30, 2010 valuations.

**Recommendation:** *We recommend continued use of the economic assumptions adopted for the June 30, 2010 valuations except for (1) merit and promotion salary increases (discussed in this report) and (2) medical trend (to be discussed in a future report when the supporting information becomes available later this year).*

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

**Recommendation:** *We recommend changing the current rates to better reflect past experience.*

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

**Recommendation:** *We recommend adjusting the rates to reflect decreased mortality rates. 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 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 plus the level of disability benefit payable upon disability retirement to better reflect recent experience. We also recommend maintaining 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 recent experience.*

Section II provides some background on basic principles and the methodology used for the experience study. A detailed discussion of the experience 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, 2010 valuation (that we recommend be continued for the June 30, 2011 valuation) were provided in a separate report dated August 26, 2010. 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 in excess of general salary increases (i.e., the merit and promotion 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. RETIREMENT RATES**

The age at which a member retires 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.

For both Fire and Police members we used experience collected during the three-year period. The actual service (non-disability) retirement experience for active participants over the past three years is provided on the following page, followed by the current and proposed retirement rates.

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	0.00	1.00
48	2.00	0.00	2.00
49	2.00	0.00	2.00
50	2.00	7.69	3.00
51	2.00	3.13	3.00
52	4.00	4.35	4.00
53	4.00	5.26	5.00
54	4.00	6.67	5.00
55	6.00	35.71	10.00
56	10.00	25.00	15.00
57	10.00	38.46	15.00
58	10.00	0.00	15.00
59	10.00	22.22	15.00
60	20.00	0.00	20.00
61	20.00	0.00	20.00
62	20.00	0.00	20.00
63	25.00	33.33	25.00
64	30.00	0.00	30.00
65	100.00	0.00	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	8.00	0.90	5.00
51	8.00	0.28	5.00
52	8.00	0.93	5.00
53	8.00	1.02	5.00
54	8.00	6.76	8.00
55	10.00	10.65	10.00
56	10.00	16.02	12.00
57	10.00	21.71	15.00
58	12.00	23.66	18.00
59	15.00	30.08	20.00
60	20.00	35.19	25.00
61	20.00	38.96	30.00
62	20.00	43.48	30.00
63	25.00	62.50	35.00
64	30.00	53.33	40.00
65	100.00	51.85	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	6.00%	80.00%	8.00%
42	6.00	23.53	8.00
43	10.00	9.68	10.00
44	10.00	9.09	10.00
45	8.00	11.36	10.00
46	8.00	3.92	8.00
47	8.00	3.51	8.00
48	9.00	7.35	8.00
49	9.00	5.41	8.00
50	8.00	4.29	8.00
51	8.00	12.35	10.00
52	8.00	9.23	10.00
53	15.00	15.79	15.00
54	15.00	10.26	15.00
55	15.00	28.00	20.00
56	15.00	25.00	20.00
57	15.00	40.00	20.00
58	25.00	25.00	25.00
59	25.00	25.00	25.00
60	25.00	50.00	25.00
61	25.00	50.00	25.00
62	25.00	0.00	25.00
63	25.00	100.00	30.00
64	30.00	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	15.00	4.79	10.00
51	15.00	3.87	10.00
52	15.00	3.71	10.00
53	15.00	5.15	10.00
54	15.00	9.59	13.00
55	15.00	21.54	16.00
56	15.00	21.69	18.00
57	18.00	28.72	22.00
58	20.00	29.21	25.00
59	25.00	36.30	30.00
60	25.00	33.02	30.00
61	25.00	38.46	30.00
62	25.00	45.83	30.00
63	25.00	34.62	30.00
64	30.00	28.57	30.00
65	100.00	63.89	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 50.97 for all deferred vested members. However, 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.

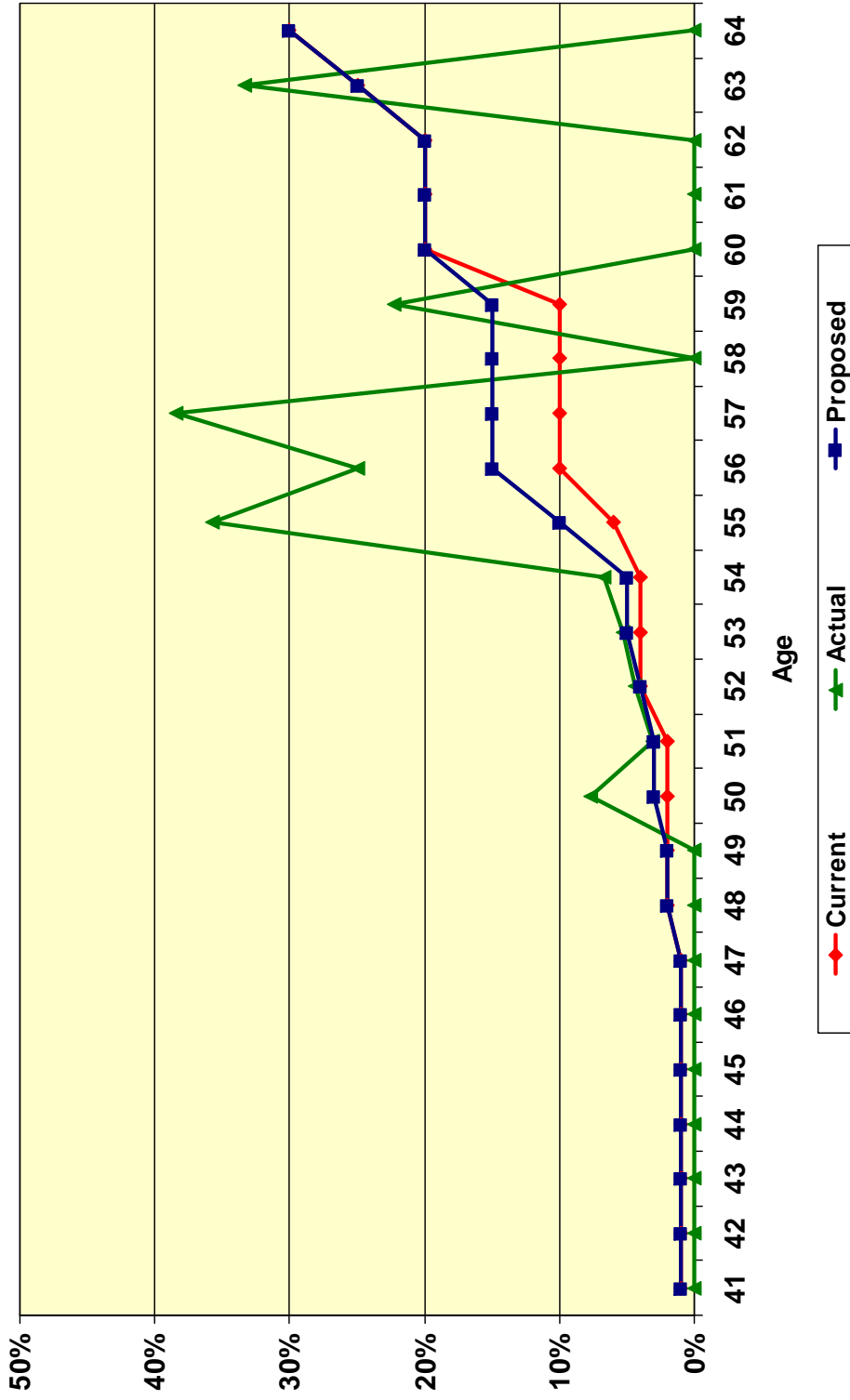
In prior valuations, it was assumed that 86% of all active members would be married when they retired. According to experience of members who retired during the last three years, about 84% of all members were married at retirement. We recommend maintaining this assumption.

Based on observed experience from members who retired during the last three years, we also recommend that we maintain the assumption that when active members retire, female spouses are assumed to be three years younger than their male spouses. Spouses are assumed to be of the opposite sex to the member.

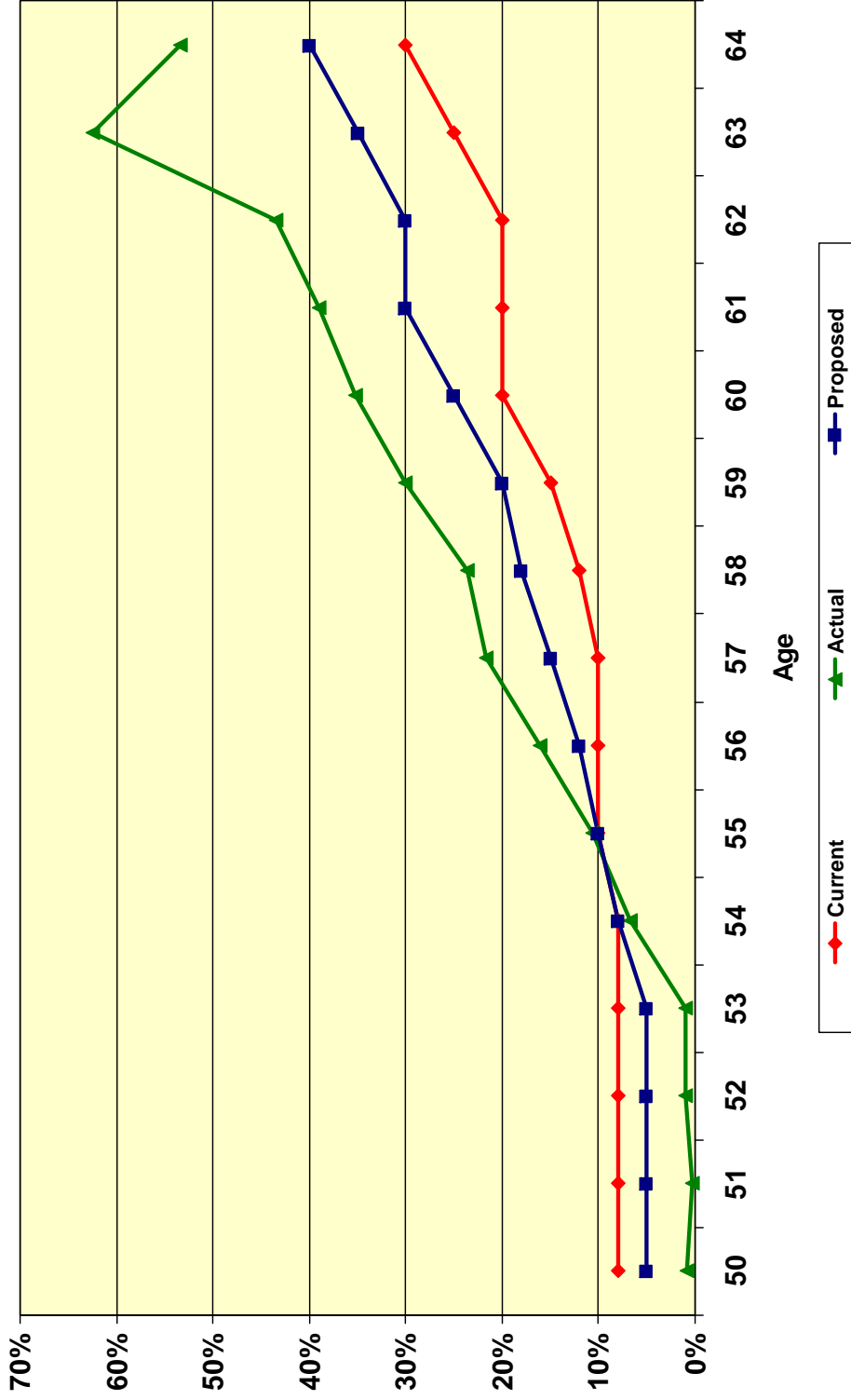
In prior valuations, of all members expected to retire with service retirement benefit, we assumed a 90% DROP utilization rate if they also satisfy the requirements for participating in the DROP. The average utilization rate over the prior three years was 97%. We recommend increasing the DROP utilization rate to 95% based on the recent experience.

In prior valuations, members were assumed to remain in the DROP for 4 years. According to experience for the last three years, the average period participating in DROP is 4 years and 7 months. Based on this, we recommend increasing the expected period participating in DROP from 4 to 5 years.

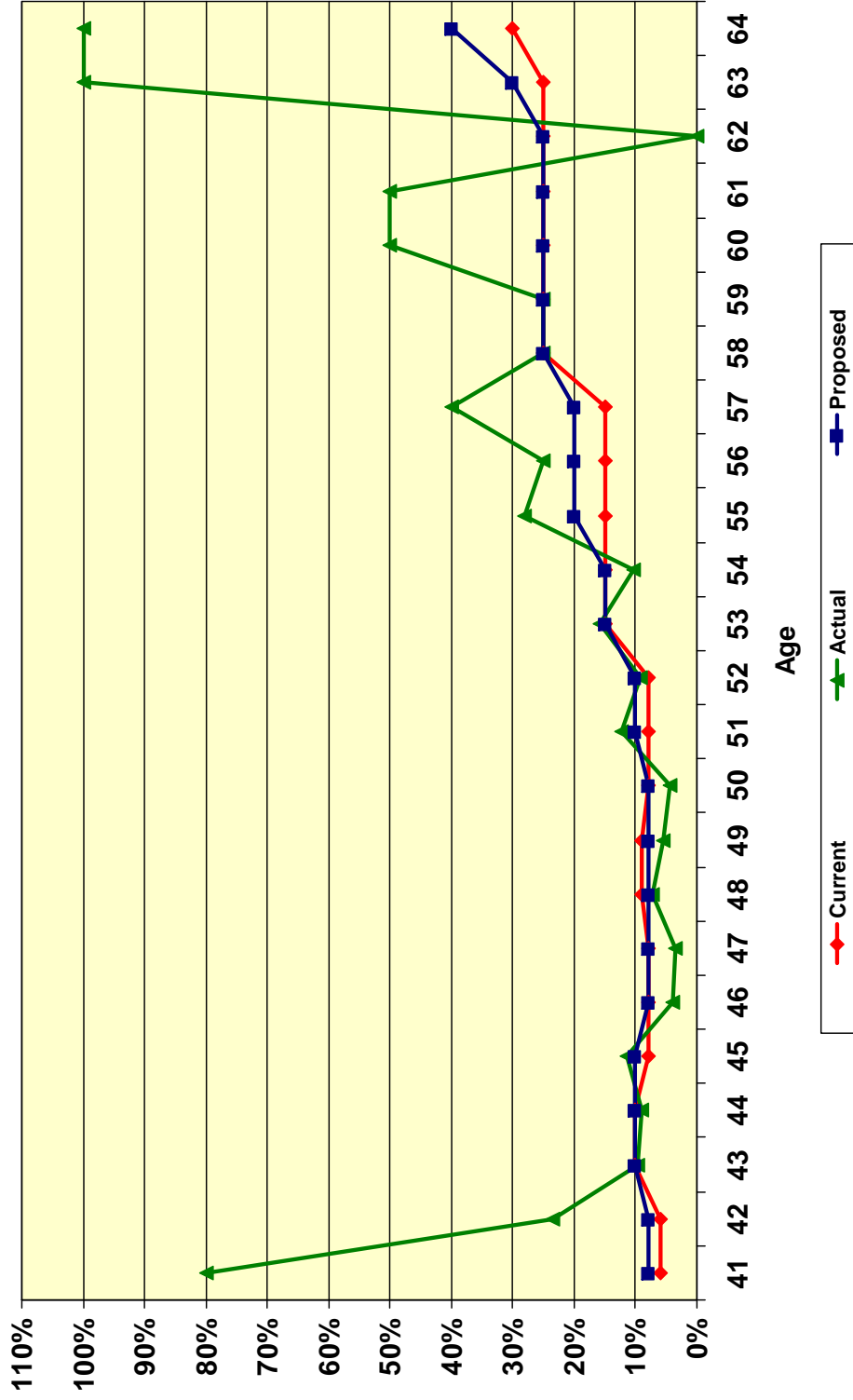
# Chart 1 Retirement Rates - Fire Tiers 2 & 4



**Chart 2**  
**Retirement Rates - Fire Tiers 3 & 5**

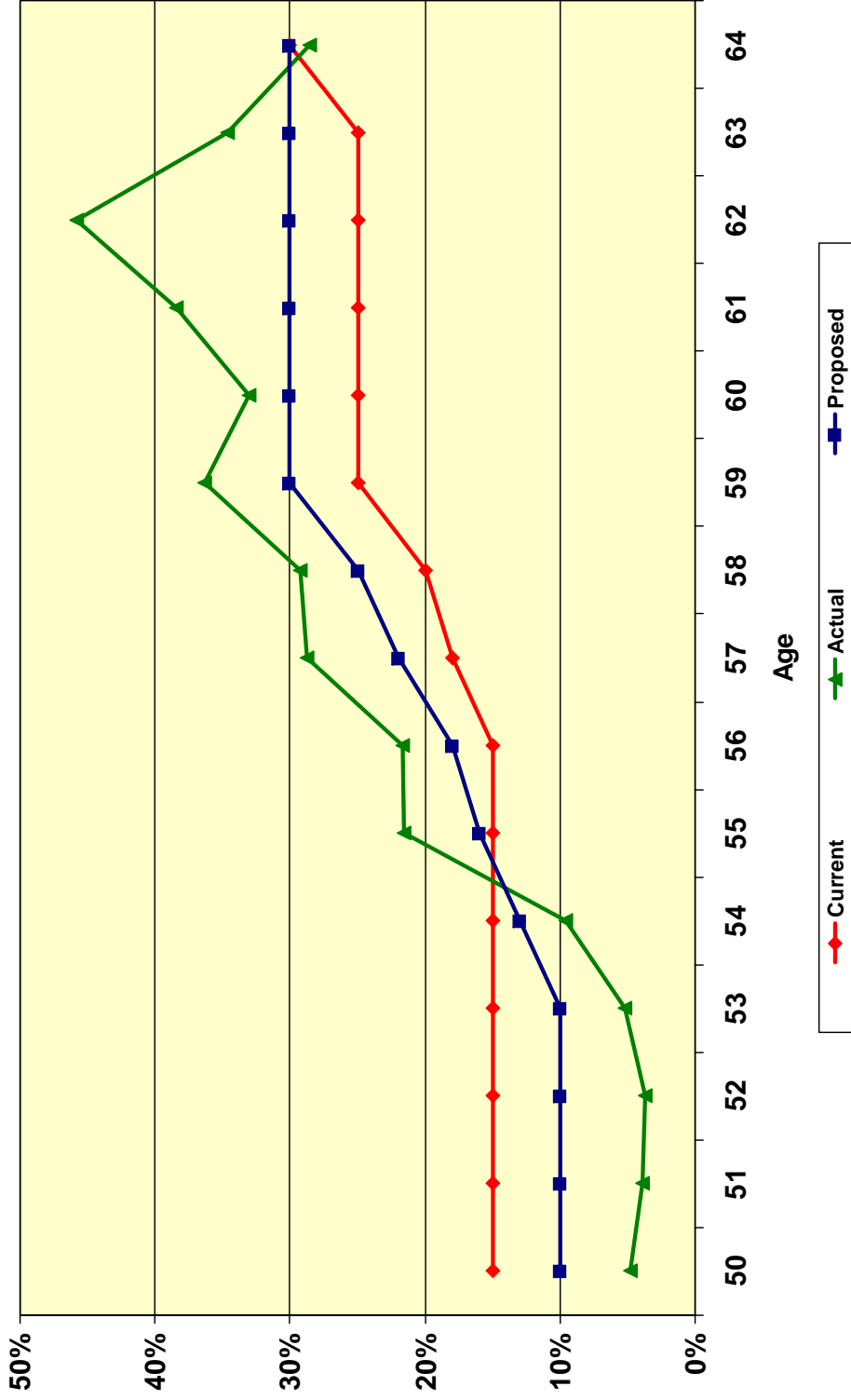


### Chart 3 Retirement Rates - Police Tiers 2 & 4





**Chart 4**  
**Retirement Rates - Police Tiers 3 & 5**



**B. 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) with a two-year set back for members and the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) with no set back for beneficiaries.

Pre-Retirement Mortality

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

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 is as follows:

Year Ended June 30	Healthy Retirees		
	Actual Deaths	Current Expected Deaths	Proposed Expected Deaths
2008	201	202	164
2009	174	208	167
2010	200	218	176
Total	575	628	507
Actual / Expected		92%	113%

Chart 5 compares actual to expected deaths for all members under the current and proposed assumptions over the last three years. Recent experience shows that there were fewer deaths than predicted by the current table.

For retirees, the ratio of actual to expected deaths was 92%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) with a four-year set back. This will bring the actual to expected ratio to 113%, providing an additional margin for

future mortality improvements that is more consistent with industry standards of practice. We will continue to monitor this assumption in future studies.

Post-Retirement Mortality (Beneficiaries)

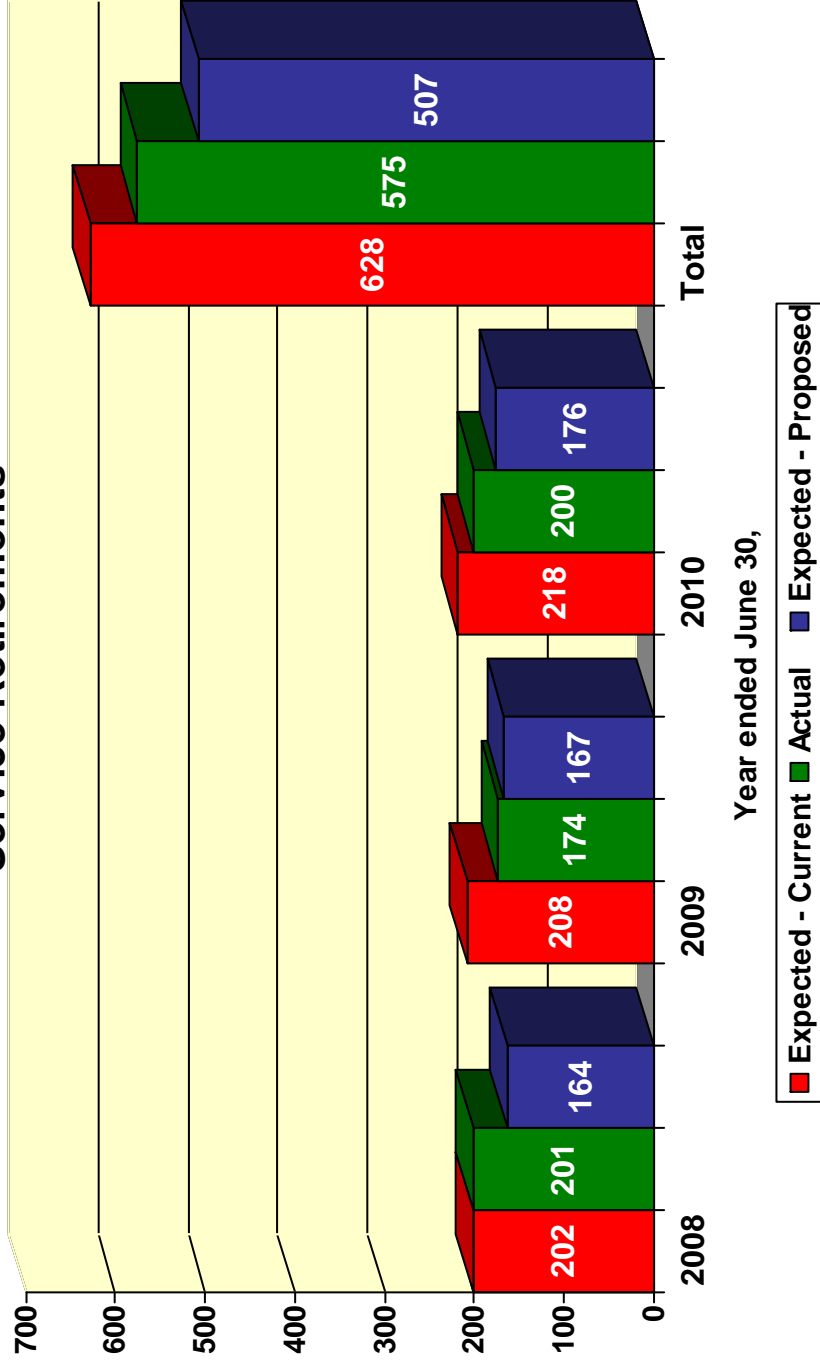
Among beneficiaries, the actual deaths compared to the expected deaths under the current and proposed assumptions for the last three years is as follows:

Year Ended June 30	Beneficiaries		
	Actual Deaths	Current Expected Deaths	Proposed Expected Deaths
2008	105	128	106
2009	134	137	113
2010	136	140	116
Total	375	405	335
Actual / Expected		93%	112%

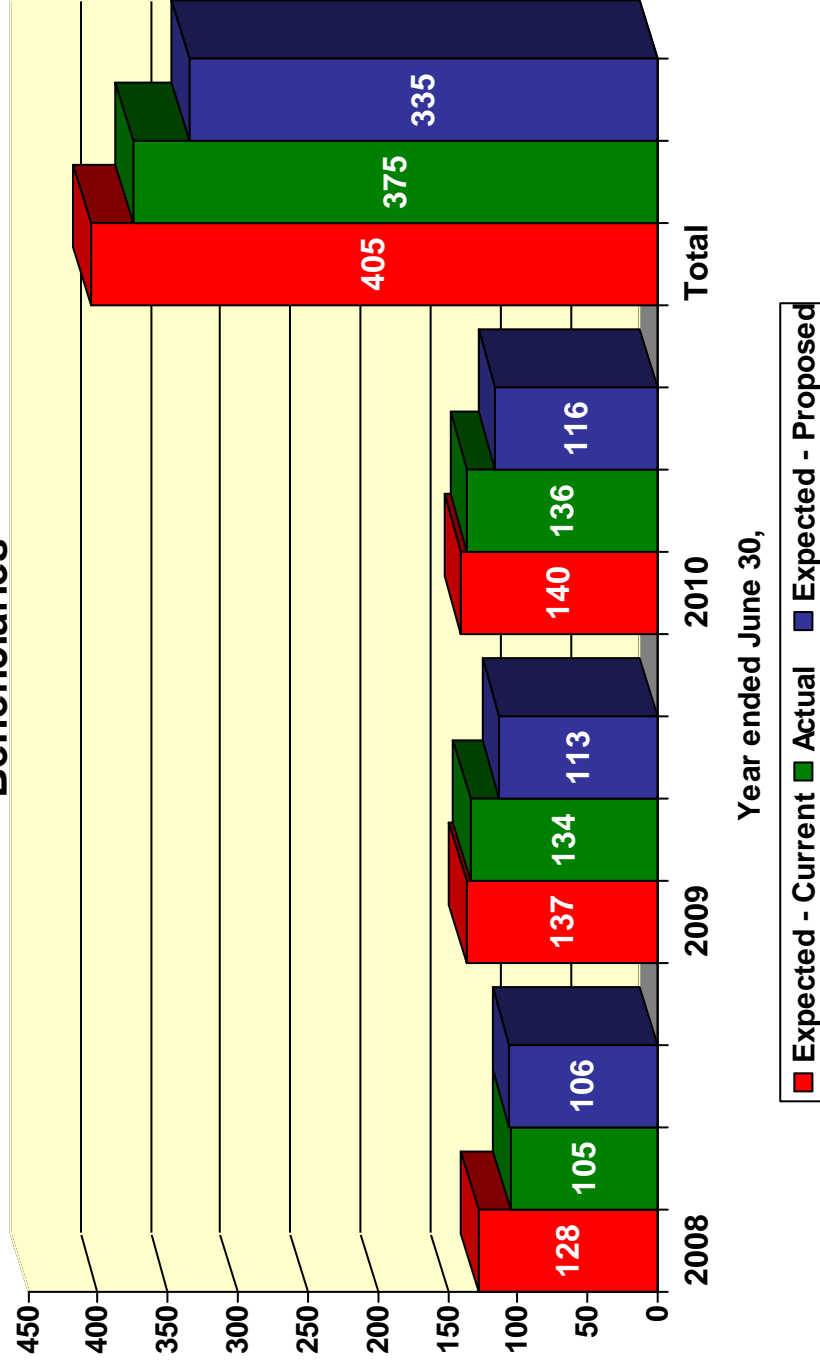
Chart 6 compares actual to expected deaths for all beneficiaries under the current and proposed assumptions over the last three years. Recent experience shows that there were fewer deaths than predicted by the current table, as the ratio of actual to expected deaths was 93%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) with a two-year set back. This will bring the actual to expected ratio to 112%. We will continue to monitor this assumption in future studies.

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**



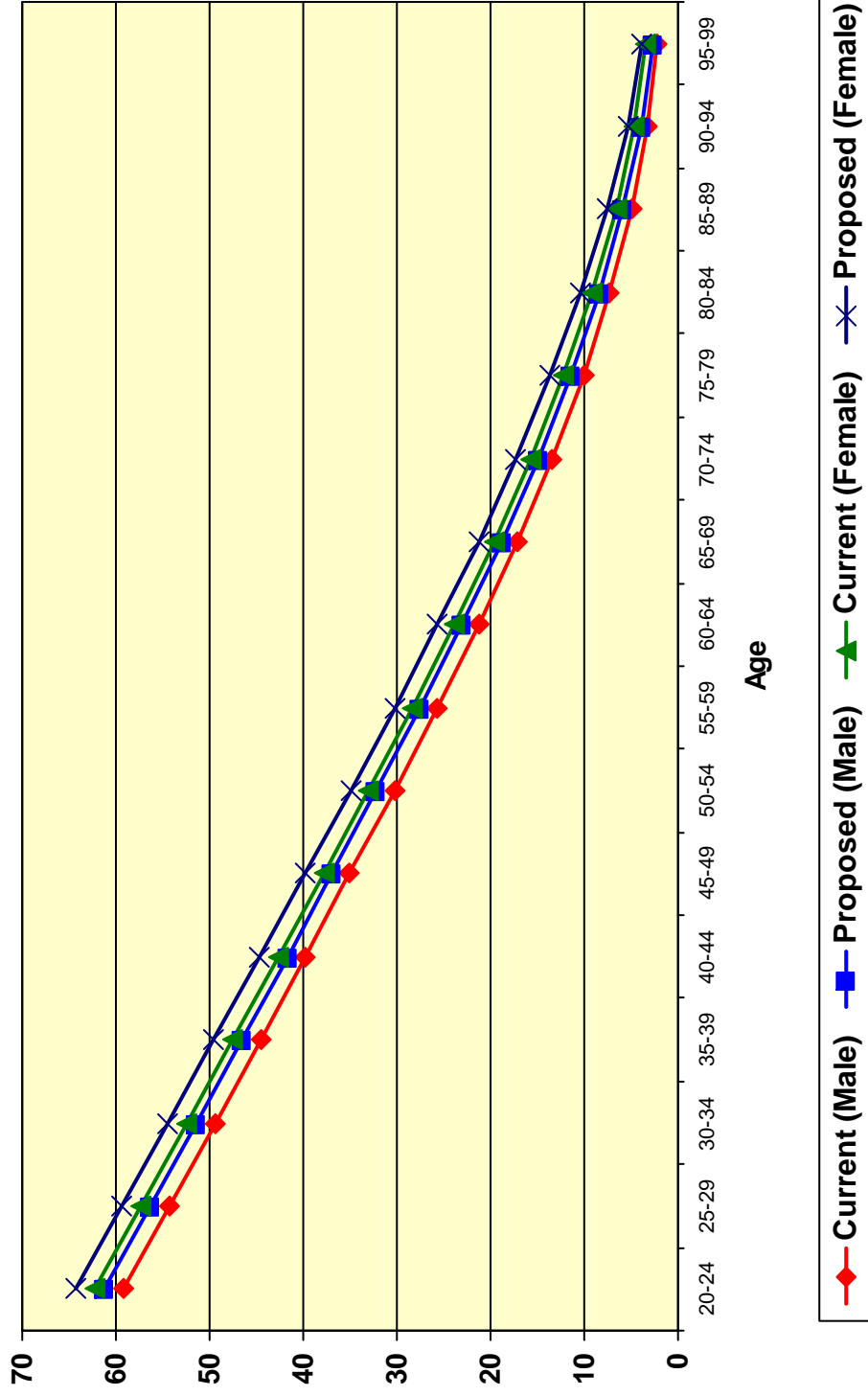
**Chart 6**  
**Post - Retirement Deaths**  
**Beneficiaries**



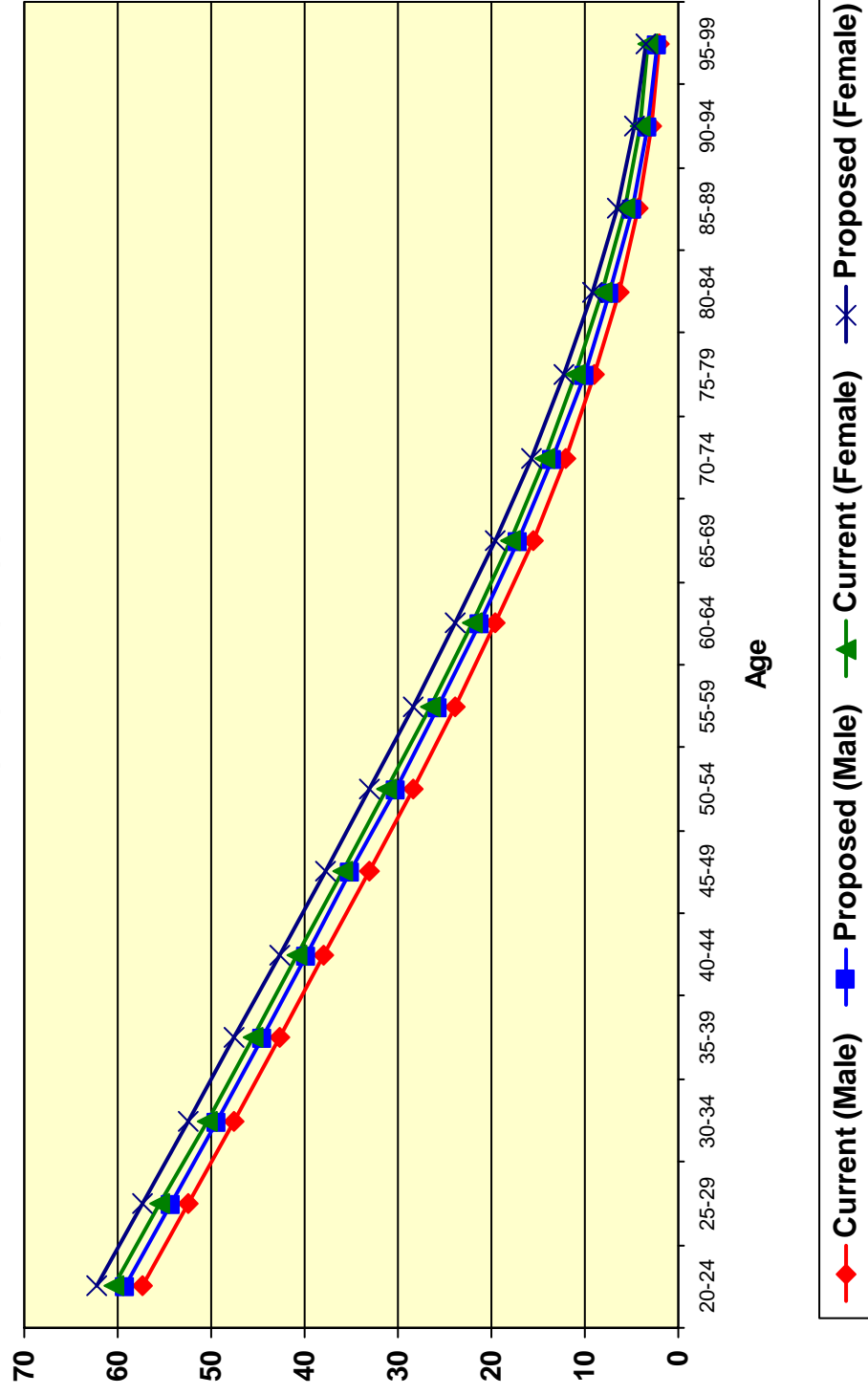
# Chart 7

## Life Expectancies

### Non-Disabled Members



# Chart 8 Life Expectancies Beneficiaries



### C. MORTALITY RATES - DISABLED

Since mortality rates for disabled members can be higher than for 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) with a one-year set forward.

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		
	Actual Deaths	Current Expected Deaths	Proposed Expected Deaths
2008	46	59	43
2009	45	62	45
2010	45	66	47
Total	136	187	135
Actual / Expected		73%	101%

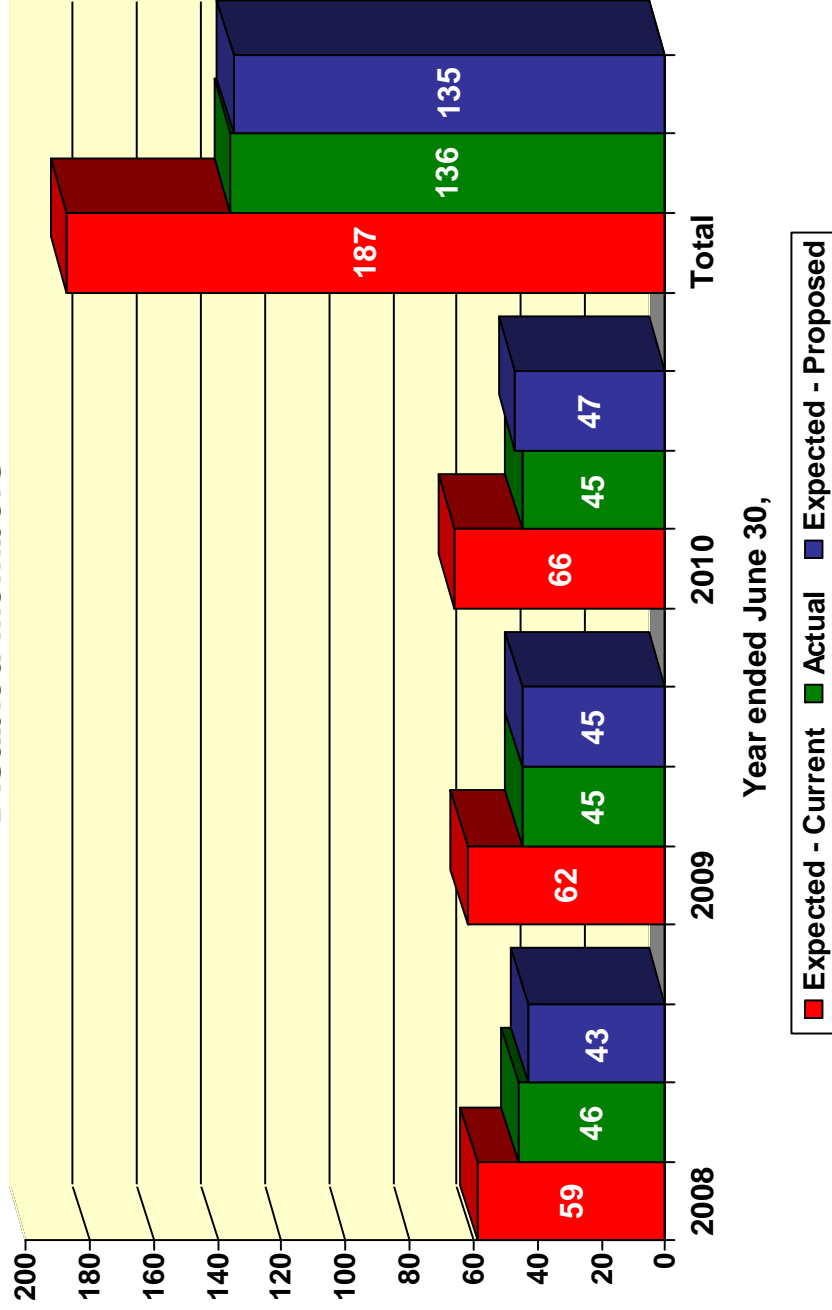
Chart 9 compares actual to expected deaths under both the current and proposed assumptions for disabled members over the last three years.

For disabled retirees, the ratio of actual to expected deaths was 73%. We recommend changing to the RP-2000 Combined Healthy Mortality Table (separate tables for males and females) with a two-year set back. This will bring the actual to expected ratio to 101%. While significantly fewer deaths are predicted under the proposed assumptions relative to the current assumptions, the ratio of actual to expected deaths is still lower than the 110% ratio that we would generally recommend. We are comfortable with our recommendation because when the experience of the service retirees and the disabled retirees are combined together, the ratio of actual to proposed deaths is about 110%. We will continue to monitor the assumption for disableds closely to see if the mortality rates need to be adjusted in the future.

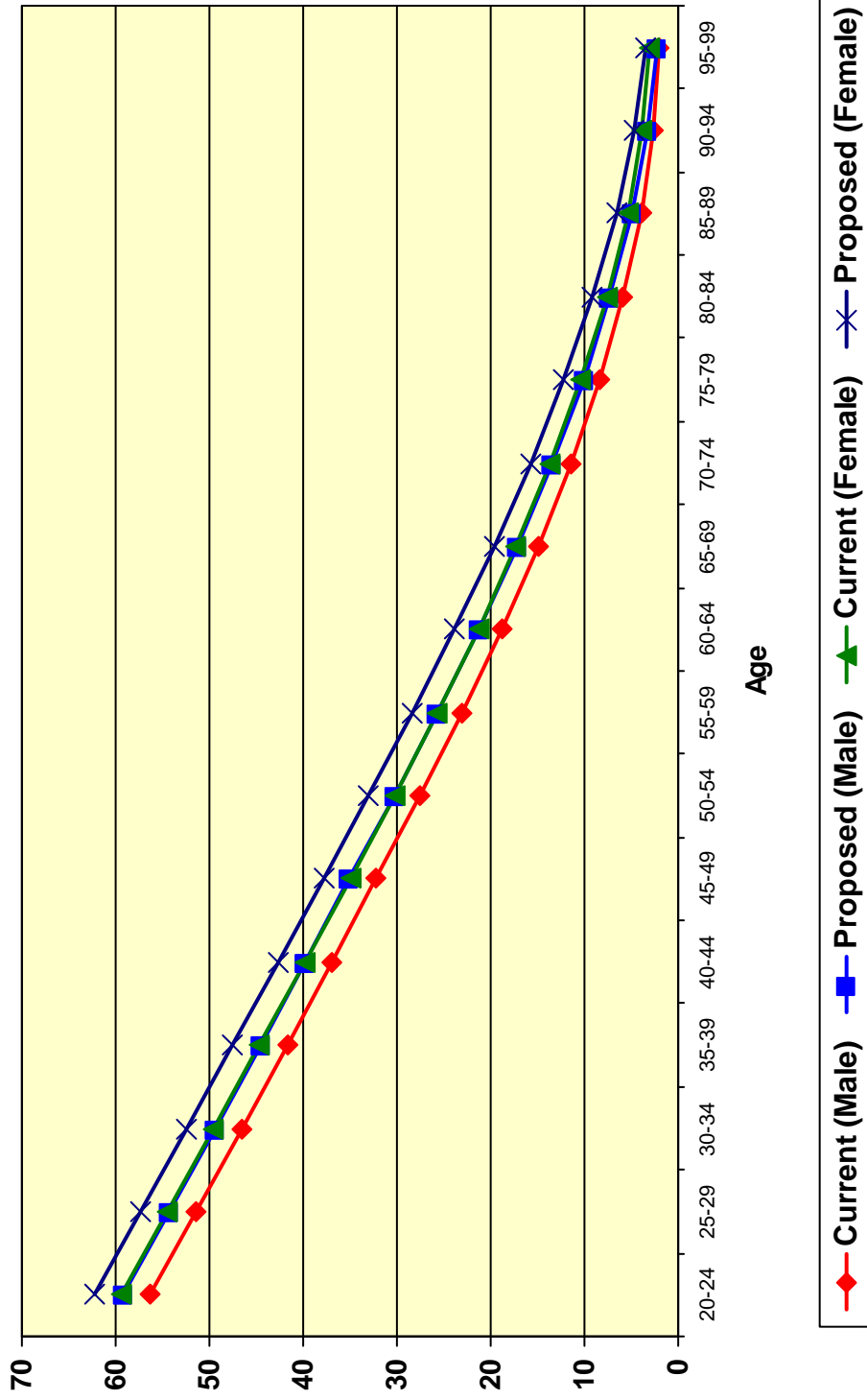
Chart 10 shows the life expectancies under the current and proposed tables for disabled members.



**Chart 9**  
**Post - Retirement Deaths**  
**Disabled Members**



### Chart 10 Life Expectancies Disabled Members



#### **D. TERMINATION RATES**

Termination rates include all terminations for reasons other than death, disability, or retirement. Under the current assumptions, there are separate sets of assumptions for withdrawal and for vested termination to predict, respectively, those members who are anticipated to withdraw their contributions (withdrawal) or leave their contributions on deposit and receive a deferred vested benefit (vested termination). 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 three pages.

Rates of Withdrawal (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%	7.51%	8.00%
1 - 2	4.00	1.54	3.00
2 - 3	3.00	0.51	2.00
3 - 4	2.00	0.27	1.00
4 - 5	2.00	0.51	1.00

Rates of Vested 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	2.00%	0.00%	1.50%
25 - 29	2.00	0.00	1.50
30 - 34	1.20	0.24	1.00
35 - 39	0.70	0.09	0.50
40 - 44	0.45	0.28	0.35
45 - 49	0.20	0.05	0.10
50 - 54	0.00	0.00	0.00
55 - 59	0.00	0.00	0.00

Rates of Withdrawal (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%	9.55%	8.00%
1 - 2	4.50	1.60	4.00
2 - 3	3.50	1.71	3.00
3 - 4	3.50	2.03	3.00
4 - 5	3.00	1.75	2.50

Rates of Vested 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	3.00%	0.00%	2.50%
25 – 29	3.00	1.85	2.50
30 – 34	2.50	0.49	2.00
35 – 39	2.00	0.82	1.50
40 – 44	1.50	0.49	1.00
45 – 49	1.00	0.55	0.70
50 – 54	0.00	0.21	0.00
55 – 59	0.00	0.00	0.00

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

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

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

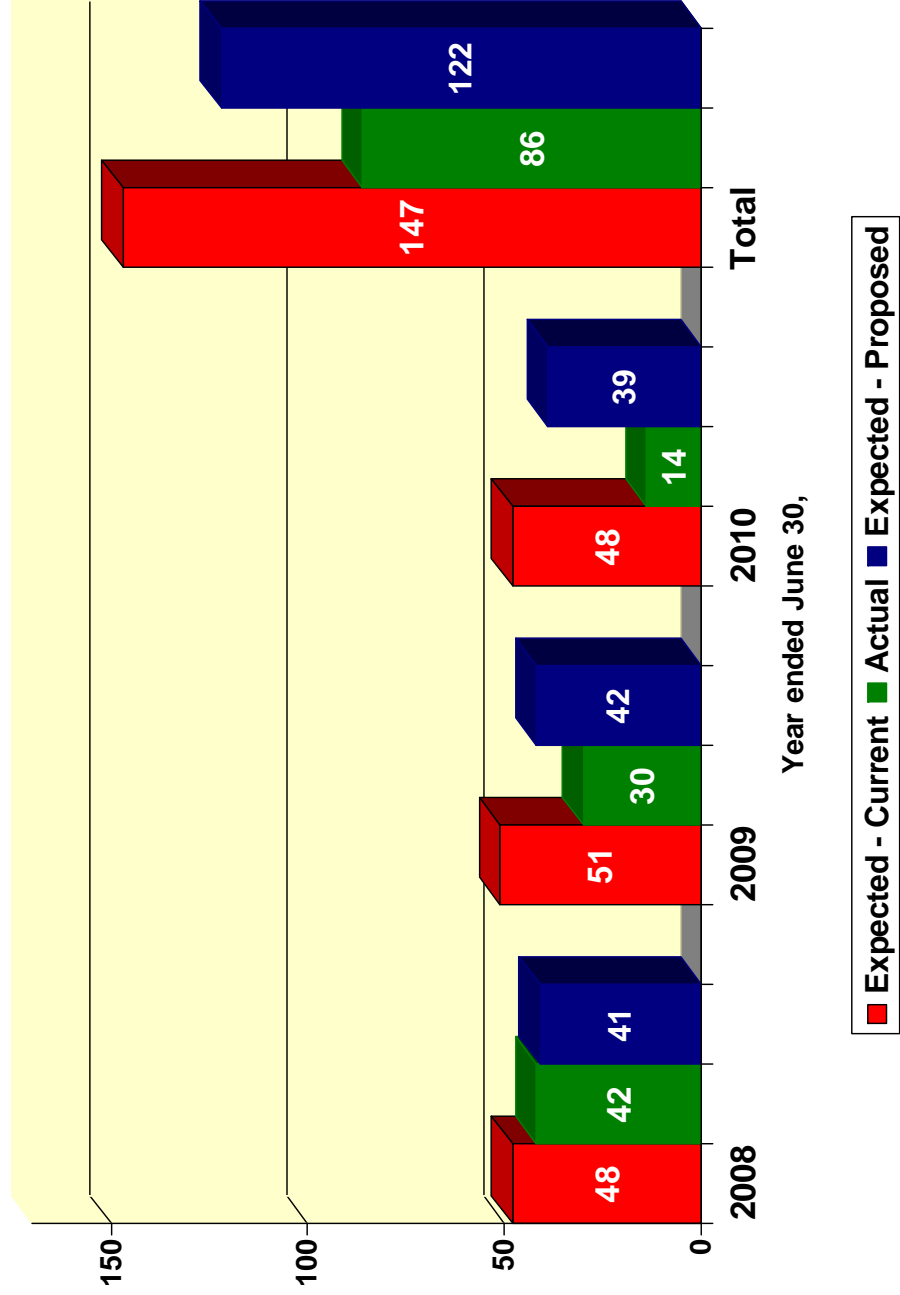
Chart 14 shows the same information as Chart 12, but for Police members.

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

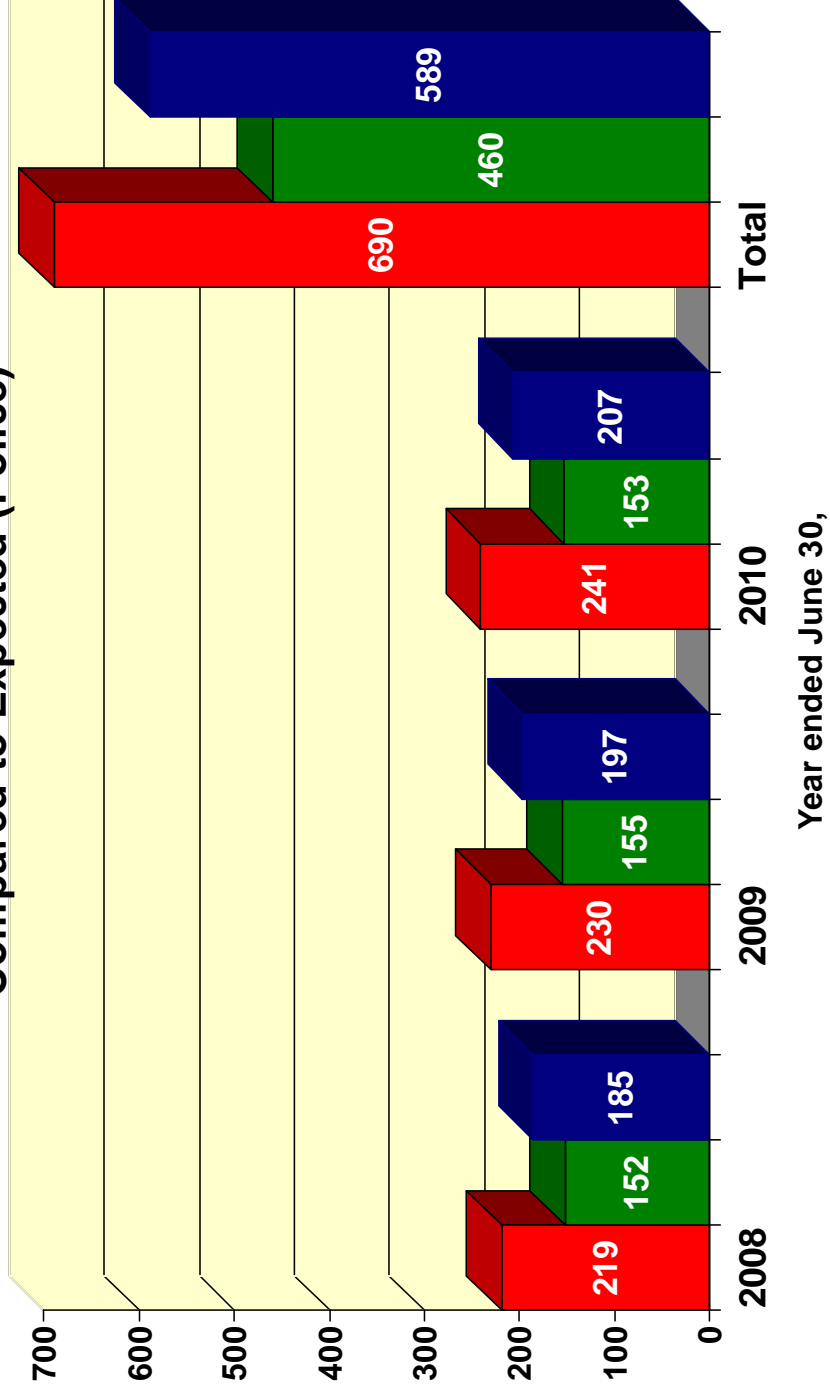
Chart 16 shows the same information as Chart 15, but for Police members.

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

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



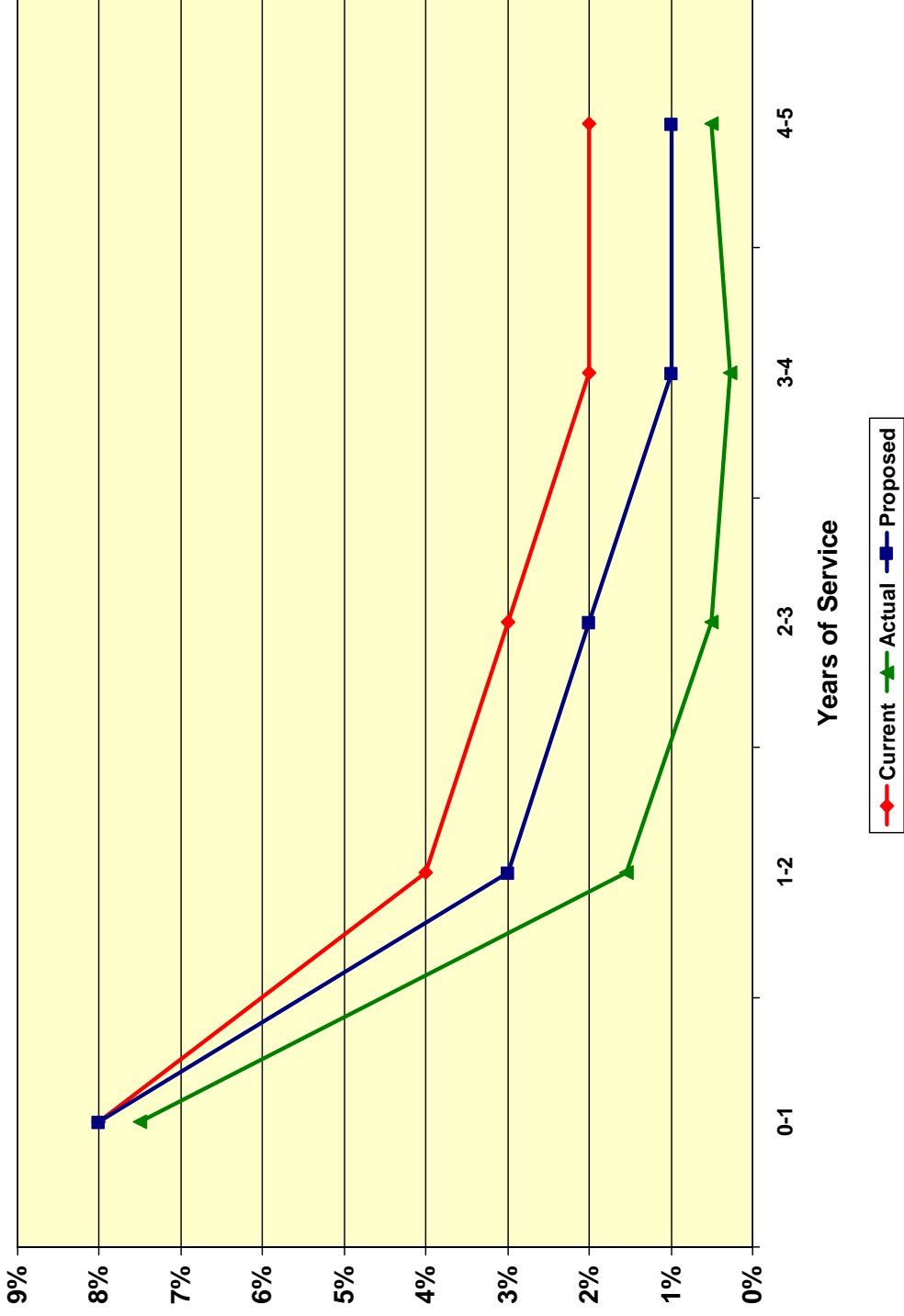
**Chart 12**  
**Actual Number of Terminations**  
**(Withdrawals plus Vested Terminations)**  
**Compared to Expected (Police)**



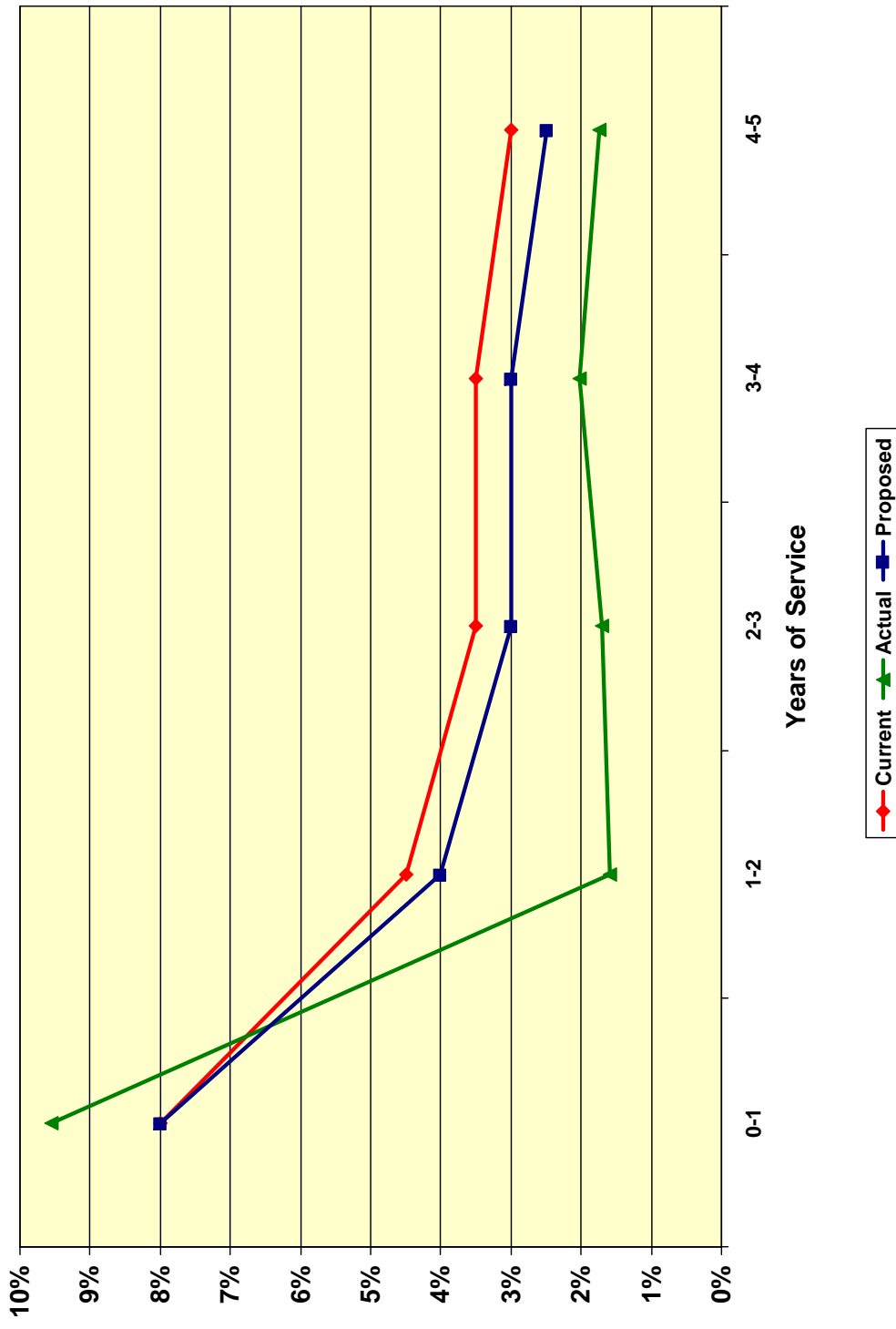
Expected - Current ■ Actual ■ Expected - Proposed



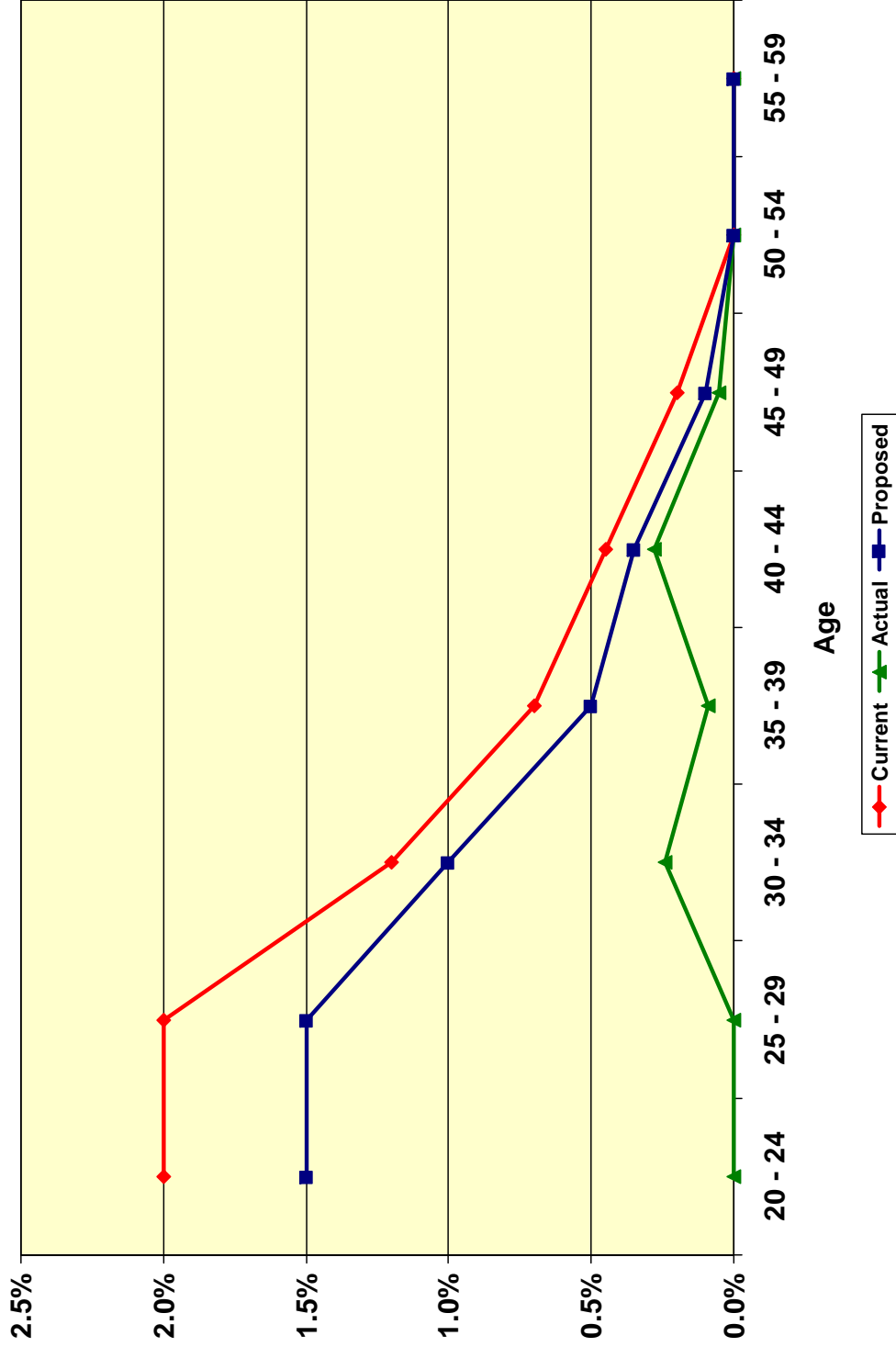
**Chart 13**  
**Withdrawal Rates - Fire**  
**(Less Than Five Years of Service)**



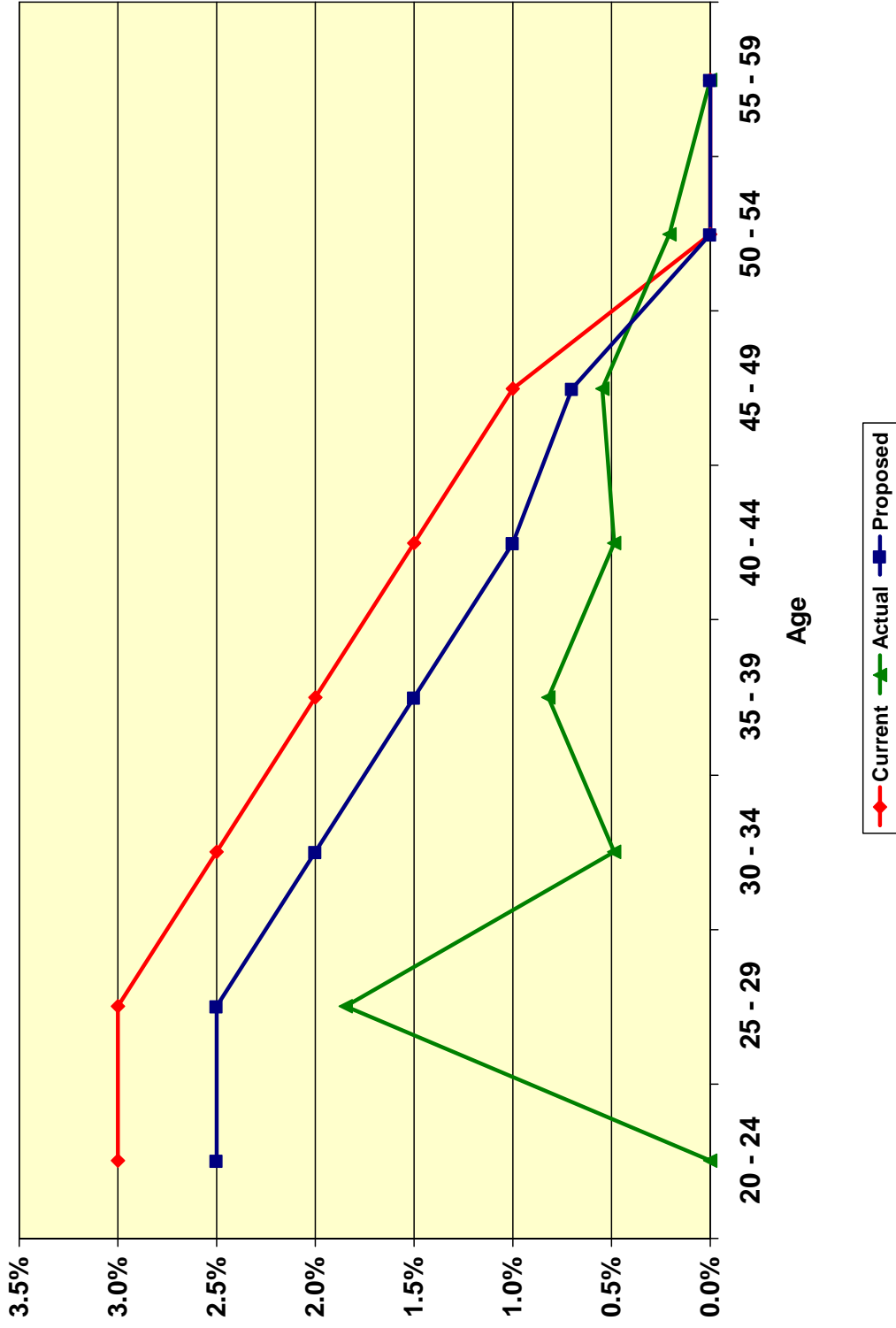
**Chart 14**  
**Withdrawal Rates - Police**  
**(Less than Five Years of Service)**



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



**Chart 16**  
**Vested Termination Rates - Police**  
**(More than Five Years of Service)**



**E. 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	0.07	0.04
35 – 39	0.08	0.15	0.08
40 – 44	0.19	0.07	0.19
45 – 49	0.35	0.10	0.30
50 – 54	0.70	0.24	0.50
55 – 59	3.00	1.38	2.00
60 – 64	8.00	5.56	6.00

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	0.05	0.03	0.03
30 – 34	0.15	0.07	0.07
35 – 39	0.18	0.10	0.13
40 – 44	0.40	0.39	0.40
45 – 49	0.55	0.47	0.50
50 – 54	0.60	0.31	0.60
55 – 59	1.50	1.38	1.40
60 – 64	1.65	0.00	1.50

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. The proposed disability rates were adjusted to reflect the past three years experience.

Chart 18 graphs the same information as Chart 17, but for Police members.

Chart 19 shows actual disablement rates, compared to the assumed (current) 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 duty disabilities. Since about 93% of disabled members received a duty disability during the last three years, we recommend maintaining the assumption that 90% of all disabilities will be duty 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 increasing the current assumptions for percentage of final average salary for Service Connected disabilities and maintaining the current assumption for Nonservice Connected disabilities.

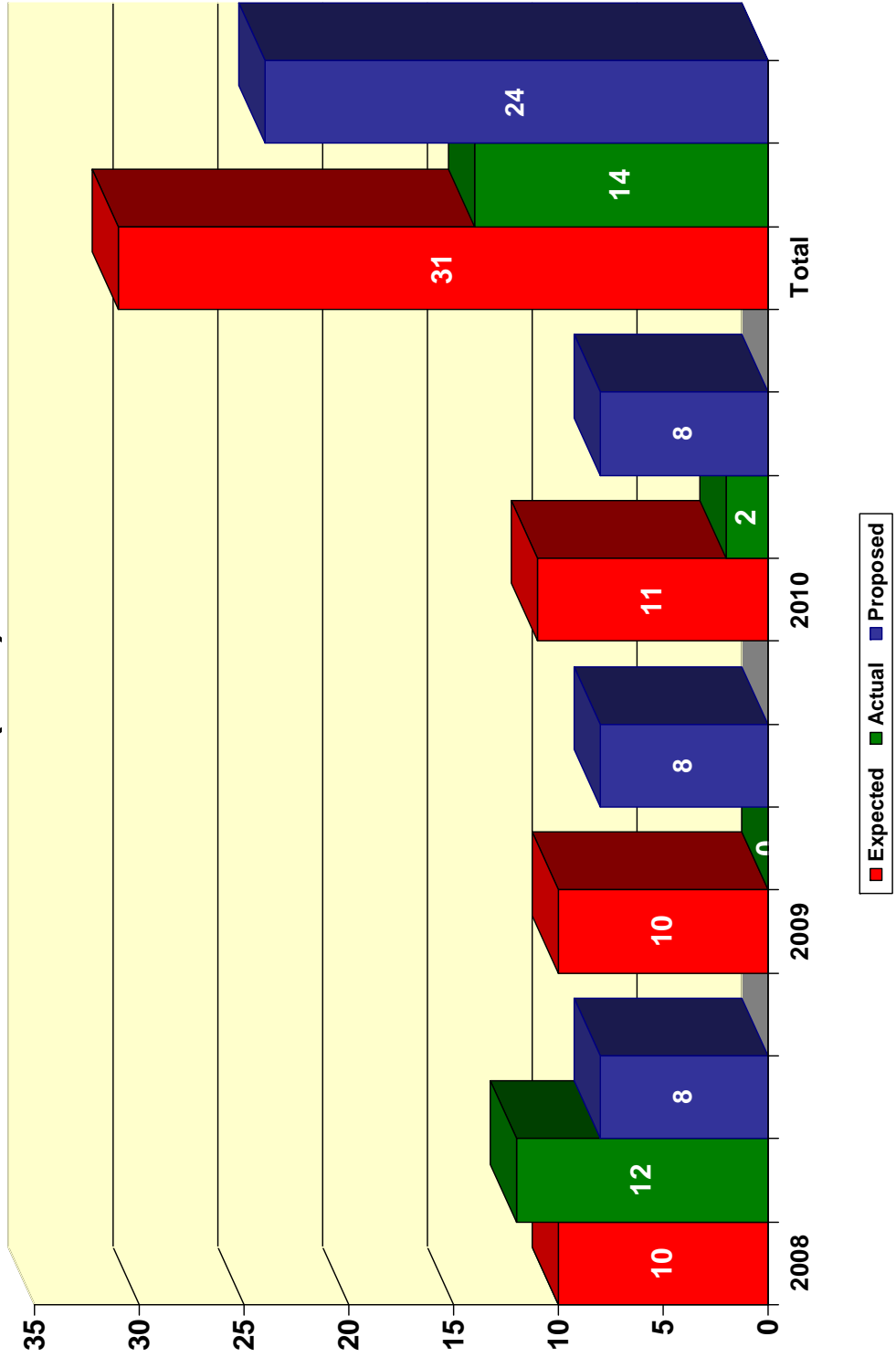
Service Connected Disabilities

<u>Years of Service</u>	<u>Current Assumed Percentage</u>	<u>Actual Percentage</u>	<u>Proposed Assumed Percentage</u>
< 20	50%	54%	55%
20 – 30	60%	67%	65%
> 30	70%	80%	75%

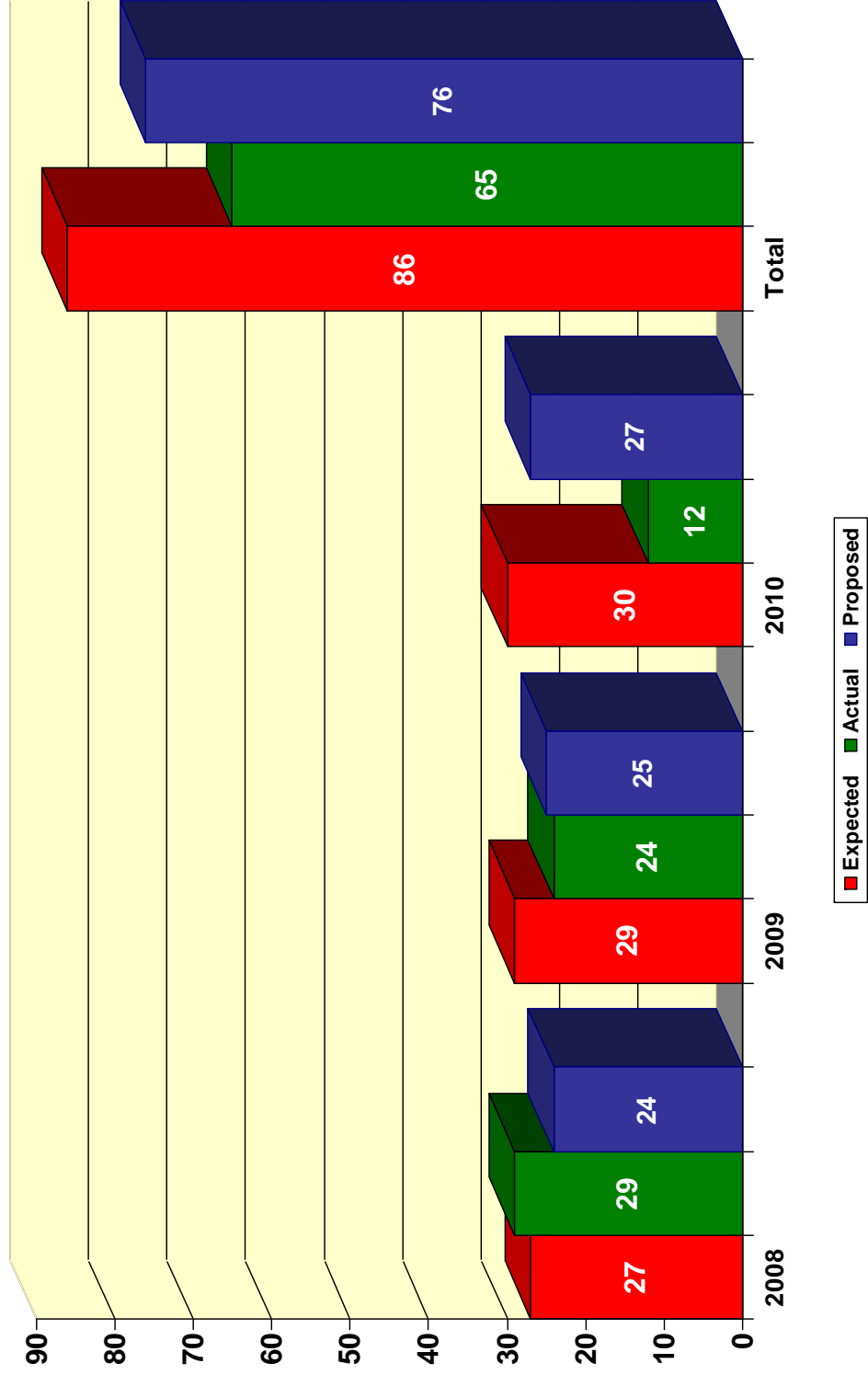
Nonservice Connected Disabilities

<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)**

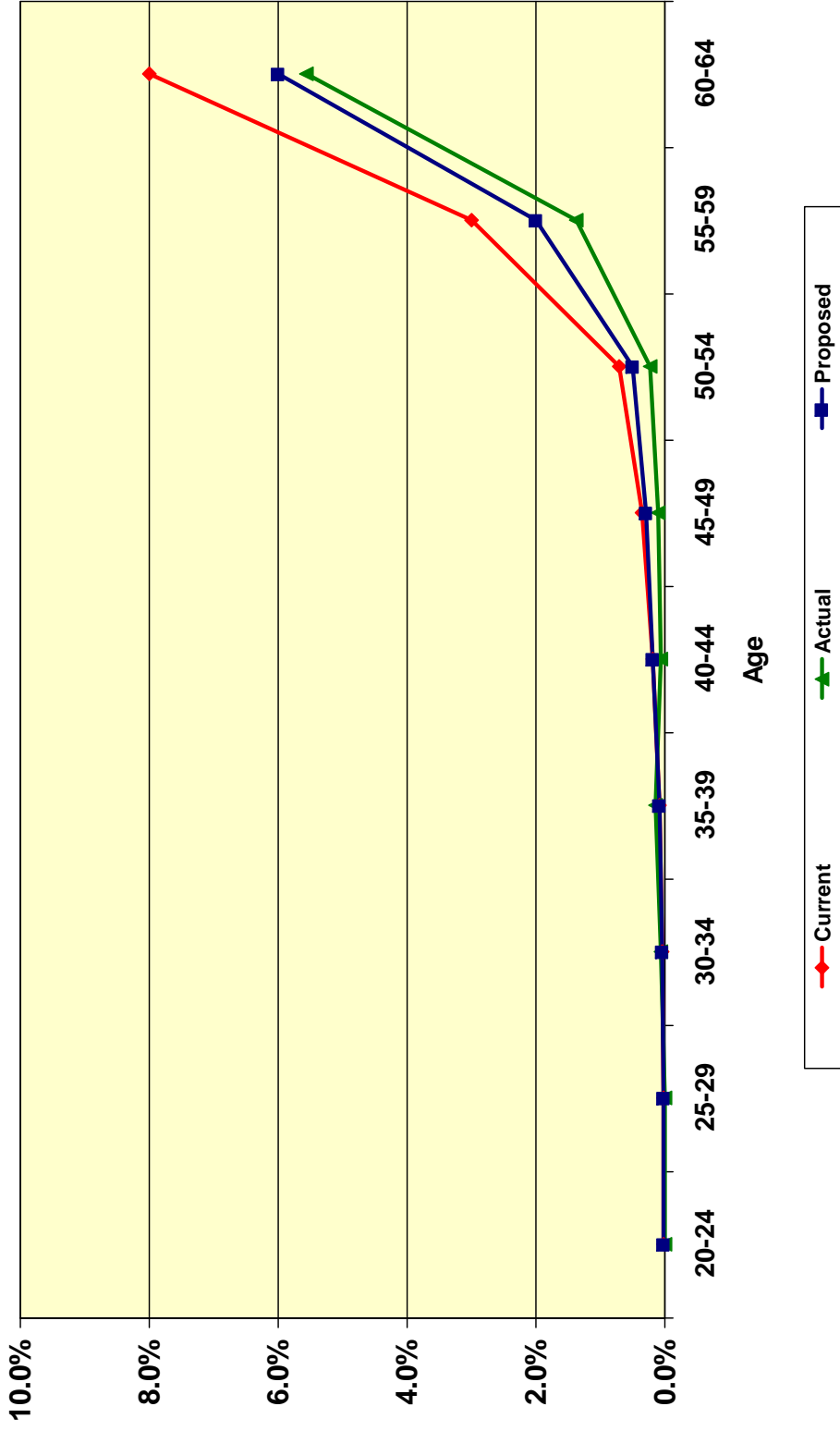


**Chart 18**  
**Actual Number of Disabilities Compared to Expected**  
**(Police)**

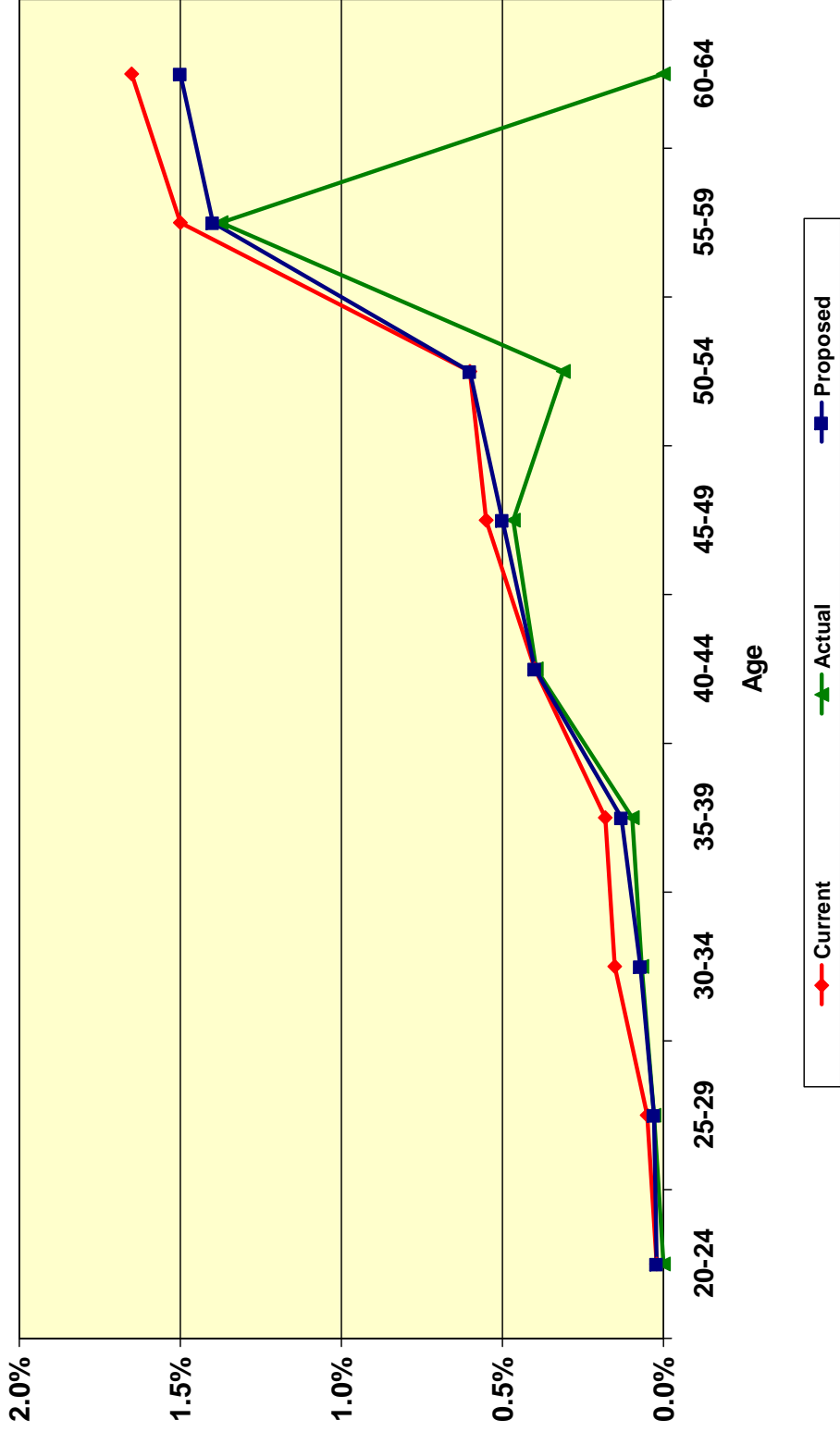




**Chart 19**  
**Disablement Rates for Fire**



### Chart 20 Disablement Rates for Police



## **F. MERIT AND PROMOTION 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 promotion increases.

The inflationary increases are assumed to follow the general annual inflation assumption of 3.50% and a real "across the board" pay increase assumption of 0.75%. Therefore, the total annual inflation and real "across the board" increase of 4.25% is used as the assumed annual rate of payroll growth at which payments to the UAAL are assumed to increase.

The annual merit and promotion 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 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 according to member demographic;
- Removing the general salary increases (representing inflation and "across the board" components) from these increases. These general increases are 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."

Currently, the assumed rates of future merit and promotional increases are a function of an employee's age. Our experience review analyzed recent years' merit and promotional increases, both as a function of age and also as a function of years of service. We observed that salary increases correlated better with years of service than with age. As a result of these observations, we recommend that merit and promotional increase assumptions be structured as a function of years of service instead of age.

The following table shows the current assumptions for merit and promotional increases for members at sample ages.

<u>Age Group</u>	<u>Current Merit and Promotional Increases</u>
20-24	5.50%
25-29	4.65%
30-34	3.35%
35-39	2.35%
40-44	1.35%
45-49	1.05%
50-54	0.75%
55-59	0.65%
60-64	0.65%

The following table shows the average annual increases by years of service over the three-year experience period (July 1, 2007 through June 30, 2010) before removing the general increases (inflationary and “across the board” components):

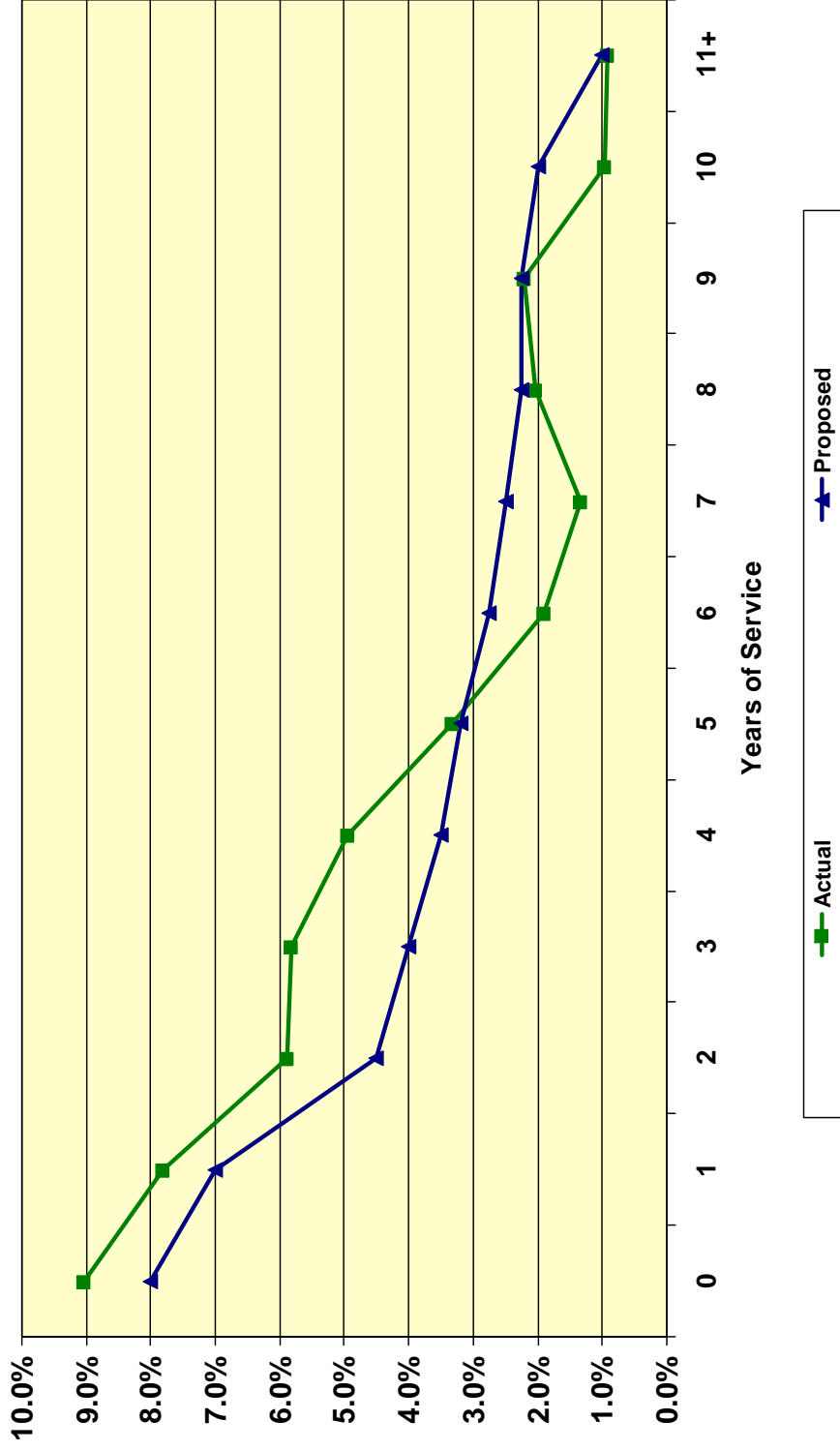
<u>Service Group</u>	<u>Average Increase</u>
Less than 1	11.91%
1-2	10.56
2-3	8.42
3-4	8.43
4-5	8.34
5-6	6.09
6-7	4.68
7-8	4.30
8-9	4.80
9-10	5.35
10-11	4.09
11 & Over	3.77

The annual increase in average salary over this three -year period was about 2.9% for members. After removing these general inflationary and “across the board” increases, the following table shows the average annual merit and promotion increases for the three-year period:

<u>Service Group</u>	<u>Average Promotional and Merit Increases</u>	<u>Proposed Assumptions</u>
Less than 1	9.04%	8.00%
1-2	7.81	7.00
2-3	5.89	4.50
3-4	5.81	4.00
4-5	4.95	3.50
5-6	3.32	3.20
6-7	1.90	2.75
7-8	1.33	2.50
8-9	2.02	2.25
9-10	2.22	2.25
10-11	0.96	2.00
11 & Over	0.91	1.00

Charts 21 provides a graphical comparison of the actual merit and promotional increases, compared to the proposed assumptions.

**Chart 21**  
**Merit and Promotion Salary Increase Rates**



**APPENDIX A**  
**CURRENT ACTUARIAL ASSUMPTIONS**

**Mortality Rates**

<b>Healthy:</b>	RP-2000 Combined Healthy Mortality Table (separate for males and females) set back two years.
<b>Disabled:</b>	RP-2000 Combined Healthy Mortality Table (separate for males and females) set forward one year.
<b>Beneficiaries:</b>	RP-2000 Combined Healthy Mortality Table (separate for males and females) with no age adjustment.

**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	0.06	0.04
40	0.10	0.06
45	0.13	0.09
50	0.19	0.14
55	0.29	0.22
60	0.53	0.39

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

**Termination Rates Before Retirement (continued):**

Rate (%)		
Disability*		
Age	Fire	Police
20	0.02%	0.01%
25	0.02	0.04
30	0.03	0.11
35	0.06	0.17
40	0.15	0.31
45	0.29	0.49
50	0.56	0.58
55	2.08	1.14
60	6.00	1.59

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

Rate (%)		
Withdrawal (< 5 Years of Service)		
Years of Service	Fire	Police
0 - 1	8.00%	8.00%
1 - 2	4.00	4.50
2 - 3	3.00	3.50
3 - 4	2.00	3.50
4 - 5	2.00	3.00

Rate (%)		
Vested Termination (5+ Years of Service) *		
Age	Fire	Police
20	2.00%	3.00%
25	2.00	3.00
30	1.52	2.70
35	0.90	2.20
40	0.55	1.70
45	0.30	1.20
50	0.00	0.00
55	0.00	0.00
60	0.00	0.00

\* No vested termination is assumed after a member is eligible for retirement.



**Termination Rates Before Retirement (continued):**

**Retirement Rates:**

Age	Rate(%)			
	Fire		Police	
	Tiers 2&4	Tiers 3&5	Tiers 2&4	Tiers 3&5
41	1.00%	0.00%	6.00%	0.00%
42	1.00	0.00	6.00	0.00
43	1.00	0.00	10.00	0.00
44	1.00	0.00	10.00	0.00
45	1.00	0.00	8.00	0.00
46	1.00	0.00	8.00	0.00
47	1.00	0.00	8.00	0.00
48	2.00	0.00	9.00	0.00
49	2.00	0.00	9.00	0.00
50	2.00	8.00	8.00	15.00
51	2.00	8.00	8.00	15.00
52	4.00	8.00	8.00	15.00
53	4.00	8.00	15.00	15.00
54	4.00	8.00	15.00	15.00
55	6.00	10.00	15.00	15.00
56	10.00	10.00	15.00	15.00
57	10.00	10.00	15.00	18.00
58	10.00	12.00	25.00	20.00
59	10.00	15.00	25.00	25.00
60	20.00	20.00	25.00	25.00
61	20.00	20.00	25.00	25.00
62	20.00	20.00	25.00	25.00
63	25.00	25.00	25.00	25.00
64	30.00	30.00	30.00	30.00
65	100.00	100.00	100.00	100.00

**DROP Program:**

For this valuation, of all members expected to retire with a service retirement benefit, we assume a 90% DROP utilization rate if they also satisfy the requirements for participating in the DROP. Members are assumed to remain in the DROP for 4 years.

**Retirement Age and Benefit for Deferred Vested Members:** For current deferred vested members, the 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 5.

**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 age.

Age	Additional Salary Increase
20	5.84%
25	4.99%
30	3.87%
35	2.75%
40	1.75%
45	1.17%
50	0.87%
55	0.69%
60	0.65%

---

**Service Connected Disability Benefits:**

---

<b>Years of Service</b>	<b>Benefit</b>
Less than 20	50% of Final Average Salary
20 – 30	60% of Final Average Salary
More than 30	70% of Final Average Salary

**Nonservice Connected Disability Benefits:**

40% of Final Average Salary

## APPENDIX B

### PROPOSED ACTUARIAL ASSUMPTIONS

#### Mortality Rates

<b>Healthy:</b>	RP-2000 Combined Healthy Mortality Table (separate for males and females) set back four years.
<b>Disabled:</b>	RP-2000 Combined Healthy Mortality Table (separate for males and females) set back two years.
<b>Beneficiaries:</b>	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	1.46

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

Rate (%)		
Withdrawal (< 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 (%)		
Vested 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 vested termination is assumed after a member is eligible for retirement.

**Termination Rates Before Retirement (continued):**

**Retirement Rates:**

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

**DROP Program:**

For this valuation, of all members expected to retire with a service retirement benefit, we assume a 95% DROP utilization rate if they also satisfy the requirements for participating in the DROP. Members are assumed to remain in the DROP for 5 years.

**Retirement Age and Benefit for Deferred Vested Members:** For current deferred vested members, the 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 5.

**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 service.

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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+	1.00

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**Service Connected Disability Benefits:**

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**Years of Service****Benefit**

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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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