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**EMPLOYEES'
RETIREMENT SYSTEM
OF GEORGIA**

EMPLOYEES' RETIREMENT SYSTEM OF GEORGIA

**EXPERIENCE INVESTIGATION FOR THE FIVE-YEAR PERIOD
ENDING JUNE 30, 2009**





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

December 16, 2010

Board of Trustees
Employees' Retirement System of Georgia
Two Northside 75, Suite 300
Atlanta, GA 30318

Members of the Board:

We are pleased to submit the results of an investigation of the economic and demographic experience for the Employees' Retirement System of Georgia. The purpose of the investigation was to assess the reasonability of the actuarial assumptions currently used by the Retirement System. This investigation covers the five-year period from July 1, 2004 to June 30, 2009.

This report shows a comparison of the actual and expected cases of separation from active service, actual and expected number of deaths, and actual and expected salary increases. A comparison between the rates of separation and mortality presently in use and the recommended revised rates are also shown in this report.

All new assumptions are shown in the attached tables in Appendix D of this report. In the actuary's judgment, the recommended assumptions are suitable for use until further experience indicates that modifications are desirable.

The experience investigation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
I	Executive Summary	1
II	Financial Impact	2
III	Economic Assumptions	3
IV	Demographic Assumptions	11
	Rates of Withdrawal	12
	Rates of Disability Retirement	22
	Rates of Retirement	27
	Rates of Pre-retirement Mortality	42
	Rates of Post-retirement Mortality	42
	Rates of Salary Increase	48
V	Other Assumptions and Methods	50
VI	Group Term Life Insurance Plan Results	51
<u>Appendix</u>		
A	Historical CPI (U) Index	53
B	Capital Market Assumptions and Asset Allocation	54
C	Social Security Administration Wage Index	55
D	Recommended Rates	56



Section I Executive Summary

The following table summarizes the findings and recommendations with regard to the assumptions utilized for the Employees' Retirement System of Georgia. Detailed explanations for the recommendations are found in the sections that follow.

Summary of Recommended Assumptions	
Economic Assumptions	
Salary	Composed of Inflation component, Real Rate of Salary Increase component and Merit/Promotion Scale
Inflation	Recommend change to annual rate of inflation assumption from 3.75% to 3.00%.
Real Rate of Wage Inflation	Recommend change in annual real rate of wage inflation assumption to 0.75%.
Merit/Promotion Scale	Recommend no change to current long term assumption.
Investment Rate of Return	Composed of Inflation component (3.00% from above) and Real Rate of Return component.
Real Rate of Investment Return	Recommend 4.50% assumption resulting in no change to the 7.50% net investment return assumption.
Payroll Growth	Recommend change to current assumption.
Demographic Assumptions	
Withdrawal	Recommend change to current assumption.
Disability	Recommend change to current assumption.
Retirement	Recommend change to current assumption.
Mortality	Recommend change to current assumption.
Other Actuarial Methods and Assumptions	
Administrative Expenses	Recommend change to current assumption.
Amortization Method	Recommend change to current method.
Asset Smoothing	Recommend no change to current method.
Option Factors	Recommend change in current option factors to reflect change in mortality rate tables.
Unused Sick Leave	Recommend change to current assumption.
All others	Recommend no change to other actuarial methods.



Section II Financial Impact

The following table highlights the impact of the recommended changes on the principal valuation results.

Impact on Principal Valuation Results		
	Valuation Results 2009	Recommended Assumptions*
Unfunded Accrued Liability (\$1,000's)	\$2,264,416	\$2,562,605
Funding Ratio	85.7%	84.2%
Employer Annual Required Contribution		
Old Plan		
Initial Normal Rate	6.96%	6.33%
Employer Paid on Behalf of Employee	<u>(4.75)</u>	<u>(4.75)</u>
Normal Rate	2.21%	1.58%
Accrued Liability Rate	<u>4.67</u>	<u>6.52</u>
Total	6.88%	8.10%
New Plan		
Normal Rate	6.96%	6.33%
Accrued Liability Rate	<u>4.67</u>	<u>6.52</u>
Total	11.63%	12.85%
GSEPs		
Normal Rate	2.75%	3.02%
Accrued Liability Rate	<u>4.67</u>	<u>6.52</u>
Total	7.42%	9.54%
Amortization Period (in years)	30	30

* Normal Rate includes estimated administrative expenses.



Section III Economic Assumptions

There are three economic assumptions used in the actuarial valuations performed for the System. They are:

- Price Inflation
- Investment Return
- Wage Inflation

The Actuarial Standards Board has issued Actuarial Standard of Practice (ASOP) No. 27, “*Selection of Economic Assumptions for Measuring Pension Obligations*”, which provides guidance to actuaries in selecting economic assumptions for measuring obligations under defined benefit plans. As noted in ASOP No. 27, because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes based on a mixture of past experience and future expectations. These estimates therefore are best stated as a range utilizing the actuary’s professional judgment. In setting the range and the single point within that range to use, the actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

In our opinion, the economic assumptions recommended in this report have been developed in accordance with ASOP No. 27. The following table shows our recommendations followed by detailed discussions of each assumption.

Item	Current	Proposed
Price Inflation	3.75%	3.00%
Real Rate of Return	<u>3.75</u>	<u>4.50</u>
Investment Return	7.50%	7.50%
Price Inflation	3.75%	3.00%
Real Wage Growth	<u>0.00%</u>	<u>0.75%</u>
Wage Inflation	3.75%	3.75%



Price Inflation

Background: As can be seen from the table on the previous page, assumed price inflation is used as the basis for both the investment return assumption and the wage inflation assumption. These latter two assumptions will be discussed in detail in the following sections.

It is important that the price inflation assumption be consistently applied throughout the economic assumptions utilized in an actuarial valuation. This is called for in ASOP No. 27 and is also required to meet the parameters for determining pension liabilities and expense under Governmental Accounting Standards Board (GASB) Statements No. 25 and 27.

The current price inflation assumption is 3.75% per year.

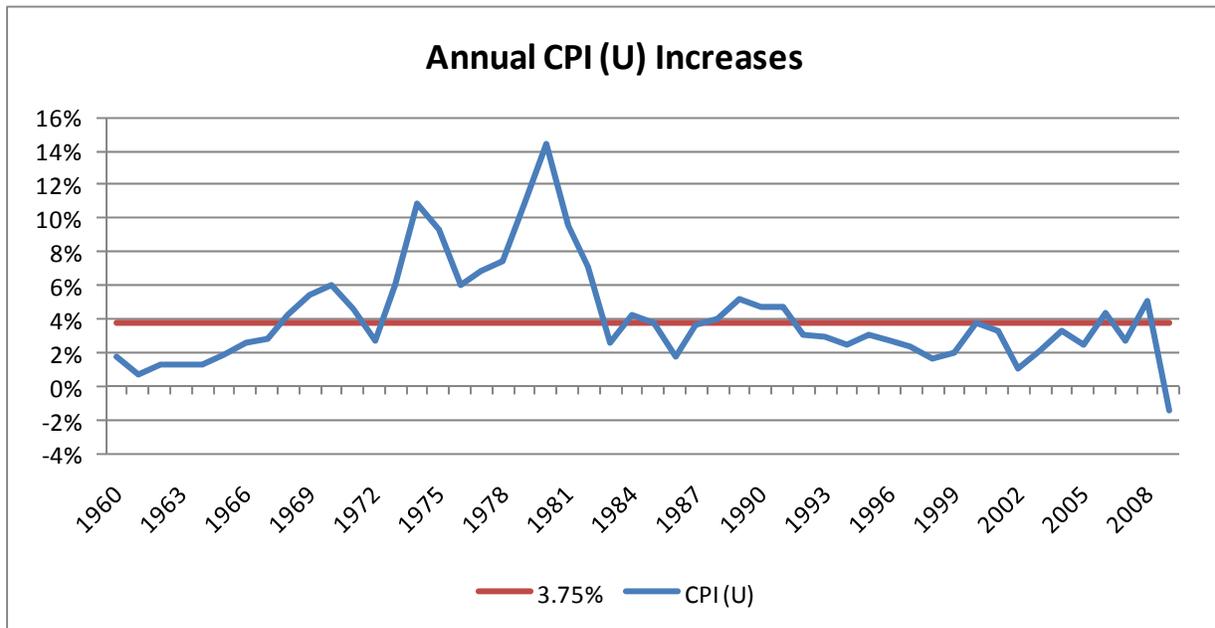
Past Experience: The Consumer Price Index, US City Average, All Urban Consumers, CPI (U), has been used as the basis for reviewing historical levels of price inflation. The level of that index in June of each of the last 50 years is provided in Appendix A.

In analyzing this data, annual rates of inflation have been determined by measuring the compound growth rate of the CPI (U) over various time periods. The results are as follows:

Period	Inflation
2000-2009	2.64%
1990-1999	2.96
1980-1989	5.55
1970-1979	7.04
1960-1969	2.32
1990-2009	2.80%
1980-2009	3.71
1970-2009	4.53
1960-2009	4.09



The graph below shows the annual increases in the CPI (U) over the entire 50 year period.



Recommendation: It is difficult to accurately predict inflation. Inflation’s short-term volatility is illustrated by comparing its average rate over the last 10, 30 and 50 years. Although the 10-year average of 2.6% is significantly lower than the System’s assumed rate of 3.75%, the longer 30, 40 and 50-year averages of 3.7%, 4.5% and 4.1% respectively, are at or slightly higher than the System’s rate. The validity of the System’s assumption is, therefore, dependent upon the emphasis one assigns to the short and long-terms.

Current economic forecasts suggest lower inflation but are generally looking at a shorter time period than appropriate for our purposes. In the 2009 OASDI Trustees Report, the Chief Actuary for Social Security bases the 75 year cost projections on an intermediate inflation assumption of 2.8% with a range of 1.8% to 3.8%. We concur in general with a range of 2.0% - 4.0%, and recommend use of a 3.00% per year rate recognizing the likely inflation pressures built into the economy at the current time.

Price Inflation Assumption	
Current	3.75%
Reasonable Range	2.00% - 4.00%
Recommended	3.00%



Investment Return

Background: The assumed investment return is one of the most significant assumptions in the annual actuarial valuation process as it is used to discount the expected benefit payments for all active, inactive and retired members of the System. Minor changes in this assumption can have a major impact on valuation results. The investment return assumption should reflect the asset allocation target for the funds set by the Board of Trustees.

The current assumption is 7.50%, consisting of a price inflation assumption of 3.75% and a real rate of return assumption of 3.75%. The return is net of all investment and administrative expenses.

Past Experience: The assets for the System are valued using a widely accepted asset-smoothing methodology that fully recognizes the expected investment income and also recognizes 1/7 of each year's investment gain or loss (the difference between actual and expected investment income). The recent experience over the last five years is shown in the table below.

Year Ending 6/30	Actuarial Value	Market Value
2005	6.7%	7.7%
2006	7.0	6.2
2007	7.7	14.7
2008	6.6	(3.5)
2009	3.0	(13.5)
Average	6.2%	2.3%

Because of the significant variability in past year-to-year results and the inter-play of inflation on those results in the short term, we prefer to base our investment return assumption on the capital market assumptions utilized by the Board in setting investment policy and the asset allocation established by the Board as a result of that policy. This approach is referred to as the building block method in ASOP No. 27.



Analysis: The current capital market assumptions and asset allocation are shown in Appendix B. Using stochastic projection results provides an expected range of real rates of return over a 50 year time horizon. Looking at one year results produces an expected real return of 5.85% but also has a high standard deviation or measurement of volatility. By expanding the time horizon, the average return does not change much but the volatility declines significantly. The following table provides a summary of results.

Time Span In Years	Mean Real Return	Standard Deviation	Real Returns by Percentile				
			5 th	25 th	50 th	75 th	95 th
1	6.81%	15.33%	-16.43%	-4.13%	5.85%	16.63%	33.54%
5	6.03%	6.73%	-4.44%	1.34%	5.81%	10.42%	17.65%
10	6.00%	4.73%	-1.50%	2.74%	5.90%	9.16%	13.97%
20	5.98%	3.32%	0.61%	3.61%	5.96%	8.17%	11.45%
30	5.95%	2.72%	1.55%	4.04%	5.95%	7.74%	10.43%
40	5.98%	2.33%	2.18%	4.38%	5.97%	7.53%	9.77%
50	5.98%	2.07%	2.66%	4.55%	5.95%	7.37%	9.43%

The percentile results are percentage of the 5,000 random results that produce returns over the time span shown of less than the amount indicated. Thus for the 10 year time span, 5% of the resulting real rates of return were below -1.50% and 95% were above that. As the time span increases, the results begin to merge. Over a 50 year time span, the results indicate there is a 25% chance that real returns will be below 4.55% and a 25% chance they will be above 7.37%. In other words there is a 50% chance the real returns will be between 4.55% and 7.37%.

Investment Expenses: The investment return is assumed to be net of investment expenses. We would not expect the investment expense ratio long term to exceed 0.10% and are recommending that level in setting the net investment return assumption.



Recommendation: Using the building block approach of ASOP No. 27 and the projection results outlined above, we are recommending a range for the investment return assumption of the 25th to 75th percentile real returns over the 50 year time span plus the recommended inflation assumption less the recommended expense ratio. The following table details the range.

Item	25 th Percentile	50 th Percentile	75 th Percentile
Real Rate of Return	4.55%	5.95%	7.37%
Inflation	3.00	3.00	3.00
Expenses	<u>(0.10)</u>	<u>(0.10)</u>	<u>(0.10)</u>
Net Investment Return	7.45%	8.85%	10.27%

There is a 50% chance that the net return will be 8.85% or more over a 50-year period. A net return of 7.50% is at the 26th percentile. Although not in the center of the recommended range, in our opinion a return of 7.50% is conservative yet reasonable. We recommend that the long-term net investment return assumption remain at 7.50%.

Investment Return Assumption	
Current	7.50%
Reasonable Range	7.45% - 10.27%
Recommended	7.50%

Wage Inflation

Background: The assumed future increases in salaries consist of a wage inflation component and a component for promotion and longevity, often called merit increases. Wage inflation normally consists of price inflation and a component for real wage growth which reflects the overall return on labor in the economy. Merit increases are generally age and or service related, and will be discussed in the demographic assumption section of the report.



Past Experience: The Social Security Administration publishes data on wage growth in the United States. Appendix C shows the last 50 calendar years' data. As with our analysis of inflation, we provide below wage inflation and a comparison with price inflation over various time periods. Since wage data is only available through 2008 we use that year as the starting point.

Period	Wage Inflation	Price Inflation	Real Wage Growth
1999-2008	3.66%	2.99%	0.67%
1989-1998	4.09	3.28	0.81
1979-1988	6.24	6.11	0.13
1969-1978	6.60	6.51	0.09
1959-1968	4.25	1.85	2.40
1989-2008	3.87%	3.14%	0.73%
1979-2008	4.66	4.12	0.54
1969-2008	5.14	4.71	0.43
1959-2008	4.96	4.13	0.83

Thus over the last 50 years, annual real wage growth has averaged 0.83%.





Recommendation: As with price inflation, we again look at the 2009 OASDI Trustees Report. The Chief Actuary for Social Security bases the 75 year cost projections on a national wage growth assumption 1.1% greater than the price inflation assumption of 2.8%. We concur in general with a range of .5% to 1.5%, and recommend use of a 0.75% per year rate at the current time.

Wage Inflation Assumption		
Current	3.75%	
	Reasonable Range	
Real Wage Growth	0.50%	1.50%
Price Inflation	<u>3.00</u>	<u>3.00</u>
Total	3.50%	4.50%
Recommended	3.75%	

Payroll Growth Assumption: The current payroll growth assumption used in the valuation is equal to the wage inflation assumption. This assumption is used in determining the accrued liability contribution rates required to amortize the unfunded accrued liability using a level percent of pay amortization method. Due to current economic conditions which include hiring freezes and pay furloughs, we recommend that the amortization method be gradually changed to level dollar amortization. In order to minimize the impact of this change on contribution requirements, we recommend that this change be phased in over a 3 year period using the following schedule: 2% for the 2010 valuation; 1% for the 2011 valuation and no assumed increase beginning with the 2012 valuation.



Section IV Demographic Assumptions

There are several demographic assumptions used in the actuarial valuations performed for the Employees' Retirement System of Georgia. They are:

- Rates of Withdrawal
- Rates of Disability Retirement
- Rates of Service Retirement
- Rates of Mortality
- Rates of Salary Merit Increase

The Actuarial Standards Board has issued Actuarial Standard of Practice (ASOP) No. 35, "*Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*", which provides guidance to actuaries in selecting demographic assumptions for measuring obligations under defined benefit plans. In our opinion, the demographic assumptions recommended in this report have been developed in accordance with ASOP No. 35.

The purpose of a study of demographic experience is to compare what actually happened to the membership during the study period (July 1, 2004, through June 30, 2009) with what was expected to happen based on the assumptions used in the most recent Actuarial Valuations.

Detailed tabulations by age, service and/or gender are performed over the entire study period. These tabulations look at all active and retired members during the period as well as separately annotating those who experience a demographic event, also referred to as a decrement. In addition the tabulation of all members together with the current assumptions permits the calculation of the number of expected decrements during the study period.

If the actual experience differs significantly from the overall expected results, or if the pattern of actual decrements, or rates of decrement, by age, gender, or service does not follow the expected pattern, new assumptions are recommended. Recommended changes usually do not follow the exact actual experience during the observation period. Judgment is required to extrapolate future experience from past trends and current member behavior. In addition non-recurring events, such as the layoffs and forced work hour reductions that occurred in 2009, need to be taken into account in determining the weight to give to recent experience.

The remainder of this section presents the results of the demographic study. We have prepared tables that show a comparison of the actual and expected decrements and the overall ratio of actual to expected results (A/E Ratios) under the current assumptions. If a change is being proposed, the revised A/E Ratios are shown as well. Salary adjustments, other than the economic assumption for wage inflation discussed in the previous section, are treated as demographic assumptions.



RATES OF WITHDRAWAL

**COMPARISON OF ACTUAL AND EXPECTED WITHDRAWALS
FROM ACTIVE SERVICE**

NON-POLICE

CENTRAL AGE OF GROUP	NUMBER OF WITHDRAWALS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
	Withdrawals with less than 5 years of service					
20	792	652.2	1.214	550	469.8	1.171
25	2,212	2,015.9	1.097	3,649	3,531.5	1.033
30	1,826	1,768.1	1.033	3,481	3,708.0	0.939
35	1,312	1,404.9	0.934	2,594	2,640.3	0.982
40	996	1,080.7	0.922	1,931	1,914.9	1.008
45	961	862.5	1.114	1,480	1,566.1	0.945
50	724	653.6	1.108	1,147	1,258.2	0.912
53 & OVER	949	1,075.1	0.883	1,259	1,597.8	0.788
TOTAL	9,772	9,513.0	1.027	16,091	16,686.6	0.964
	Withdrawals with at least 5 but less than 10 years of service					
25	177	100.1	1.768	201	94.8	2.120
30	552	387.4	1.425	1,090	831.9	1.310
35	557	423.0	1.317	1,057	868.0	1.218
40	408	310.3	1.315	707	570.7	1.239
45	359	257.2	1.396	609	511.1	1.192
50	270	223.5	1.208	474	397.9	1.191
53 & OVER	518	430.2	1.204	632	605.8	1.043
TOTAL	2,841	2,131.7	1.333	4,770	3,880.2	1.229
	Withdrawals with 10 or more years of service					
30	39	25.1	1.554	30	26.6	1.128
35	277	191.5	1.446	328	273.0	1.201
40	457	327.6	1.395	484	416.1	1.163
45	432	309.2	1.397	550	543.5	1.012
50	366	341.1	1.073	504	524.6	0.961
53 & OVER	447	459.0	0.974	585	787.5	0.743
TOTAL	2,018	1,653.5	1.220	2,481	2,571.3	0.965



POLICE

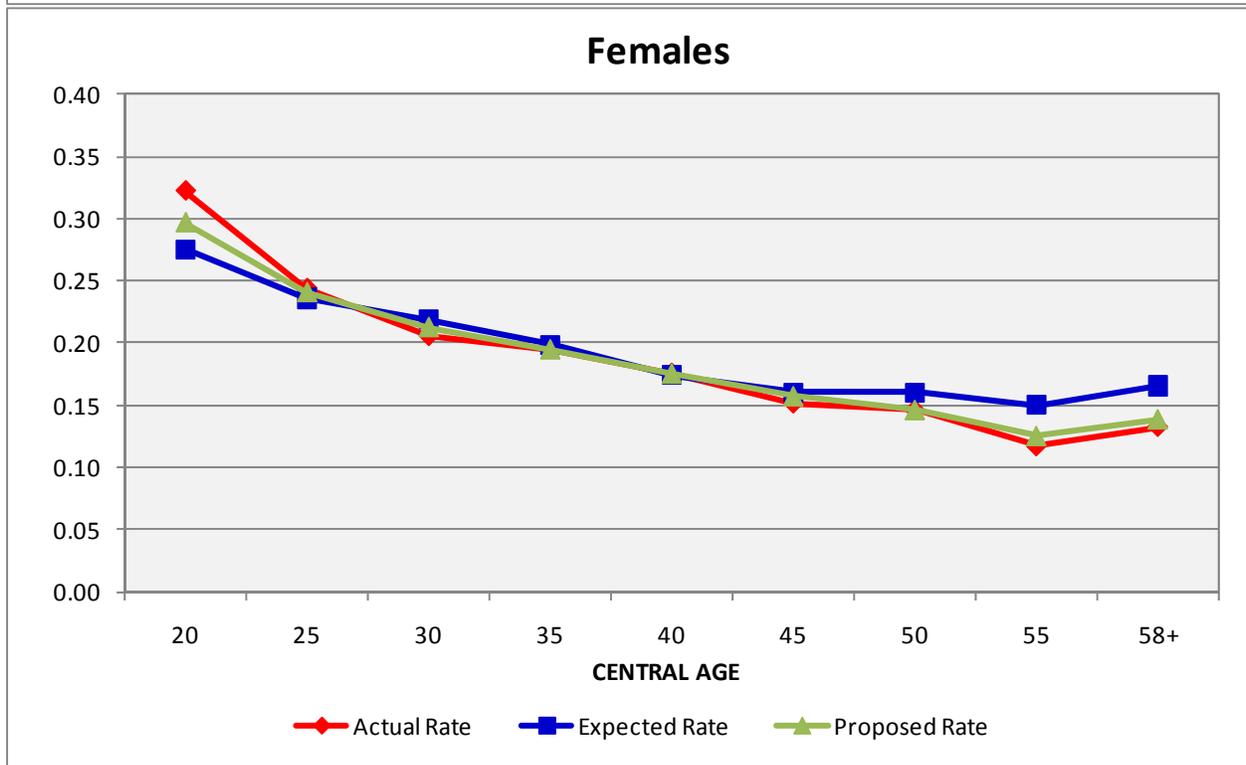
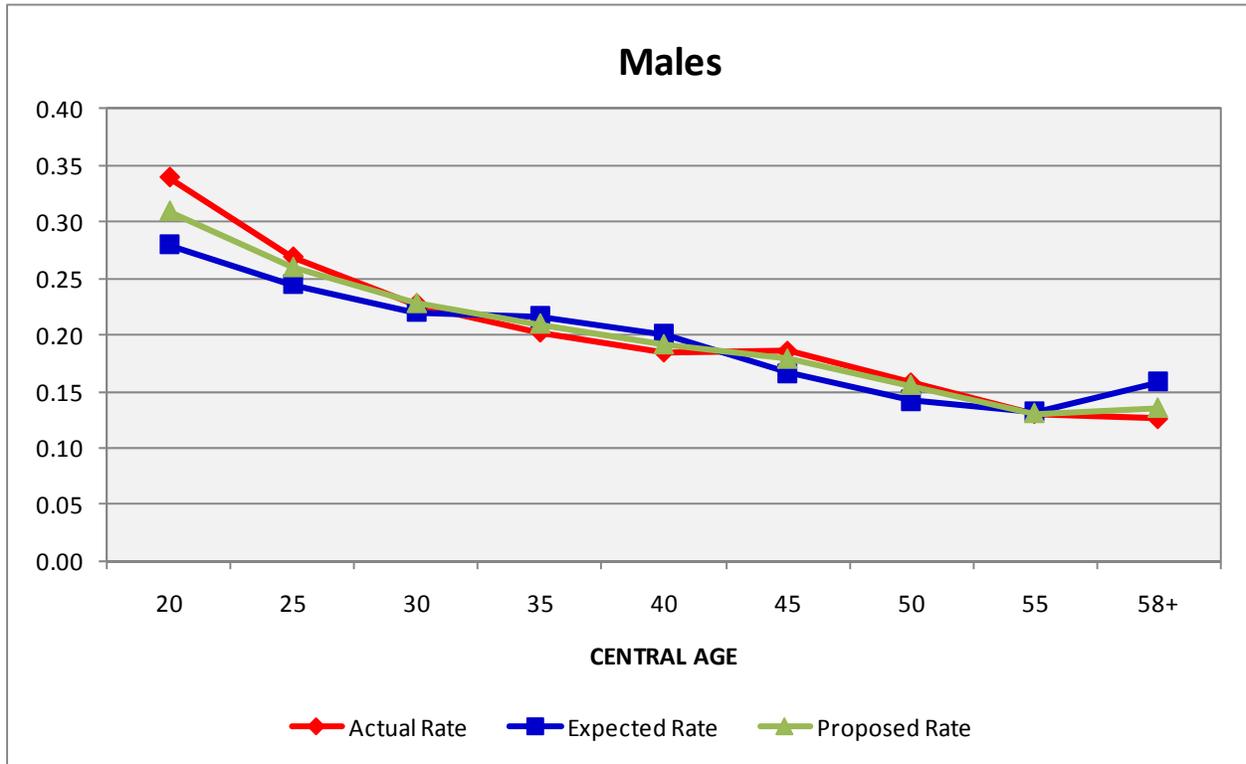
CENTRAL AGE OF GROUP	NUMBER OF WITHDRAWALS		
	Current Rates		
	Actual	Expected	Ratio of Actual to Expected
Withdrawals with less than 10 years of service			
20	6	1.4	4.286
25	18	24.7	0.729
30	56	62.0	0.903
35	55	61.8	0.890
40	9	23.6	0.381
45	8	6.8	1.176
50	1	3.1	0.323
53 & OVER	0	0.8	0.000
TOTAL	153	184.2	0.831
Withdrawals with 10 or more years of service			
30	5	6.4	0.781
35	30	53.0	0.566
40	25	81.1	0.308
45	13	58.5	0.222
50	4	32.5	0.123
53 & OVER	1	6.9	0.145
TOTAL	78	238.4	0.327

The rates of withdrawal adopted by the Board are used to determine the expected number of separations from active service which will occur as a result of resignation or dismissal. The experience indicates that during the period studied, for Non-Police members, there were more withdrawals than expected at most age and service categories. For Police members, there were fewer withdrawals than expected at most ages. We recommend that the rates be adjusted to more closely reflect the experience.

The following graphs show a comparison of the current expected, actual, and proposed rates of withdrawal for actives.

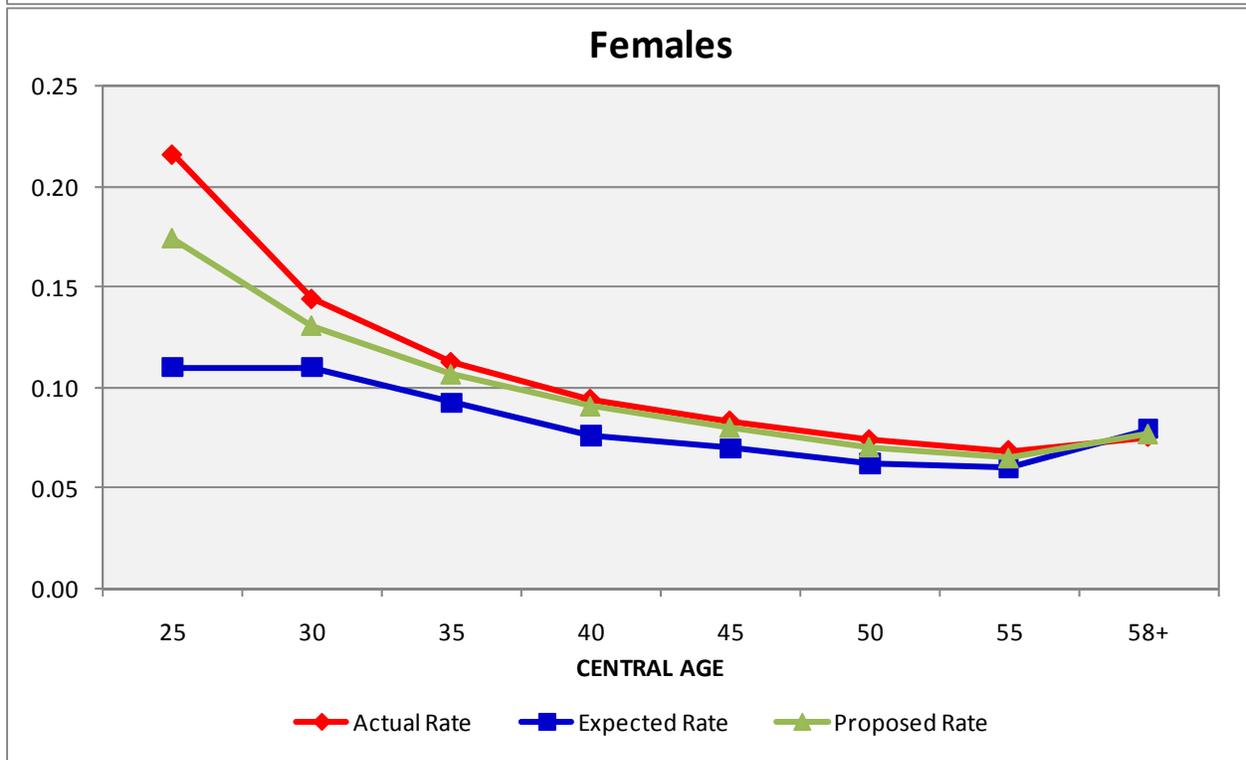
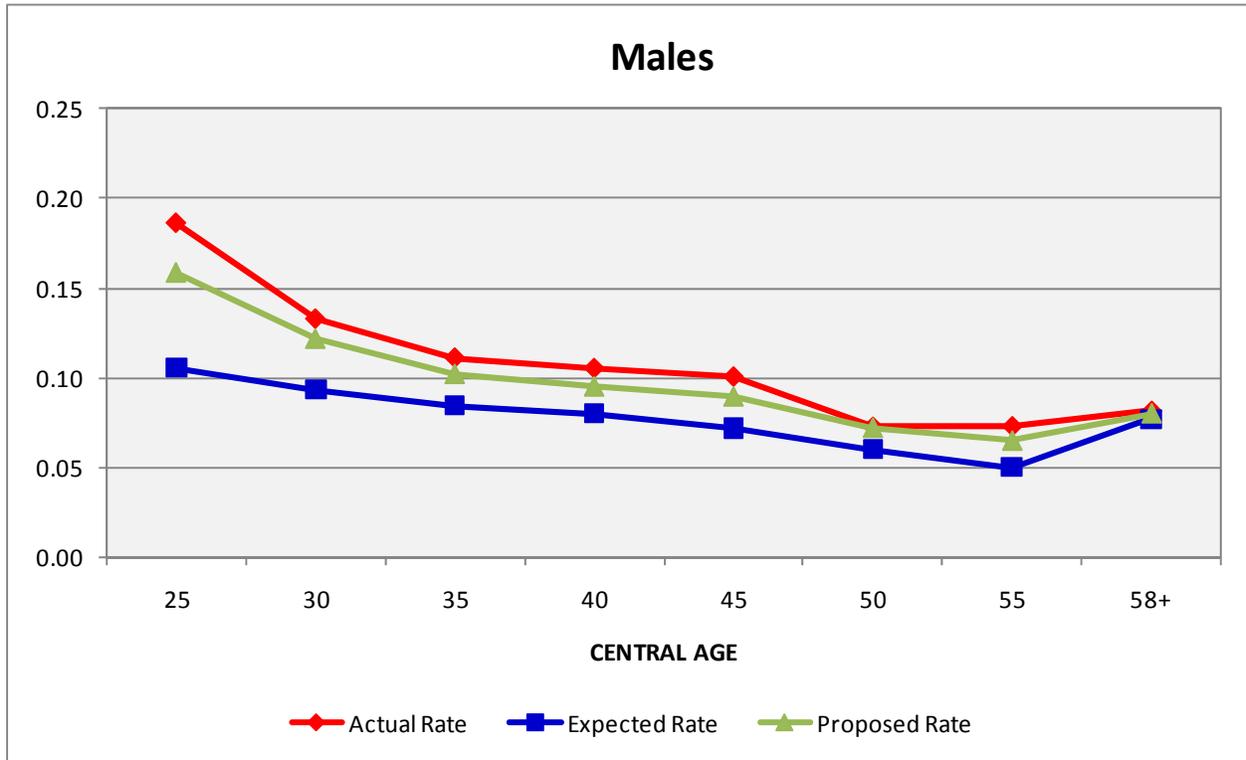


RATES OF WITHDRAWAL FOR NON-POLICE ACTIVE MEMBERS WITH LESS THAN 5 YEARS OF SERVICE



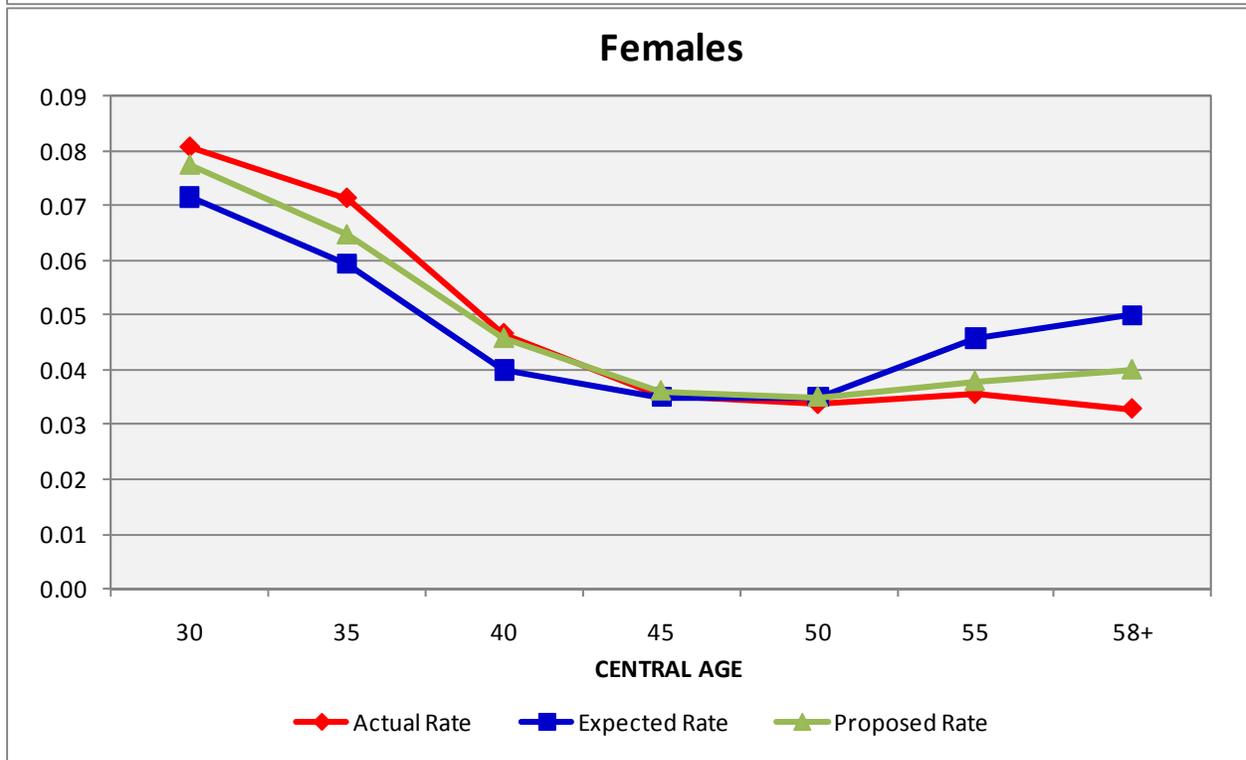
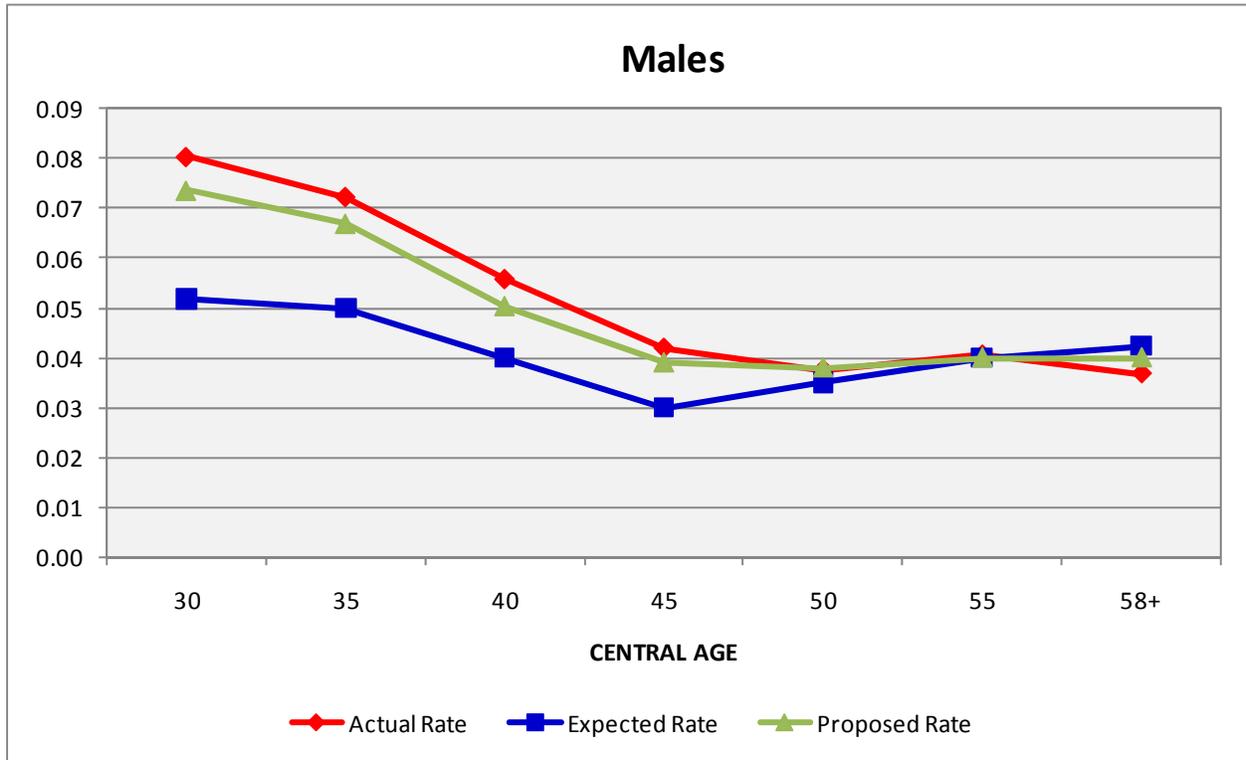


RATES OF WITHDRAWAL FOR NON-POLICE ACTIVE MEMBERS WITH AT LEAST 5 BUT LESS THAN 10 YEARS OF SERVICE



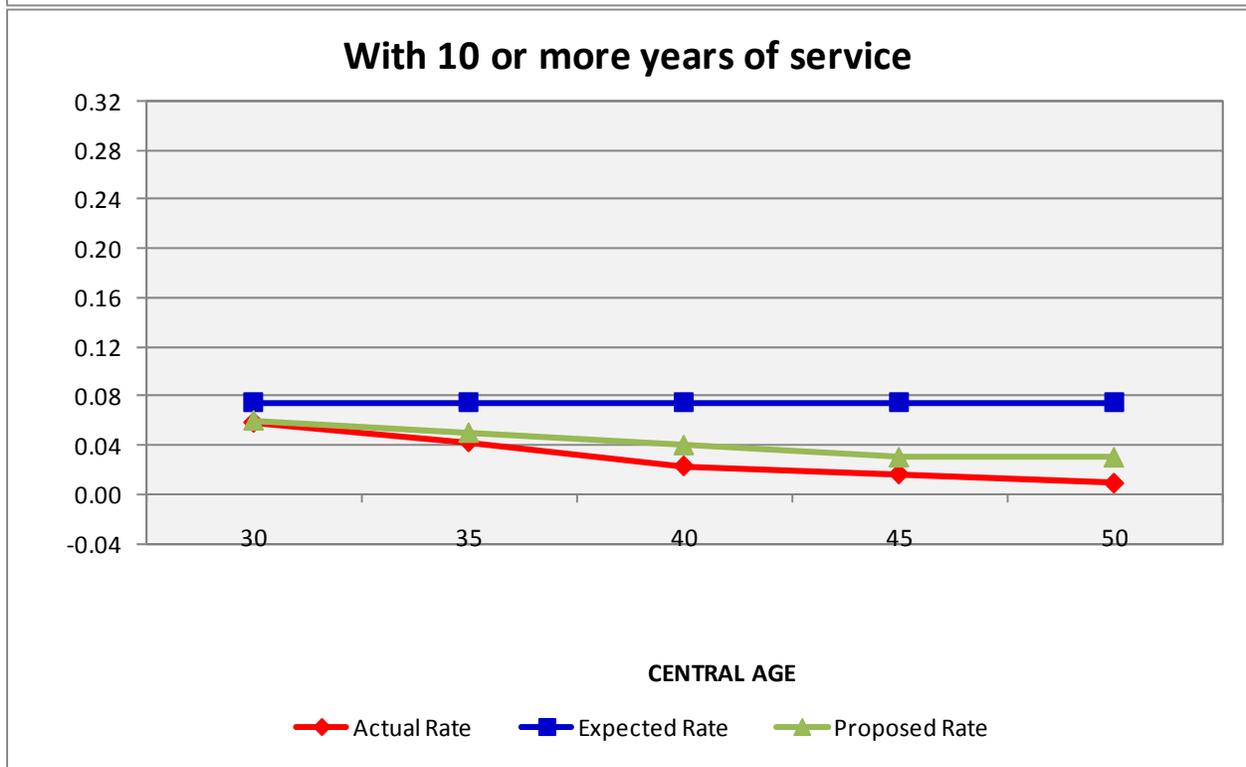
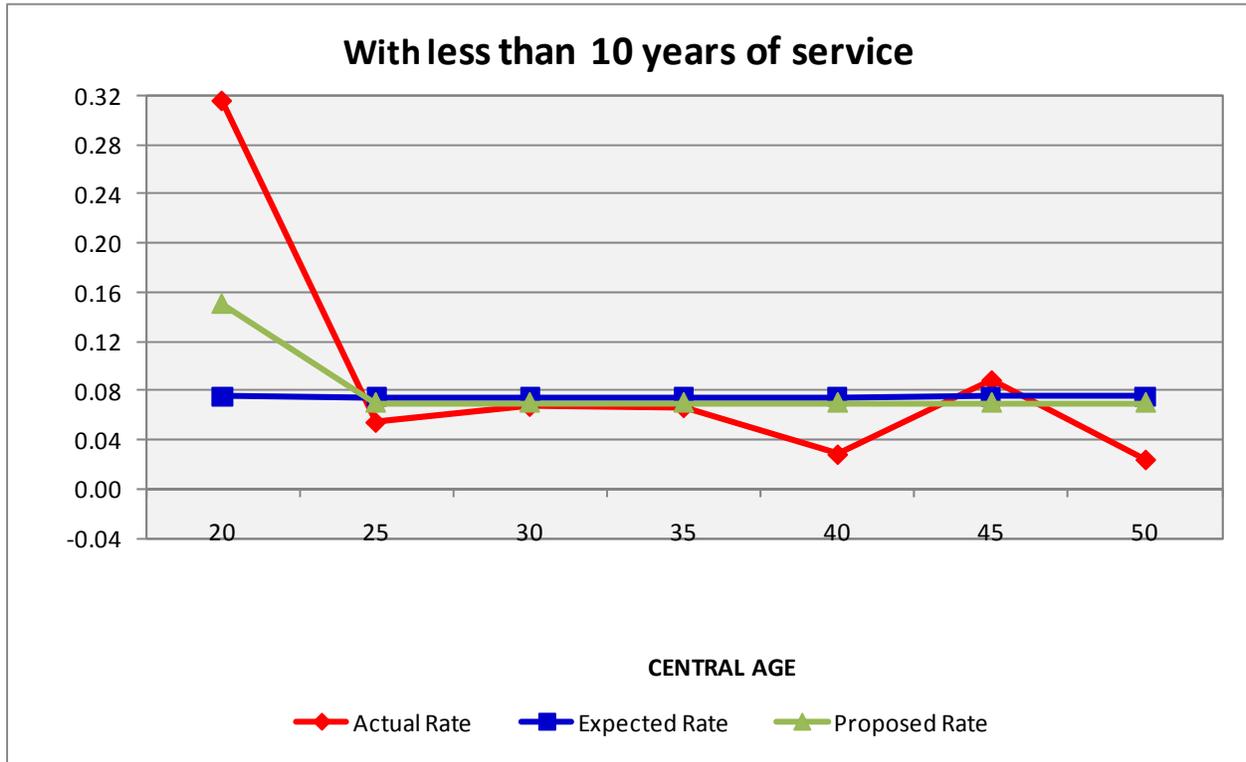


RATES OF WITHDRAWAL FOR NON-POLICE ACTIVE MEMBERS WITH 10 OR MORE YEARS OF SERVICE





RATES OF WITHDRAWAL FOR POLICE ACTIVE MEMBERS





The charts below provide our recommended changes to this assumption.

**COMPARATIVE RATES OF WITHDRAWAL
FROM ACTIVE SERVICE**

NON-POLICE

AGE	RATES OF WITHDRAWAL					
	CURRENT			PROPOSED		
	Years of Service			Years of Service		
	0 – 4	5 – 9	10+	0 – 4	5 – 9	10+
	Males					
20	30.00%			31.00%		
25	24.00	11.00%		26.00	17.00%	
30	22.00	9.00	6.00%	22.50	12.00	7.50%
35	22.00	8.00	5.00	21.00	10.00	7.00
40	20.00	8.00	4.00	19.00	9.50	5.00
45	17.00	7.00	3.00	18.00	9.00	3.75
50	14.00	6.00	3.50	15.50	7.00	3.75
55	13.00	5.00	4.00	13.00	6.50	4.00
Females						
20	28.00%			31.00%		
25	24.00	11.00%		24.00	19.00%	
30	22.00	11.00	8.00%	21.00	13.00	7.75%
35	20.00	9.00	6.00	19.50	10.50	6.75
40	17.00	8.00	4.00	17.50	9.00	4.50
45	16.00	7.00	3.50	15.50	8.00	3.50
50	16.00	6.00	3.50	15.00	7.00	3.50
55	15.00	6.00	5.00	12.50	6.50	4.00



POLICE

AGE	RATES OF WITHDRAWAL			
	CURRENT		PROPOSED	
	Years of Service		Years of Service	
	0 – 9	10+	0 – 9	10+
20	7.5%	7.5%	15.0%	
25	7.5	7.5	7.0	
30	7.5	7.5	7.0	6.0%
35	7.5	7.5	7.0	5.0
40	7.5	7.5	7.0	4.0
45	7.5	7.5	7.0	3.0
50	7.5	7.5	7.0	3.0
55	0.0	0.0	0.0	0.0

The following table shows a comparison of the actual and expected withdrawals from active service based on the new proposed rates of withdrawal and the resulting A/E (actual to expected) ratio.



**COMPARISON OF ACTUAL AND EXPECTED WITHDRAWALS
BASED ON PROPOSED RATES**

NON-POLICE

CENTRAL AGE OF GROUP	NUMBER OF WITHDRAWALS					
	Proposed Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
	Withdrawals with less than 5 years of service					
20	792	722.6	1.096	550	506.4	1.086
25	2,212	2,140.8	1.033	3,649	3,601.2	1.013
30	1,826	1,832.5	0.996	3,481	3,601.1	0.967
35	1,312	1,362.1	0.963	2,594	2,589.9	1.002
40	996	1,032.9	0.964	1,931	1,926.1	1.003
45	961	924.7	1.039	1,480	1,536.7	0.963
50	724	714.4	1.013	1,147	1,147.6	0.999
53 & OVER	949	982.4	0.966	1,259	1,334.0	0.944
TOTAL	9,772	9,712.4	1.006	16,091	16,243.0	0.991
	Withdrawals with at least 5 but less than 10 years of service					
25	177	149.9	1.181	201	162.0	1.241
30	552	505.6	1.092	1,090	988.8	1.102
35	557	512.0	1.088	1,057	1,000.0	1.057
40	408	368.8	1.106	707	680.2	1.039
45	359	320.0	1.122	609	584.7	1.042
50	270	268.6	1.005	474	450.5	1.052
53 & OVER	518	488.9	1.060	632	619.7	1.020
TOTAL	2,841	2,613.8	1.087	4,770	4,485.9	1.063
	Withdrawals with 10 or more years of service					
30	39	35.7	1.092	30	28.8	1.042
35	277	256.4	1.080	328	297.7	1.102
40	457	412.3	1.108	484	476.1	1.017
45	432	401.6	1.076	550	561.0	0.980
50	366	370.2	0.989	504	524.6	0.961
53 & OVER	447	451.9	0.989	585	646.0	0.906
TOTAL	2,018	1,928.1	1.047	2,481	2,534.2	0.979



**COMPARISON OF ACTUAL AND EXPECTED WITHDRAWALS
BASED ON PROPOSED RATES**

POLICE

CENTRAL AGE OF GROUP	NUMBER OF WITHDRAWALS		
	Proposed Rates		
	Actual	Expected	Ratio of Actual to Expected
Withdrawals with less than 10 years of service			
20	6	2.9	2.069
25	18	23.0	0.783
30	56	57.9	0.967
35	55	57.7	0.953
40	9	22.0	0.409
45	8	6.3	1.270
50	1	2.9	0.345
53 & OVER	0	0.7	0.000
TOTAL	153	173.4	0.882
Withdrawals with 10 or more years of service			
30	5	4.7	1.064
35	30	35.3	0.85
40	25	43.2	0.579
45	13	23.4	0.556
50	4	13.0	0.308
53 & OVER	1	2.8	0.357
TOTAL	78	122.4	0.637



RATES OF DISABILITY RETIREMENT

COMPARISON OF ACTUAL AND EXPECTED DISABILITY RETIREMENTS

NON-POLICE

CENTRAL AGE OF GROUP	NUMBER OF DISABILITY RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
25	0	5.8	0.000	0	8.8	0.000
30	0	6.3	0.000	0	12.4	0.000
35	2	12.4	0.161	4	13.7	0.292
40	24	67.3	0.357	20	40.8	0.490
45	82	149.1	0.550	65	132.0	0.492
50	113	277.8	0.407	149	232.3	0.641
53 & OVER	250	461.7	0.541	299	447.1	0.669
TOTAL	471	980.4	0.480	537	887.1	0.605

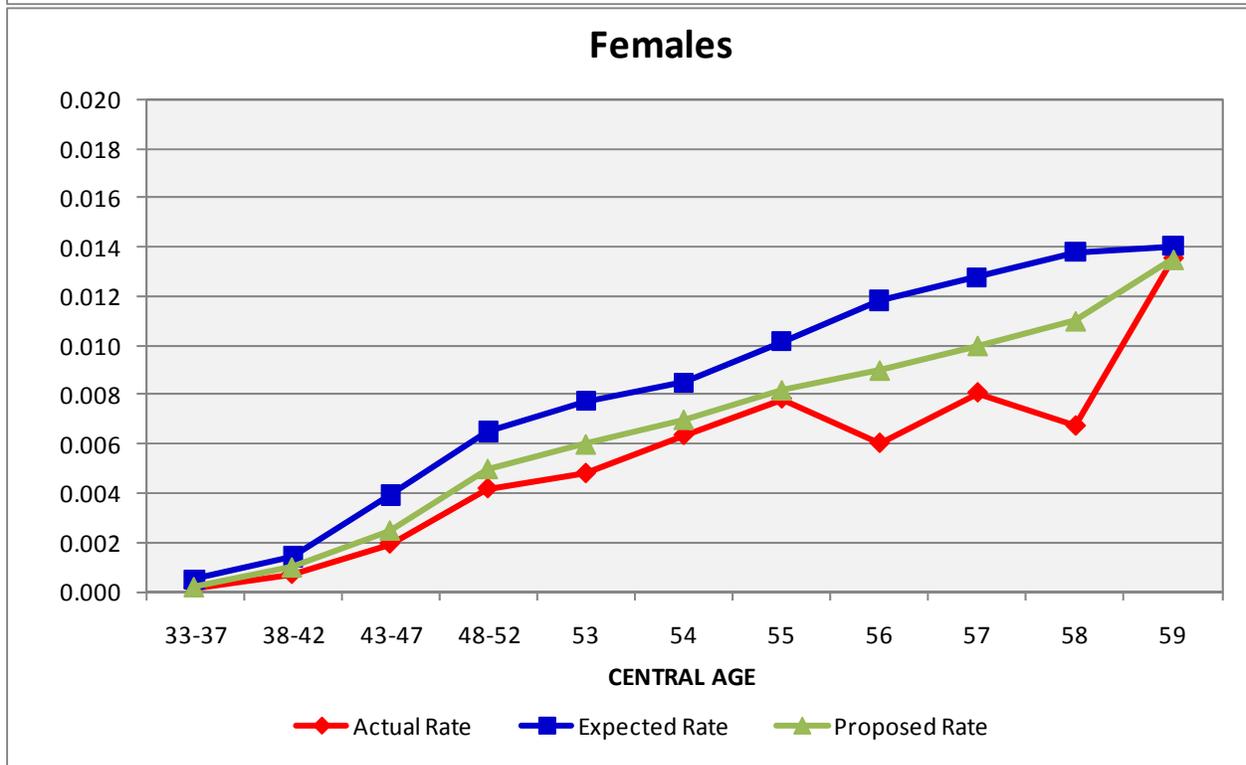
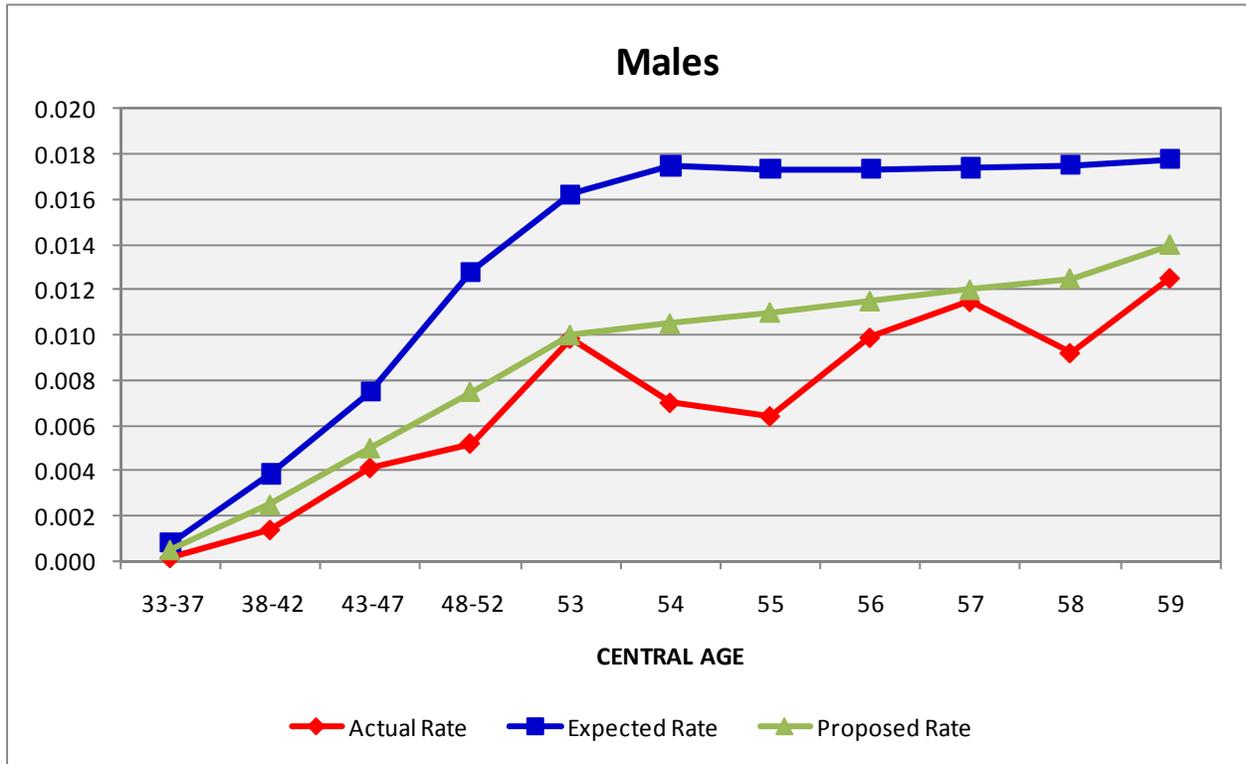
POLICE

CENTRAL AGE OF GROUP	NUMBER OF DISABILITY RETIREMENTS		
	Current Rates		
	Actual	Expected	Ratio of Actual to Expected
25	0	0.5	0.000
30	1	1.8	0.556
35	3	4.3	0.698
40	13	5.8	2.241
45	18	5.8	3.103
50	7	4.8	1.458
53 & OVER	11	2.7	4.074
TOTAL	53	25.7	2.062

During the period under investigation, the actual rates of disability retirement for Non-Police members were significantly less than expected over all age groups. On the contrary, for Police members the disability retirements were significantly more than expected over most age groups. Therefore, we recommend the rates of disability retirement be decreased for Non-Police members and increased for Police members to partially reflect the experience of the System. The following graphs show a comparison of the current expected, actual, and proposed rates of disability retirements for actives.

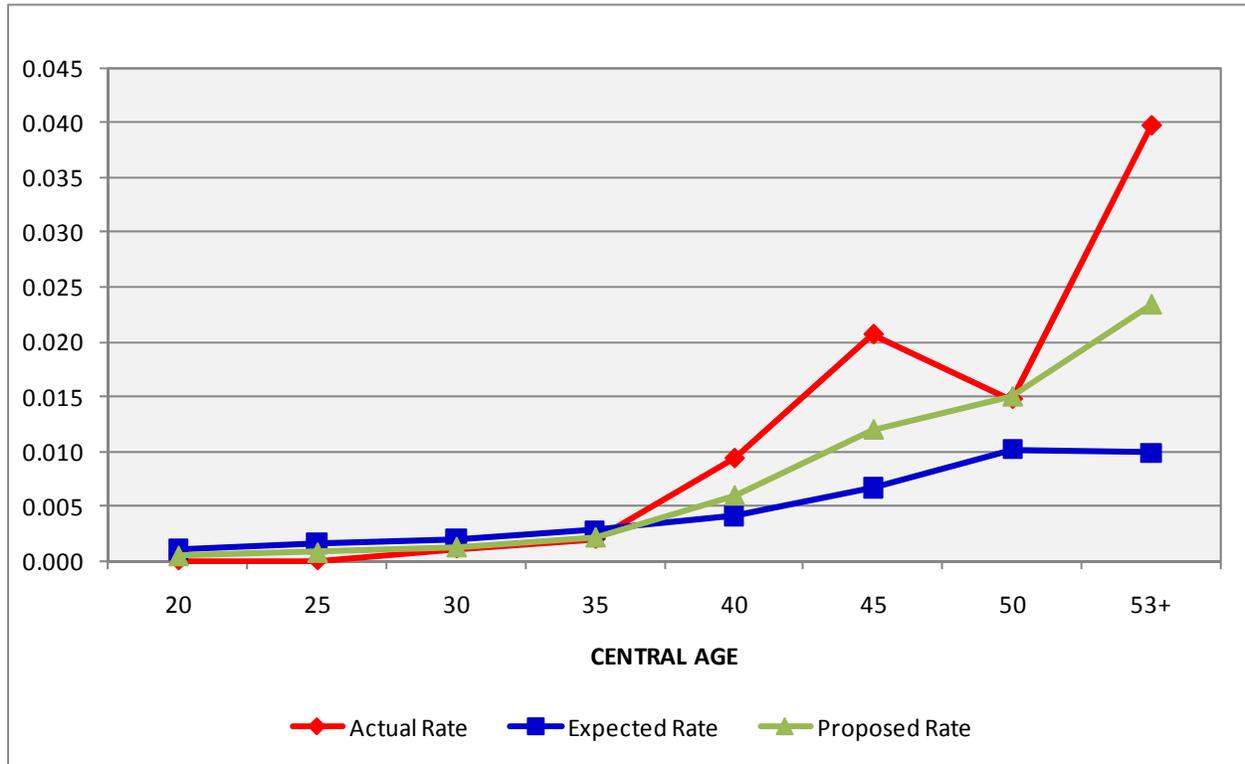


RATES OF DISABILITY RETIREMENT NON-POLICE





RATES OF DISABILITY RETIREMENT POLICE



The following tables show a comparison between the present disability retirement rates and the proposed rates.

COMPARATIVE RATES OF DISABILITY RETIREMENTS NON-POLICE

AGE	RATES OF DISABILITY			
	MALES		FEMALES	
	Current	Proposed	Current	Proposed
20	0.05%	0.05%	0.05%	0.02%
25	0.05	0.05	0.05	0.02
30	0.05	0.05	0.05	0.02
35	0.10	0.05	0.05	0.02
40	0.35	0.25	0.14	0.10
45	0.77	0.50	0.40	0.25
50	1.30	0.75	0.70	0.50
55	2.00	1.10	1.20	0.82



**COMPARATIVE RATES OF DISABILITY RETIREMENTS
POLICE**

AGE	RATES OF DISABILITY	
	Current	Proposed
20	0.10%	0.05%
25	0.10	0.08
30	0.20	0.13
35	0.30	0.22
40	0.40	0.60
45	0.70	1.20
50	1.00	1.50
55	1.80	2.30

The following table shows a comparison of the actual and expected disability retirements based on the new proposed rates of disability and the resulting A/E (actual to expected) ratio.

**COMPARISON OF ACTUAL AND EXPECTED DISABILITY RETIREMENTS
BASED ON PROPOSED RATES**

NON-POLICE

CENTRAL AGE OF GROUP	NUMBER OF DISABILITY RETIREMENTS					
	Proposed Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
25	0	5.8	0.000	0	3.5	0.000
30	0	6.3	0.000	0	5.0	0.000
35	2	11.5	0.174	4	8.1	0.494
40	24	45.2	0.531	20	31.7	0.631
45	82	100.0	0.820	65	88.8	0.732
50	113	166.0	0.681	149	174.1	0.856
53 & OVER	250	302.0	0.828	299	357.1	0.837
TOTAL	471	636.8	0.740	537	668.3	0.804



**COMPARISON OF ACTUAL AND EXPECTED DISABILITY RETIREMENTS
BASED ON PROPOSED RATES**

POLICE

CENTRAL AGE OF GROUP	NUMBER OF DISABILITY RETIREMENTS		
	Proposed Rates		
	Actual	Expected	Ratio of Actual to Expected
25	0	0.3	0.000
30	1	1.3	0.769
35	3	4.0	0.750
40	13	8.5	1.529
45	18	10.0	1.800
50	7	7.3	0.959
55 & OVER	11	6.1	1.803
TOTAL	53	37.5	1.413



RATES OF RETIREMENT

**COMPARISON OF ACTUAL AND EXPECTED
EARLY RETIREMENTS**

OLD PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
45	20	23.9	0.837	15	26.3	0.570
50	47	88.5	0.531	85	120.9	0.703
53	11	18.1	0.608	18	24.3	0.741
54	5	16.8	0.298	19	21.0	0.905
55	7	31.6	0.222	16	48.1	0.333
56	9	28.3	0.318	25	43.6	0.573
57	9	26.3	0.342	20	38.0	0.526
58	10	23.0	0.435	21	36.3	0.579
59	11	18.0	0.611	20	34.0	0.588
TOTAL	129	274.5	0.470	239	392.5	0.609

NEW PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
45	21	8.8	2.386	8	10.6	0.755
50	35	23.7	1.477	36	37.3	0.965
53	13	5.6	2.321	12	7.7	1.558
54	7	5.2	1.346	11	8.5	1.294
55	8	6.3	1.270	12	17.0	0.706
56	14	5.9	2.373	12	17.8	0.674
57	6	6.1	0.984	15	17.5	0.857
58	14	5.7	2.456	13	13.5	0.963
59	9	5.1	1.765	23	11.7	1.966
TOTAL	127	72.4	1.754	142	141.6	1.003



**COMPARISON OF ACTUAL AND EXPECTED
NORMAL RETIREMENTS**

OLD PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
52 & UNDER	252	219.2	1.150	308	304.6	1.011
55	748	732.1	1.022	1,158	1,198.0	0.967
60	550	610.7	0.901	957	1,053.3	0.909
65	123	144.7	0.850	270	269.6	1.001
68 & OVER	33	108.3	0.305	61	142.9	0.427
TOTAL	1,706	1,815.0	0.940	2,754	2,968.4	0.928

NEW PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
52 & UNDER	10	2.7	3.704	34	9.9	3.434
55	50	13.6	3.676	106	34.3	3.090
60	795	838.4	0.948	1,150	1,153.7	0.997
65	527	570.6	0.924	719	707.7	1.016
68 & OVER	202	812.6	0.249	203	674.9	0.301
TOTAL	1,584	2,237.9	0.708	2,212	2,580.5	0.857



**COMPARISON OF ACTUAL AND EXPECTED
NORMAL RETIREMENTS**

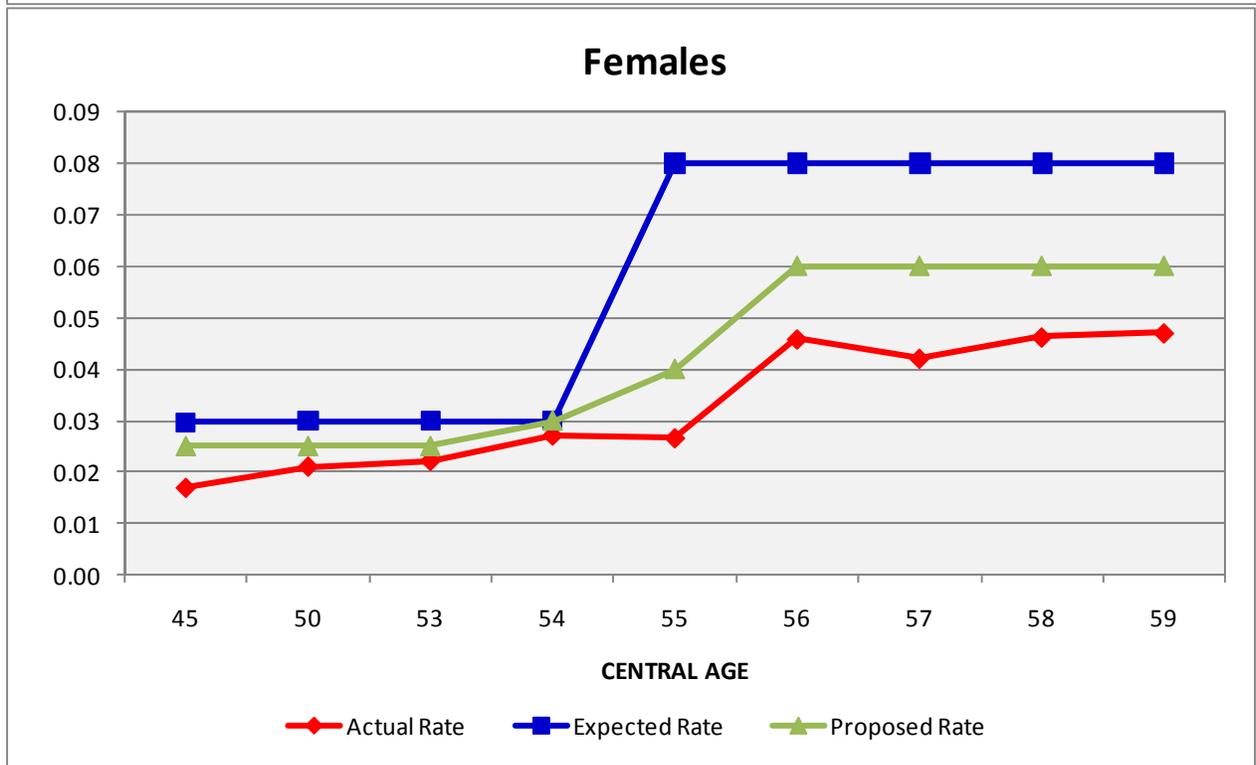
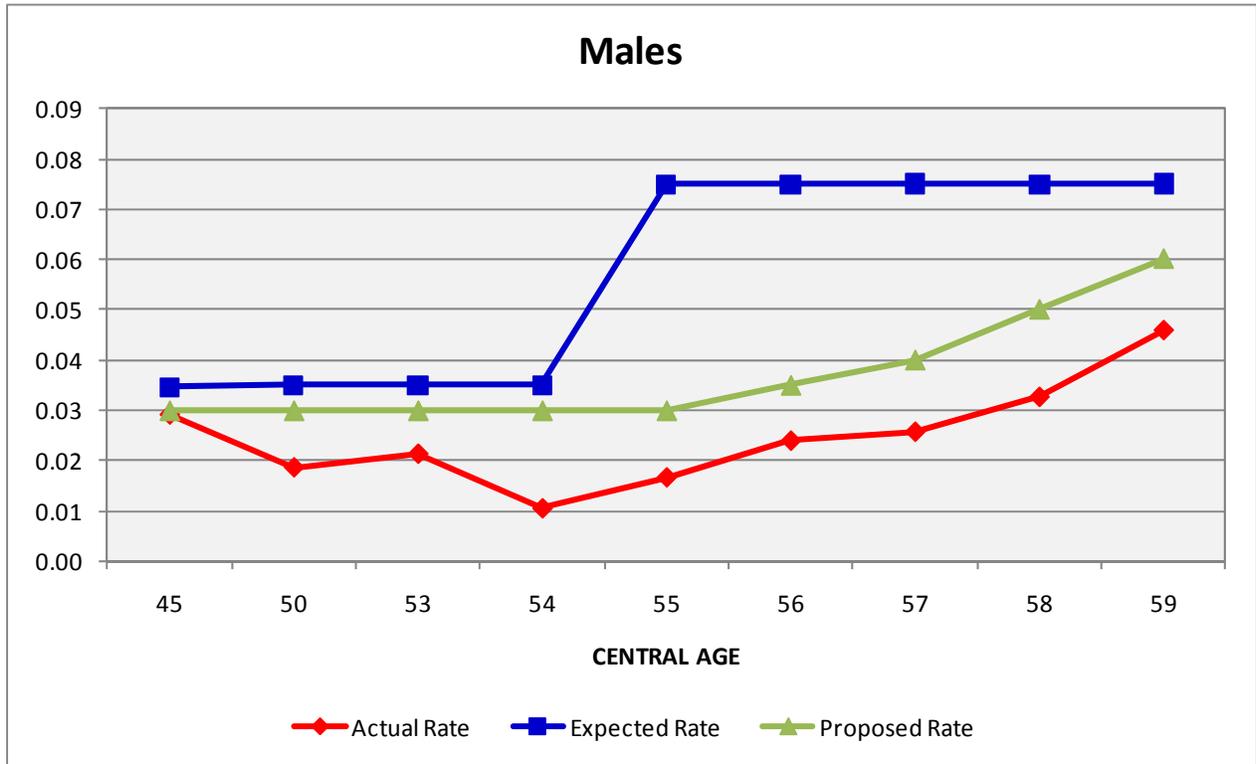
POLICE

AGE	NUMBER OF SERVICE RETIREMENTS		
	Current Rates		
	Actual	Expected	Ratio of Actual to Expected
< 55	4	0.0	0.000
55	4	7.4	0.541
56	1	5.2	0.192
57	0	5.4	0.000
58	3	4.6	0.652
59	0	3.2	0.000
60	3	2.2	1.364
61	1	2.0	0.500
62	2	1.4	1.429
63	1	0.8	1.250
64	0	0.6	0.000
65 & OVER	1	9.0	0.111
TOTAL	20	41.8	0.478

The analysis of the experience reflects that actual early retirement rates were less than expected at most ages, except for male New Plan members. The rates of normal retirement for Old Plan and New Plan members indicate that more than expected are retiring at the younger ages and fewer than expected are retiring after age 60. For Police members, fewer than expected overall are retiring. We recommend an adjustment to the rates to reflect the experience as well as maintain a reasonable degree of margin. The following graphs show a comparison of the present, actual, and proposed rates of service retirements.

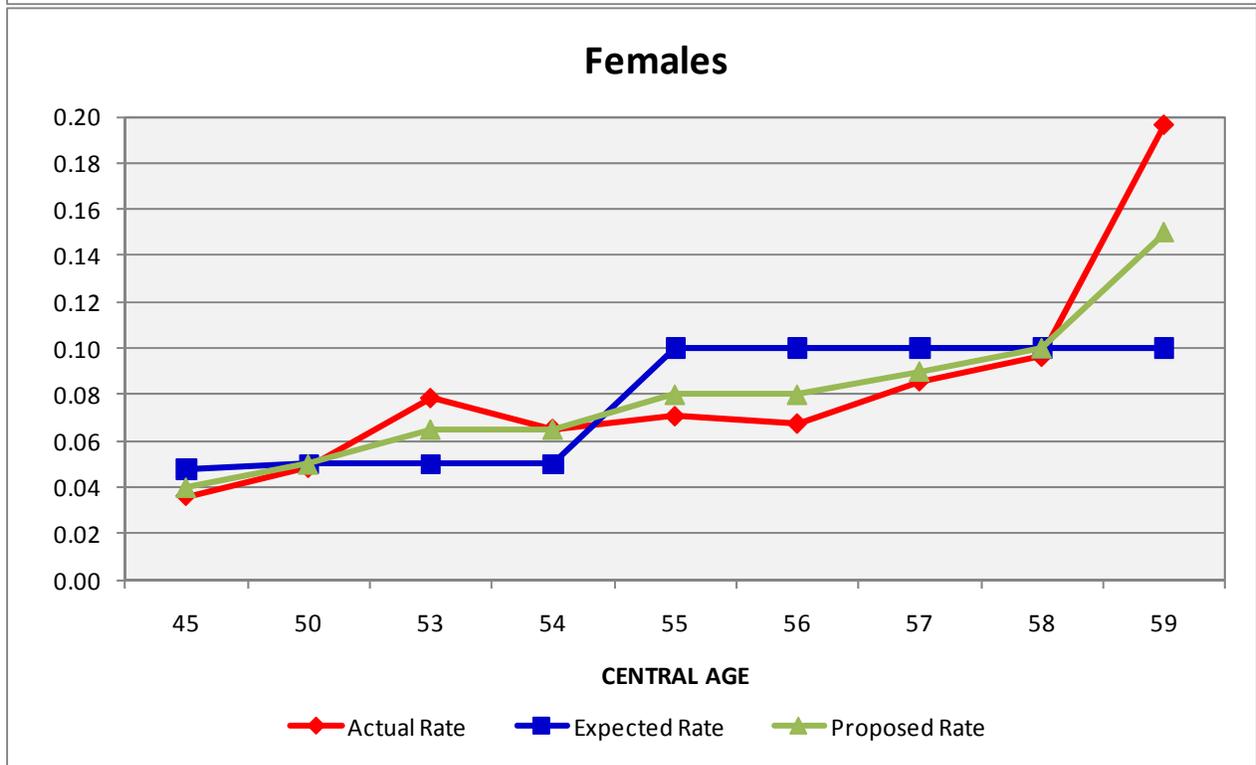
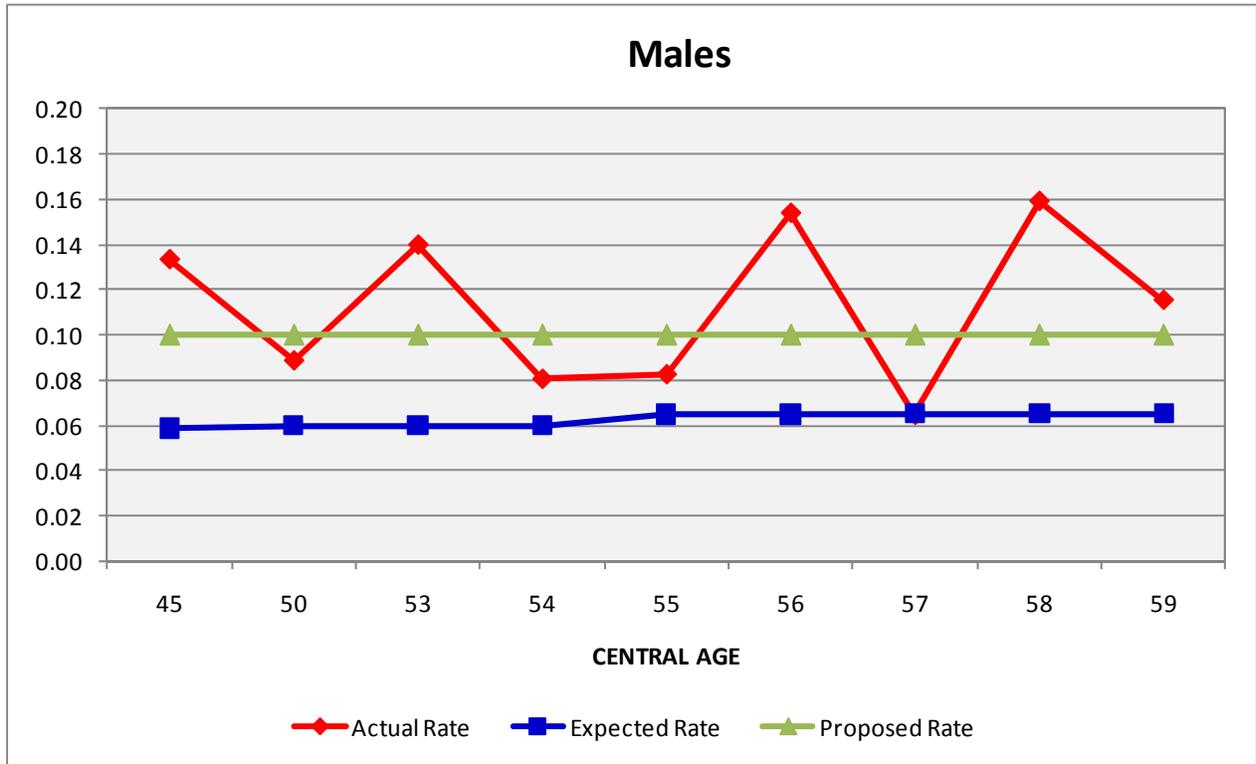


RATES OF EARLY RETIREMENT OLD PLAN



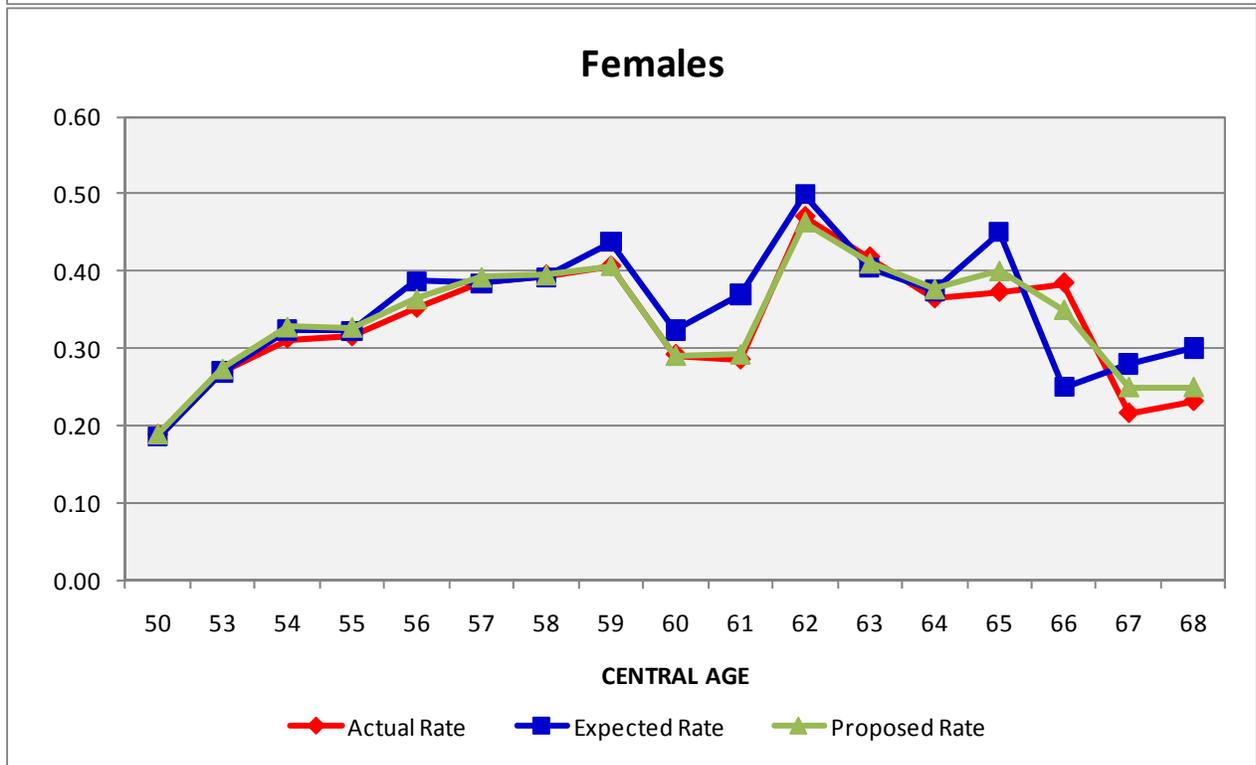
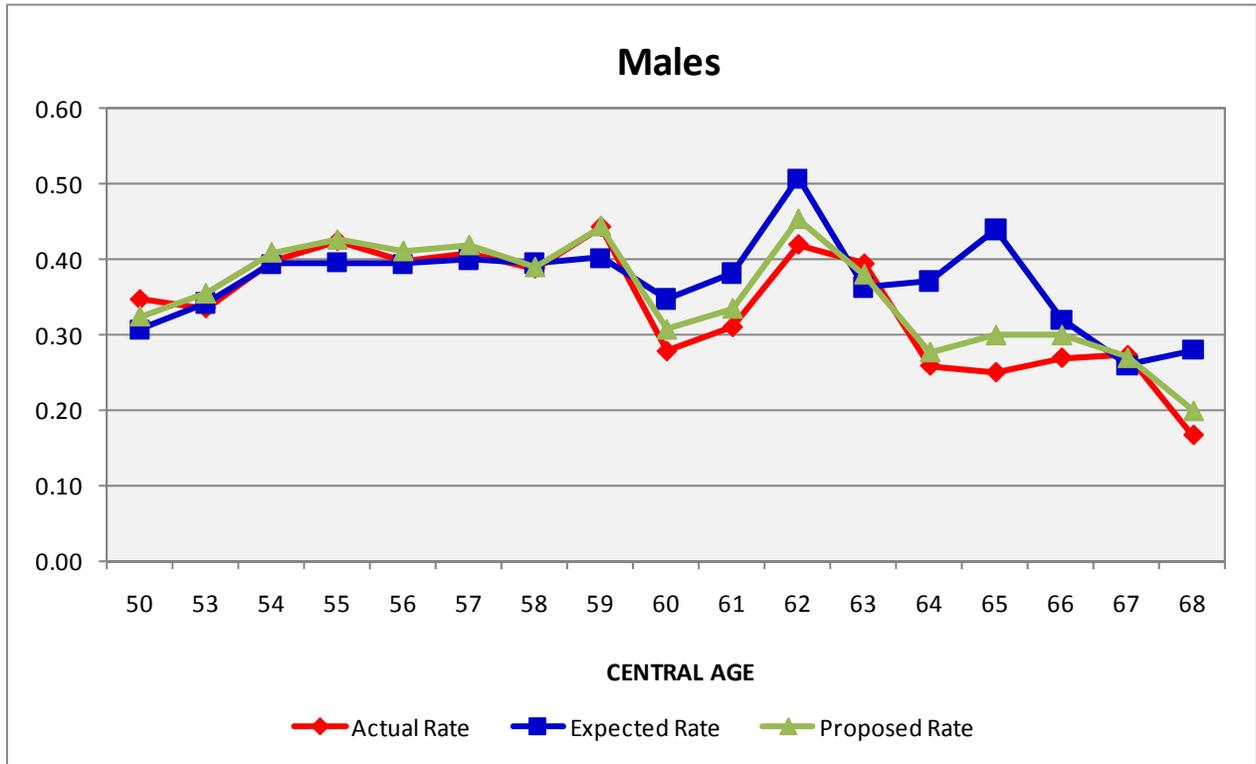


RATES OF EARLY RETIREMENT NEW PLAN



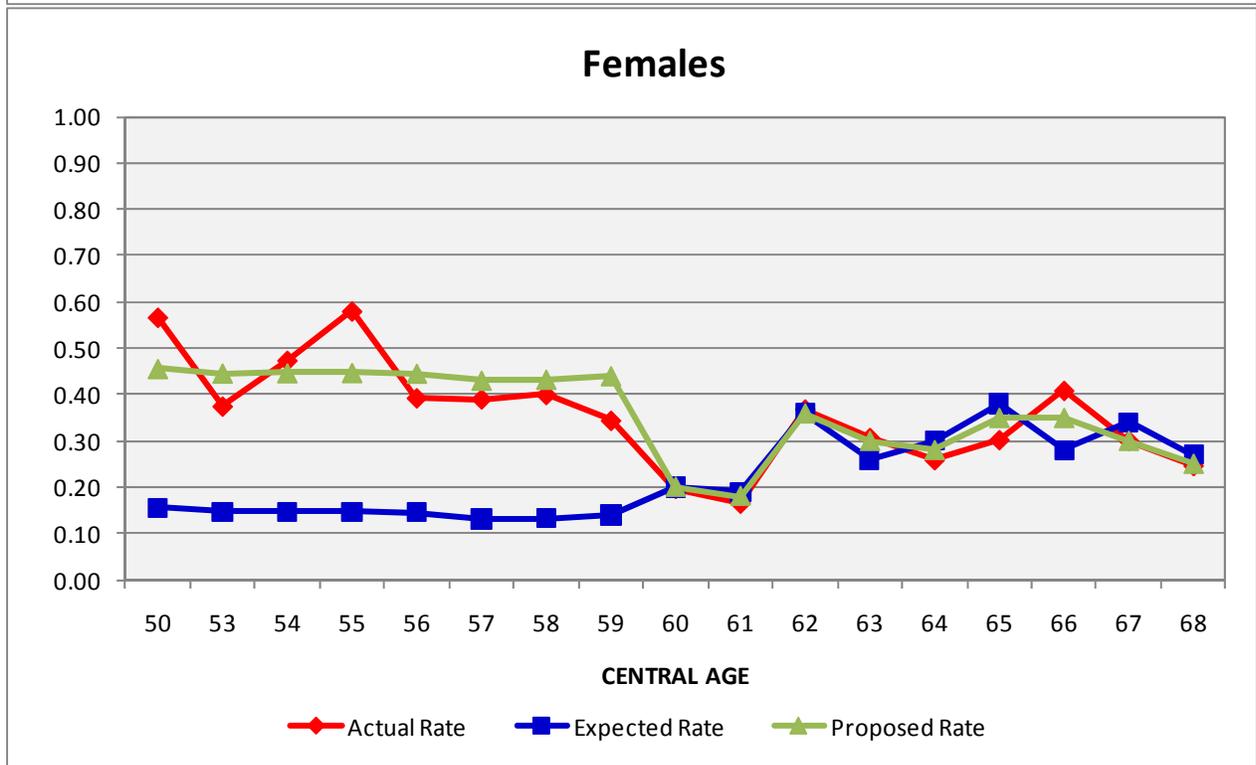
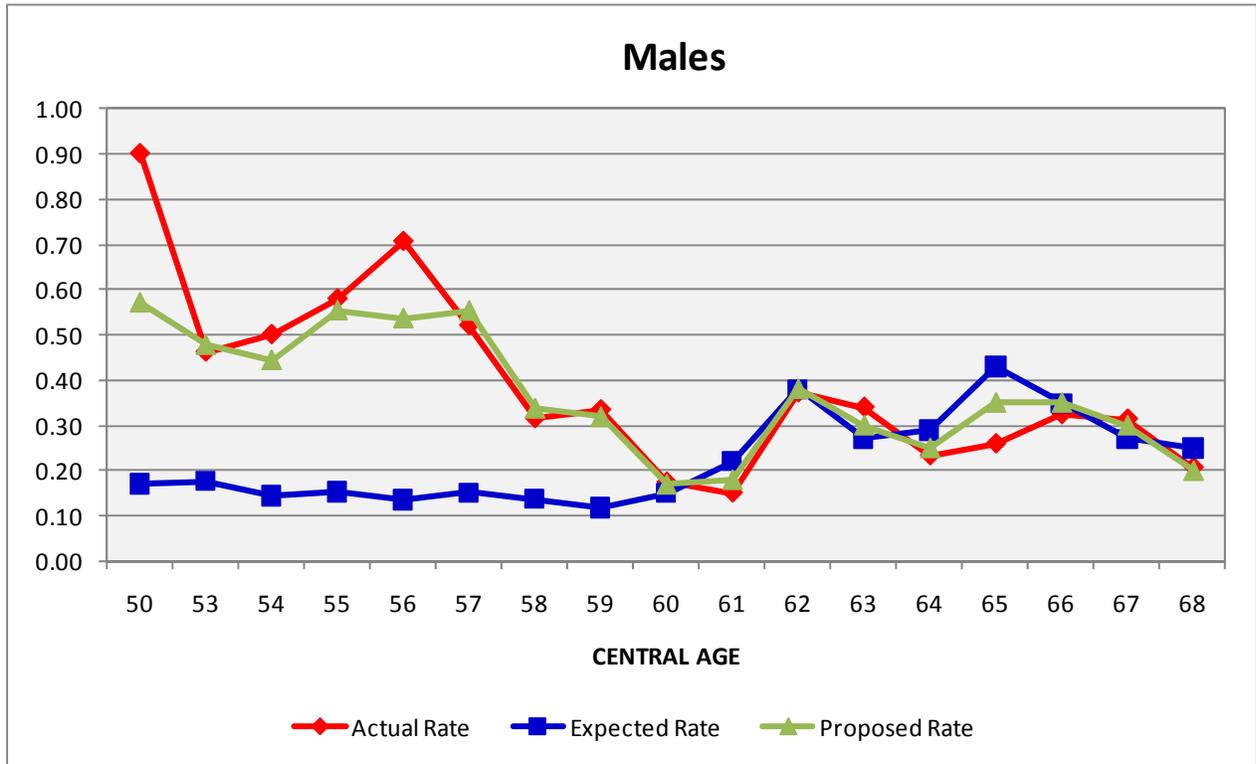


RATES OF NORMAL RETIREMENT OLD PLAN



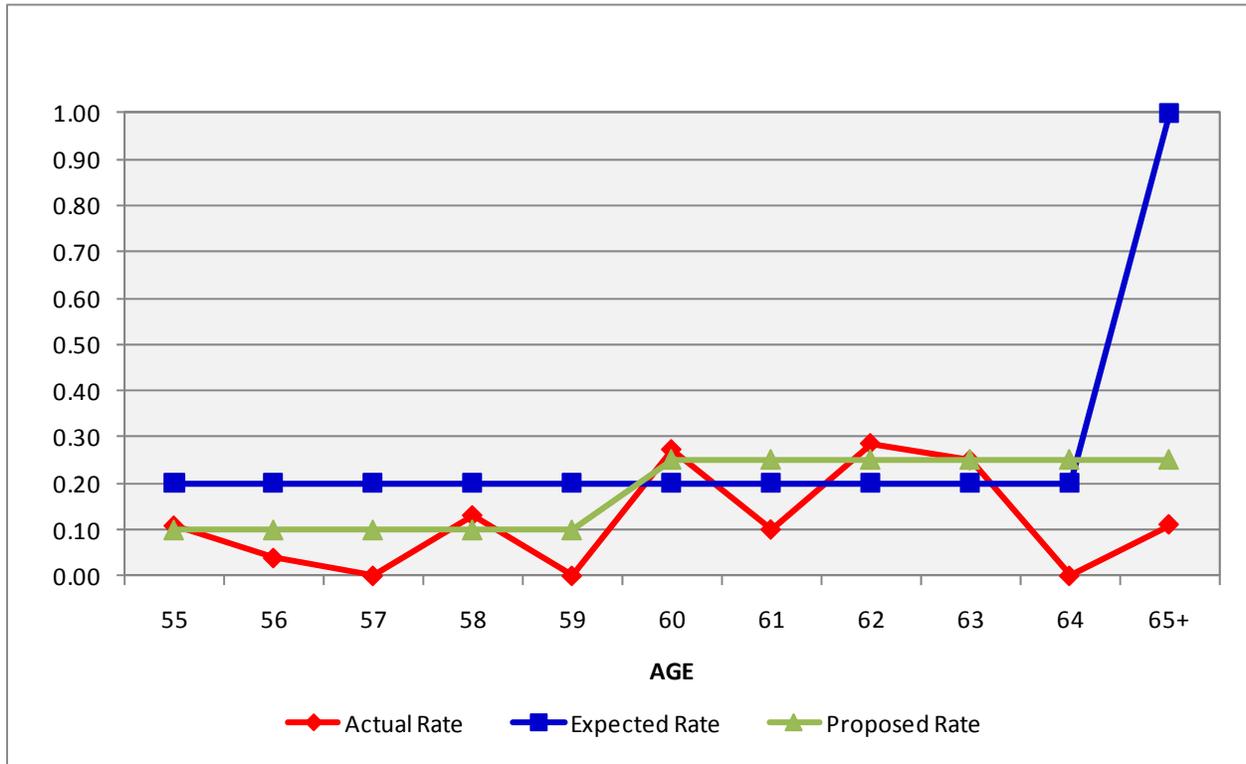


RATES OF NORMAL RETIREMENT NEW PLAN





RATES OF RETIREMENT POLICE



The following tables show a comparison of the present and proposed rates of service retirement.



**COMPARATIVE RATES OF RETIREMENT
Old Plan**

AGE	EARLY RETIREMENT			
	MALES		FEMALES	
	Present	Proposed	Present	Proposed
45	3.5%	3.0%	3.0%	2.5%
50	3.5	3.0	3.0	2.5
55	7.5	3.0	8.0	4.0
59	7.5	6.0	8.0	6.0

AGE	NORMAL RETIREMENT			
	MALES		FEMALES	
	Present	Proposed	Present	Proposed
	AT AGE 60 OR ATTAINMENT OF 30 YEARS OF SERVICE			
50	9.0%	9.0%	7.5%	7.0%
55	11.0	11.5	11.5	9.0
60	22.0	17.0	24.0	20.0
61	26.0	20.0	29.0	20.0
62	43.0	37.0	44.0	40.0
63	25.0	28.0	33.0	34.0
64	27.0	20.0	30.0	30.0
65	44.0	30.0	45.0	40.0
66	32.0	30.0	25.0	35.0
67	26.0	27.0	28.0	25.0
68	28.0	20.0	30.0	25.0
69	20.0	45.0	15.0	35.0
70	100.0	45.0	100.0	35.0
75	100.0	100.0	100.0	100.0

In addition, the following rates are recommended for Old Plan members with 34 or more years of service.



**COMPARATIVE RATES OF RETIREMENT
Old Plan (continued)**

AGE	NORMAL RETIREMENT (continued)			
	MALES		FEMALES	
	Present	Proposed	Present	Proposed
	ATTAINMENT OF 34 YEARS OF SERVICE			
50	95.0%	100.0%	95.0%	100.0%
55	95.0	100.0	95.0	100.0
60	95.0	95.0	95.0	95.0
61	95.0	95.0	95.0	95.0
62	95.0	90.0	95.0	90.0
63	95.0	90.0	95.0	90.0
64	95.0	90.0	95.0	90.0
	ATTAINMENT OF GREATER THAN 34 YEARS OF SERVICE			
50	50.0%	90.0%	50.0%	90.0%
55	50.0	90.0	50.0	90.0
60	50.0	50.0	50.0	60.0
61	50.0	50.0	50.0	60.0
62	50.0	50.0	50.0	60.0
63	50.0	50.0	50.0	60.0
64	50.0	15.0	50.0	60.0



**COMPARATIVE RATES OF RETIREMENT
New Plan**

AGE	EARLY RETIREMENT			
	MALES		FEMALES	
	Present	Proposed	Present	Proposed
45	6.0%	10.0%	5.0%	4.0%
50	6.0	10.0	5.0	5.0
55	6.5	10.0	10.0	8.0
59	6.5	10.0	10.0	15.0

AGE	NORMAL RETIREMENT			
	MALES		FEMALES	
	Present*	Proposed*	Present*	Proposed*
50	10.0%	50.0%	10.0%	40.0%
55	10.0	50.0	10.0	40.0
60	15.0	17.0	20.0	20.0
62	38.0	38.0	36.0	36.0
64	29.0	25.0	30.0	28.0
65	43.0	35.0	38.0	35.0
66	35.0	35.0	28.0	35.0
67	27.0	30.0	34.0	30.0
68	25.0	20.0	27.0	25.0
69	20.0	20.0	18.0	25.0
70	100.0	20.0	100.0	25.0
75	100.0	100.0	100.0	100.0

* An additional 10% are assumed to retire in the first year eligible for unreduced retirement with 30 years of service.



**COMPARATIVE RATES OF RETIREMENT
Police**

AGE	RATES OF RETIREMENT	
	Current	Proposed
55	20%	10%
56	20	10
57	20	10
58	20	10
59	20	10
60	20	25
61	20	25
62	20	25
63	20	25
64	20	25
65	100	25
66	100	25
67	100	25
68	100	25
69	100	25
70 & OVER	100	100

In addition, 100% are assumed to retire with 30 years of service before age 55.



**COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS
BASED ON PROPOSED RATES OF EARLY RETIREMENT**

OLD PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
45	20	20.4	0.980	15	21.9	0.685
50	47	75.9	0.619	85	100.8	0.843
53	11	15.5	0.710	18	20.3	0.887
54	5	14.4	0.347	19	21.0	0.905
55	7	12.7	0.551	16	24.0	0.667
56	9	13.2	0.682	25	32.7	0.765
57	9	14.0	0.643	20	28.5	0.702
58	10	15.4	0.649	21	27.2	0.772
59	11	14.4	0.764	20	25.5	0.784
TOTAL	129	195.9	0.658	239	301.9	0.792

NEW PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
45	21	15.1	1.391	8	8.8	0.909
50	35	39.5	0.886	36	34.6	1.040
53	13	9.3	1.398	12	9.9	1.212
54	7	8.7	0.805	11	11.0	1.000
55	8	9.7	0.825	12	13.6	0.882
56	14	9.1	1.538	12	14.2	0.845
57	6	9.3	0.645	15	15.8	0.949
58	14	8.8	1.591	13	13.5	0.963
59	9	7.8	1.154	23	17.6	1.307
TOTAL	127	117.3	1.083	142	139.0	1.022



**COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS
BASED ON PROPOSED RATES OF NORMAL RETIREMENT**

OLD PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
52 & UNDER	252	232.0	1.086	308	310.5	0.992
55	748	767.7	0.974	1,158	1,194.9	0.969
60	550	577.4	0.953	957	958.9	0.998
65	123	127.9	0.962	270	272.9	0.989
68 & OVER	33	77.5	0.426	61	91.5	0.667
TOTAL	1,706	1,782.5	0.957	2,754	2,828.7	0.974

NEW PLAN

CENTRAL AGE OF GROUP	NUMBER OF RETIREMENTS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
52 & UNDER	10	9.9	1.010	34	29.1	1.168
55	50	46.7	1.071	106	106.3	0.997
60	795	833.2	0.954	1,150	1,173.6	0.980
65	527	548.7	0.960	719	727.5	0.988
68 & OVER	202	337.2	0.599	203	317.6	0.639
TOTAL	1,584	1,775.7	0.892	2,212	2,354.1	0.940



**COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS
BASED ON PROPOSED RATES OF NORMAL RETIREMENT**

POLICE

AGE	NUMBER OF SERVICE RETIREMENTS		
	Proposed Rates		
	Actual	Expected	Ratio of Actual to Expected
< 55	4	5.0	0.800
55	4	3.5	1.143
56	1	2.6	0.385
57	0	2.4	0.000
58	3	2.0	1.500
59	0	1.4	0.000
60	3	2.0	1.500
61	1	1.0	1.000
62	2	1.0	2.000
63	1	0.8	1.333
64	0	0.5	0.000
65 & OVER	1	1.5	0.667
TOTAL	20	23.7	0.846



RATES OF MORTALITY

Pre-Retirement Mortality

Since the Retirement System has minimal pre-retirement mortality experience, we recommend that the rates of mortality in active service for both males and females be changed to the same mortality table that is used for post-retirement healthy mortality, which is the RP-2000 Combined Mortality Table.

COMPARISON OF ACTUAL AND EXPECTED PRE-RETIREMENT DEATHS

CENTRAL AGE OF GROUP	NUMBER OF PRE-RETIREMENT DEATHS					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
20	1	1.4	0.714	1	0.5	2.000
25	4	6.7	0.597	1	4.9	0.204
30	6	10.6	0.566	6	10.0	0.600
35	6	14.0	0.429	9	15.3	0.588
40	9	22.1	0.407	6	23.8	0.252
45	10	38.5	0.260	14	38.1	0.367
50	11	70.6	0.156	17	62.4	0.272
53 & OVER	72	330.2	0.218	64	257.5	0.249
TOTAL	119	494.1	0.241	118	412.5	0.286

Post-Retirement Mortality Rates

The recommended table for service retirements and beneficiaries of deceased members is the RP-2000 Combined Mortality Table. We recommend that the rates of disabled mortality be changed to the RP-2000 Disabled Mortality Table set back 9 years for males and set forward 1 year for females.

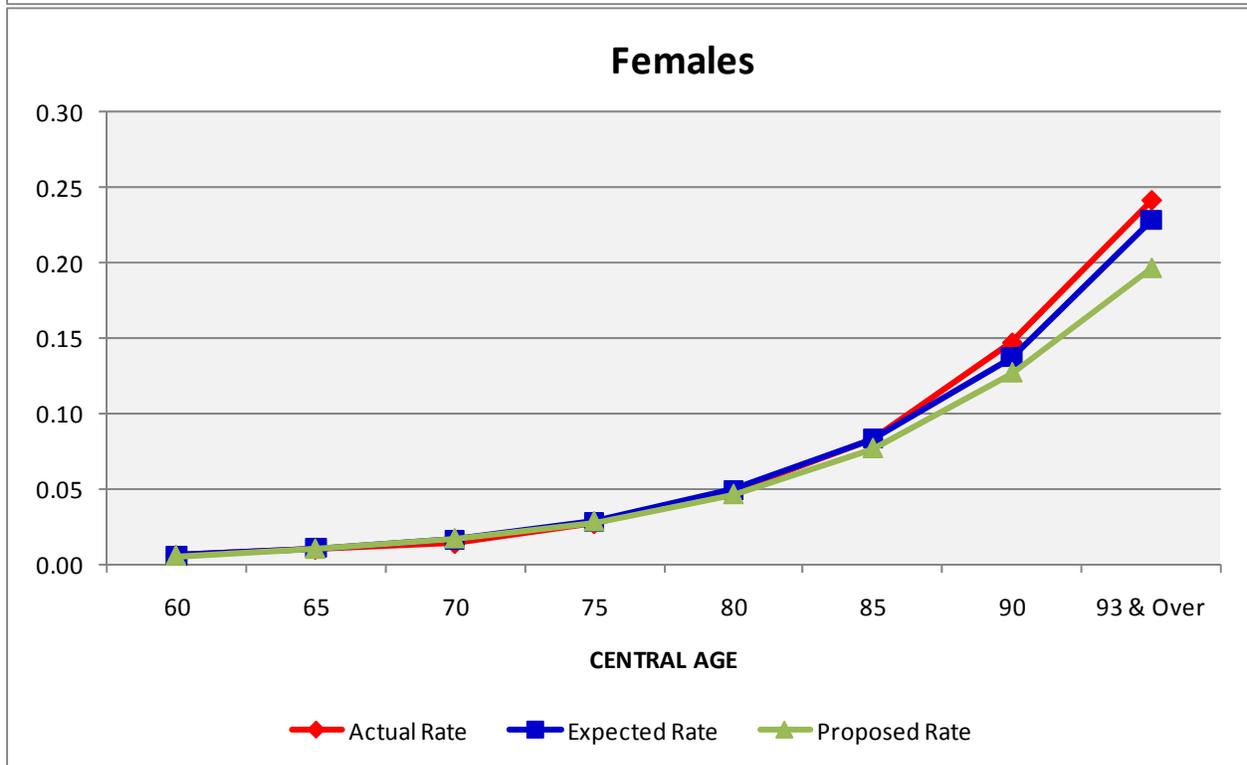
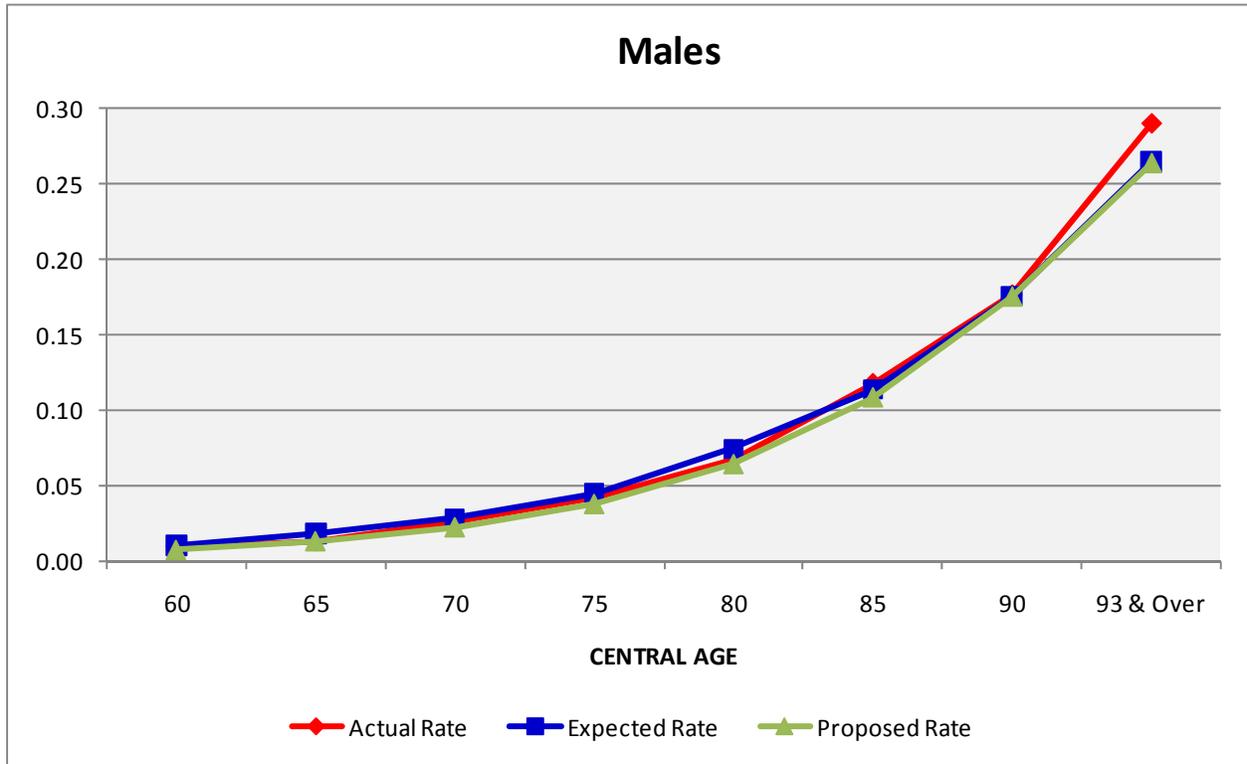


**COMPARISON OF ACTUAL AND EXPECTED CASES OF
POST-RETIREMENT DEATHS**

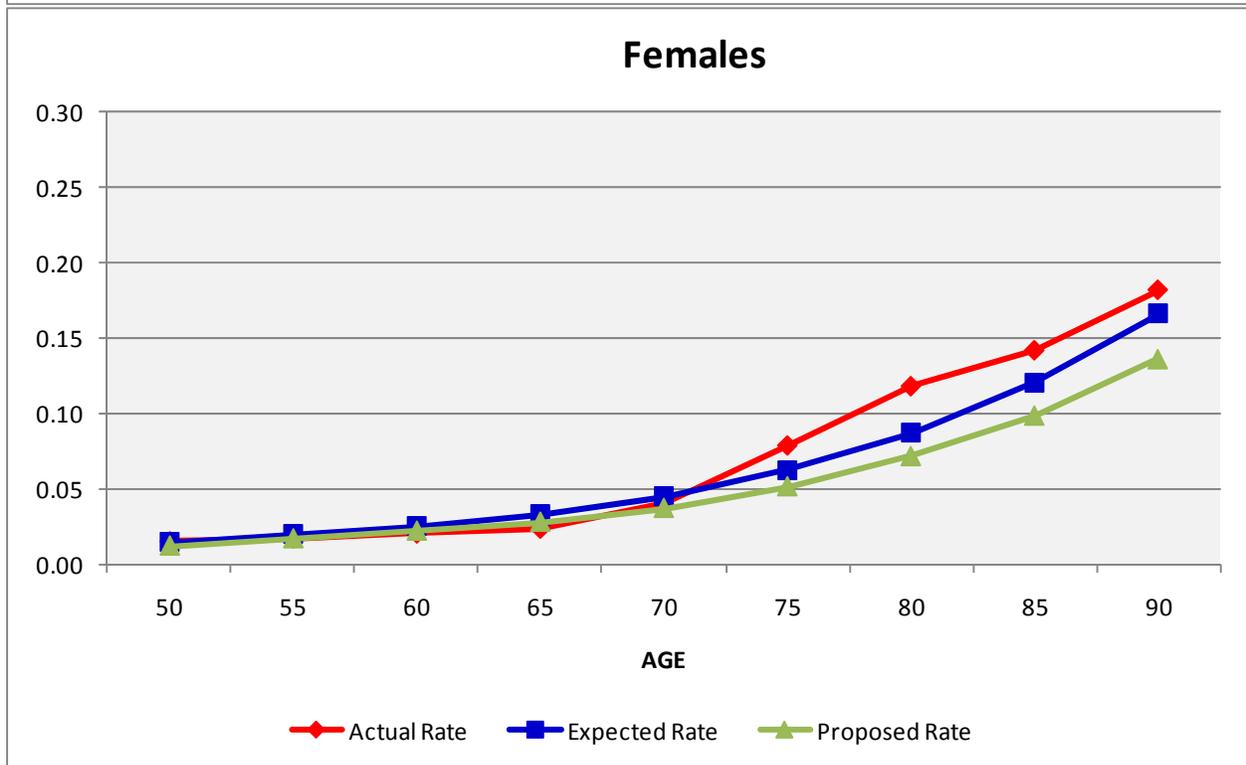
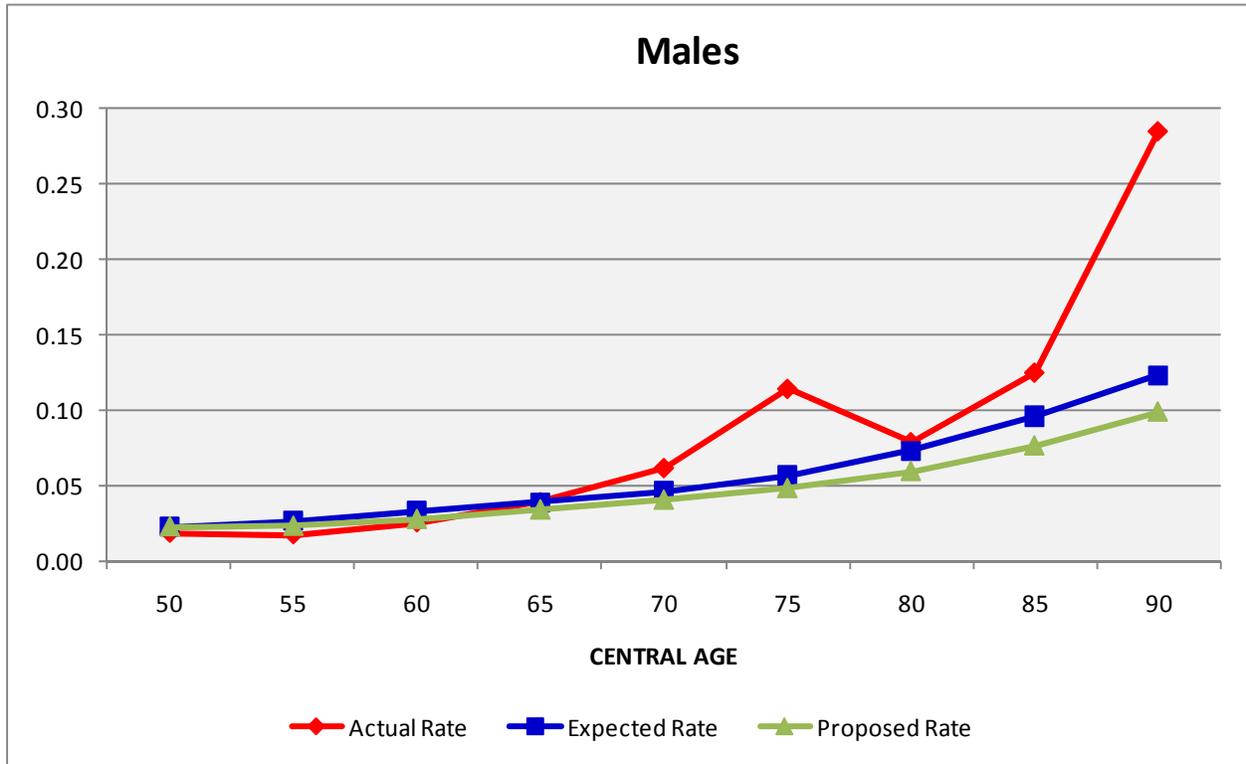
CENTRAL AGE OF GROUP	NUMBER OF POST-RETIREMENT DEATHS					
	Current Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
	SERVICE RETIREMENTS AND BENEFICIARIES					
57 & UNDER	34	35.5	0.958	50	25.3	1.976
60	97	108.1	0.897	74	73.9	1.001
65	163	231.4	0.704	157	169.1	0.928
70	282	309.7	0.911	188	226.2	0.831
75	337	363.1	0.928	301	317.4	0.948
80	352	390.1	0.902	449	458.4	0.979
85	344	333.4	1.032	559	558.4	1.001
90	181	180.2	1.004	429	400.4	1.071
93 & OVER	80	73.1	1.094	253	239.5	1.056
TOTAL	1,870	2,024.6	0.924	2,460	2,468.6	0.997
	DISABILITY RETIREMENTS					
52 & UNDER	35	53.2	0.658	31	26.9	1.152
55	49	74.8	0.655	44	50.8	0.866
60	79	101.2	0.781	58	72.0	0.806
65	62	62.3	0.995	44	61.5	0.715
70	50	37.6	1.330	34	37.9	0.897
75	45	22.3	2.018	31	24.7	1.255
80	17	15.8	1.076	25	18.5	1.351
85	20	15.4	1.299	18	15.3	1.176
90	8	3.5	2.286	8	7.3	1.096
93 & OVER	0	0.3	0.000	6	3.2	1.875
TOTAL	365	386.4	0.945	299	318.1	0.940



POST-RETIREMENT RATES OF DEATH FOR SERVICE RETIREMENTS AND BENEFICIARIES



POST-RETIREMENT RATES OF DEATH FOR DISABILITY RETIREMENTS





COMPARATIVE RATES OF POST-RETIREMENT MORTALITY

AGE	MALES		FEMALES	
	Present	Proposed	Present	Proposed
	SERVICE RETIREMENTS AND BENEFICIARIES			
35	0.089%	0.077%	0.055%	0.048%
40	0.125	0.108	0.082	0.071
45	0.190	0.151	0.111	0.112
50	0.321	0.214	0.173	0.168
55	0.558	0.362	0.292	0.272
60	1.015	0.675	0.583	0.506
65	1.803	1.274	1.076	0.971
70	2.848	2.221	1.651	1.674
75	4.517	3.783	2.837	2.811
80	7.553	6.437	4.915	4.588
85	11.567	11.076	8.402	7.745
90	18.228	18.341	14.197	13.168
	DISABILITY RETIREMENTS			
35	2.257%	2.257%	0.745%	0.745%
40	2.257	2.769	0.745	0.745
45	2.257	3.415	0.978	0.745
50	2.257	4.067	1.447	1.063
55	2.640	4.831	1.971	1.550
60	3.286	5.961	2.529	2.077
65	3.933	7.751	3.323	2.660
70	4.658	10.339	4.577	3.534
75	5.691	13.492	6.355	4.890
80	7.329	16.923	8.784	6.779
85	9.764	25.069	12.246	9.379
90	12.834	33.021	17.043	13.097



**COMPARISON OF ACTUAL AND EXPECTED CASES OF
POST-RETIREMENT DEATHS
BASED ON PROPOSED RATES OF MORTALITY**

CENTRAL AGE OF GROUP	NUMBER OF POST-RETIREMENT DEATHS					
	Proposed Rates					
	MALES			FEMALES		
	Actual	Expected	Ratio of Actual to Expected	Actual	Expected	Ratio of Actual to Expected
SERVICE RETIREMENTS AND BENEFICIARIES						
57 & UNDER	34	23.7	1.435	50	23.5	2.128
60	97	72.3	1.342	74	64.5	1.147
65	163	165.1	0.987	157	154.9	1.014
70	282	241	1.17	188	227.1	0.828
75	337	302.4	1.114	301	313.6	0.960
80	352	336	1.048	449	428.6	1.048
85	344	317.2	1.084	559	514.7	1.086
90	181	179.8	1.007	429	370.4	1.158
93 & OVER	80	72.8	1.099	253	205.7	1.230
TOTAL	1,870	1,710.3	1.093	2,460	2,303.0	1.068
DISABILITY RETIREMENTS						
52 & UNDER	35	53.2	0.658	31	21.7	1.429
55	49	64.1	0.764	44	42.7	1.030
60	79	85.2	0.927	58	62.1	0.934
65	62	54	1.148	44	51.9	0.848
70	50	32.8	1.524	34	31.2	1.090
75	45	18.9	2.381	31	20.3	1.527
80	17	12.8	1.328	25	15.2	1.645
85	20	12.2	1.639	18	12.6	1.429
90	8	2.8	2.857	8	6.0	1.333
93 & OVER	0	0.3	0.000	6	2.7	2.222
TOTAL	365	336.3	1.085	299	266.4	1.122



RATES OF SALARY INCREASE

COMPARISON OF ACTUAL AND EXPECTED RATES OF SALARY INCREASE OF ACTIVE MEMBERS

CENTRAL AGE OF GROUP	RATES OF SALARY INCREASE		
	CURRENT RATES		
	Actual	Expected	Ratio of Actual to Expected
20	6.21%	9.23%	0.673
25	6.60%	8.50%	0.777
30	5.38%	6.98%	0.771
35	4.85%	5.94%	0.817
40	4.44%	5.56%	0.798
45	4.06%	5.45%	0.744
50	3.61%	5.45%	0.663
55	3.32%	5.45%	0.608
60	3.18%	5.45%	0.584
63+	2.95%	5.45%	0.540
TOTAL	4.12%	5.81%	0.710

Overall, the current assumed rates of salary increase were greater than the actual rates of increase averaged over the study period. We recommend no change to the long-term current salary increase assumption. However, we recommend that the rates of salary increase be adjusted over the four year period beginning with the June 30, 2010 valuation to reflect the lower than anticipated salary increases during that time period. The following shows the proposed rate of salary increase.



COMPARATIVE ASSUMED RATES OF SALARY INCREASE

RATES OF SALARY INCREASE				
AGE	Current	Fiscal year 2011 Proposed	Fiscal years 2012-2013 Proposed	Fiscal year 2014+ Proposed
20	9.25%	0.00%	4.63%	9.25%
25	8.25%	0.00%	4.13%	8.25%
30	6.25%	0.00%	3.13%	6.25%
35	5.75%	0.00%	2.88%	5.75%
40	5.45%	0.00%	2.73%	5.45%
45	5.45%	0.00%	2.73%	5.45%
50	5.45%	0.00%	2.73%	5.45%
55	5.45%	0.00%	2.73%	5.45%
60	5.45%	0.00%	2.73%	5.45%
63+	5.45%	0.00%	2.73%	5.45%



Section V

Other Assumptions and Methods

ADMINISTRATIVE EXPENSES: There is currently no explicit assumption for administrative expenses. We recommend adding the budgeted expenses for the fiscal year to the normal cost.

AMORTIZATION METHOD: Currently, the unfunded accrued liability is amortized as a level percentage of payroll. We recommend changing to the use of a level dollar amortization method. In order to minimize the impact of this change on contribution requirements, we recommend that this change be phased in over a 3 year period using the following schedule: 2% for the 2010 valuation; 1% for the 2011 valuation and no assumed increase beginning with the 2012 valuation.

ASSETS: Currently the actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return. The amount recognized each year is 1/7 of the difference between market value and expected actuarial value. We recommend maintaining the current smoothing method.

OPTION FACTORS: The option factors currently used by the Retirement System are based on the mortality tables and investment rate of return (discount rate) used in the valuation. We recommend that the factors be revised to be based on the mortality table recommended for the valuation.

SICK LEAVE: We currently assume a 3.4% load on service for the practice of allowing members to convert forfeited sick leave to service at retirement. We recommend a change in the assumption as follows:

- Old Plan members who retire with 34 years of service – 4.0%
- Old Plan members who retire on normal retirement – 2.5%
- All New Plan retirements and Old Plan early retirement – 2.0%

VALUATION COST METHOD: Currently the valuation uses the entry age actuarial cost method. This is the most widely used cost method of large public sector plans and has demonstrated the highest degree of stability as compared to alternative methods. We recommend no change to this assumption.



Section VI Group Term Life Insurance Plan Results

The following table highlights the impact of the recommended changes on the Group Term Life Insurance Plan for pre-retirement benefits.

Pre-Retirement Benefits

Impact on Principal Valuation Results		
	Valuation Results 2009	Recommended Assumptions
Unfunded Accrued Liability (\$1,000's)	\$(82,810)	\$(99,462)
Funding Ratio	235.0%	322.5%
Employer Annual Required Contribution		
Total Normal Rate	0.24%	0.19%
Employee Rates		
Old Plan Members	0.05%*	0.05%*
New Plan, LRS and JRS Members	0.02%	0.02%
Employer Normal Rate	0.22%	0.17%
Accrued Liability Rate	<u>(0.22)%</u>	<u>(0.17)%</u>
Total Employer Rate	0.00%	0.00%

* 0.03% paid by employer.



The following table highlights the impact of the recommended changes on the Group Term Life Insurance Plan for post-retirement benefits.

Post-Retirement Benefits

Impact on Principal Valuation Results		
	Valuation Results 2009	Recommended Assumptions
Unfunded Accrued Liability (\$1,000's)	\$105,472	\$57,489
Funding Ratio	85.6%	91.6%
Employer Annual Required Contribution		
Total Normal Rate	0.52%	0.48%
Employee Rates		
Old Plan Members	0.45%*	0.45%*
New Plan, LRS and JRS Members	0.23%	0.23%
Employer Normal Rate	0.27%	0.23%
Accrued Liability Rate	<u>0.34%</u>	<u>0.18%</u>
Total Employer Rate	0.61%	0.41%

* 0.22% paid by employer.



APPENDIX A

Historical June CPI (U) Index

Year	CPI (U)	Year	CPI (U)
1959	29.10	1985	107.60
1960	29.60	1986	109.50
1961	29.80	1987	113.50
1962	30.20	1988	118.00
1963	30.60	1989	124.10
1964	31.00	1990	129.90
1965	31.60	1991	136.00
1966	32.40	1992	140.20
1967	33.30	1993	144.40
1968	34.70	1994	148.00
1969	36.60	1995	152.50
1970	38.80	1996	156.70
1971	40.60	1997	160.30
1972	41.70	1998	163.00
1973	44.20	1999	166.20
1974	49.00	2000	172.40
1975	53.60	2001	178.00
1976	56.80	2002	179.90
1977	60.70	2003	183.70
1978	65.20	2004	189.70
1979	72.30	2005	194.50
1980	82.70	2006	202.90
1981	90.60	2007	208.352
1982	97.00	2008	218.815
1983	99.50	2009	215.693
1984	103.70		



APPENDIX B

Capital Market Assumptions and Asset Allocation

Real Rates of Return and Standard Deviations by Asset Class

Asset Class	Expected Real Rate of Return	Standard Deviation
Fixed Income	6.0%	8.0%
US Large Stocks	9.5%	21.5%
US Mid Stocks	13.0%	24.5%
US Small Stocks	16.0%	34.0%
Int'l Developed Mkt Stocks	9.5%	22.5%
Int'l Emerging Mkt Stocks	14.0%	28.0%

Asset Class Correlation Coefficients

Asset Class	Fixed Income	US Large Stocks	US Mid Stocks	US Small Stocks	Int'l Dev Mkt Stocks	Int'l EM Mkt Stocks
Fixed Income	1.00					
US Large Stocks	0.20	1.00				
US Mid Stocks	0.20	0.90	1.00			
US Small Stocks	0.20	0.85	0.90	1.00		
Int'l Developed Mkt Stocks	0.15	0.70	0.60	0.60	1.00	
Int'l Emerging Mkt Stocks	0.15	0.55	0.60	0.60	0.65	1.00

Asset Allocation Targets

Asset Class	Asset Allocation
Fixed Income	30.0%
US Large Stocks	39.7%
US Mid Stocks	3.7%
US Small Stocks	1.6%
Int'l Developed Mkt Stocks	18.9%
Int'l Emerging Mkt Stocks	6.1%



APPENDIX C

Social Security Administration Wage Index

Year	Wage Index	Annual Increase	Year	Wage Index	Annual Increase
1958	\$3,673.80		1984	\$16,135.07	5.88%
1959	3,855.80	4.95%	1985	16,822.51	4.26
1960	4,007.12	3.92	1986	17,321.82	2.97
1961	4,086.76	1.99	1987	18,426.51	6.38
1962	4,291.40	5.01	1988	19,334.04	4.93
1963	4,396.64	2.45	1989	20,099.55	3.96
1964	4,576.32	4.09	1990	21,027.98	4.62
1965	4,658.72	1.80	1991	21,811.60	3.73
1966	4,938.36	6.00	1992	22,935.42	5.15
1967	5,213.44	5.57	1993	23,132.67	0.86
1968	5,571.76	6.87	1994	23,753.53	2.68
1969	5,893.76	5.78	1995	24,705.66	4.01
1970	6,186.24	4.96	1996	25,913.90	4.89
1971	6,497.08	5.02	1997	27,426.00	5.84
1972	7,133.80	9.80	1998	28,861.44	5.23
1973	7,580.16	6.26	1999	30,469.84	5.57
1974	8,030.76	5.94	2000	32,154.82	5.53
1975	8,630.92	7.47	2001	32,921.92	2.39
1976	9,226.48	6.90	2002	33,252.09	1.00
1977	9,779.44	5.99	2003	34,064.95	2.44
1978	10,556.03	7.94	2004	35,648.55	4.65
1979	11,479.46	8.75	2005	36,952.94	3.66
1980	12,513.46	9.01	2006	38,651.41	4.60
1981	13,773.10	10.07	2007	40,405.48	4.54
1982	14,531.34	5.51	2008	41,334.97	2.30
1983	15,239.24	4.87			



APPENDIX D

TABLE 1

RATES OF SEPARATION FROM ACTIVE SERVICE – MALES (NON-POLICE)

AGE	RATES OF WITHDRAWAL			RATES OF DEATH	RATES OF DISABILITY
	YEARS OF SERVICE				
	0 – 4	5 – 9	10+		
19	0.31			0.00033	0.0005
20	0.31			0.00035	0.0005
21	0.31			0.00036	0.0005
22	0.31			0.00037	0.0005
23	0.28	0.17		0.00037	0.0005
24	0.27	0.17		0.00038	0.0005
25	0.26	0.17		0.00038	0.0005
26	0.25	0.16		0.00038	0.0005
27	0.25	0.15		0.00038	0.0005
28	0.24	0.14	0.075	0.00039	0.0005
29	0.23	0.13	0.075	0.00041	0.0005
30	0.23	0.12	0.075	0.00044	0.0005
31	0.22	0.12	0.074	0.00050	0.0005
32	0.22	0.11	0.073	0.00056	0.0005
33	0.22	0.11	0.072	0.00063	0.0005
34	0.21	0.10	0.071	0.00070	0.0005
35	0.21	0.10	0.070	0.00077	0.0005
36	0.21	0.10	0.066	0.00084	0.0009
37	0.20	0.10	0.062	0.00090	0.0013
38	0.20	0.10	0.058	0.00096	0.0017
39	0.19	0.10	0.054	0.00102	0.0021
40	0.19	0.10	0.050	0.00108	0.0025
41	0.19	0.09	0.048	0.00114	0.0030
42	0.19	0.09	0.045	0.00122	0.0035
43	0.18	0.09	0.043	0.00130	0.0040
44	0.18	0.09	0.040	0.00140	0.0045
45	0.18	0.09	0.038	0.00151	0.0050
46	0.18	0.09	0.038	0.00162	0.0055
47	0.17	0.09	0.038	0.00173	0.0060
48	0.17	0.08	0.038	0.00186	0.0065
49	0.16	0.08	0.038	0.00200	0.0070
50	0.16	0.07	0.038	0.00214	0.0075
51	0.15	0.07	0.038	0.00245	0.0083
52	0.15	0.07	0.039	0.00267	0.0092
53	0.14	0.07	0.040	0.00292	0.0100
54	0.13	0.07	0.040	0.00320	0.0105
55	0.13	0.07	0.040	0.00362	0.0110
56	0.13	0.07	0.040	0.00420	0.0115
57	0.13	0.07	0.040	0.00469	0.0120
58	0.11	0.07	0.040	0.00527	0.0125
59	0.11	0.07	0.040	0.00595	0.0140
60	0.15	0.07	0.000	0.00675	0.0000
61	0.15	0.07	0.000	0.00768	0.0000
62	0.15	0.10	0.000	0.00876	0.0000
63	0.15	0.10	0.000	0.01001	0.0000
64	0.15	0.10	0.000	0.01128	0.0000
65	0.15	0.10	0.000	0.01274	0.0000
66	0.15	0.10	0.000	0.01441	0.0000
67	0.15	0.10	0.000	0.01608	0.0000
68	0.15	0.10	0.000	0.01787	0.0000
69	0.15	0.10	0.000	0.01980	0.0000
70	0.15	0.10		0.02221	0.0000



TABLE 2
RATES OF SEPARATION FROM ACTIVE SERVICE – MALES (NON-POLICE)
(Continued)

AGE	RATES OF SERVICE RETIREMENT					
	OLD PLAN				NEW PLAN	
	EARLY RETIREMENT	AGE 60 OR 30 YEARS	34 YEARS	MORE THAN 34 YEARS	EARLY RETIREMENT	NORMAL RETIREMENT*
49	0.030	0.090	0.900	0.000	0.100	0.500
50	0.030	0.090	0.900	0.900	0.100	0.500
51	0.030	0.090	0.900	0.900	0.100	0.500
52	0.030	0.090	0.900	0.900	0.100	0.500
53	0.030	0.090	0.900	0.900	0.100	0.400
54	0.030	0.090	0.900	0.900	0.100	0.400
55	0.030	0.115	0.900	0.900	0.100	0.500
56	0.035	0.120	0.700	0.700	0.100	0.500
57	0.040	0.120	0.700	0.700	0.100	0.500
58	0.050	0.130	0.700	0.700	0.100	0.300
59	0.060	0.160	0.700	0.700	0.100	0.300
60		0.170	0.500	0.500		0.170
61		0.200	0.500	0.500		0.180
62		0.370	0.500	0.500		0.380
63		0.280	0.500	0.500		0.300
64		0.200	0.150	0.150		0.250
65		0.300	0.300	0.300		0.350
66		0.300	0.300	0.300		0.350
67		0.270	0.270	0.270		0.300
68		0.200	0.200	0.200		0.200
69		0.450	0.450	0.450		0.200
70		0.450	0.450	0.450		0.200
71		0.200	0.200	0.200		0.200
72		0.200	0.200	0.200		0.200
73		0.200	0.200	0.200		0.200
74		0.200	0.200	0.200		0.200
75		1.000	1.000	1.000		1.000

* An additional 10% are assumed to retire in the first year eligible for unreduced retirement with 30 years of service.



TABLE 3
RATES OF SEPARATION FROM ACTIVE SERVICE – FEMALES (NON-POLICE)

AGE	RATES OF WITHDRAWAL			RATES OF DEATH	RATES OF DISABILITY
	YEARS OF SERVICE				
	0 – 4	5 – 9	10+		
19	0.31			0.00019	0.0002
20	0.31			0.00019	0.0002
21	0.30			0.00019	0.0002
22	0.29			0.00019	0.0002
23	0.27	0.19		0.00020	0.0002
24	0.25	0.19		0.00020	0.0002
25	0.24	0.19		0.00021	0.0002
26	0.23	0.19		0.00021	0.0002
27	0.23	0.19		0.00022	0.0002
28	0.22	0.19	0.078	0.00024	0.0002
29	0.22	0.19	0.078	0.00025	0.0002
30	0.21	0.18	0.078	0.00026	0.0002
31	0.21	0.17	0.078	0.00031	0.0002
32	0.20	0.15	0.078	0.00035	0.0002
33	0.20	0.14	0.078	0.00039	0.0002
34	0.20	0.13	0.078	0.00044	0.0002
35	0.20	0.13	0.078	0.00048	0.0002
36	0.19	0.12	0.078	0.00051	0.0004
37	0.19	0.12	0.078	0.00055	0.0005
38	0.18	0.11	0.078	0.00060	0.0007
39	0.18	0.11	0.078	0.00065	0.0008
40	0.18	0.10	0.078	0.00071	0.0010
41	0.17	0.10	0.078	0.00077	0.0013
42	0.17	0.10	0.074	0.00085	0.0016
43	0.16	0.09	0.071	0.00094	0.0019
44	0.16	0.09	0.068	0.00103	0.0022
45	0.16	0.09	0.063	0.00112	0.0025
46	0.15	0.09	0.059	0.00122	0.0030
47	0.15	0.08	0.054	0.00133	0.0035
48	0.15	0.08	0.050	0.00143	0.0040
49	0.15	0.08	0.045	0.00155	0.0045
50	0.15	0.08	0.043	0.00168	0.0050
51	0.14	0.08	0.041	0.00185	0.0053
52	0.13	0.07	0.039	0.00202	0.0057
53	0.13	0.07	0.037	0.00221	0.0060
54	0.13	0.07	0.035	0.00242	0.0070
55	0.13	0.07	0.035	0.00272	0.0082
56	0.13	0.07	0.035	0.00309	0.0090
57	0.13	0.07	0.035	0.00348	0.0100
58	0.13	0.07	0.035	0.00392	0.0110
59	0.13	0.07	0.035	0.00444	0.0135
60	0.13	0.07	0.035	0.00506	0.0000
61	0.13	0.07	0.035	0.00581	0.0000
62	0.17	0.06	0.035	0.00666	0.0000
63	0.17	0.06	0.035	0.00765	0.0000
64	0.17	0.07	0.040	0.00862	0.0000
65	0.17	0.07	0.040	0.00971	0.0000
66	0.17	0.10	0.040	0.01095	0.0000
67	0.17	0.10	0.040	0.01216	0.0000
68	0.17	0.10	0.040	0.01345	0.0000
69	0.17	0.10	0.000	0.01486	0.0000
70	0.17	0.10		0.01674	0.0000



TABLE 4
RATES OF SEPARATION FROM ACTIVE SERVICE – FEMALES (NON-POLICE)
(Continued)

AGE	RATES OF SERVICE RETIREMENT					
	OLD PLAN				NEW PLAN	
	EARLY RETIREMENT	AGE 60 OR 30 YEARS	34 YEARS	MORE THAN 34 YEARS	EARLY RETIREMENT	NORMAL RETIREMENT*
49	0.025	0.070	0.900	0.900	0.040	0.400
50	0.025	0.070	0.900	0.900	0.050	0.400
51	0.025	0.070	0.900	0.900	0.050	0.400
52	0.025	0.070	0.900	0.900	0.050	0.400
53	0.025	0.080	0.900	0.900	0.065	0.400
54	0.030	0.080	0.900	0.900	0.065	0.400
55	0.040	0.090	0.900	0.900	0.080	0.400
56	0.060	0.110	0.700	0.700	0.080	0.400
57	0.060	0.130	0.700	0.700	0.090	0.400
58	0.060	0.150	0.700	0.700	0.100	0.400
59	0.060	0.160	0.700	0.700	0.150	0.400
60		0.200	0.600	0.600		0.200
61		0.200	0.600	0.600		0.180
62		0.400	0.600	0.600		0.360
63		0.340	0.600	0.600		0.300
64		0.300	0.600	0.600		0.280
65		0.400	0.400	0.400		0.350
66		0.350	0.350	0.350		0.350
67		0.250	0.250	0.250		0.300
68		0.250	0.250	0.250		0.250
69		0.350	0.350	0.350		0.250
70		0.350	0.350	0.350		0.250
71		0.350	0.350	0.350		0.250
72		0.350	0.350	0.350		0.250
73		0.350	0.350	0.350		0.250
74		0.350	0.350	0.350		0.200
75		1.000	1.000	1.000		1.000

* An additional 10% are assumed to retire in the first year eligible for unreduced retirement with 30 years of service.



TABLE 5

RATES OF SEPARATION FROM ACTIVE SERVICE - POLICE

AGE	RATES OF WITHDRAWAL		DEATH		DISABILITY	RETIREMENT
	With less than 10 years of service	With 10 or more years of service	MALE	FEMALE		
19	0.150		0.000331	0.000190	0.00050	
20	0.150		0.000345	0.000191	0.00050	
21	0.150		0.000357	0.000192	0.00056	
22	0.150		0.000366	0.000194	0.00062	
23	0.070		0.000373	0.000197	0.00068	
24	0.070		0.000376	0.000201	0.00074	
25	0.070	0.060	0.000376	0.000207	0.00080	
26	0.070	0.060	0.000378	0.000214	0.00090	
27	0.070	0.060	0.000382	0.000223	0.00100	
28	0.070	0.060	0.000393	0.000235	0.00110	
29	0.070	0.060	0.000412	0.000248	0.00120	
30	0.070	0.060	0.000444	0.000264	0.00130	
31	0.070	0.060	0.000499	0.000307	0.00148	
32	0.070	0.050	0.000562	0.000350	0.00166	
33	0.070	0.050	0.000631	0.000394	0.00184	
34	0.070	0.050	0.000702	0.000435	0.00202	
35	0.070	0.050	0.000773	0.000475	0.00220	
36	0.070	0.050	0.000841	0.000514	0.00296	
37	0.070	0.050	0.000904	0.000554	0.00372	
38	0.070	0.040	0.000964	0.000598	0.00448	
39	0.070	0.040	0.001021	0.000648	0.00524	
40	0.070	0.040	0.001079	0.000706	0.00600	
41	0.070	0.040	0.001142	0.000774	0.00720	
42	0.070	0.040	0.001215	0.000852	0.00840	
43	0.070	0.030	0.001299	0.000937	0.00960	
44	0.070	0.030	0.001397	0.001029	0.01080	
45	0.070	0.030	0.001508	0.001124	0.01200	
46	0.070	0.030	0.001616	0.001223	0.01260	
47	0.070	0.030	0.001734	0.001326	0.01320	
48	0.070	0.030	0.001860	0.001434	0.01380	
49	0.070	0.030	0.001995	0.001550	0.01440	
50	0.070	0.030	0.002138	0.001676	0.01500	
51	0.070	0.030	0.002449	0.001852	0.01660	
52	0.070	0.030	0.002667	0.002018	0.01820	
53	0.070	0.030	0.002916	0.002207	0.01980	
54	0.070	0.030	0.003196	0.002424	0.02140	
55			0.003624	0.002717	0.02300	0.100
56			0.004200	0.003090	0.02440	0.100
57			0.004693	0.003478	0.02580	0.100
58			0.005273	0.003923	0.02720	0.100
59			0.005945	0.004441	0.02860	0.100
60			0.006747	0.005055	0.03000	0.250
61			0.007676	0.005814	0.02400	0.250
62			0.008757	0.006657	0.01800	0.250
63			0.010012	0.007648	0.01200	0.250
64			0.011280	0.008619	0.00600	0.250
65			0.012737	0.009706		0.250
66			0.014409	0.010954		0.250
67			0.016075	0.012163		0.250
68			0.017871	0.013445		0.250
69			0.019802	0.014860		0.250
70			0.022206	0.016742		1.000

* In addition, 100% are assumed to retire with 30 years of service before age 55.



TABLE 6
RATES OF ANTICIPATED SALARY INCREASES
(For Both Males and Females)

AGE	FY 2011	FY 2012-2013	FY 2014+
19	0	0.04625	0.0925
20	0	0.04625	0.0925
21	0	0.04625	0.0925
22	0	0.04625	0.0925
23	0	0.04625	0.0925
24	0	0.04625	0.0925
25	0	0.04125	0.0825
26	0	0.04125	0.0825
27	0	0.04125	0.0825
28	0	0.04125	0.0825
29	0	0.04125	0.0825
30	0	0.03125	0.0625
31	0	0.03125	0.0625
32	0	0.03125	0.0625
33	0	0.03125	0.0625
34	0	0.03125	0.0625
35	0	0.02875	0.0575
36	0	0.02875	0.0575
37	0	0.02875	0.0575
38	0	0.02875	0.0575
39	0	0.02875	0.0575
40	0	0.02725	0.0545
41	0	0.02725	0.0545
42	0	0.02725	0.0545
43	0	0.02725	0.0545
44	0	0.02725	0.0545
45	0	0.02725	0.0545
46	0	0.02725	0.0545
47	0	0.02725	0.0545
48	0	0.02725	0.0545
49	0	0.02725	0.0545
50	0	0.02725	0.0545
51	0	0.02725	0.0545
52	0	0.02725	0.0545
53	0	0.02725	0.0545
54	0	0.02725	0.0545
55	0	0.02725	0.0545
56	0	0.02725	0.0545
57	0	0.02725	0.0545
58	0	0.02725	0.0545
59	0	0.02725	0.0545
60	0	0.02725	0.0545
61	0	0.02725	0.0545
62	0	0.02725	0.0545
63	0	0.02725	0.0545
64	0	0.02725	0.0545
65	0	0.02725	0.0545
66	0	0.02725	0.0545
67	0	0.02725	0.0545
68	0	0.02725	0.0545
69	0	0.02725	0.0545
70	0	0.02725	0.0545



TABLE 7

**RATES OF MORTALITY FOR MEMBERS RETIRED ON ACCOUNT OF SERVICE
AND BENEFICIARIES OF DECEASED MEMBERS**

AGE	MALES	FEMALES	AGE	MALES	FEMALES
19	0.00033	0.00019	71	0.02457	0.01858
20	0.00035	0.00019	72	0.02728	0.02067
21	0.00036	0.00019	73	0.03039	0.02297
22	0.00037	0.00019	74	0.03390	0.02546
23	0.00037	0.00020	75	0.03783	0.02811
24	0.00038	0.00020	76	0.04217	0.03097
25	0.00038	0.00021	77	0.04691	0.03411
26	0.00038	0.00021	78	0.05212	0.03760
27	0.00038	0.00022	79	0.05793	0.04151
28	0.00039	0.00024	80	0.06437	0.04588
29	0.00041	0.00025	81	0.07204	0.05078
30	0.00044	0.00026	82	0.08049	0.05629
31	0.00050	0.00031	83	0.08972	0.06251
32	0.00056	0.00035	84	0.09978	0.06952
33	0.00063	0.00039	85	0.11076	0.07745
34	0.00070	0.00044	86	0.12280	0.08638
35	0.00077	0.00048	87	0.13604	0.09634
36	0.00084	0.00051	88	0.15059	0.10730
37	0.00090	0.00055	89	0.16642	0.11915
38	0.00096	0.00060	90	0.18341	0.13168
39	0.00102	0.00065	91	0.19977	0.14460
40	0.00108	0.00071	92	0.21661	0.15762
41	0.00114	0.00077	93	0.23366	0.17043
42	0.00122	0.00085	94	0.25069	0.18280
43	0.00130	0.00094	95	0.26749	0.19451
44	0.00140	0.00103	96	0.28391	0.20538
45	0.00151	0.00112	97	0.29985	0.21524
46	0.00162	0.00122	98	0.31530	0.22395
47	0.00173	0.00133	99	0.33021	0.23139
48	0.00186	0.00143	100	0.34456	0.23747
49	0.00200	0.00155	101	0.35863	0.24483
50	0.00214	0.00168	102	0.37169	0.25450
51	0.00245	0.00185	103	0.38304	0.26604
52	0.00267	0.00202	104	0.39200	0.27906
53	0.00292	0.00221	105	0.39789	0.29312
54	0.00320	0.00242	106	0.40000	0.30781
55	0.00362	0.00272	107	0.40000	0.32273
56	0.00420	0.00309	108	0.40000	0.33744
57	0.00469	0.00348	109	0.40000	0.35154
58	0.00527	0.00392	110	0.40000	0.36462
59	0.00595	0.00444	111	0.40000	0.37625
60	0.00675	0.00506	112	0.40000	0.38602
61	0.00768	0.00581	113	0.40000	0.39351
62	0.00876	0.00666	114	0.40000	0.39831
63	0.01001	0.00765	115	0.40000	0.40000
64	0.01128	0.00862	116	0.40000	0.40000
65	0.01274	0.00971	117	0.40000	0.40000
66	0.01441	0.01095	118	0.40000	0.40000
67	0.01608	0.01216	119	0.40000	0.40000
68	0.01787	0.01345	120	1.00000	1.00000
69	0.01980	0.01486			
70	0.02221	0.01674			



TABLE 8

RATES OF MORTALITY FOR MEMBERS RETIRED ON ACCOUNT OF DISABILITY

AGE	MALES	FEMALES	AGE	MALES	FEMALES
19	0	0	71	0.109372	0.037635
20	0	0	72	0.115544	0.040140
21	0.022571	0.007450	73	0.121877	0.042851
22	0.022571	0.007450	74	0.128343	0.045769
23	0.022571	0.007450	75	0.134923	0.048895
24	0.022571	0.007450	76	0.141603	0.052230
25	0.022571	0.007450	77	0.148374	0.055777
26	0.022571	0.007450	78	0.155235	0.059545
27	0.022571	0.007450	79	0.162186	0.063545
28	0.022571	0.007450	80	0.169233	0.067793
29	0.022571	0.007450	81	0.183408	0.072312
30	0.022571	0.007450	82	0.199769	0.077135
31	0.022571	0.007450	83	0.216605	0.082298
32	0.022571	0.007450	84	0.233662	0.087838
33	0.022571	0.007450	85	0.250693	0.093794
34	0.022571	0.007450	86	0.267491	0.100203
35	0.022571	0.007450	87	0.283905	0.107099
36	0.022571	0.007450	88	0.299852	0.114512
37	0.023847	0.007450	89	0.315296	0.122464
38	0.025124	0.007450	90	0.330207	0.130972
39	0.026404	0.007450	91	0.344556	0.140049
40	0.027687	0.007450	92	0.358628	0.149698
41	0.028975	0.007450	93	0.371685	0.159924
42	0.030268	0.007450	94	0.383040	0.170433
43	0.031563	0.007450	95	0.392003	0.182799
44	0.032859	0.007450	96	0.397886	0.194509
45	0.034152	0.007450	97	0.400000	0.205379
46	0.035442	0.007450	98	0.400000	0.215240
47	0.036732	0.008184	99	0.400000	0.223947
48	0.038026	0.008959	100	0.400000	0.231387
49	0.039334	0.009775	101	0.400000	0.237467
50	0.040668	0.010634	102	0.400000	0.244834
51	0.042042	0.011535	103	0.400000	0.254498
52	0.043474	0.012477	104	0.400000	0.266044
53	0.044981	0.013456	105	0.400000	0.279055
54	0.046584	0.014465	106	0.400000	0.293116
55	0.048307	0.015497	107	0.400000	0.307811
56	0.050174	0.016544	108	0.400000	0.322725
57	0.052213	0.017598	109	0.400000	0.337441
58	0.054450	0.018654	110	0.400000	0.351544
59	0.056909	0.019710	111	0.400000	0.364617
60	0.059613	0.020768	112	0.400000	0.376246
61	0.062583	0.021839	113	0.400000	0.386015
62	0.065841	0.022936	114	0.400000	0.393507
63	0.069405	0.024080	115	0.400000	0.398308
64	0.073292	0.025293	116	0.400000	0.400000
65	0.077512	0.026600	117	0.400000	0.400000
66	0.082067	0.028026	118	0.400000	0.400000
67	0.086951	0.029594	119	0.400000	0.400000
68	0.092149	0.031325	120	1.000000	1.000000
69	0.097640	0.033234			
70	0.103392	0.035335			