

**REPORT ON THE RESULTS OF AN  
EXPERIENCE STUDY OF THE  
TOWN OF MIDDLETOWN PENSION PLAN**

**COVERING THE PERIOD JULY 1, 2006 THROUGH JUNE 30, 2011**

March 28, 2012

Ms. Lynne Dible  
Finance Director  
Town Hall  
Town of Middletown  
350 East Main Road  
Middletown, Rhode Island 02840

Dear Lynne:

The results of our experience study of the Town of Middletown Pension Plan covering the five-year period ending June 30, 2011, are described in this report, along with our recommendations for changes in the present assumptions.

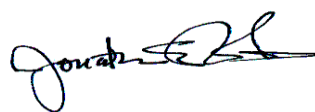
The Table of Contents, which immediately follows, outlines the information contained in this report.

To the best of our knowledge, this experience investigation report is complete and accurate. The experience investigation was prepared under the supervision of Jonathan Chipko, a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. Mr. Chipko has met the Qualification Standards of the American Academy of Actuaries to render actuarial opinions on the subject matter contained herein. Jonathan E. Dobbs, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries, assisted in the development of the findings in this report.

Respectfully submitted,



Jonathan Chipko, F.S.A., E.A., M.A.A.A., F.C.A.  
Senior Consultant, Retirement Actuary



Jonathan E. Dobbs, A.S.A., E.A., M.A.A.A.  
Director, Retirement Actuary

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## I. INTRODUCTION

In order to accumulate funds to pay retirement benefits on a reasonable and relatively stable basis, the actuary prepares annual valuations of the Plan's assets and liabilities to measure the funded status and to ensure that funding is progressing at a rate that is adequate to meet the Plan's obligations.

The primary purposes of funding are to equitably allocate costs between generations of taxpayers and to provide security to members, who view the funds set aside as assurance that their benefits will be paid.

While the ultimate cost of the Plan is not determinable until all benefits are paid and expenses provided for, each actuarial valuation attempts to estimate costs based on assumptions selected to predict, as accurately as possible, future experience in order to produce stable contribution amounts.

Overly conservative or aggressive assumptions will result in actuarial gains or losses each year. When translated into contributions, this will result in decreasing or increasing contribution amounts and an inequitable allocation of costs.

The major actuarial assumptions are:

- (a) Active service demographic assumptions,
- (b) Compensation increase assumptions,
- (c) Postretirement mortality rates, and
- (d) Interest rate.

Before presenting our analysis of the Plan's experience and discussion of the proposed assumptions, it is important to outline considerations that should govern the selection of actuarial assumptions. The recommendations of the American Academy of Actuaries are as follows:

- (i) The actuarial assumptions selected should reflect the actuary's best judgment of future events. They should take into account actual experience to the extent possible, but they should also reflect long-term future trends rather than give undue weight to recent past experience.
- (ii) The actuary should consider the impact of inflation in selecting the actuarial assumptions to be used.
- (iii) The actuary should give consideration to the reasonableness of each actuarial assumption independently as well as the combined impact of all the assumptions.
- (iv) The actuary should give careful attention to changes in plan design that may significantly alter expected future experience. For example, a liberalization of early retirement benefits may make advisable a revision in the retirement assumption.
- (v) The actuary, in choosing assumptions, should take into account general or specific information available from other sources, including the plan sponsor, plan administrator, investment managers, accountants, economists, etc.

Likewise, according to Actuarial Standard of Practice No. 4 (ASOP 4), "when selecting an actuarial cost method or an amortization method, the actuary should consider factors such as the timing and duration of expected benefit payments and the nature and frequency of plan amendments. In addition, the actuary should consider

relevant input received from the principal, such as a desire for stable or predictable costs or contributions, or a desire to achieve a target funding level within a specified time frame.”

The purpose of this Report is to provide the information necessary to decide on the appropriate assumptions and methods to be used in future valuations. It should be noted that these decisions cannot be made in a vacuum but must reflect the present and expected situation within the Town, the State and the Plan.

The balance of this Report deals in detail with the various assumptions and methods. In each area we have made recommendations as to what we believe are appropriate assumptions and methods. These recommendations reflect our best estimate of the likely future experience based on:

- (a) the recent past experience,
- (b) the general economic views prevailing at this time, and
- (c) anticipated trends.

This report was prepared in accordance with Actuarial Standards of Practice No. 4 (ASOP 4), No. 27 (ASOP 27), No. 35 (ASOP 35) and No. 44 (ASOP 44). ASOP 4 provides guidance on actuarial cost methods. ASOP 27 provides guidance to actuaries in selecting economic assumptions (including discount rate and compensation scale) for measuring obligations under defined benefit pension plans. ASOP 35 provides guidance in selecting demographic and other noneconomic assumptions (including, but not limited to, retirement, mortality and mortality improvement, termination of employment and disability) for measuring obligations under defined benefit plans. ASOP 44 provides guidance in selecting an asset valuation method for purposes of a defined benefit pension plan actuarial valuation.

## II. ACTIVE SERVICE DEMOGRAPHIC ASSUMPTIONS

The active service demographic assumptions include rates of:

- (a) Termination,
- (b) Disability,
- (c) Death before retirement, and
- (d) Retirement.

Our review of active service demographic assumptions is based on the actuarial valuation data for the Plan. Since the Plan covers different departments within the Town, each with its own set of benefit provisions, we review experience separately by department. These departments include the Fire Department, Police Department, Public Works, and Town Hall.

The basis for analysis of the Plan's experience is a comparison of the actual number of separations from service under each category with those expected based on the assumptions currently in use.

The expected number of separations from service are calculated by multiplying the various rates of separation by the number of individuals exposed to each respective event. For example, active Public Works members age 40 with 10 years of credited service would be exposed to the probabilities of withdrawal, death and disability. Fire Department members age 50 with 20 years of service would be exposed to death, disability and retirement.

Numerical summaries of the Plan's experience from July 1, 2006, through June 30, 2011 are presented in Appendix I. The tables show the exposures to each event and the ratios of the actual experience of the Plan as compared to that anticipated by the present actuarial assumptions. The results are shown separately by assumption and, where appropriate, by sex.

The ratios of actual to expected experience indicate the extent of deviation from the assumptions. A ratio of 1.0 would mean the experience has been exactly as anticipated. If the ratio of actual to expected is greater than 1.0, then the assumption tables have underestimated actual experience. If the ratio is less than 1.0, then the assumption tables have overstated actual experience.

As an aid in analyzing these results, we have also prepared a series of graphs, which present the statistical data summarized in Appendix I in visual form. Our comments will refer to these graphs, which immediately follow each of the following subsections. The graphs omit age ranges with no exposures.

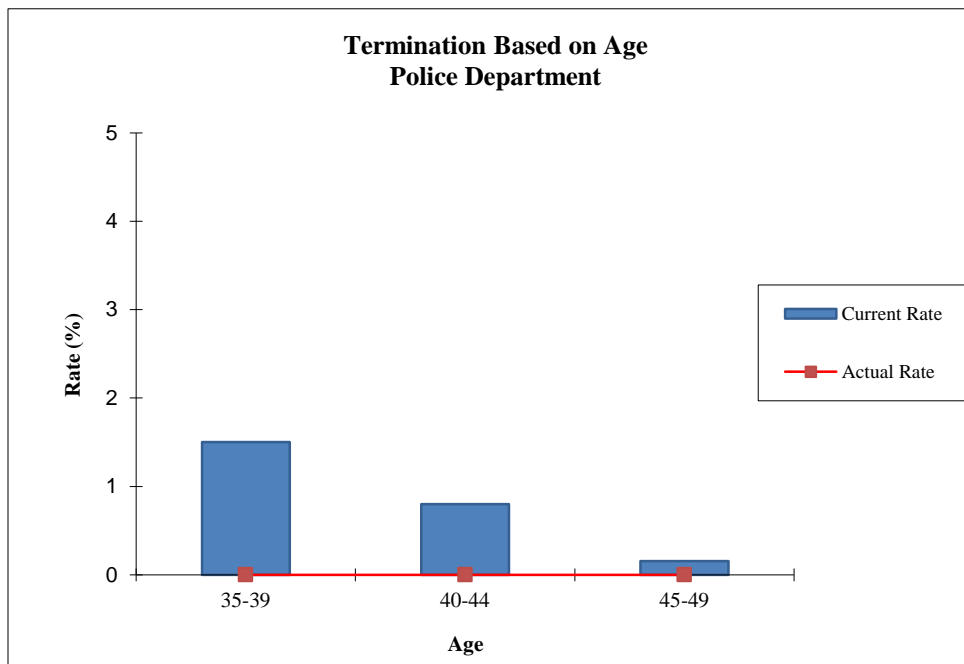
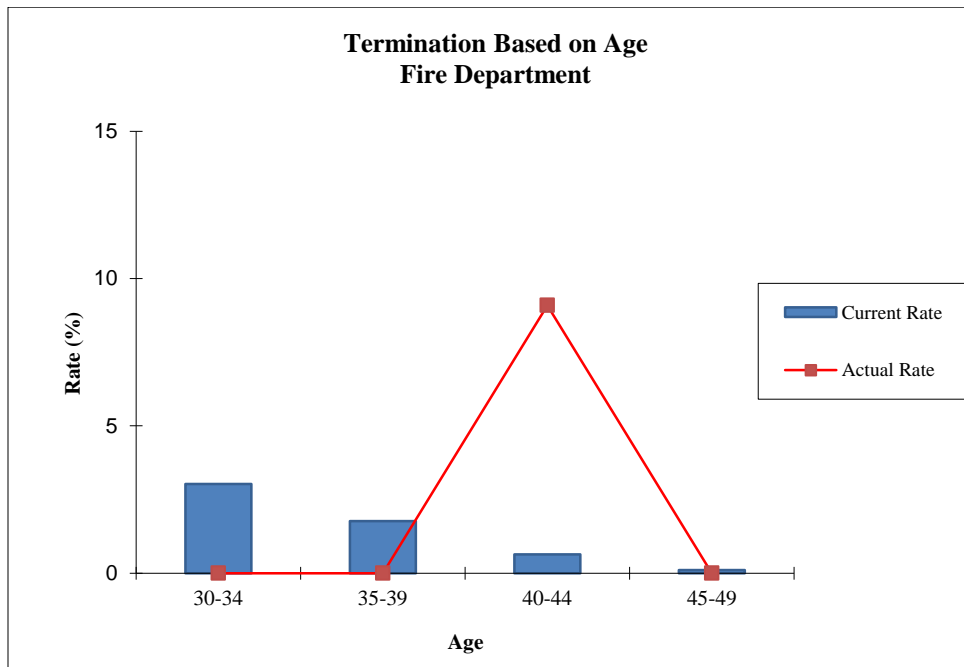
### Termination

The graphs that follow present the vesting experience separately for each department. The financial impact on the funding of the Plan of this experience is relatively minor due to the number of exposures to this event.

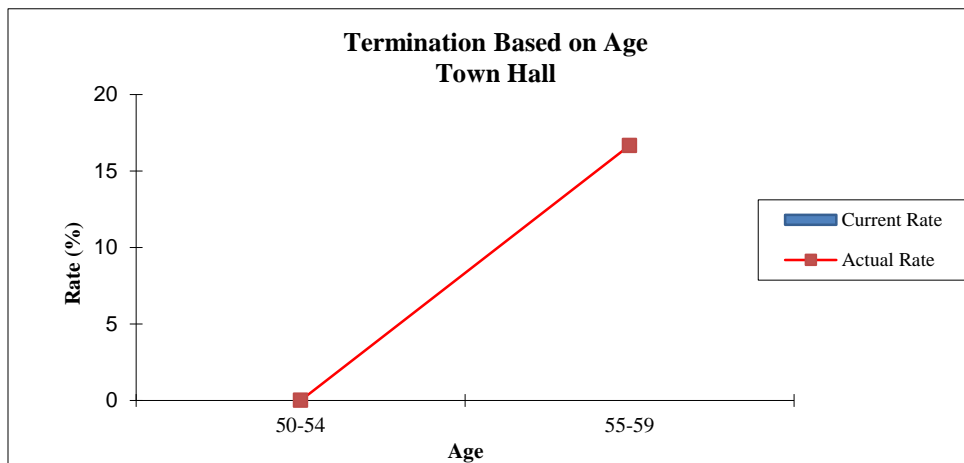
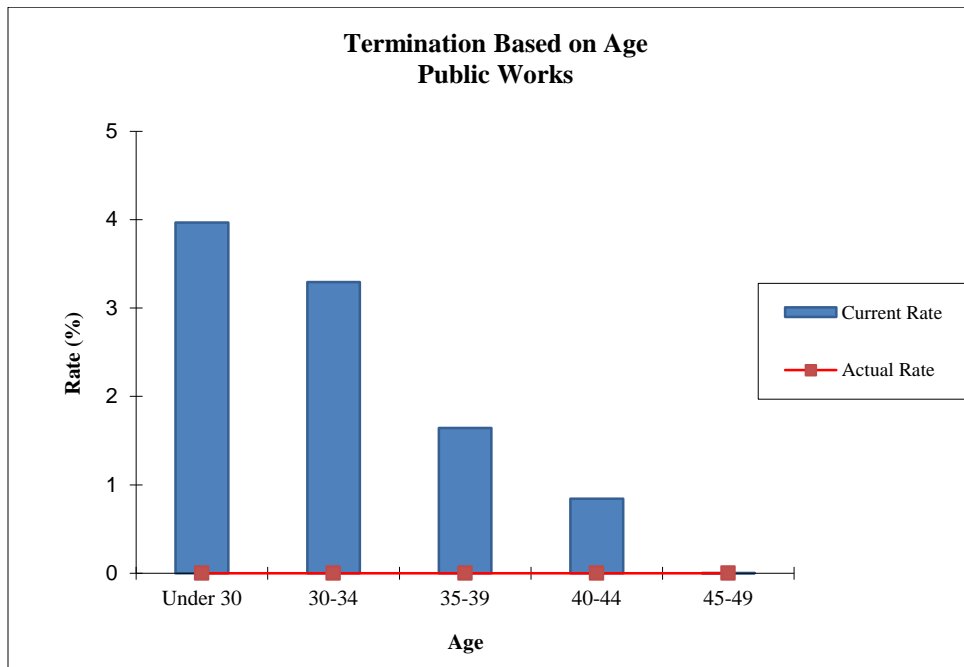
Very little turnover was anticipated, and very little was experienced during the five-year period. Only two individuals terminated for reasons other than retirement, disability, or death. Under the valuation assumptions, we assumed one. We do not recommend any change in the assumed termination rates at this time, as the exposures along with both the expected and actual numbers of participants terminating are rather small.

The graphs presented on pages 4 through 5 show the current and actual rates separately for each department.

## Active Service Experience - Terminations July 1, 2006 through June 30, 2011



## Active Service Experience - Terminations July 1, 2006 through June 30, 2011 (continued)





### Disability and Death

The graphs that follow show the incidence of disability and active service mortality. The financial impact on the funding of the Plan of this experience is relatively minor. It should be noted that the low incidence of actual deaths and disabilities makes this experience susceptible to rather large fluctuations from year to year.

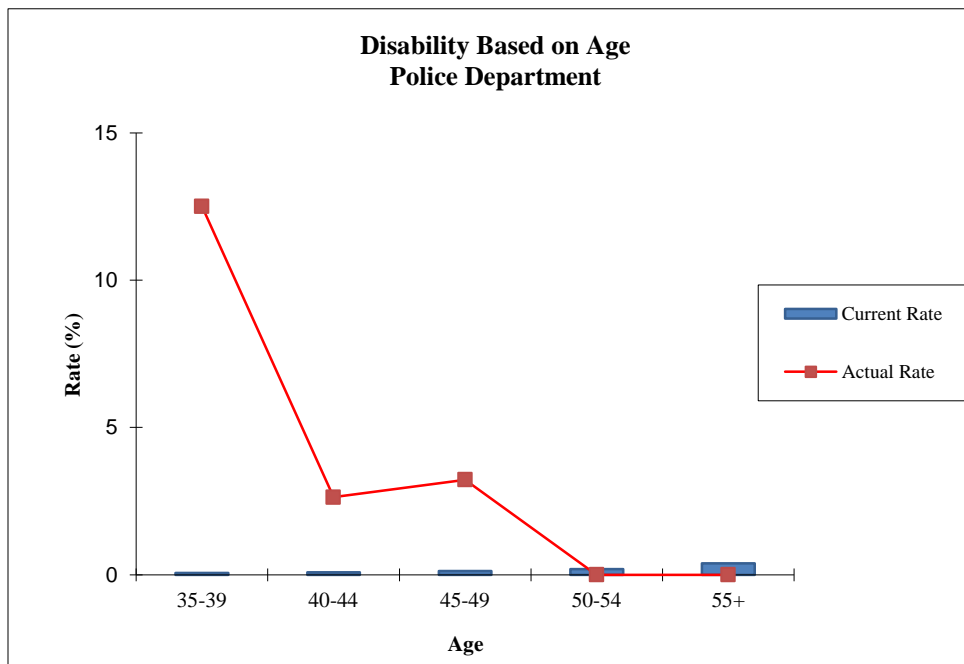
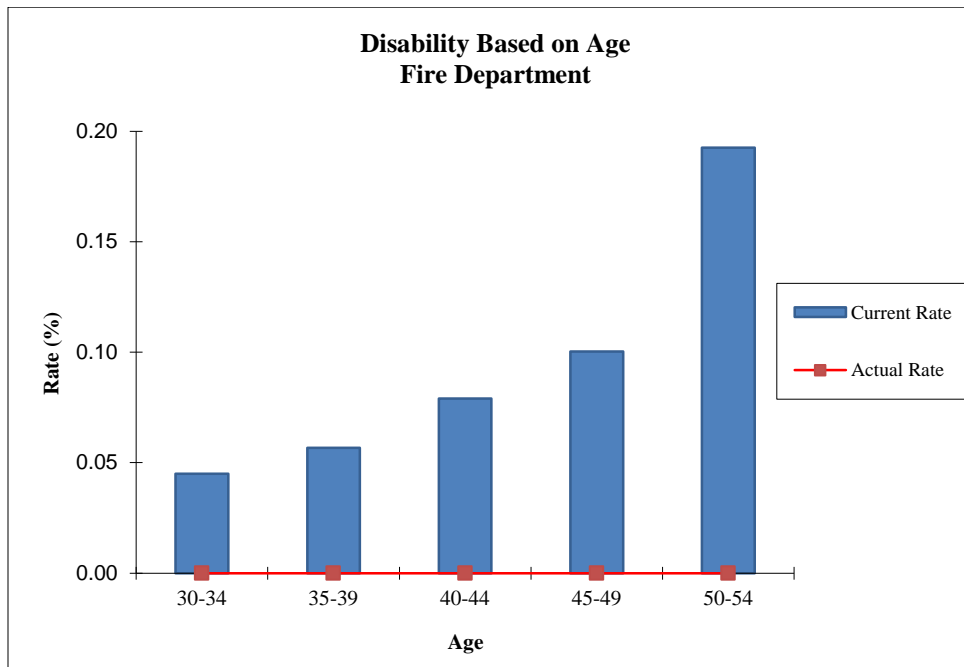
During the five-year period, there were three actual disability retirements compared to less than one expected disability retirement. However, we do not recommend any change in the assumed disability rates at this time, as the exposures along with both the expected and actual numbers of participants becoming disabled are rather small.

There were no deaths from active status in the five-year period. This is within an acceptable range, as the numbers of both expected and actual deaths are too small to form any conclusions.

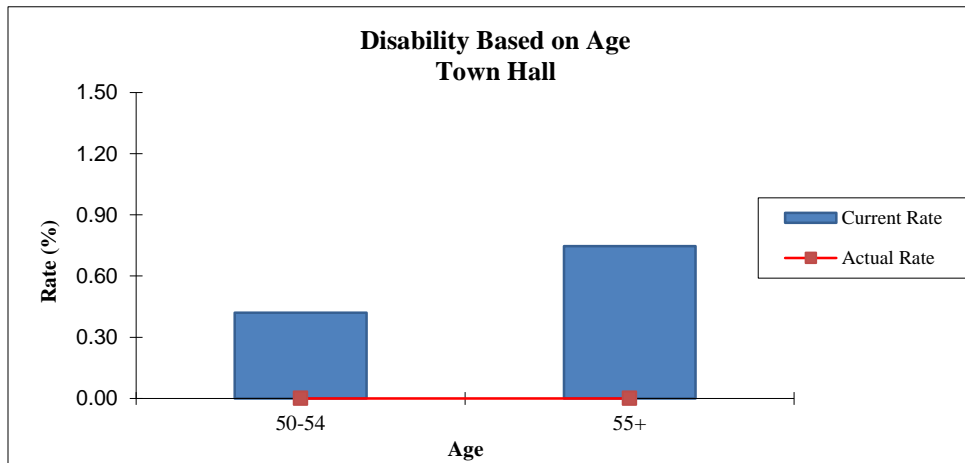
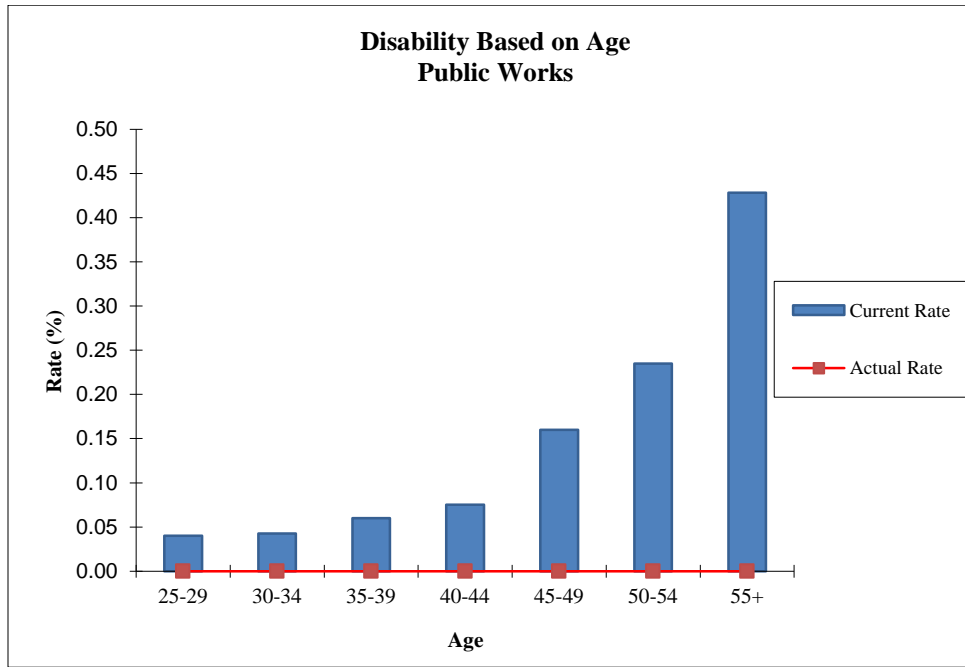
The current assumption is similar to tables used by many private sector plans for funding purposes. This table is based on RP-2000 Combined Mortality and reflects future improvement by projecting annuitant mortality to seven years beyond the valuation date and non-annuitant mortality to 15 years beyond the valuation date. In order to better reflect anticipated mortality improvements, we recommend the continued use of the RP-2000 Combined Mortality table as a basis for the preretirement mortality rates, but with a generational, instead of a static, projection. For a further discussion of generational mortality projections, see the analysis of the postretirement mortality assumption.

We recommend the use of projection scale AA in the projection of the mortality tables.

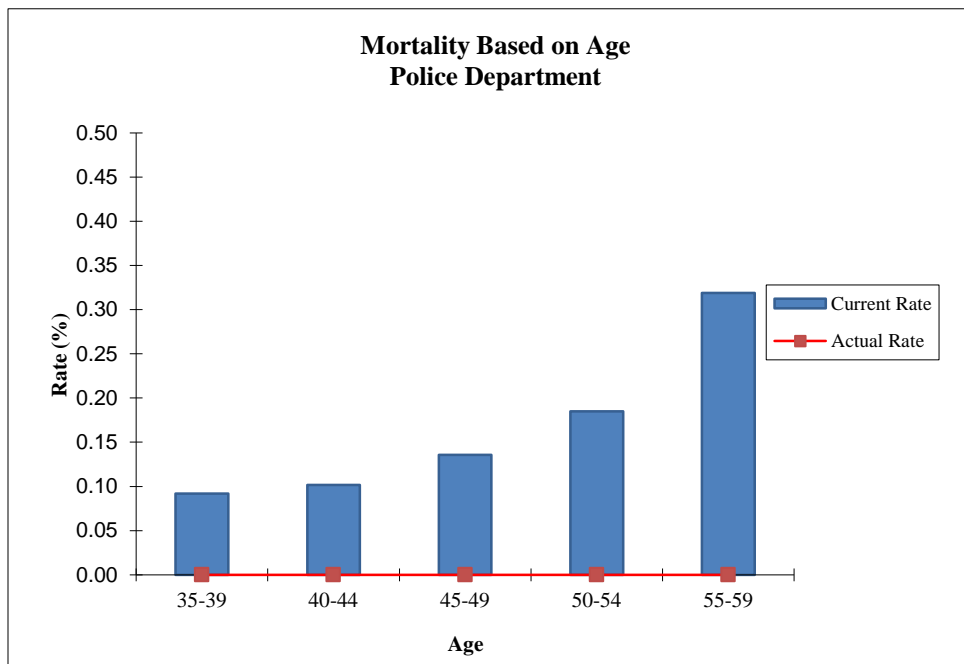
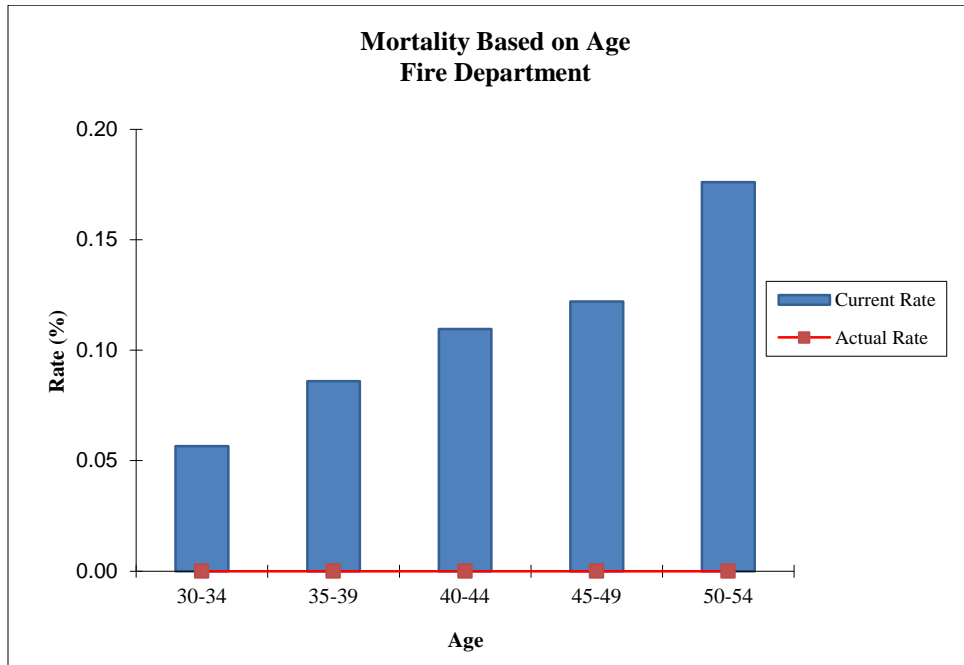
## Active Service Experience - Disability Retirements July 1, 2006 through June 30, 2011



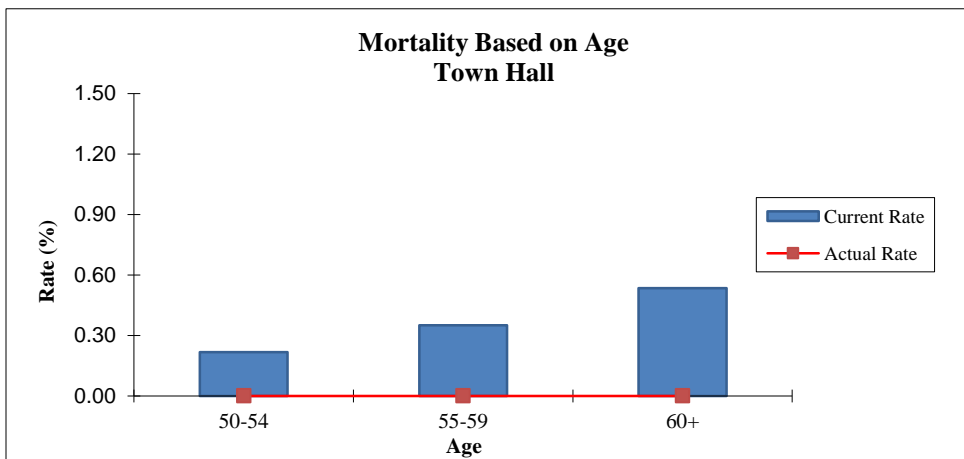
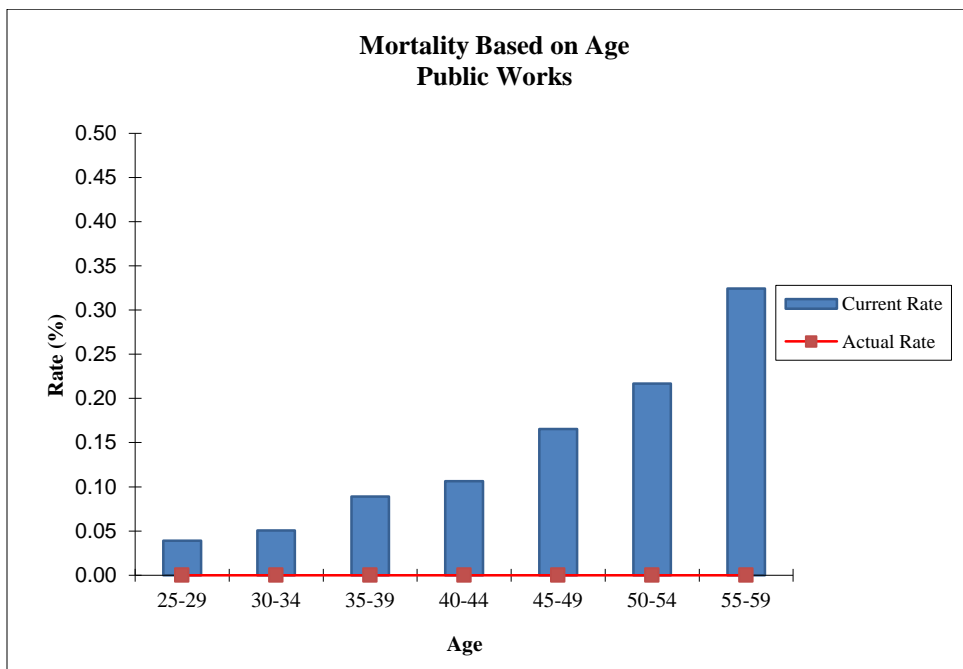
## Active Service Experience - Disability Retirements July 1, 2006 through June 30, 2011 (continued)



## Active Service Experience - Deaths July 1, 2006 through June 30, 2011



## Active Service Experience - Deaths July 1, 2006 through June 30, 2011 (continued)

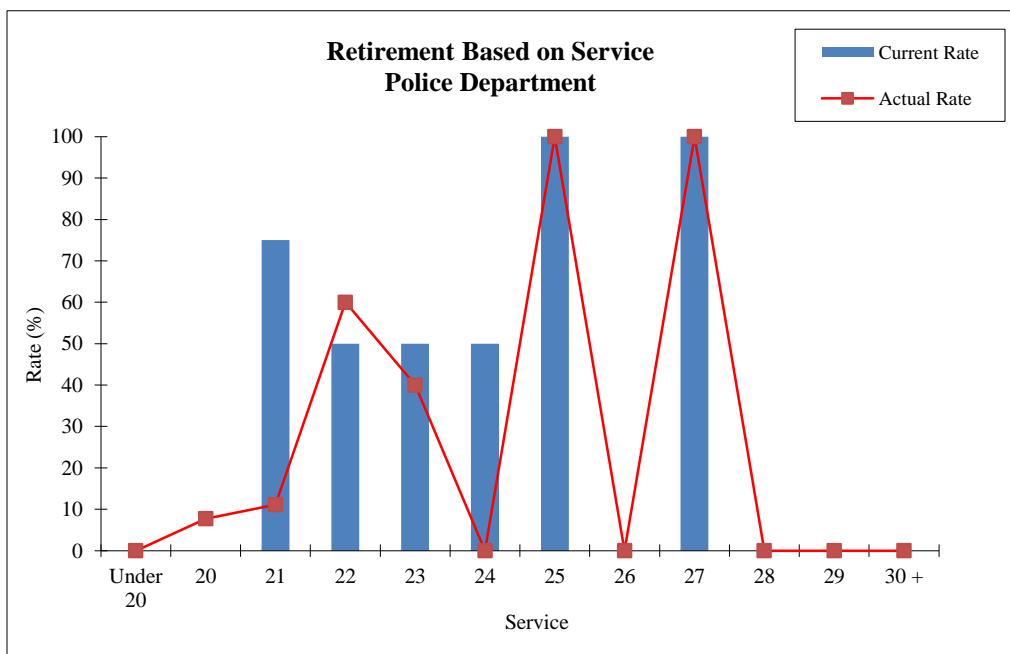
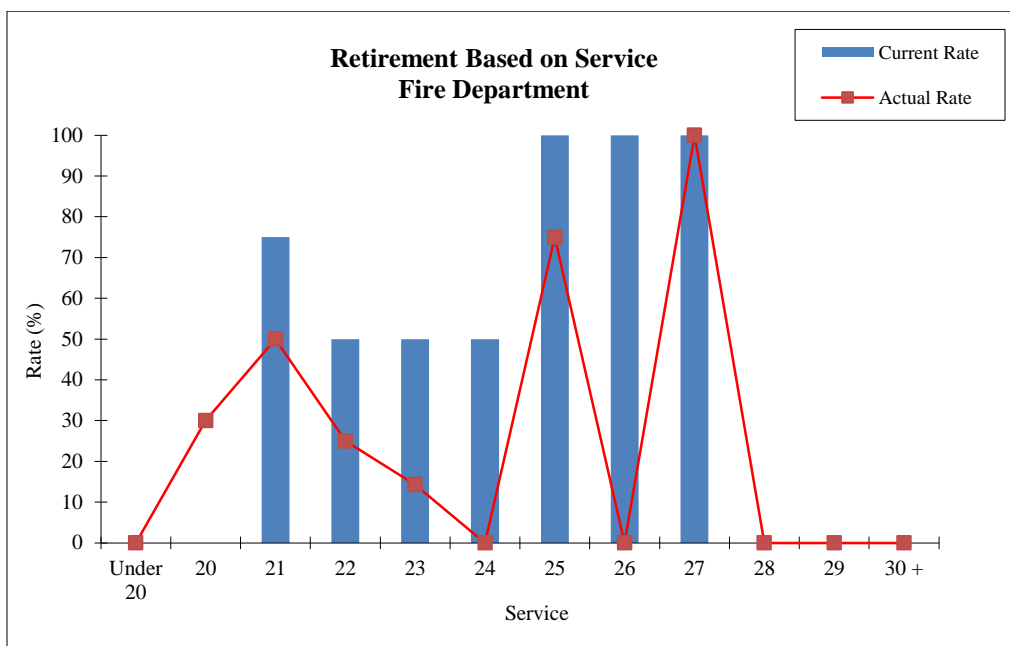


### Service Retirement

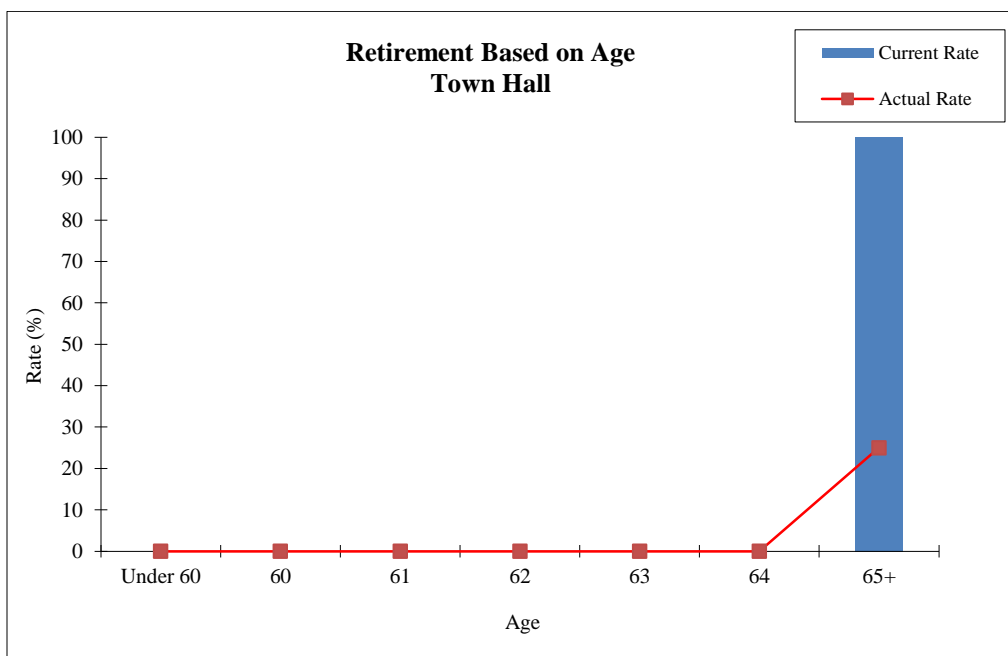
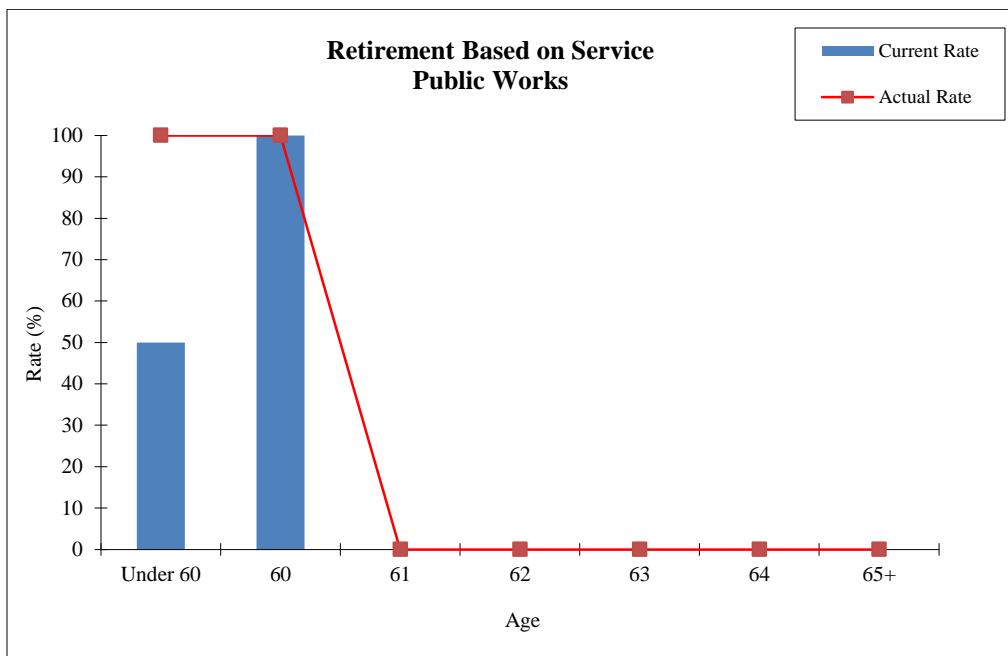
For the Police and Fire departments, retirements are related to service rather than age. The graphs on pages 12 and 13 show that the number of actual retirements fell at or under the expected values for most years of service. A notable exception was at 20 years of service. The current rates assume that no Police or Fire members retire with 20 years of service despite members attaining retirement eligibility in that year. During the five-year period, there were four actual retirements from the Police and Fire departments versus 23 exposures. We recommend an increase in the retirement rate to 25% at 20 years of service. Additionally, we recommend a decrease in the retirement rate at 21 years of service from 75% to 50%. Such a change is consistent with actual experience. No other changes are recommended.

For the Public Works department and the Town Hall, members are assumed to retire at first eligibility for unreduced retirement. In the Public Works department, there were three retirements when two were expected. The only member eligible for a reduced benefit retired immediately upon attaining the required age and service. For the Town Hall, there was one actual retirement compared to four expected retirements. The one actual retirement terminated after the assumed retirement age. We do not recommend any change in the assumed retirement rates for Public Works or Town Hall at this time, as the actual experience is within a reasonable range relative to the number of exposures.

## Active Service Experience - Service Retirements July 1, 2006 through June 30, 2011



## Active Service Experience - Service Retirements July 1, 2006 through June 30, 2011 (continued)





### III. POSTRETIREMENT MORTALITY RATES

A review of the statistics with regard to postretirement mortality, which are summarized in Table 5 of Appendix I, reveals that retired individuals are living about as expected. There were more deaths than expected among beneficiaries of current retirees, but the actual experience is within a reasonable range relative to the number of exposures.

The current assumption is similar to tables used by many private sector plans for funding purposes. This table is based on RP-2000 Combined Mortality and reflects future improvement by projecting annuitant mortality to seven years beyond the valuation date and non-annuitant mortality to 15 years beyond the valuation date. In order to better reflect anticipated mortality improvements, we recommend the continued use of the RP-2000 Combined Mortality table as a basis for the postretirement mortality rates, but with a generational, instead of a static, projection beyond the measurement date.

The projection of mortality improvements on a generational basis results in a separate table for each year of birth. The rates of mortality decrease as the year of birth increases. For example, a participant born in 1960 will have a higher rate of mortality at each age than a participant born in 1965. The mortality table for birth year 1965 will have five more years of mortality improvement than the table for birth year 1960.

To create this dynamic mortality table, we use the RP-2000 Combine Mortality table projected to the measurement date as the base mortality table that represents the current experience of the plan. Each year after the measurement date, this base table will be projected with an additional year of improvement. The resulting generational mortality table will better reflect expected future mortality improvements compared to a static table and should decrease the losses experienced by the plan over time.

We recommend the use of projection scale AA in the projection of the mortality tables.

The following chart demonstrates the impact of the generational mortality improvement. It compares the expected age at death for members of various ages before and after incorporating the recommended changes to the mortality projections. The table below shows the impact of the change in the mortality assumption on the expected age at death for a healthy male retiree. The impact for a female retiree would be similar.

Age at July 1, 2011	Expected Age at Death	
	Current Mortality Assumption with Static Mortality Improvement	Recommended Mortality Assumption with Generational Mortality Improvement
50	82.58	83.95
55	82.86	83.83
60	83.30	83.92
65	84.02	84.33

The current mortality tables for disabled retirees are the same as the healthy retiree tables but set forward ten years. We recommend the continued use of the same base mortality tables as for healthy retirees, RP-2000 Combined, but with a ten-year set forward. As with the mortality assumption for healthy retirees, we recommend projecting the base mortality tables for disabled retirees to the measurement date and beyond using generational improvements. Again, we recommend the use of projection scale AA for this purpose.

#### **IV. ECONOMIC ASSUMPTIONS**

Economic assumptions include:

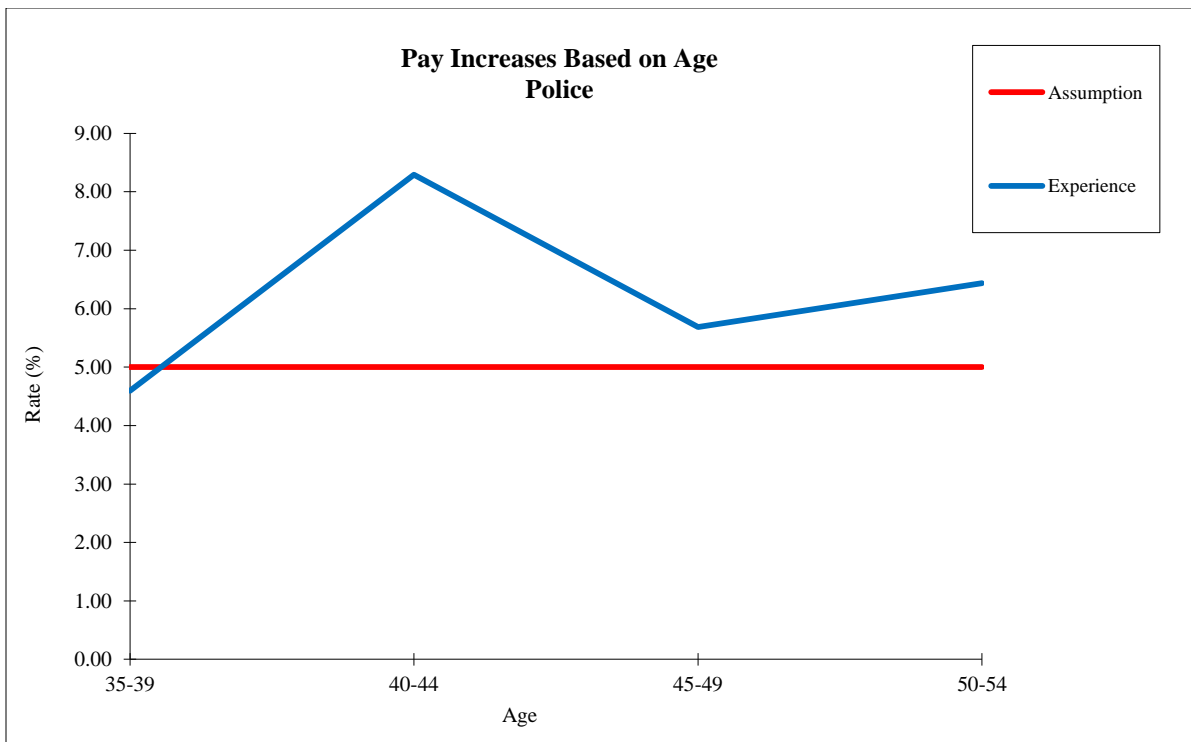
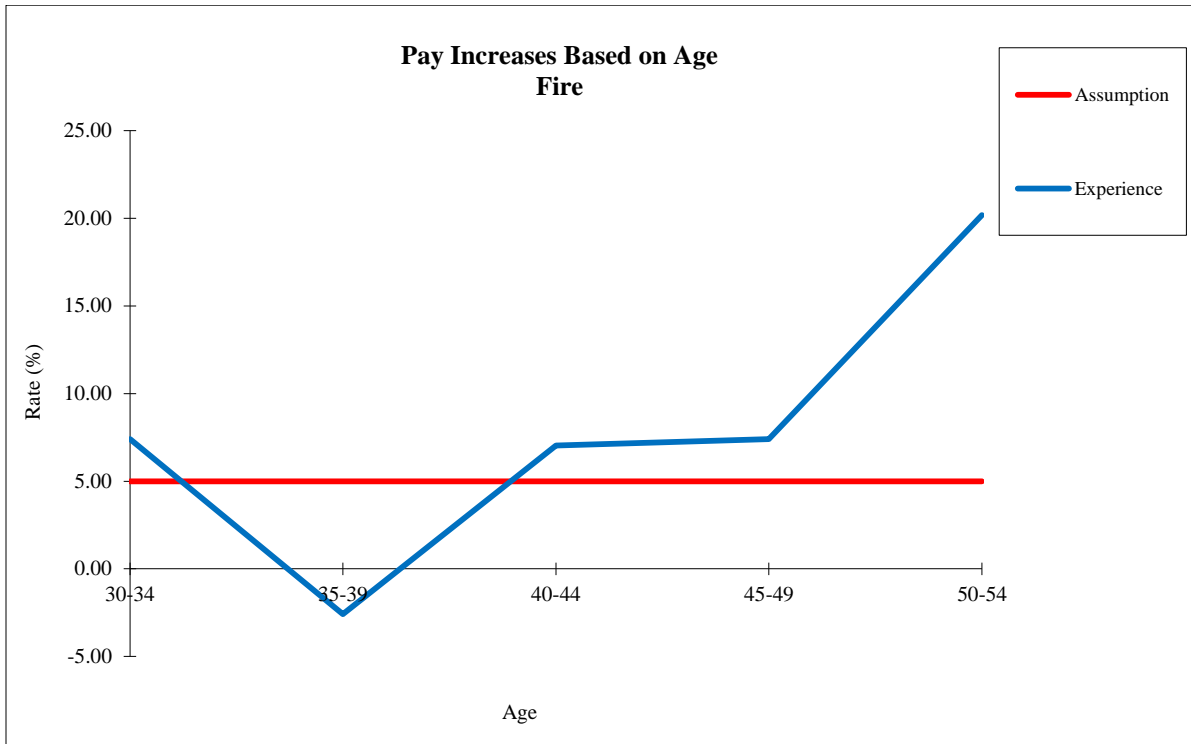
- (a) rates of compensation increase, and
- (b) investment income.

##### **Compensation Increases**

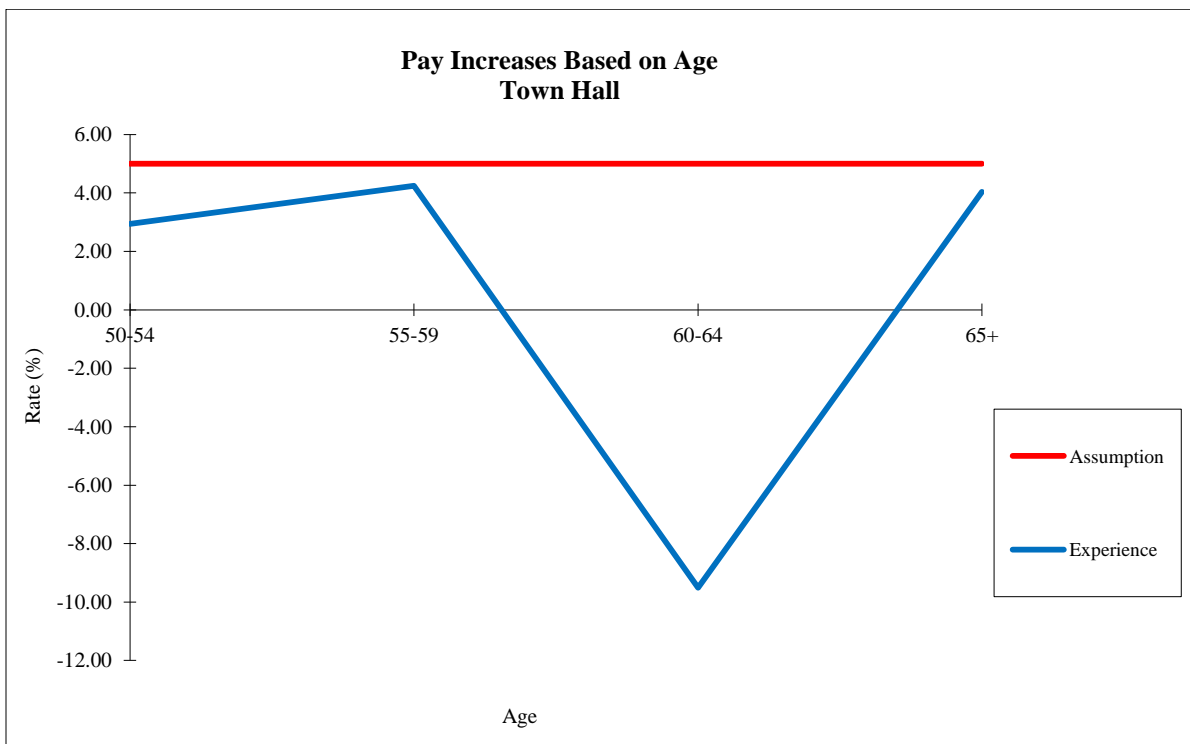
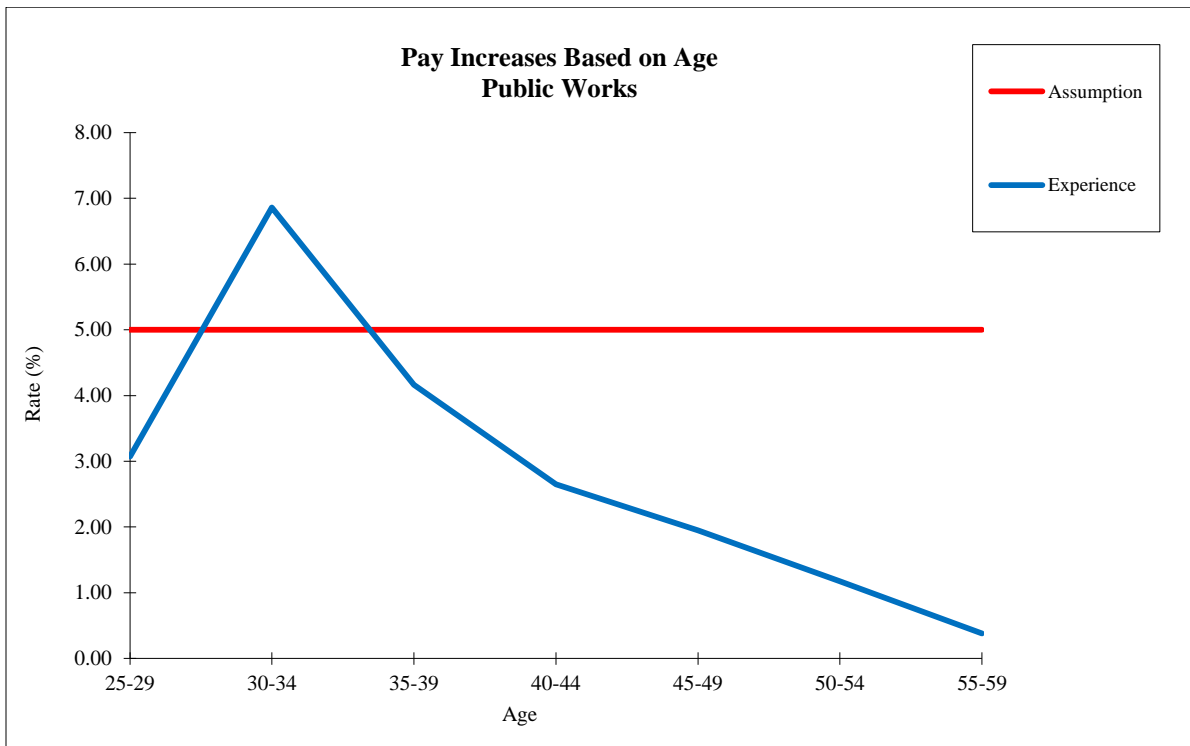
Currently a single compensation scale of 5.0% is used.

The graphs on pages 16 and 17 set forth the levels of compensation increase during the five-year period for all departments. These results include both merit-promotion increases and inflationary increases. The graph shows that compensation increases for the Fire Department, and to a lesser extent Police, have exceeded expectations. However, for the Public Works and Town Hall, compensation increases have been lower than those expected. A summary of actual and expected salaries is shown in Table 6. In aggregate, given the relatively small amount of salary exposed to this assumption, the actual salaries are within an acceptable range of the expected salaries. We recommend no changes to the salary increase assumptions at this time.

## Active Service Experience - Salary Experience July 1, 2006 through June 30, 2011



## Active Service Experience - Salary Experience July 1, 2006 through June 30, 2011 (continued)



### Interest Rate

The current valuation interest rate assumption used in the funding of the Plan is 7.50% per year. Our analysis confirmed that this assumption of 7.50% remains reasonable relative to the current asset allocation. We do not recommend a change to the valuation interest assumption at this time.

The valuation interest rate was determined through a forecast of the expected return of the plan's assets over the next 30 years. Forecast values were generated using the GEMS Economic Scenario Generator, which Buck leases from Conning and Company. The GEMS model is a multifactor economic model that uses basic macroeconomic variables (GDP growth, employment levels, expected and actual inflation) to generate simulations of the economy over the period. A total of 1,000 stochastic forecast paths were generated, and the simulated geometric mean portfolio return (based on the plan's current asset allocation) over 30 years was computed on each path. The valuation interest rate is based on the average return computed on these 1,000 paths, rounded to the nearest half percent.

The above analysis was based on the following planned asset allocation for the Plan as of January 2012:

<b>Asset Type</b>		<b>Target Percentage of Total Assets</b>
<b>Domestic Equity</b>	US Large Cap	38.21%
	US Mid Cap	3.33%
	US Small Cap	3.32%
	<b>Total Domestic Equity</b>	<b>44.86%</b>
<b>International Equity</b>	International Developed Markets	15.41%
	International Emerging Markets	0.51%
	<b>Total International Equity</b>	<b>15.92%</b>
<b>Domestic Fixed Income</b>	US Investment Grade Fixed Income	34.52%
	<b>Total Domestic Fixed Income</b>	<b>34.52%</b>
<b>Cash</b>	<b>Total Cash</b>	<b>4.70%</b>
<b>Total</b>		<b>100.00%</b>

This asset allocation is within the permissible ranges set forth in the Plan's Investment Policy Statement and shown below.

<b>Asset Type</b>	<b>Permissible Range</b>
Domestic Equity	40% to 60%
International Equity	0% to 20%
Domestic Fixed Income	30% to 60%
Cash	0% to 10%

Any changes to the planned asset allocation may change the reasonability of the recommended valuation interest rate.

## **V. FUNDING AND ASSET METHODS**

The Plan currently utilizes the entry age normal cost method. The actuarial present value of projected benefits of each individual is allocated on a level basis over the covered salary of the individual between date of hire and assumed date they cease active employment. The portion of this actuarial present value not provided for at the valuation date by the actuarial present value of future entry age normal cost is called the accrued liability. The entry age normal cost method is appropriate for the Town's funding objectives and is commonly used in the public arena. We do not recommend any changes to the cost method at this time.

As of July 1, 2011 valuation, the Plan's unfunded accrued liability is amortized over a closed six-year period. Such an amortization method is appropriate given the Plan's status and the Town's funding objectives. We do not recommend any changes to the amortization method at this time.

The actuarial value of assets is determined using a method that spreads over a period of five years the difference between the actual investment income and the expected income (based on the valuation interest rate applied to the prior year's market value of assets). The resulting value is constrained to a corridor of 80% to 120% of market value. This asset method is appropriate for the Town's funding objections. We do not recommend any changes to the asset method at this time.

## **VI. COST ANALYSIS AND CONCLUSIONS**

To assist in selecting and approving the final package of valuation assumptions to be used prospectively from July 1, 2011, we have recalculated the results of the valuation of the Plan as of July 1, 2011, to reflect the potential impact of the recommended assumptions.

Based on the revised assumptions, the recommended employer contribution as of July 1, 2011 would have increased from \$3,240,416 to \$3,305,175. These results are summarized in Appendix III.

We look forward to discussing the results of this experience investigation prior to the preparation of the July 1, 2012, valuation of the Plan.

**APPENDIX I**

**ACTUAL AND EXPECTED EXPERIENCE**



**TABLE 1**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**  
**TERMINATIONS**

	FIRE DEPARTMENT			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	4	0	0.12	0.000
35-39	3	0	0.05	0.000
40-44	11	1	0.07	14.286
45-49	7	0	0.01	0.000
50-54	1	0	0.00	0.000
55 and over	0	0	0.00	0.000
Total	26	1	0.25	4.000

	POLICE DEPARTMENT			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	0	0	0.00	0.000
35-39	8	0	0.12	0.000
40-44	20	0	0.16	0.000
45-49	7	0	0.01	0.000
50-54	0	0	0.00	0.000
55 and over	0	0	0.00	0.000
Total	35	0	0.29	0.000

**TABLE 1**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**  
**TERMINATIONS (Continued)**

	PUBLIC WORKS			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	1	0	0.04	0.000
30-34	4	0	0.13	0.000
35-39	10	0	0.16	0.000
40-44	15	0	0.13	0.000
45-49	1	0	0.00	0.000
50-54	9	0	0.00	0.000
55 and over	4	0	0.00	0.000
Total	44	0	0.46	0.000

	TOWN HALL			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	0	0	0.00	0.000
35-39	0	0	0.00	0.000
40-44	0	0	0.00	0.000
45-49	0	0	0.00	0.000
50-54	1	0	0.00	0.000
55 and over	6	1	0.00	0.000
Total	7	1	0.00	0.000

**TABLE 2**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**  
**DISABILITY RETIREMENTS**

	FIRE DEPARTMENT			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	4	0	0.00	0.000
35-39	3	0	0.00	0.000
40-44	20	0	0.02	0.000
45-49	35	0	0.04	0.000
50-54	16	0	0.03	0.000
55 and over	2	0	0.00	0.000
Total	80	0	0.09	0.000

	POLICE DEPARTMENT			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	0	0	0.00	0.000
35-39	8	1	0.00	0.000
40-44	38	1	0.03	33.333
45-49	31	1	0.04	25.000
50-54	9	0	0.02	0.000
55 and over	2	0	0.01	0.000
Total	88	3	0.10	30.000

**TABLE 2**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**

**DISABILITY RETIREMENTS (Continued)**

	PUBLIC WORKS			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	1	0	0.00	0.000
30-34	4	0	0.00	0.000
35-39	10	0	0.01	0.000
40-44	15	0	0.01	0.000
45-49	1	0	0.00	0.000
50-54	10	0	0.02	0.000
55 and over	6	0	0.02	0.000
Total	47	0	0.06	0.000

	TOWN HALL			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	0	0	0.00	0.000
35-39	0	0	0.00	0.000
40-44	0	0	0.00	0.000
45-49	0	0	0.00	0.000
50-54	1	0	0.00	0.000
55 and over	15	0	0.11	0.000
Total	16	0	0.11	0.000

**TABLE 3**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**  
**DEATHS**

	FIRE DEPARTMENT			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	4	0	0.00	0.000
35-39	3	0	0.00	0.000
40-44	20	0	0.02	0.000
45-49	35	0	0.04	0.000
50-54	16	0	0.03	0.000
55 and over	2	0	0.00	0.000
Total	80	0	0.09	0.000

	POLICE DEPARTMENT			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	0	0	0.00	0.000
35-39	8	0	0.01	0.000
40-44	38	0	0.04	0.000
45-49	31	0	0.04	0.000
50-54	9	0	0.02	0.000
55 and over	2	0	0.01	0.000
Total	88	0	0.12	0.000

**TABLE 3**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**  
**DEATHS (Continued)**

	PUBLIC WORKS			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	1	0	0.00	0.000
30-34	4	0	0.00	0.000
35-39	10	0	0.01	0.000
40-44	15	0	0.02	0.000
45-49	1	0	0.00	0.000
50-54	10	0	0.02	0.000
55 and over	6	0	0.02	0.000
Total	47	0	0.07	0.000

	TOWN HALL			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0.00	0.000
25-29	0	0	0.00	0.000
30-34	0	0	0.00	0.000
35-39	0	0	0.00	0.000
40-44	0	0	0.00	0.000
45-49	0	0	0.00	0.000
50-54	1	0	0.00	0.000
55 and over	15	0	0.04	0.000
Total	16	0	0.04	0.000

**TABLE 4**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**  
**SERVICE RETIREMENTS**

	FIRE DEPARTMENT			
Service of Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 20	7	0	0.00	0.000
20	10	3	0.00	0.000
21	8	4	6.00	0.667
22	4	1	2.00	0.500
23	7	1	3.50	0.286
24	7	0	3.50	0.000
25	8	6	8.00	0.750
26	1	0	1.00	0.000
27	2	2	2.00	1.000
28 and over	0	0	0.00	0.000
Total	54	17	26.00	0.654

	POLICE DEPARTMENT			
Service of Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 20	10	0	0.00	0.000
20	13	1	0.00	0.000
21	9	1	6.75	0.148
22	10	6	5.00	1.200
23	5	2	2.50	0.800
24	3	0	1.50	0.000
25	2	2	2.00	1.000
26	0	0	0.00	0.000
27	1	1	1.00	1.000
28 and over	0	0	0.00	0.000
Total	53	13	18.75	0.693

**TABLE 4**  
**COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS**  
**FROM ACTIVE SERVICE**

**SERVICE RETIREMENTS (Continued)**

	PUBLIC WORKS			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 60	2	2	1.00	2.000
60	1	1	1.00	1.000
61	0	0	0.00	0.000
62	0	0	0.00	0.000
63	0	0	0.00	0.000
64	0	0	0.00	0.000
65 and over	0	0	0.00	0.000
Total	3	3	2.00	1.500

	TOWN HALL			
Age Group	Exposed	Actual	Expected	Ratio of Actual To Expected
Under 60	1	0	0.00	0.000
60	2	0	0.00	0.000
61	1	0	0.00	0.000
62	1	0	0.00	0.000
63	0	0	0.00	0.000
64	0	0	0.00	0.000
65 and over	4	1	4.00	0.250
Total	9	1	4.00	0.250



**TABLE 5**  
**SUMMARY OF MORTALITY EXPERIENCE**  
**OF PENSIONERS**

<b>Males</b>	<b>Exposed</b>	<b>Actual</b>	<b>Expected</b>	<b>Ratio of Actual To Expected</b>
Service Retirees	440	8	8.04	0.995
Disability Retirees	16	0	0.05	0.000
Dependents of Deceased Members	0	0	0.00	0.000
<b>Total</b>	<b>456</b>	<b>8</b>	<b>8.09</b>	<b>0.989</b>

<b>Females</b>	<b>Exposed</b>	<b>Actual</b>	<b>Expected</b>	<b>Ratio of Actual To Expected</b>
Service Retirees	99	5	5.73	0.873
Disability Retirees	0	0	0.00	0.000
Dependents of Deceased Members	68	6	3.99	1.504
<b>Total</b>	<b>167</b>	<b>11</b>	<b>9.72</b>	<b>1.132</b>

<b>Total</b>	<b>Exposed</b>	<b>Actual</b>	<b>Expected</b>	<b>Ratio of Actual To Expected</b>
Service Retirees	539	13	13.77	0.944
Disability Retirees	16	0	0.05	0.000
Dependents of Deceased Members	68	6	3.99	1.504
<b>Total</b>	<b>623</b>	<b>19</b>	<b>17.81</b>	<b>1.067</b>

**TABLE 6**  
**COMPARISON OF ACTUAL AND EXPECTED**  
**ANNUAL SALARIES OF MEMBERS**

Age Group	Fire Department				Police Department			
	Annual Salaries				Annual Salaries			
	Prior Year Salaries	Actual	Expected	Ratio of Actual To Expected	Prior Year Salaries	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0	0.000	0	0	0	0.000
25-29	0	0	0	0.000	0	0	0	0.000
30-34	400,691	430,346	420,725	1.023	0	0	0	0.000
35-39	204,975	199,696	215,224	0.928	1,042,244	1,090,153	1,094,356	0.996
40-44	1,722,429	1,843,525	1,808,550	1.019	2,656,771	2,877,052	2,789,610	1.031
45-49	1,815,278	1,949,638	1,906,042	1.023	1,838,423	1,942,926	1,930,344	1.007
50-54	752,634	904,538	790,266	1.145	367,559	391,210	385,937	1.014
55-59	0	0	0	0.000	0	0	0	0.000
60-64	0	0	0	0.000	0	0	0	0.000
65 and over	0	0	0	0.000	0	0	0	0.000
Total	4,896,007	5,327,743	5,140,807	1.036	5,904,997	6,301,341	6,200,247	1.016

**TABLE 6**  
**COMPARISON OF ACTUAL AND EXPECTED**  
**ANNUAL SALARIES OF MEMBERS (Continued)**

Age Group	Public Works				Town Hall			
	Annual Salaries				Annual Salaries			
	Prior Year Salaries	Actual	Expected	Ratio of Actual To Expected	Prior Year Salaries	Actual	Expected	Ratio of Actual To Expected
Under 25	0	0	0	0.000	0	0	0	0.000
25-29	91,844	94,668	96,436	0.982	0	0	0	0.000
30-34	152,591	163,061	160,221	1.018	0	0	0	0.000
35-39	854,865	890,463	897,608	0.992	0	0	0	0.000
40-44	601,191	617,126	631,251	0.978	0	0	0	0.000
45-49	98,372	100,291	103,291	0.971	0	0	0	0.000
50-54	489,105	494,854	513,560	0.964	49,114	50,560	51,570	0.980
55-59	186,305	187,015	195,620	0.956	355,045	370,115	372,797	0.993
60-64	0	0	0	0.000	113,577	102,771	119,256	0.862
65 and over	0	0	0	0.000	86,980	90,487	91,329	0.991
Total	2,474,273	2,547,478	2,597,987	0.981	604,716	613,933	634,952	0.967

**APPENDIX II**

**RECOMMENDED ACTIVE SERVICE TABLES**

**TABLE 1**  
**COMPARISON OF CURRENT AND RECOMMENDED SEPARATIONS**  
**FROM ACTIVE SERVICE**  
**SERVICE RETIREMENTS**  
**FOR POLICE AND FIRE DEPARTMENTS**

<b>Service</b>	<b>Current</b>	<b>Proposed</b>
Under 20	0%	0%
20	0%	25%
21	75%	50%
22	50%	50%
23	50%	50%
24	50%	50%
25 and over	100%	100%

TABLE 2

**COMPARISON OF CURRENT AND RECOMMENDED MORTALITY RATES**  
**PRERETIREMENT AND HEALTHY POSTRETIREMENT MORTALITY**  
**In Effect for the Year Beginning July 1, 2011**

Age	Males		Females	
	Current	Proposed <sup>1</sup>	Current	Proposed <sup>1</sup>
25	0.0290%	0.0337%	0.0143%	0.0177%
26	0.0323%	0.0354%	0.0156%	0.0187%
27	0.0335%	0.0362%	0.0163%	0.0195%
28	0.0345%	0.0372%	0.0172%	0.0206%
29	0.0362%	0.0390%	0.0181%	0.0217%
30	0.0390%	0.0420%	0.0203%	0.0236%
31	0.0438%	0.0472%	0.0249%	0.0281%
32	0.0493%	0.0532%	0.0284%	0.0320%
33	0.0554%	0.0597%	0.0311%	0.0357%
34	0.0616%	0.0664%	0.0335%	0.0389%
35	0.0679%	0.0732%	0.0356%	0.0421%
36	0.0738%	0.0796%	0.0376%	0.0450%
37	0.0794%	0.0856%	0.0394%	0.0480%
38	0.0824%	0.0902%	0.0414%	0.0512%
39	0.0851%	0.0945%	0.0437%	0.0549%
40	0.0876%	0.0988%	0.0477%	0.0598%
41	0.0903%	0.1034%	0.0522%	0.0655%
42	0.0937%	0.1088%	0.0575%	0.0722%
43	0.0977%	0.1150%	0.0633%	0.0793%
44	0.1028%	0.1223%	0.0695%	0.0871%
45	0.1087%	0.1306%	0.0739%	0.0941%
46	0.1144%	0.1384%	0.0784%	0.1013%
47	0.1210%	0.1468%	0.0831%	0.1086%
48	0.1281%	0.1558%	0.0904%	0.1174%
49	0.1360%	0.1652%	0.0986%	0.1269%
50	0.1447%	0.1751%	0.1106%	0.1388%
51	0.1515%	0.1983%	0.1231%	0.1551%
52	0.1618%	0.2136%	0.1414%	0.1728%
53	0.1781%	0.2335%	0.1633%	0.1933%
54	0.1968%	0.2559%	0.1891%	0.2170%

<sup>1</sup> Rates shown are those in effect for the plan year beginning July 1, 2011. Rates for subsequent years will reflect further mortality improvement.

TABLE 2

**COMPARISON OF CURRENT AND RECOMMENDED MORTALITY RATES**  
**PRERETIREMENT AND HEALTHY POSTRETIREMENT MORTALITY**  
**In Effect for the Year Beginning July 1, 2011**

Age	Males		Females	
	Current	Proposed <sup>1</sup>	Current	Proposed <sup>1</sup>
55	0.2323%	0.2935%	0.2241%	0.2487%
56	0.2809%	0.3439%	0.2690%	0.2892%
57	0.3234%	0.3886%	0.3107%	0.3291%
58	0.3741%	0.4416%	0.3512%	0.3713%
59	0.4247%	0.4978%	0.3985%	0.4203%
60	0.4854%	0.5650%	0.4548%	0.4784%
61	0.5676%	0.6500%	0.5248%	0.5502%
62	0.6522%	0.7416%	0.6026%	0.6300%
63	0.7655%	0.8574%	0.6944%	0.7238%
64	0.8656%	0.9660%	0.7837%	0.8157%
65	0.9808%	1.0907%	0.8839%	0.9185%
66	1.1342%	1.2477%	0.9989%	1.0366%
67	1.2668%	1.3920%	1.1099%	1.1511%
68	1.3838%	1.5304%	1.2274%	1.2724%
69	1.5341%	1.6957%	1.3568%	1.4063%
70	1.6651%	1.8805%	1.5006%	1.5844%
71	1.8457%	2.0807%	1.6386%	1.7389%
72	2.0543%	2.3102%	1.8271%	1.9341%
73	2.2943%	2.5733%	2.0008%	2.1262%
74	2.5661%	2.8708%	2.2239%	2.3565%
75	2.9226%	3.2399%	2.4180%	2.5729%
76	3.2633%	3.6111%	2.6700%	2.8347%
77	3.7013%	4.0618%	2.9991%	3.1569%
78	4.1920%	4.5641%	3.3100%	3.4799%
79	4.7463%	5.1291%	3.6568%	3.8420%
80	5.3716%	5.7631%	4.0430%	4.2467%
81	6.1222%	6.5221%	4.4749%	4.7004%
82	6.9651%	7.3680%	4.9608%	5.2108%
83	7.7641%	8.2131%	5.5082%	5.7858%
84	8.7928%	9.2359%	6.1260%	6.4348%
85	9.7602%	10.2521%	6.9495%	7.2485%

<sup>1</sup> Rates shown are those in effect for the plan year beginning July 1, 2011. Rates for subsequent years will reflect further mortality improvement.

TABLE 2

**COMPARISON OF CURRENT AND RECOMMENDED MORTALITY RATES  
PRERETIREMENT AND HEALTHY POSTRETIREMENT MORTALITY  
In Effect for the Year Beginning July 1, 2011**

Age	Males		Females	
	Current	Proposed <sup>1</sup>	Current	Proposed <sup>1</sup>
86	10.8212%	11.3666%	7.8924%	8.1742%
87	12.2076%	12.7329%	8.9632%	9.2182%
88	13.7598%	14.2512%	9.9834%	10.2675%
89	15.2062%	15.7492%	11.2881%	11.5280%
90	17.0642%	17.5498%	12.4750%	12.7401%
91	18.5864%	19.1153%	13.6991%	13.9903%
92	20.5202%	20.9563%	14.9320%	15.2494%
93	22.1361%	22.6066%	16.4401%	16.6721%
94	23.7495%	24.2543%	17.6329%	17.8817%
95	25.8023%	26.1665%	18.7624%	19.0272%
96	27.3856%	27.7721%	19.8110%	20.0906%
97	28.9239%	29.3321%	21.1398%	21.2884%
98	30.9669%	31.1845%	21.9950%	22.1496%
99	32.4314%	32.6593%	22.7257%	22.8854%
100	33.8406%	34.0785%	23.3229%	23.4868%

<sup>1</sup> Rates shown are those in effect for the plan year beginning July 1, 2011. Rates for subsequent years will reflect further mortality improvement.



TABLE 3

## COMPARISON OF CURRENT AND RECOMMENDED MORTALITY RATES

**DISABLED MORTALITY**  
**In Effect for the Year Beginning July 1, 2011**

Age	Males		Females	
	Current	Proposed <sup>1</sup>	Current	Proposed <sup>1</sup>
25	0.0679%	0.0732%	0.0356%	0.0421%
26	0.0738%	0.0796%	0.0376%	0.0450%
27	0.0794%	0.0856%	0.0394%	0.0480%
28	0.0824%	0.0902%	0.0414%	0.0512%
29	0.0851%	0.0945%	0.0437%	0.0549%
30	0.0876%	0.0988%	0.0477%	0.0598%
31	0.0903%	0.1034%	0.0522%	0.0655%
32	0.0937%	0.1088%	0.0575%	0.0722%
33	0.0977%	0.1150%	0.0633%	0.0793%
34	0.1028%	0.1223%	0.0695%	0.0871%
35	0.1087%	0.1306%	0.0739%	0.0941%
36	0.1144%	0.1384%	0.0784%	0.1013%
37	0.1210%	0.1468%	0.0831%	0.1086%
38	0.1281%	0.1558%	0.0904%	0.1174%
39	0.1360%	0.1652%	0.0986%	0.1269%
40	0.1447%	0.1751%	0.1106%	0.1388%
41	0.1515%	0.1983%	0.1231%	0.1551%
42	0.1618%	0.2136%	0.1414%	0.1728%
43	0.1781%	0.2335%	0.1633%	0.1933%
44	0.1968%	0.2559%	0.1891%	0.2170%
45	0.2323%	0.2935%	0.2241%	0.2487%
46	0.2809%	0.3439%	0.2690%	0.2892%
47	0.3234%	0.3886%	0.3107%	0.3291%
48	0.3741%	0.4416%	0.3512%	0.3713%
49	0.4247%	0.4978%	0.3985%	0.4203%
50	0.4854%	0.5650%	0.4548%	0.4784%
51	0.5676%	0.6500%	0.5248%	0.5502%
52	0.6522%	0.7416%	0.6026%	0.6300%
53	0.7655%	0.8574%	0.6944%	0.7238%
54	0.8656%	0.9660%	0.7837%	0.8157%

<sup>1</sup> Rates shown are those in effect for the plan year beginning July 1, 2011. Rates for subsequent years will reflect further mortality improvement.

TABLE 3

## COMPARISON OF CURRENT AND RECOMMENDED MORTALITY RATES

**DISABLED MORTALITY**  
**In Effect for the Year Beginning July 1, 2011**

Age	Males		Females	
	Current	Proposed <sup>1</sup>	Current	Proposed <sup>1</sup>
55	0.9808%	1.0907%	0.8839%	0.9185%
56	1.1342%	1.2477%	0.9989%	1.0366%
57	1.2668%	1.3920%	1.1099%	1.1511%
58	1.3838%	1.5304%	1.2274%	1.2724%
59	1.5341%	1.6957%	1.3568%	1.4063%
60	1.6651%	1.8805%	1.5006%	1.5844%
61	1.8457%	2.0807%	1.6386%	1.7389%
62	2.0543%	2.3102%	1.8271%	1.9341%
63	2.2943%	2.5733%	2.0008%	2.1262%
64	2.5661%	2.8708%	2.2239%	2.3565%
65	2.9226%	3.2399%	2.4180%	2.5729%
66	3.2633%	3.6111%	2.6700%	2.8347%
67	3.7013%	4.0618%	2.9991%	3.1569%
68	4.1920%	4.5641%	3.3100%	3.4799%
69	4.7463%	5.1291%	3.6568%	3.8420%
70	5.3716%	5.7631%	4.0430%	4.2467%
71	6.1222%	6.5221%	4.4749%	4.7004%
72	6.9651%	7.3680%	4.9608%	5.2108%
73	7.7641%	8.2131%	5.5082%	5.7858%
74	8.7928%	9.2359%	6.1260%	6.4348%
75	9.7602%	10.2521%	6.9495%	7.2485%
76	10.8212%	11.3666%	7.8924%	8.1742%
77	12.2076%	12.7329%	8.9632%	9.2182%
78	13.7598%	14.2512%	9.9834%	10.2675%
79	15.2062%	15.7492%	11.2881%	11.5280%
80	17.0642%	17.5498%	12.4750%	12.7401%
81	18.5864%	19.1153%	13.6991%	13.9903%
82	20.5202%	20.9563%	14.9320%	15.2494%
83	22.1361%	22.6066%	16.4401%	16.6721%
84	23.7495%	24.2543%	17.6329%	17.8817%
85	25.8023%	26.1665%	18.7624%	19.0272%

<sup>1</sup> Rates shown are those in effect for the plan year beginning July 1, 2011. Rates for subsequent years will reflect further mortality improvement.

TABLE 3

## COMPARISON OF CURRENT AND RECOMMENDED MORTALITY RATES

**DISABLED MORTALITY**  
**In Effect for the Year Beginning July 1, 2011**

Age	Males		Females	
	Current	Proposed <sup>1</sup>	Current	Proposed <sup>1</sup>
86	27.3856%	27.7721%	19.8110%	20.0906%
87	28.9239%	29.3321%	21.1398%	21.2884%
88	30.9669%	31.1845%	21.9950%	22.1496%
89	32.4314%	32.6593%	22.7257%	22.8854%
90	33.8406%	34.0785%	23.3229%	23.4868%
91	35.8628%	39.2003%	24.4834%	27.9055%
92	37.1685%	39.7886%	25.4498%	29.3116%
93	38.3040%	40.0000%	26.6044%	30.7811%
94	39.2003%	40.0000%	27.9055%	32.2725%
95	39.7886%	40.0000%	29.3116%	33.7441%
96	40.0000%	40.0000%	30.7811%	35.1544%
97	40.0000%	40.0000%	32.2725%	36.4617%
98	40.0000%	40.0000%	33.7441%	37.6246%
99	40.0000%	40.0000%	35.1544%	38.6015%
100	40.0000%	40.0000%	36.4617%	39.3507%

<sup>1</sup> Rates shown are those in effect for the plan year beginning July 1, 2011. Rates for subsequent years will reflect further mortality improvement.

**APPENDIX III**

**COMPARATIVE VALUATION RESULTS**

**RESULTS FOR THE ACTUARIAL VALUATION  
PREPARED AS OF JULY 1, 2011, ON  
CURRENT AND RECOMMENDED ASSUMPTIONS**

Item	Current Assumptions	Recommended Assumptions
1. Accrued Liabilities:		
Present Active Participants	\$ 11,312,842	\$ 11,411,590
Retired Members, Beneficiaries and Members Entitled to Deferred Vested Benefits	<u>45,744,838</u>	<u>45,957,836</u>
Total	\$ 57,057,680	\$ 57,369,426
2. Assets	43,503,856	43,503,856
3. Unfunded Accrued Liability	\$ 13,553,824	\$ 13,865,570
4. Amortization of Unfunded Accrued Liability	\$ 2,686,115	\$ 2,747,897
5. Normal Cost	256,225	254,684
6. Expected Expenses	72,000	72,000
7. Interest on (4), (5), and (6) to End of Year	<u>226,076</u>	<u>230,594</u>
8. Recommended Employer Contribution = (4) + (5) + (6) + (7)	\$ 3,240,416	\$ 3,305,175