CHATTANOOGA FIRE AND POLICE PENSION FUND

March 30, 2011

The Honorable Mayor Ron Littlefield
The Honorable Manny Rico, Chair, Chattanooga City Council
The Honorable Carol Berz, Chair, Budget and Finance Committee
The Honorable Members of the Chattanooga City Council
City of Chattanooga
1000 Lindsay Street
Chattanooga, TN 37402-4233

RE: Required report as outlined in Sec. 2-424 (a) of Pension Fund

Mayor Littlefield, Members of Council:

In compliance with Part II, Chapter 2, Article III, Division 8, Sec. 2-424 (a) of the Chattanooga City Code, which requires that the Board submit to the City Council an actuarial analysis of the financial impact of the Deferred Retirement Option Plan (DROP) on the Fund, the Board of the Chattanooga Fire and Police Pension Fund submits the enclosed study and letter, prepared by our actuaries, that relate to the financial impact of the DROP on the Fund. As you can see, the enclosed letter states that the DROP is moving toward cost neutrality. The Board appreciates the opportunity to provide the Mayor and City Council with an update about the Pension Fund's performance and the retirement benefits for our members.

We believe, and our members agree, that the pension is the most important benefit dedicated Firefighters and Police Officers receive from the City. It is a benefit that enables the City to attract and retain public safety servants who protect Chattanooga's citizens day and night. Unlike other City employees, our members are not entitled to receive Social Security, and this underscores the importance of the complete benefit structure of the Pension Plan. Throughout its 63-year history, the Pension Plan has provided retirement benefits for more than 1,100 Firefighters and Police Officers and their beneficiaries. Today, more than 800 Firefighters and Police Officers depend on the Fund for their retirement after their public service to our community.

The enclosed information from our actuary outlines the impact of the DROP benefit on the Fund. The DROP benefit, created jointly by Mayor Jon Kinsey, City administrators and the Pension Board in 1999, was intended, in part, to reduce the number of Police Officers and Firefighters working longer than 30 years and to achieve savings in the City's healthcare and disability costs. Since 2000, the number of active disability cases has dropped by approximately 25% and, as the below chart shows, the DROP achieved the goal of reducing the number of members with more than 30 years of service.

MEMBERS 30+ YEARS SERVICE					
Valuation Date	Year	Total	Valuation Date	Year	Total
	1997	19		2004	4
	1998	34		2005	4
	1999	35		2006	4
	2000	29		2007	3
31-Dec	2001	1		2008	3
	2002	2		2009	3
	2003	3		2010	3

In the past, the DROP benefit has been the subject of numerous discussions between Mayor Littlefield, the City Council and the Board. We believe it's important to remember that Police Officers and Firefighters **continue to work for the City and contribute to the Pension Fund** for up to three years past the typical retirement period of 25 years of service. There has been confusion about the DROP in the past, and it is beneficial to clarify how the DROP is actually structured. The DROP is an optional benefit available to all members with at least 25 years of service. In order to qualify for this benefit, the member must work up to an additional three years (the DROP Period) after which the member can elect to receive the accrued retirement benefit for the DROP Period as a qualified lump sum payment. If the member declines to take advantage of the DROP, the retirement income benefit stream that is delivered as a monthly annuity would include the additional years of service.

Currently, our members are entitled to receive one of two DROP benefits within the Fund based on changes jointly made by the City and the Pension Board in 2008. The first is the pre-2008 benefit which requires members to contribute 9% of their pay to the Fund and receive interest during the DROP accumulation period. After 2008, all members entering the program pay 8% of their pay into the Fund and receive no interest during the DROP accumulation period.
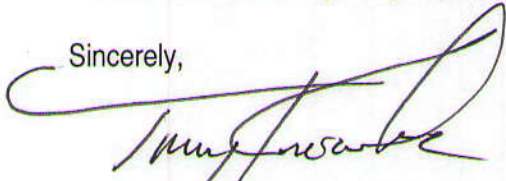
As noted previously, based on actuarial assumptions, **the DROP for new members is more than "cost neutral" and is financially positive for the Fund while the original DROP program has a slightly negative financial impact on the Fund.**

Working proactively over the past two years, the Pension Fund Board **has adjusted its investment strategy to include allocations to certain investments to help cover the impact of the DROP.** The original DROP has a finite number of participants and as these officers retire, along with the investment strategy change made this January, the impact of the DROP will move steadily towards cost neutrality to the Fund.

I could share many stories of how the DROP program has made a positive difference in the lives of Police Officers and Firefighters as they transition to retirement. Because of the important public service they deliver and the nature of their professions, Police Officers and Firefighters do not enjoy the career longevity afforded to other City employees and members of the private sector. Moreover, ample research has demonstrated that public safety officers tend to have shorter life expectancies. **For these reasons, the DROP and other benefits in the Pension Fund are of vital importance to current members and essential factors with regard to recruitment and retention.**

This enclosed packet is our first response to satisfy the requirements outlined for the actuarial and experience study review. If you want additional information, please let me know as members of the Pension Fund Board welcome your questions and are available to meet with you at any time.

Sincerely,

Terry Knowles
Chairman of the Board

cc: Members of Chattanooga Fire and Police Pension Fund Board of Directors
    Chattanooga Police Chief Bobby Dodd
    Chattanooga Fire Chief Randy Parker

March 30, 2011

Mr. Frank Hamilton
Fund Administrator
City of Chattanooga Fire & Police Pension Fund
6009 John Douglass Drive
Chattanooga, TN 37421

Re: City of Chattanooga Report on the Neutrality of the DROP Provision

Dear Frank:

As requested, we have analyzed the "neutrality" of the Plan's DROP provision in compliance with Sec. 2-424 of the plan document. To determine DROP neutrality we have compared the present value of the benefits that would have been paid to a retiring participant if they did not take advantage of the DROP option and retired at 25 years of service and if they worked the additional three years to maximize the DROP period. Our analysis presumed that salary increases during the DROP period would be at the actuarial assumption for inflation of 3.25% per year. We performed this comparison on both the 9% benefit plan and the 8% benefit plan.

Under the 9% plan, the DROP option resulted in a present value of benefits that was 6% greater than the annuity only selection. For the 8% plan, the DROP option had a present value that is 3% less than the annuity only option. This means that based on the current plan and the current demographic characteristics of the plan, the 8% DROP option is cost "neutral".

Since the number of participants in the 9% plan is finite and decreasing and all new participants will participate in the 8% plan, as new participants are hired the DROP option will be come increasingly more "neutral" for the Plan as a whole. Currently over half of active employees remain in the 9% plan. However, as these employees retire, terminate employment or otherwise leave the plan, they will be replaced with employees in the 8% plan. Therefore, the DROP option will become a smaller and smaller component of plan cost, and over the next 7 to 10 years will become cost "neutral" as described above. This is consistent with the results and discussion at the time the changes in the DROP option were adopted and shows that the adopted changes are working.

If you have any questions, please contact me.

Sincerely,

Leon (Rocky) F. Joyner, Jr.
Vice President and Actuary

CHATTANOOGA FIRE AND POLICE PENSION FUND

Actuarial Experience Study

January 1, 2005 Through December 31, 2009

★SEGAL

✴SEGAL

May 12, 2010

Board of Trustees
City of Chattanooga Fire and Police Pension Fund
6009 John Douglass Drive
Chattanooga, TN 37421

Dear Board Members:

We are pleased to present this report on our actuarial experience investigation of the Pension Fund covering the period from January 1, 2005 to December 31, 2009.

Based on our analysis of the plan's actuarial experience for the period, we offer for the Board's consideration certain changes in the actuarial assumptions. We encourage the Board's comments and input on this study as we consider modifications to the actuarial assumptions used to value the plan.

This study was performed under our supervision with the assistance of Ms. Jody Martin.

To the best of our knowledge, this report is complete and accurate and the calculations were performed in accordance with generally accepted actuarial principles and practices. The signing actuaries are members of the Society of Actuaries, the American Academy of Actuaries, and other professional actuarial organizations and collectively meet their "General Qualification Standards for Prescribed Statements of Actuarial Opinions" to render the actuarial opinion contained herein.

Sincerely,

Leon F. "Rocky" Joyner, Jr.,   Jeffrey S. Williams,
FCA, ASA, MAAA, EA   FCA, ASA, MAAA, EA
Vice President and Actuary   Consulting Actuary

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Chattanooga Fire and Police Pension Fund
January 1, 2005 to December 31, 2009

I. Executive Summary

A. Introduction

The annual actuarial valuation for the Chattanooga Fire and Police Pension Fund ("Fund" or "Plan") provides a projection of future benefit payments for all current participants, based upon actuarial assumptions adopted by the Board, that are discounted to the valuation date. The actuarial valuation methods are tools that develop long-term budget patterns to assure necessary contributions are systematically deposited in the Plan so that funds are available to pay promised benefits as they come due. The methods and assumptions must comply with generally accepted actuarial principles and practices, GASB accounting standards and state law.

The assumptions and methods used in the annual actuarial valuations are adopted by the Board of Trustees, based on recommendations of the actuary and the findings of actuarial experience studies. Pursuant to current industry standards, an actuarial experience study should be prepared at least every five years. The purpose of the study is to modify current assumptions to reflect emerging experience as well as expected experience in future years.

The experience study includes a complete review of all assumptions and methods used in the valuation. The assumptions can be broken down into two categories: economic and demographic assumptions. Economic assumptions include inflation, investment rate of return (or discount rate), salary scale, payroll growth rate and administrative expenses. Demographic assumptions include mortality, turnover (or withdrawal), retirement, disability, percent married, and spousal age difference.

The methods studied include the base actuarial cost method for determining allocation of liabilities to past and future years, the asset smoothing method, and amortization of unfunded liabilities.

Following the Executive Summary are three additional sections which include detailed analysis, address specific issues and provide recommendations related to the following:

- Economic assumptions;
- Demographic assumptions; and
- Actuarial methods.

An appendix at the end of the report details all of the current and proposed decrement rates.

A summary of the key points of our review and our recommendations follows on the next few pages.

B. Recommendations

At the direction of the Chattanooga Fire and Police Pension Fund Board of Trustees, we have performed a review of plan experience for the period January 1, 2005 through December 31, 2009.

The experience review affords an opportunity for the Board, staff and actuary to consider how specific assumptions or methods may be affecting contribution rates and the proper funding of the Plan. We have reviewed both economic and demographic experience of the plan as it relates to the expected actuarial experience based on the current plan assumptions. Included are recommendations for changes in assumptions and methods that we believe will more accurately reflect the future experience of the Plan and will help to stabilize annual cost requirements from year to year.

The detailed analysis of each individual assumption is discussed later in this report.

Economic Assumptions

Economic assumptions include inflation, investment rate of return (or discount rate), salary scale, payroll growth rates and administrative expenses.

Inflation

Inflation continues at relatively low levels from a historical perspective, as shown in the graph below.
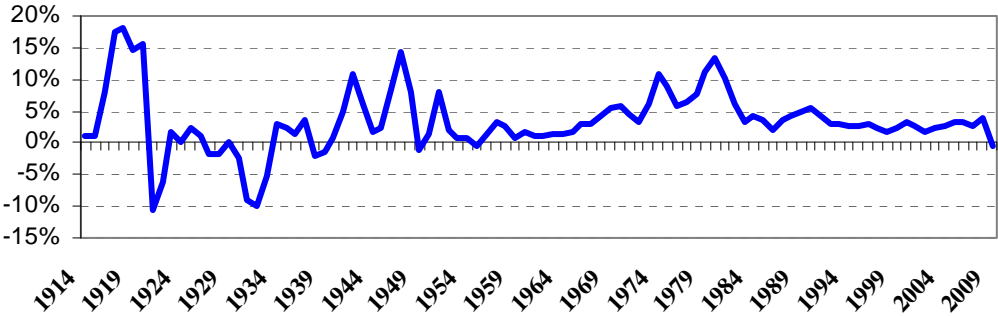
There is an explicit assumption for inflation in the actuarial valuation of 3.25%. The future outlook for inflation remains relatively low despite the volatile nature of energy and commodities prices. Even so, as this is a long-term assumption, we do not recommend lowering the inflation component at this time.

We utilized the "building block" approach to develop economic assumptions. Under the "building block" approach, inflation is the basis for all economic assumptions. The investment return assumption is comprised of inflation and the expected risk premium for each asset class. The underlying salary scale assumption is composed of inflation, a merit increase and productivity increases. Finally, payroll growth is a function of the inflation and productivity components of salary scale.

Investment Return

The Plan has averaged 2.96% investment return over the last five years based on a smoothed actuarial value of assets, compared to the assumption of 8.00%. Thus, on average the plan has underperformed the assumption significantly over the study period. On a market value basis, the five-year average is 1.83%. However, it should be noted that if the year 2008 is removed from this five-year period, the average return for the other four years in the period was 7.48% based on a smoothed actuarial value of assets and 11.91% on a market value basis.

There has been a historical drop in the market and the short-to-mid-term outlook for stocks and bonds remains uncertain. Therefore we recommend lowering the investment return assumption from 8.00% to 7.75%. The Plan's current target allocation is 50% equities, 35% fixed income, 8% hedged strategies, and 7% real estate. If the target investment mix is changed to lower exposure to stocks, then the investment return assumption should be lowered accordingly.

Salary Scale

The current assumption for salary increases is based on the service of the participant, and is the same for both Fire and Police. The salary scale assumes higher salary increases for the first ten years of employment, beginning at 8.25% in the first year and decreasing in a step-rate fashion by 0.50% each year until the inflation assumption of 3.25% is reached.

We recommend maintaining the current select-and-ultimate salary scale structure, with higher rates for the first decade of employment. However, we recommend a change in the rates, with different scales for Fire and Police. A detailed analysis is discussed in the Economic Assumptions section of this report.

Payroll Growth Rate

The payroll growth rate is used for determining the amortization amount of the unfunded actuarial accrued liability (UAAL) when the recommended contribution is determined as a level percentage of payroll. We recommend this assumption remain the same as the recommended inflation assumption, or 3.25%.

Administrative Expenses

Chattanooga currently includes administrative expenses as part of the normal cost. This tends to be a dynamic assumption, one that is adjusted between experience studies to account for changes in the Plan's actual expenses. Between 2005 and 2009, the assumed expenses were increased from $300,000 to $500,000. We recommend maintaining the Plan's current administrative expense assumption of $500,000 for the coming year.

Demographic Assumptions

Demographic assumptions include mortality, turnover (or withdrawal), retirement, disability, percent married and spousal age difference.

Mortality

The predicted mortality experience for non-disabled lives has been based on the 1983 Group Annuity Mortality table (GAM83), without margin and with ages set forward one year. For annuitants who went into pay status prior to 2006, the assumed rates are based on is the UP 1984 Mortality Table. Finally, for disabled annuitants, the current table is the UP 1984 Mortality Table set forward five years.

We recommend changing to a more modern mortality table: the RP-2000 Combined Healthy Blue Collar Mortality Table, set forward two years for healthy lives and eight years for disabled annuitants. The proposed mortality tables are shown in *Appendix A*.

Turnover

The current assumption is based on age, and the same set of rates is used for both Fire and Police. We propose adding a select-and-ultimate component to the table, with higher rates of termination in the first five years of employment, and that different rates be used for Fire and Police. The proposed turnover tables are shown in *Appendix B*.

Retirement

The current assumption includes rates of retirement between 25 and 32 years of service. Effective with the January 1, 2009 actuarial valuation, separate rates were established for existing active participants contributing 9% of pay, versus active participants contributing 8% of pay and new hires. This change was made to account for differences in the DROP plan based on different employees' contribution percentages and hire dates.

We propose modifying the rates of retirement for participants contributing 9% of pay. We are not proposing changes to the recently adopted rates of retirement for participants contributing 8% or for new hires. The proposed retirement table is shown in *Appendix C*.

Disability

The current rates are a modified version of the rates we inherited from the prior actuary.

We recommend that the assumption be changed from the current table to 25% of the Old Age Survivors and Disability Income (OASDI) table. The proposed disability table is shown in *Appendix D*.

Other Demographic Assumptions

Other demographic assumptions that impact the valuation are the percent married and spousal age difference. The current percent married assumption is 100%. We propose lowering this assumption to 75%. No change is being recommended to the assumed three-year age difference between husbands and wives.

Methods

Actuarial methods include actuarial cost method, asset valuation method and amortization method of the unfunded actuarial accrued liability (UAAL).

Actuarial Cost Method

The actuarial cost method is a mechanism to orderly fund benefits over a participant's lifetime. The actuarial cost method allocates liability for service already accrued (i.e. Actuarial Accrued Liability) and future service (i.e. Normal Cost). The current actuarial cost method is the Segal "replacement life" Entry Age Normal actuarial cost method, which recognizes that every member that retires is likely to be *replaced* by a new member. Under this method, a normal cost is calculated for each employee which is the level annual contribution as a percent of pay required to be made from the employee's date of hire for as long as he/she remains active so that sufficient assets will be accumulated to provide his/her benefit. The normal cost reflects the ongoing plan for new hires and as such is expected to be reasonably level as a percent of pay over time.The actuarial accrued liability includes the accumulated normal costs to date as well as any additional liability for the employees remaining in the 9% plan.

Given the Fund's desire for a stable funding pattern and ability to recognize future plan changes when made, we do not suggest a change to the actuarial cost method.

Asset Valuation Method

The current asset valuation method is a five-year smoothed value of assets, with no corridor around market value. The removal of the previous 20% corridor around market value was effective with the January 1, 2009 actuarial valuation.

The advantage of an asset valuation method that smoothes investment returns over a period is a more stable (or level) actuarial rate of return and more predictable pension cost. Given the investment performance during 2008-2009 and the volatile nature of the markets, we recommend maintaining the current method.

Amortization Method

The amortization method for amortizing the unfunded actuarial accrued liability (UAAL) is based on a level percent-of-pay methodology, over a closed 30-year period. With the January 1, 2009 actuarial valuation, the Board and the City agreed to re-set the amortization period to 30 years from 27 years. The amortization period will be 29 years with the January 1, 2010 actuarial valuation and will continue decreasing by one year each valuation hereafter.

We do not suggest a change in the amortization period or amortization methodology for the UAAL at this time.

Summary of Actuarial Experience

For the past five years investment experience has been the determining factor as to whether the Fund has experience an overall actuarial gain or loss. Total gains/(losses) were relatively small prior to investment experience in 2008. A summary of the historical gains and losses are shown below.

Valuation Date Jan. 1	Actuarial Accrued Liability AAL	Total Actuarial (Loss)/Gain		Investment (Loss)/Gain		Non-Investment (Loss)/Gain	
		Amount (in $)	% of AAL	Amount (in $)	% of AAL	Amount (in $)	% of AAL
2006	$292,658,620	($3,326,195)	(1.1%)	$652,592	0.2%	($3,978,787)	(1.3%)
2007	304,151,880	2,103,793	0.7%	3,533,716	1.2%	(1,429,923)	(0.5%)
2008	316,806,281	2,254,157	0.7%	4,494,823	1.4%	(2,240,666)	(0.7%)
2009	327,638,030	(50,171,549)	(15.5%)	(53,149,379)	(16.4%)	2,977,830	0.9%
2010 (preliminary)	339,158,049	(15,377,788)	(4.5%)	(14,485,512)	(4.3%)	(892,276)	(0.2%)

GAINS/(LOSSES) AS A PERCENT OF AAL

	2006	2007	2008	2009	2010
Investment Gain/(Loss)	0.2%	1.2%	1.4%	-16.2%	-4.3%
Non-Investment Gain/(Loss)	-1.3%	-0.5%	-0.7%	0.9%	-0.2%
Total	-1.1%	0.7%	0.7%	-15.3%	-4.5%
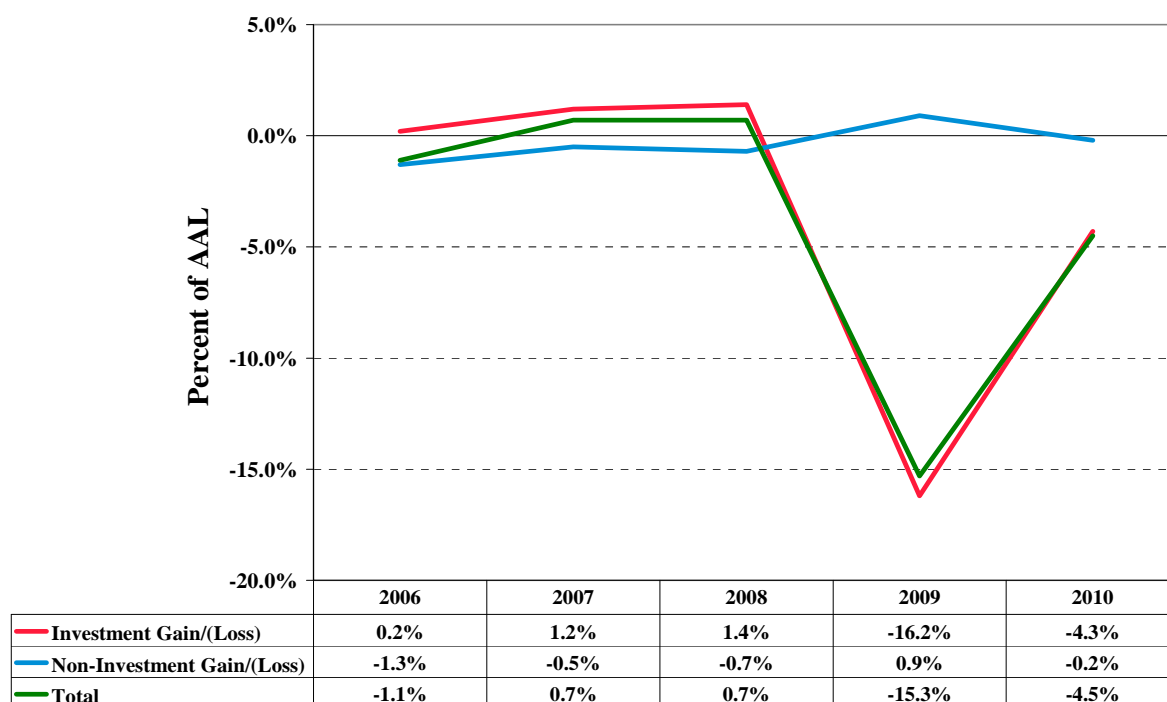
C. Impact of Assumption Changes on Valuation Results

The following table details the impact of the change in assumptions and methods on the preliminary January 1, 2010 actuarial valuation results for illustrative purposes. We included the results with an 8% investment return for comparative purposes.

	Preliminary January 1, 2010 Valuation Results	Proposed Demographic Assumption Changes	Proposed Demographic & Economic Assumption Changes @ 7.75%	Proposed Demographic & Economic Assumption Changes @ 8.00%
Normal Cost	$5,514,602	$5,282,330	$5,346,308	$5,039,669
Administrative Expenses	481,125	481,125	481,125	481,125
Expected Employee Contributions	(2,994,672)	(2,994,672)	(2,994,672)	(2,994,672)
Employer Normal Cost	3,001,055	2,768,783	2,832,761	2,526,122
Actuarial Accrued Liability	339,158,049	350,283,194	358,088,214	348,755,485
Actuarial Value of Assets	245,399,902	245,399,902	245,399,902	245,399,902
Unfunded Actuarial Accrued Liability (UAL)	93,758,147	104,883,292	112,688,312	103,355,583
Amortization of UAL	5,659,229	6,330,742	6,630,458	6,238,529
Funded %	72.36%	70.06%	68.53%	70.36%
Total Recommended Contribution, Adjusted for Timing	**$9,000,032**	**$9,456,504**	**$9,823,114**	**$9,108,531**
Recommended Contribution as a Percentage of Projected Pay*	**26.03%**	**27.35%**	**28.41%**	**26.35%**

Projected Payroll is approximately $34.6 million.

The net impact of the recommended demographic changes increases the actuarial accrued liability by approximately $11.1 million, or 3.3%, and increases the January 1, 2011 recommended contribution by approximately 1.32% of payroll.

The net impact of the recommended economic changes by themselves increases the actuarial accrued liability by approximately $12.4 million, or 3.7%, and increases the January 1, 2011 recommended contribution by approximately 1.92% of payroll. The primary driver of the increase in the actuarial accrued liability is the lowering of the investment return assumption from 8.00% to 7.75%. Lowering the investment return assumption increases the January 1, 2011 recommended contribution by approximately 2.09%. However, the increase in recommended contribution from lowering the investment return assumption was partially offset by modifying the salary scale assumptions.

Overall, the recommended economic and demographic changes would increase the January 1, 2011 recommended contribution by 2.38% of pay, or approximately $0.8 million.

In recognition of the fact that the City is still recovering from the historic market collapse of 2008, we have also provided cost information based on the proposed demographic changes and modification of the salary scale, but with the interest rate assumption unchanged at 8.00%. We understand the Board's desire to strengthen the funded level of the Plan, but also recognize the reality of the budget strain that the City faces. *If the Board chooses to remain at an 8.00% interest assumption for the January 1, 2010 actuarial valuation, we advise and urge that they review the possibility of lowering the assumption to 7.75% with the January 1, 2011 actuarial valuation or future valuations as soon as practicable.*

II. Economic Assumptions

The economic assumptions have a significant impact on the development of plan liabilities. Changes to these assumptions can substantially alter the results determined by the actuary. The goal of an experience study is to produce a consistent set of economic assumptions that appropriately reflect expected future economic trends.

The primary economic assumptions that affect the Plan's funding are:

> Inflation;

> Investment Rate of Return (or Discount Rate);

> Payroll Growth Rate;

> Salary Scale; and

> Administrative Expenses.

The Actuarial Standards Board (ASB) has adopted Actuarial Standard of Practice No. 27 (ASOP 27 - Selection of Economic Assumptions for Measuring Pension Obligations) to provide actuaries guidance in developing economic assumptions. A key feature of the ASB's guidance is the "building block" approach in developing economic assumptions.

The "building block" approach uses the actuary's best estimate for key components of economic assumptions. The actuary begins with reasonable range of each component then selects a specific point within the range based on historical data, plan specific data and future economic environment.

The inflation component is included in all economic assumptions, and therefore is key to developing a consistent set of actuarial assumptions. Under the "building block" approach, we consider the investment rate of return assumption as the combination of an inflation component and a real rate of return component. The components of the salary increase assumption are inflation, productivity, and merit increases.

A. Inflation

In developing the recommendation for the assumed inflation component, actuarial standards of practice suggest the actuary review appropriate inflation data. This data may include consumer price indexes, the implicit price deflator, forecasts of inflation, and yields on government securities of various maturities. For this study, we reviewed a commonly referenced historical measure of inflation, the Consumer Price Index for All Urban Consumers (CPI-U).

The table below shows how recent inflation experience is below the longer-term average rate. The following table is based on calendar years through 2009.

Average Annual Change in CPI-U	
Past 5 Years	2.6%
Past 20 Years	2.7%
Past 40 Years	4.5%

The average annual rate of increase in the CPI-U in the 2000s has been the lowest since the early 1960s. Inflation for 2009 was approximately -0.4%, which was the lowest rate for inflation in over 50 years. Even so, inflation is not expected to remain at this level in the long-term. Historical trend is an important consideration for the assumed rate of inflation, but is not the sole indicator in determining the reasonable bounds of expected inflation.

The typical range of expected inflation for actuarial assumptions in recent years is between 3.00% and 4.50%. A recent National Association of State Retirement Administrators (NASRA) survey of public plans indicated an average of 3.50%. Considering this trend, as well as the bond market's current low future expectation, we have determined the current reasonable range to be between 2.50% and 4.00%.

As a check of the validity of this reasonable range, we reference the 2009 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds (2009 OASDI Trustees Report)*. The range of inflation rates in this report was 1.8% for low-cost projection and 3.8% for high-cost projection.

Once the reasonable range is set, we determine the specific point in the range which is the best estimate of long-term future inflation rates. The current inflation assumption is 3.25%. Given the reasonable range and the current environment, we recommend maintaining this assumption.

B.   Investment Rate of Return

The discount rate is used to determine the present value of expected future plan payments. Generally, the appropriate discount rate is the same as the investment return assumption. The current assumption is 8.00%, net of investment expenses.

For the five years under review, Plan returns on an actuarial value basis have been less than the 8.00% return assumption for the two years ending in 2008 and 2009. This is due to the historic market crash in the fall of 2008. The actuarial (and market value) rates of return for the past 9 ½ years are shown below. The average net investment return on the actuarial basis for the five-year period ending December 31, 2009 was 2.96% and the average return on a market basis was 1.83%. As previously stated, if the year 2008 is removed from this five-year period, the average return for the other four years in the period was 7.48% based on a smoothed actuarial value of assets basis and 11.91% based on a market value basis.

Year Ended	Actuarial Value Investment Return	Market Value Investment Return	Assumed Return
June 30, 2001	7.28%	5.11%	8.25%
December 31, 2001	2.55%	1.01%	8.25%
December 31, 2002	4.35%	-3.50%	8.25%
December 31, 2003	6.34%	22.10%	8.00%
December 31, 2004	7.43%	13.27%	8.00%
December 31, 2005	8.31%	7.42%	8.00%
December 31, 2006	9.56%	15.82%	8.00%
December 31, 2007	9.89%	9.46%	8.00%
December 31, 2008	-13.13%	-31.20%	8.00%
December 31, 2009	2.10%	16.10%	8.00%
Five-Year Average	**2.96%**	**1.83%**	**8.00%**
9 1/2-Year Average	**4.17%**	**4.36%**	**8.07%**

Note: Actuarial returns will not match market returns recorded by the Plan since investment gains/losses are smoothed and are calculated based upon an average value of expected assets which includes cash inflows and outflows. Market returns determined by the actuary also may not match recorded market returns by the Plan since the values are calculated based upon an average value of market assets that include cash inflows and outflows.

The investment rate of return assumption is developed using the "building block" approach as outlined in ASOP 27. Under this approach, the investment rate of return assumption is made up of two components; the inflation component and the real investment rate of return component. The reasonable range of the inflation component determined above is combined with the reasonable range of the real rate of return component. This reasonable range is then evaluated and refined. The final recommendation is a specific point in this best-estimate range.

In developing the reasonable range for the real rate of return, we consider the historical returns of the Plan's major asset classes. The historical rates of return for stocks, bonds and Treasuries over the last 70 years are shown below:

Asset Class	Average Return
Stocks (as measured by the S&P 500 Index)	9.1%
Bonds	5.7%
U.S. Treasury Bills	3.7%

In developing the reasonable range for the real rate of return, we consider the historical returns of the Plan's major asset classes, the capital market projections provided by Gerber/Taylor Associates, the Plan's investment consultant, as well as information provided by Segal Advisors. First, over the long term, U.S. Stocks (S&P 500) have averaged an annual rate of return of 9.1%, while U.S. Bonds have averaged a 5.7% annual rate of return according to historical market data. Adjusting for the average annual rate of inflation over this period of 3.1%, and considering the range of common allocations (35% to 65% for both stocks and bonds), we determined the initial range for the total expected real rate of return to be 3.8% to 4.8% for a similarly diversified portfolio.

The Fund's target allocation as of the end of the 2009 valuation year was 35% U.S. Equity, 15% International Equity, 35% fixed income, 8% real estate and 7% hedged strategies. Based on the above allocation we expect the real rate of return to be about 4.50%.

The 4.50% expected real rate of return falls within the reasonable range for the common allocations described above. Combining the best-estimate range with the assumed rate of inflation of 3.25% yields an investment rate of return assumption of 7.75%. Therefore, we recommend a net investment return assumption of 7.75%. We do note that applying the capital market expected returns supplied by Gerber/Taylor result in about a 6.4% annual return. However these expectations are for a 7 to 10 year period, while the actuarial assumption must cover a 30 to 50 year time horizon.

Graphs 1A and 1B display the rates of return and the asset changes over the last ten years.

Graph 1A:
SUMMARY OF INVESTMENT RETURN
For the Period July 1, 2000 through December 31, 2009

	Jun-01	Dec-01	Dec-02	Dec-03	Dec-04	Dec-05	Dec-06	Dec-07	Dec-08	Dec-09
Actuarial	7.28%	2.55%	4.35%	6.34%	7.43%	8.31%	9.56%	9.89%	-13.13%	2.10%
Market	5.11%	1.01%	-3.50%	22.10%	13.27%	7.42%	15.82%	9.46%	-31.20%	16.10%
Assumed	8.25%	8.25%	8.25%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
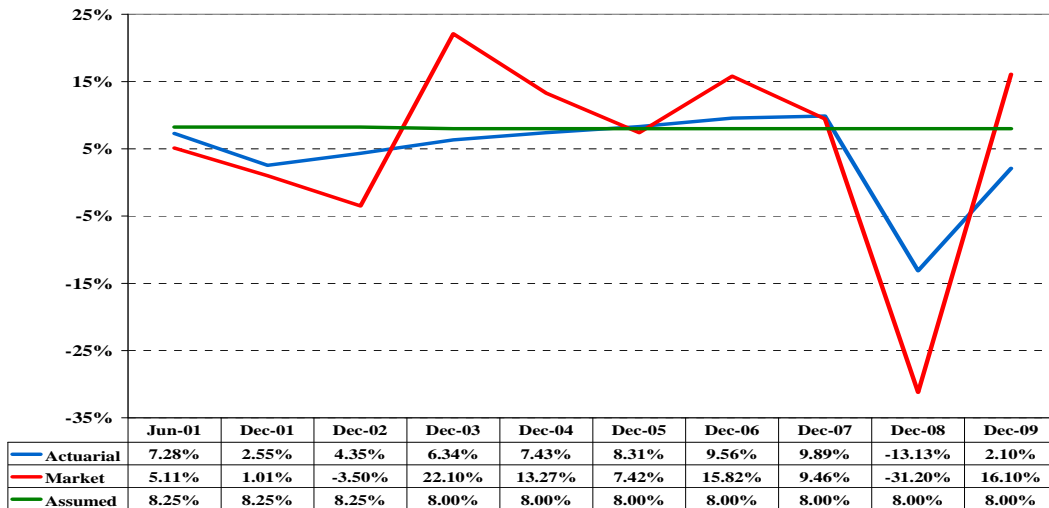
Graph 1B:
MARKET VALUE vs. ACTUARIAL VALUE OF ASSETS
For the Period July 1, 2000 through December 31, 2009

	Jun-01	Dec-01	Dec-02	Dec-03	Dec-04	Dec-05	Dec-06	Dec-07	Dec-08	Dec-09
Actuarial Value	$201.4	$202.1	$201.4	$206.0	$213.2	$230.6	$242.3	$256.2	$250.1	$245.4
Market Value	$193.8	$191.4	$175.5	$205.6	$224.6	$230.6	$256.5	$270.6	$177.6	$195.6

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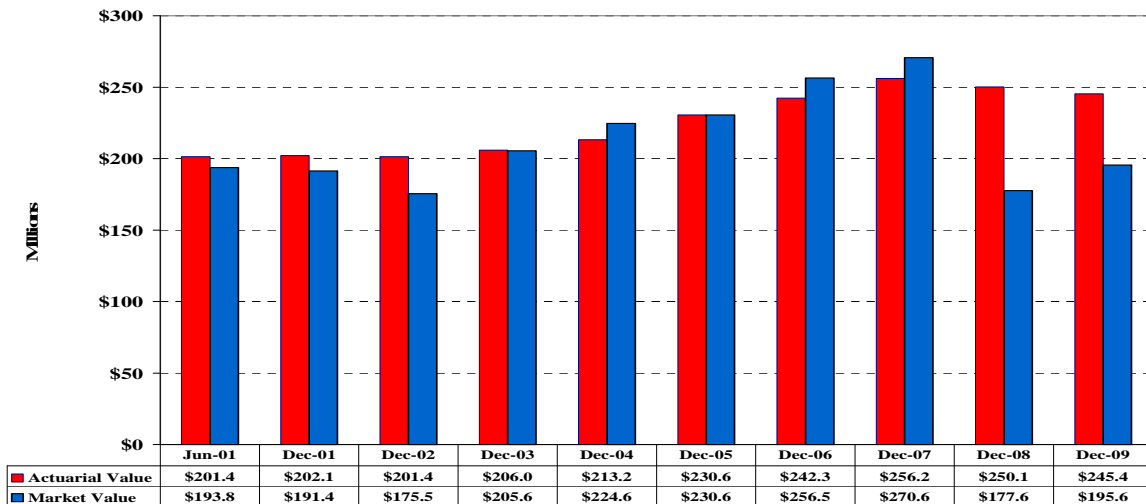
C. Payroll Growth

Payroll growth is used for determining the amortization amount of the unfunded actuarial accrued liability (UAAL), which is calculated as a level percentage of payroll. Currently the payroll growth assumption is 3.25% per year.

We recommend maintaining this assumption and keeping the payroll growth assumption equivalent to the underlying inflation assumption.

D.   Salary Scale

The salary scale is used to determine participants' ultimate benefits in the Plan. Generally, a participant's salary will change over the long term in accordance with inflation, productivity growth and merit scale. The actuary should review available compensation data when selecting this assumption, including: plan sponsor's current compensation practices and any anticipated changes; historical compensation increases and practices of the plan sponsor and other sponsors in the same industry or geographic area; and historical national wage and productivity increases.

The current assumption is a service-based set of rates that is the same for Fire and Police, with higher increases assumed in an employee's first ten years of service. Since more rapid career progression often occurs within the first few years of employment, the highest percentage increases in salary tend to happen in the first few years of service.

The actual salary experience was examined separately for Fire and Police for the five-year study period. The salary patterns for those with fewer than ten years of service were isolated and reviewed independently.

Analysis of the distribution of salary by years of service for the current population has shown that the highest increases do in fact occur during the first ten years of service for both Fire and Police. Even so, actual increases were less than expected.

The city has recently instituted a new chart of pay ranges, by department, with a minimum, midpoint, and maximum salary for each rank. Approximately half of the active participants in the January 1, 2010 actuarial valuation data have a salary that corresponds to one of the salaries in the table. We sorted the active participants by department and salary and were able to come up with an estimation of the number of participants per rank. Based on analysis of the data, the new pay chart, and conversations with Mr. Frank Hamilton, the Plan administrator, we have determined that it is appropriate to assume different rates of salary increase for Fire and Police. In most cases, the new assumptions for each group provide higher increases than were actually given during the last five years. We believe this better reflects future expectations and is consistent with the total set of economic assumptions used to value the plan. This is because inflation has been historically low over the last five years. If inflation remains lower than expected then both salary increases and investment return should be less than the new assumptions.

Experience also has shown that longer-service employees, on average, are getting less-than-inflationary increases. We suggest that the ultimate rates remain equal to the 3.25% inflation rate for these groups.

For the January 1, 2010 actuarial valuation the inflation component has been removed from the salary scale.

Tables 2 and 3 display the actual experience against the current assumption for Fire and Police. Graphs 2 and 3 provide this information pictorially, along with the new proposed assumptions. *The proposed salary scales are also shown in Appendix C.*

Table 2:
SALARY SCALE EXPERIENCE-FIREFIGHTERS
For the Period January 1, 2005 through December 31, 2009

Service	Total Exposures	Actual Salary Increase For the Year Ended December 31,					5-Year Actual	5-Year Expected
		2005	2006	2007	2008	2009		
0-1	74	4.9%	4.0%	0.0%	11.7%	0.0%	6.31%	8.25%
1-2	82	10.5%	7.8%	7.6%	0.0%	7.3%	8.02%	7.75%
2-3	91	5.1%	3.7%	5.6%	7.9%	0.0%	5.72%	7.25%
3-4	123	5.9%	4.0%	4.0%	3.5%	10.6%	5.76%	6.75%
4-5	130	5.7%	3.8%	3.6%	4.5%	9.1%	4.89%	6.25%
5-6	145	4.4%	4.4%	3.5%	2.8%	2.8%	3.69%	5.75%
6-7	150	4.3%	3.8%	3.9%	5.0%	4.8%	4.36%	5.25%
7-8	116	0.0%	4.8%	4.0%	7.3%	2.8%	4.77%	4.75%
8-9	99	5.4%	0.0%	4.0%	5.8%	3.6%	4.65%	4.25%
9-10	68	3.8%	4.3%	0.0%	4.9%	2.8%	3.82%	3.75%
10 & Over	682	2.4%	3.3%	3.2%	2.9%	0.8%	2.50%	3.25%
TOTAL	1,760	4.3%	4.0%	3.9%	4.9%	3.3%	4.06%	4.79%

Graph 2:
SALARY SCALE RATES
Firefighters

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10+
Actual	6.31%	8.02%	5.72%	5.76%	4.89%	3.69%	4.36%	4.77%	4.65%	3.82%	2.50%
Expected	8.25%	7.75%	7.25%	6.75%	6.25%	5.75%	5.25%	4.75%	4.25%	3.75%	3.25%
Proposed	7.50%	7.25%	7.00%	6.25%	6.00%	5.75%	5.25%	4.75%	4.25%	3.25%	3.25%

Year of Service
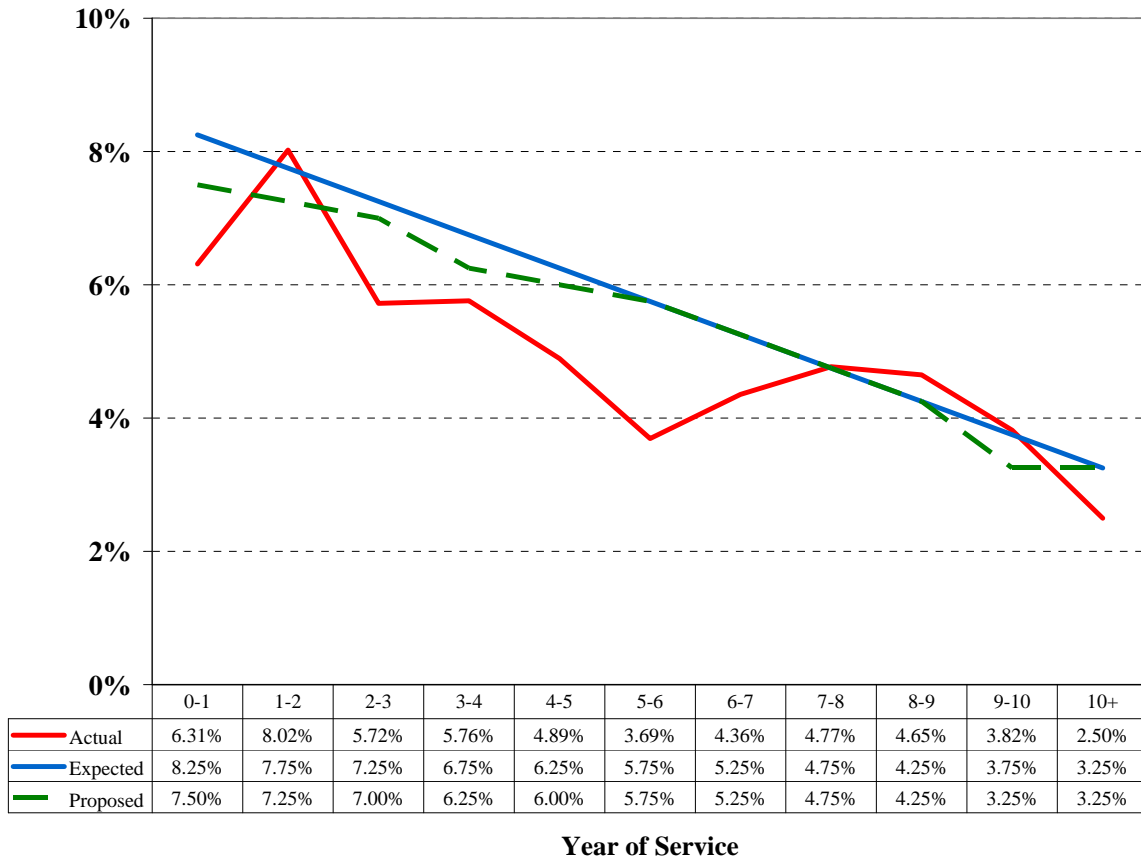
Table 3:
SALARY SCALE EXPERIENCE -POLICE OFFICERS
For the Period January 1, 2005 through December 31, 2009

Service	Total Exposures	Actual Salary Increase For the Year Ended December 31,					5-Year Actual	5-Year Expected
		2005	2006	2007	2008	2009		
0-1	125	4.7%	6.1%	2.7%	10.3%	0.0%	4.50%	8.25%
1-2	111	4.7%	3.0%	2.8%	13.5%	-0.1%	4.53%	7.75%
2-3	99	4.5%	3.3%	3.0%	11.1%	1.8%	4.14%	7.25%
3-4	116	4.5%	3.0%	3.0%	4.7%	1.4%	3.79%	6.75%
4-5	106	4.0%	3.2%	3.0%	5.6%	0.6%	3.14%	6.25%
5-6	107	3.9%	3.0%	3.1%	2.1%	4.1%	3.49%	5.75%
6-7	101	4.4%	3.5%	3.9%	3.9%	7.3%	4.12%	5.25%
7-8	100	4.5%	3.7%	3.0%	2.2%	3.0%	3.26%	4.75%
8-9	93	4.3%	2.4%	3.0%	2.6%	2.1%	3.12%	4.25%
9-10	104	4.8%	3.0%	3.6%	4.2%	1.6%	3.38%	3.75%
10 & Over	951	3.2%	3.4%	3.8%	2.2%	1.0%	2.67%	3.25%
TOTAL	2,013	3.9%	3.4%	3.4%	4.1%	1.4%	3.25%	4.79%

Graph 3:
SALARY SCALE RATES
Police Officers

	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10+
Actual	4.50%	4.53%	4.14%	3.79%	3.14%	3.49%	4.12%	3.26%	3.12%	3.38%	2.67%
Expected	8.25%	7.75%	7.25%	6.75%	6.25%	5.75%	5.25%	4.75%	4.25%	3.75%	3.25%
Proposed	7.00%	6.50%	6.00%	5.50%	5.00%	4.50%	4.25%	4.00%	3.75%	3.50%	3.25%

Year of Service
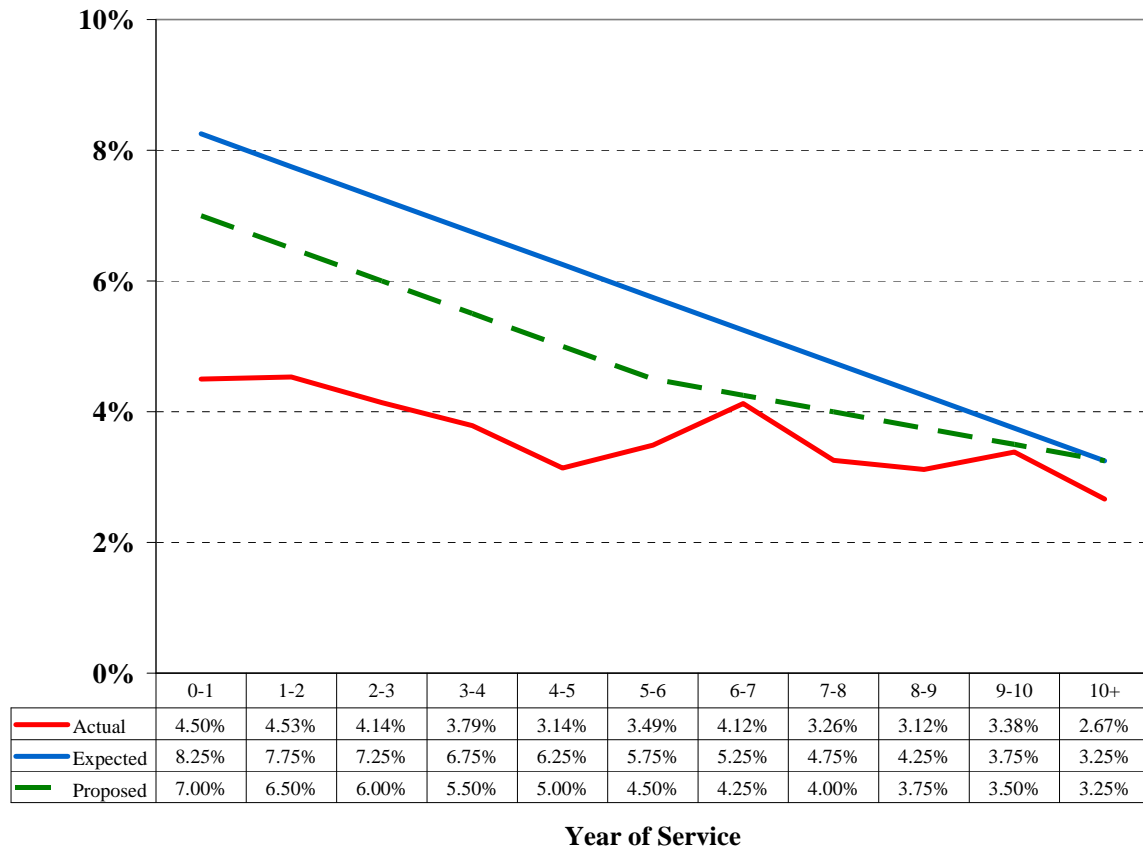
E. Administrative Expenses

The Plan currently includes administrative expenses as part of the normal cost. This tends to be a dynamic assumption, one that is adjusted between experience studies to account for changes in the Plan's actual expenses. Between 2005 and 2009, the assumed expenses were increased from $300,000 to $500,000. The following presents Plan experience over the study period.

Year Ended December 31,	Assumed Expenses	Actual Expenses
2005	$300,000	$392,917
2006	400,000	384,888
2007	400,000	514,811
2008	500,000	580,929
2009	500,000	452,683
TOTAL	$2,100,000	$2,326,228

Actual expenses have totaled slightly higher than the expected amount. We are recommending no change in the administrative expense assumption at this time.

III. Demographic Assumptions

The demographic assumptions used to value the plan reflect the expected occurrences of various events among participants of the plan. The assumptions should be reflect specific characteristics of the plan and produce reasonable results. A reasonable assumption is one that is expected to model the contingency being measured and not expected to produce significant gains and losses. The types of demographic assumptions used to measure pension obligations include, but are not limited to the following:

> Mortality;
> Disability;
> Termination of Employment (Withdrawal);
> Retirement; and
> Others, including percentage married and spousal age difference.

The Actuarial Standards Board (ASB) has adopted Actuarial Standard of Practice No. 35 (ASOP 35 - Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations) to provide actuaries guidance in developing demographic assumptions. The standard recommends the actuary follow a general process for selecting demographic assumptions. The first step of the general procedure is to identify the types of assumptions to use. The actuary should consider relevant plan provisions that will affect timing and value of any potential benefit payments, all contingencies that give rise to benefits or loss of benefits and the characteristics of the covered group. The next step is to identify the relevant assumption universe. The assumption universe may include prior experience studies or general studies of trends relevant to the type of demographic assumption in addition to plan experience to the extent that it is credible. The third step is to consider the assumption format. The format may include different tables for different segments of the covered population (i.e., different turnover for Fire and Police). The final step is to select the specific assumption and evaluate the reasonableness of each assumption. The specific experience of the plan should be incorporated but not given undue weight to past experience if recent experience is attributable to a phenomenon that is unlikely to continue. For example, if recent rates of termination were due to a one-time reduction in workforce it may be unreasonable to assume that such rates will continue.

A. Mortality Rates

One of the most basic actuarial assumptions is the probability of death. The mortality assumption takes the form of a mortality table which contains for each age in the table a probability of a person dying between that age and the next. There are three sets of mortality tables currently in use for the Fund. There are different mortality assumptions for non-disabled lives (which include members before retirement, and post-2005 retirees and beneficiaries), for pre-2006 non-disabled annuitants, and for disabled retirees. We studied the mortality rate for each of these groups individually but also combined the experience of the pre-retirement members with that of retirees and beneficiaries since the actual experience of the pre-retirement group alone did not yield enough credible experience.

Mortality was less than expected for active participants and healthy annuitants and slightly greater than expected for disabled annuitants.

Currently, the Fund uses mortality rates based on the sex-distinct 1983 Group Annuity Mortality Table, without margin and set-forward one year, for participants prior to retirement and for non-disabled retirees/beneficiaries who retired after 2005. For pre-2006 retirees, the mortality table is the UP 1984 Mortality Table. For disabled retirees, the mortality table is the UP 1984 Mortality Table set forward five years. In setting mortality assumptions, we generally take the approach that actual deaths will be 7% to 15% greater than assumed to allow for future improvements in life expectancy.

1. Pre-Retirement Mortality

The mortality experience of active members important for several reasons. First, in combination with withdrawal and disability rates, the pre-retirement mortality table enables the actuary to estimate the number of individuals who will eventually be eligible for a retirement benefit, and thereby estimate the liability for those surviving individuals. In addition, the death of a member before retirement may result in a benefit payable to a beneficiary, and the liability for these benefits must be taken into account in the valuation.

As can be seen in the table below, mortality among active participants was low, as expected, and the actual rates of pre-retirement death for the study period were 27% of what the table predicted. However, the size of the covered group does not lend enough credible experience to base the mortality assumption strictly on experience. Given the low number of deaths of active participants, we combined the mortality experience of the pre-retirement members with that of post-retirement members for further analysis.

The following table provides a summary of pre-retirement mortality experience by gender for the study period:

Pre-Retirement Mortality	Exposures	Actual Deaths	Expected Deaths	Ratio of Actual Deaths to Expected Deaths
Males	3,693	2	7.1	28%
Females	279	0	0.2	0%
Total	**3,972**	**2**	**7.3**	**27%**

As shown above, the actual rates of pre-retirement death for the study period were about a quarter of what the table predicted. While the statistical sample is quite limited, we recommend changing from the current assumption of the 1983 Group Annuity Mortality table (GAM83), without margin, with ages set forward one year, to the sex-distinct RP-2000 Blue Collar Healthy Mortality Table (RP-2000 Blue Collar), set forward two years. This will provide a better expectation of future mortality patterns.

A complete table of proposed mortality rates is shown in *Appendix A*.

2. Post–Retirement Healthy Mortality

The mortality experience among Chattanooga Fire and Police retirees and beneficiaries determines the durations over which retirement benefits are paid. Lower mortality rates mean longer benefit payment periods and, therefore, higher benefit costs. We have included terminated vested participants along with participants in pay status for purposes of analyzing post-retirement healthy mortality.

The experience analysis for the past five years reveals that post-retirement participants have been dying at a rate slightly less than expected, implying we should anticipate longer life expectancies (or fewer deaths) than are currently being assumed. The actual rate of death for post-retirement males is about 4% higher than expected while the rate for females has been about 14% less than expected. Overall, the actual number of retiree and beneficiary deaths was about 4% lower than the expected number.

The following table provides a summary of retiree, beneficiary and terminated vested mortality experience by gender for the study period:

Post-Retirement Healthy Mortality	Exposures	Actual Deaths	Expected Deaths	Ratio of Actual Deaths to Expected Deaths
Male	2,219	54	52.0	104%
Female	772	38	44.2	86%
Total	**2,991**	**92**	**96.2**	**96%**

As previously discussed, when setting mortality assumptions we generally take the approach that actual deaths be 7% to 15% greater than assumed to allow for future improvements in life expectancy. When the number of deaths assumed is too low, the cost of the plan is overstated.

The current assumption for annuitants that went into pay status prior to 2006 is the UP 1984 Mortality Table and for annuitants that went into pay status after 2005 the assumption is the 1983 Group Annuity Mortality table (GAM83), without margin, with ages set forward one year. We recommend changing to the sex-distinct RP-2000 Blue Collar Healthy Mortality Table (RP-2000 Blue Collar), set forward two years. This table will decrease the expected number of pre-retirement deaths, if the historical data for this group over the study period is an accurate predictor of the future, and add a margin for retirees and beneficiaries.

On the following pages, Tables 4 and 5 show the post-retirement healthy mortality experience for the study period. Graphs 4A, 4B, 5A, and 5B illustrate this information for males and females. A complete table of proposed mortality rates is shown in *Appendix A*.

TABLE 4:
POST-RETIREMENT HEALTHY MORTALITY
FOR THE PERIOD JANUARY 1, 2005 THROUGH DECEMBER 31, 2009

Male Annuitants prior to January 1, 2006

Average Age	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Current Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Mortality Rate
Under 55	315	1	0.32%	2.16	0.69%	46.29%	0.66%
55-59	644	5	0.78%	7.10	1.10%	70.41%	1.10%
60-64	420	5	1.19%	7.04	1.68%	71.07%	1.35%
65-69	314	10	3.18%	8.43	2.69%	118.61%	2.38%
70-74	196	7	3.57%	8.06	4.11%	86.80%	3.94%
75-79	141	16	11.35%	8.77	6.22%	182.44%	6.33%
80-84	62	6	9.68%	5.84	9.42%	102.74%	10.24%
85-89	15	2	13.33%	1.99	13.29%	100.35%	15.26%
90 & Over	10	2	20.00%	1.82	18.25%	109.61%	21.16%
Total	**2,117**	**54**	**2.55%**	**51.21**	**2.42%**	**105.42%**	**2.35%**

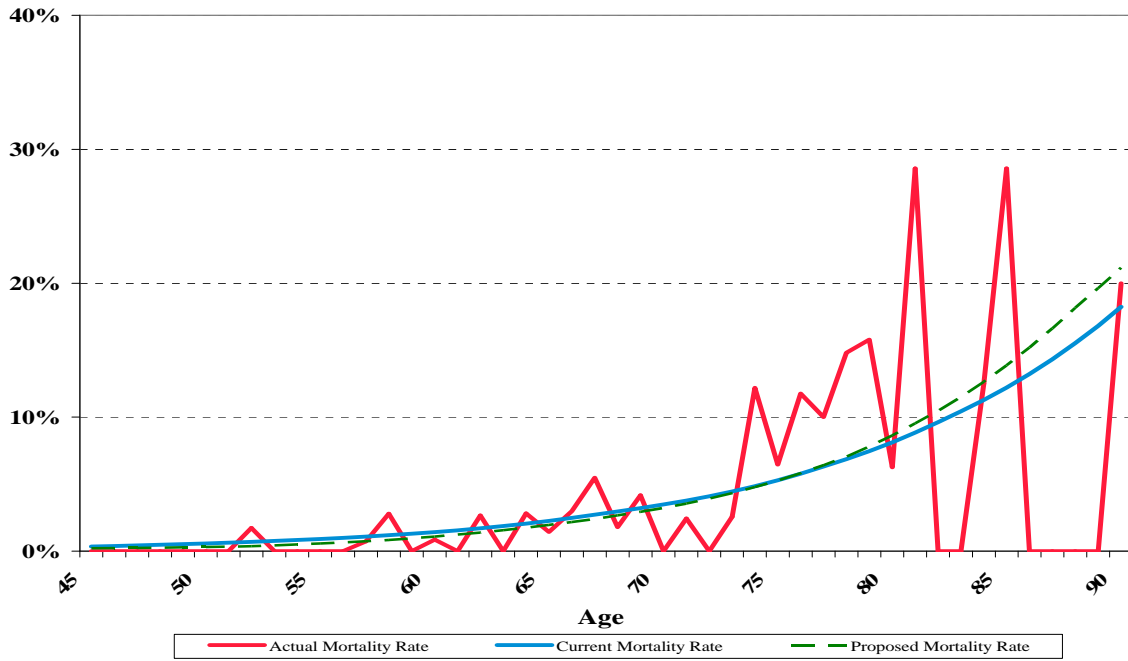*Female Annuitants prior to January 1, 2006*

Average Age	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Current Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Mortality Rate
Under 55	58	0	0.00%	0.30	0.52%	0.00%	0.21%
55-59	57	0	0.00%	0.64	1.12%	0.00%	0.46%
60-64	70	0	0.00%	1.20	1.72%	0.00%	0.92%
65-69	102	1	0.98%	2.79	2.74%	35.83%	1.68%
70-74	101	1	0.99%	4.21	4.17%	23.76%	2.86%
75-79	119	8	6.72%	7.50	6.30%	106.72%	4.46%
80-84	84	6	7.14%	7.96	9.47%	75.39%	7.35%
85-89	70	5	7.14%	10.00	14.29%	50.00%	12.38%
90 & Over	47	14	29.79%	8.58	18.25%	163.25%	16.05%
Total	**708**	**35**	**4.94%**	**43.17**	**6.10%**	**81.07%**	**4.71%**

Grand Total	**2,825**	**89**	**3.15%**	**94.39**	**3.34%**	**94.29%**	**2.94%**

GRAPH 4A:
POST-RETIREMENT HEALTHY MORTALITY RATES
MALE ANNUITANTS PRIOR TO JANUARY 1, 2006

GRAPH 4B:
POST-RETIREMENT HEALTHY MORTALITY RATES
FEMALE ANNUITANTS PRIOR TO JANUARY 1, 2006

TABLE 5:
POST-RETIREMENT HEALTHY MORTALITY
FOR THE PERIOD JANUARY 1, 2005 THROUGH DECEMBER 31, 2009

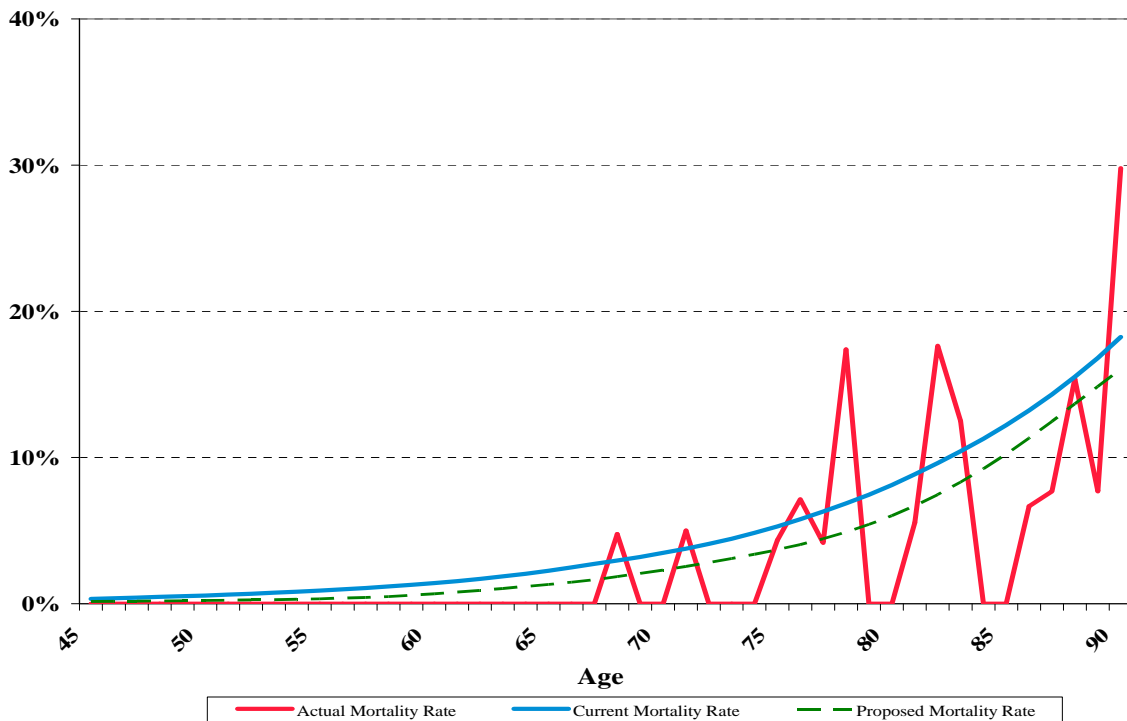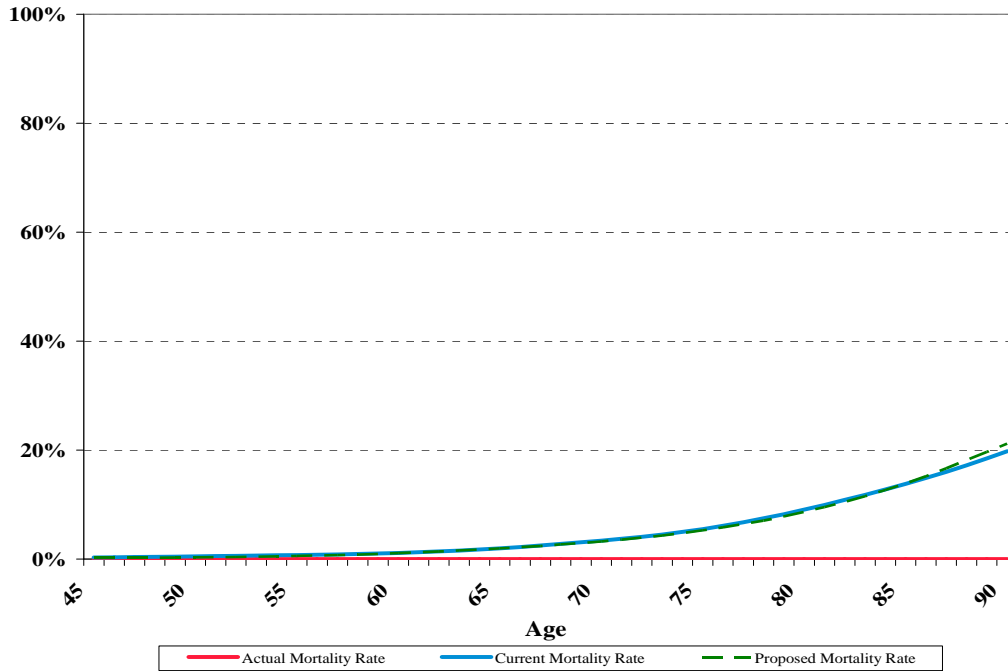*Male Annuitants on or after January 1, 2006*

Average Age	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Current Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Mortality Rate
Under 55	53	0	0.00%	0.28	0.53%	0.00%	0.35%
55-59	37	0	0.00%	0.32	0.87%	0.00%	0.74%
60-64	12	0	0.00%	0.14	1.20%	0.00%	1.18%
65-69	0	0	0.00%	0.00	0.00%	0.00%	0.00%
70-74	0	0	0.00%	0.00	0.00%	0.00%	0.00%
75-79	0	0	0.00%	0.00	0.00%	0.00%	0.00%
80-84	0	0	0.00%	0.00	0.00%	0.00%	0.00%
85-89	0	0	0.00%	0.00	0.00%	0.00%	0.00%
90 & Over	0	0	0.00%	0.00	0.00%	0.00%	0.00%
Total	**102**	**0**	**0.00%**	**0.75**	**0.73%**	**0.00%**	**0.59%**

Female Annuitants on or after January 1, 2006

Average Age	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Current Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Mortality Rate
Under 55	10	0	0.00%	0.02	0.18%	0.00%	0.21%
55-59	11	0	0.00%	0.05	0.44%	0.00%	0.53%
60-64	11	1	9.09%	0.07	0.61%	1491.94%	0.85%
65-69	9	0	0.00%	0.09	0.97%	0.00%	1.48%
70-74	9	1	11.11%	0.19	2.13%	521.99%	2.88%
75-79	9	1	11.11%	0.30	3.37%	329.48%	4.01%
80-84	5	0	0.00%	0.31	6.11%	0.00%	7.04%
85-89	0	0	0.00%	0.00	0.00%	0.00%	0.00%
90 & Over	0	0	0.00%	0.00	0.00%	0.00%	0.00%
Total	**64**	**3**	**4.69%**	**1.02**	**1.60%**	**293.59%**	**2.00%**

| **Grand Total** | **166** | **3** | **1.81%** | **1.77** | **1.07%** | **169.52%** | **1.13%** |

Graph 5A:
POST-RETIREMENT HEALTHY MORTALITY RATES
MALE ANNUITANTS ON OR AFTER JANUARY 1, 2006

Graph 5B:
POST-RETIREMENT HEALTHY MORTALITY RATES
FEMALE ANNUITANTS ON OR AFTER JANUARY 1, 2006
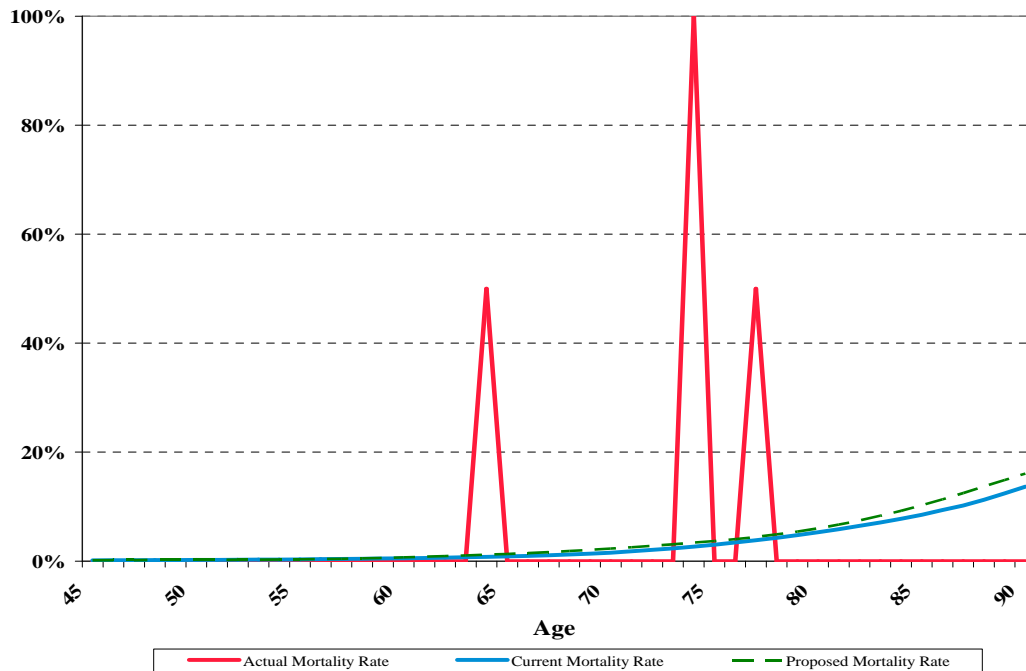
3. Disabled Annuitant Mortality

Mortality experience among disabled annuitants is studied separately from other retirees because of characteristically higher levels of mortality exhibited by disabled retirees. The current assumption is the sex-distinct UP 1984 Mortality Table with ages set forward 5 years.

For the study period, the number of deaths among disabled retirees was higher than expected. The following table summarizes the disabled annuitant mortality experience:

Disabled Annuitant Mortality	Exposures	Actual Deaths	Expected Deaths	Ratio of Actual Deaths to Expected Deaths
Male	353	14	12.2	115%
Female	19	1	0.2	500%
Total	**372**	**15**	**12.4**	**121%**

We recommend changing the mortality assumption for disabled lives to the RP-2000 Blue Collar Healthy Mortality Table set forward eight years for both males and females. The proposed rates are less at earlier ages than the current assumption but higher at later ages. The proposed table provides for some diminishing of disabled life expectancy compared to the current assumption for disabled retirees currently over age 65 but provides for a longer life expectancy for younger disabled retirees, while tying the healthy and disabled mortality assumptions into a complementary framework.

Table 6 summarizes the disabled annuitant mortality experience for the study period. Graphs 6A and 6B illustrate this information for males and females. A complete table of proposed mortality rates is shown in *Appendix A*.

TABLE 6:
DISABLED ANNUITANT MORTALITY EXPERIENCE
## For the Period January 1, 2005 through December 31, 2009

Male

Average Age	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Current Mortality Rate	Ratio of Actual Rate to	Proposed Mortality Rate
Under 45	3	0	0.00%	0.01	0.46%	0.00%	0.27%
45-49	18	1	5.56%	0.13	0.72%	772.30%	0.46%
50-54	44	2	4.55%	0.50	1.13%	401.27%	0.89%
55-59	76	1	1.32%	1.33	1.74%	75.42%	1.61%
60-64	78	1	1.28%	2.11	2.71%	47.39%	2.65%
65-69	60	1	1.67%	2.44	4.07%	40.90%	4.29%
70-74	51	4	7.84%	3.16	6.19%	126.70%	6.95%
75-79	16	3	18.75%	1.51	9.46%	198.15%	11.32%
80-84	7	1	14.29%	0.98	14.04%	101.72%	12.11%
85 & Over	0	0	0.00%	0.00	0.00%	0.00%	0.00%
Total	**353**	**14**	**3.97%**	**12.18**	**3.45%**	**114.97**	**3.56%**

Female

Average Age	Number Exposed	Actual Deaths	Actual Mortality Rate	Expected Deaths	Current Mortality Rate	Ratio of Actual Rate to Expected Rate	Proposed Mortality Rate
Under 45	9	1	11.11%	0.03	0.29%	3847.97%	0.14%
45-49	0	0	0.00%	0.00	0.00%	0.00%	0.00%
50-54	4	0	0.00%	0.05	1.21%	0.00%	0.61%
55-59	6	0	0.00%	0.10	1.58%	0.00%	0.94%
60-64	0	0	0.00%	0.00	0.00%	0.00%	0.00%
65-69	0	0	0.00%	0.00	0.00%	0.00%	0.00%
70-74	0	0	0.00%	0.00	0.00%	0.00%	0.00%
75-79	0	0	0.00%	0.00	0.00%	0.00%	0.00%
80-84	0	0	0.00%	0.00	0.00%	0.00%	0.00%
85 & Over	0	0	0.00%	0.00	0.00%	0.00%	0.00%
Total	**19**	**1**	**5.26%**	**0.17**	**0.89%**	**589.63%**	**0.49%**

| **Grand Total** | **372** | **15** | **4.03%** | **12.35** | **3.32%** | **121.49%** | **3.40%** |

SEGAL 30

Graph 6A:
DISABLED ANNUITANT MORTALITY—MALE
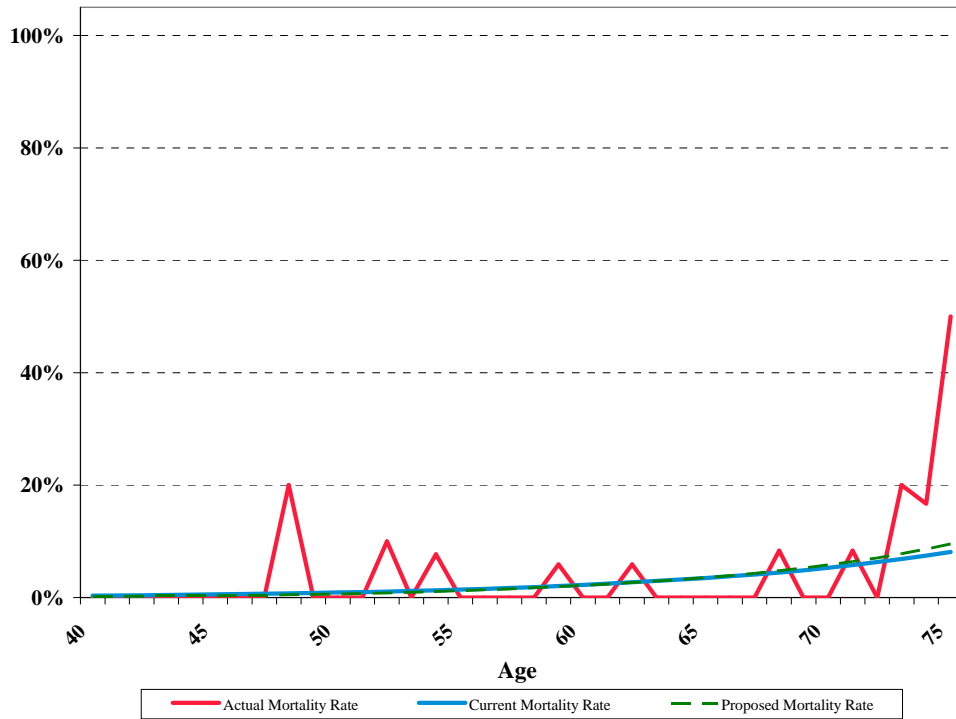
Graph 6B:
DISABLED ANNUITANT MORTALITY—FEMALE
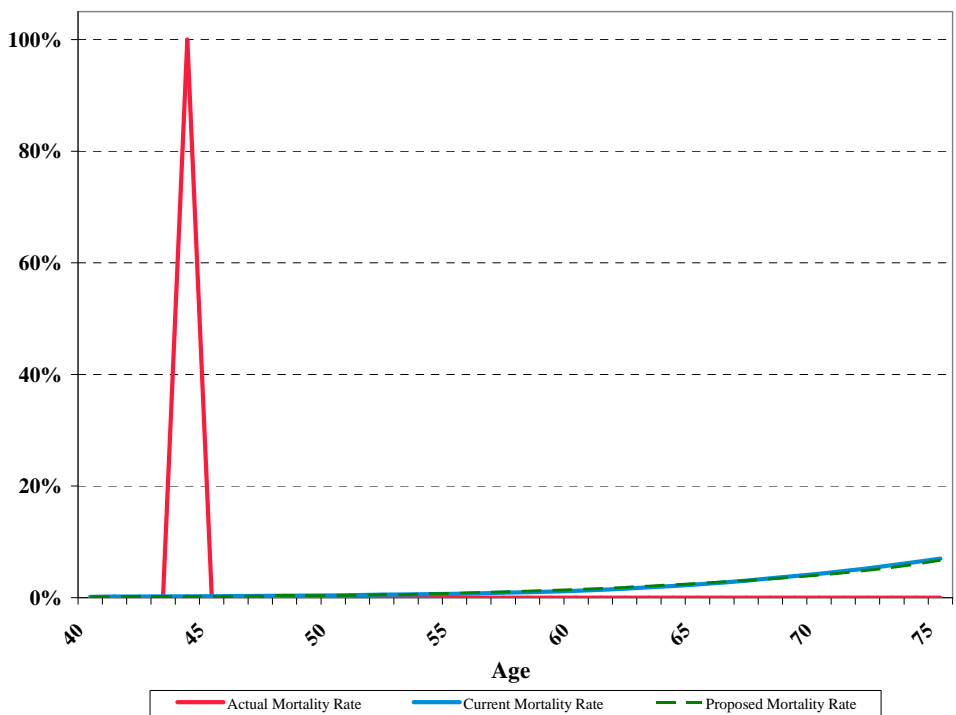
B. Turnover Rates

The assumed turnover rates used in annual actuarial valuations project the percentage of employees at each age or service duration who will terminate employment before retirement. These rates take into account possible terminations for all causes other than retirement, death, or disability. They include both voluntary and involuntary withdrawals from service.

Terminations before retirement give rise to some benefit rights, but may also involve the forfeiture of a portion of previously accrued benefits. Forfeitures resulting from turnover are anticipated in advance and help finance benefits which become payable to other Fire and Police employees.

Experience over the past five years indicates that Fire Department employees are terminating at a much slower rate than anticipated, while Police Department employees are terminating at a much faster rate than anticipated. We studied the terminations by age, service, and department to determine if there is a better assumption to fit the actual experience.

The graph below shows the total number of terminations by Fire, Police, and Total.
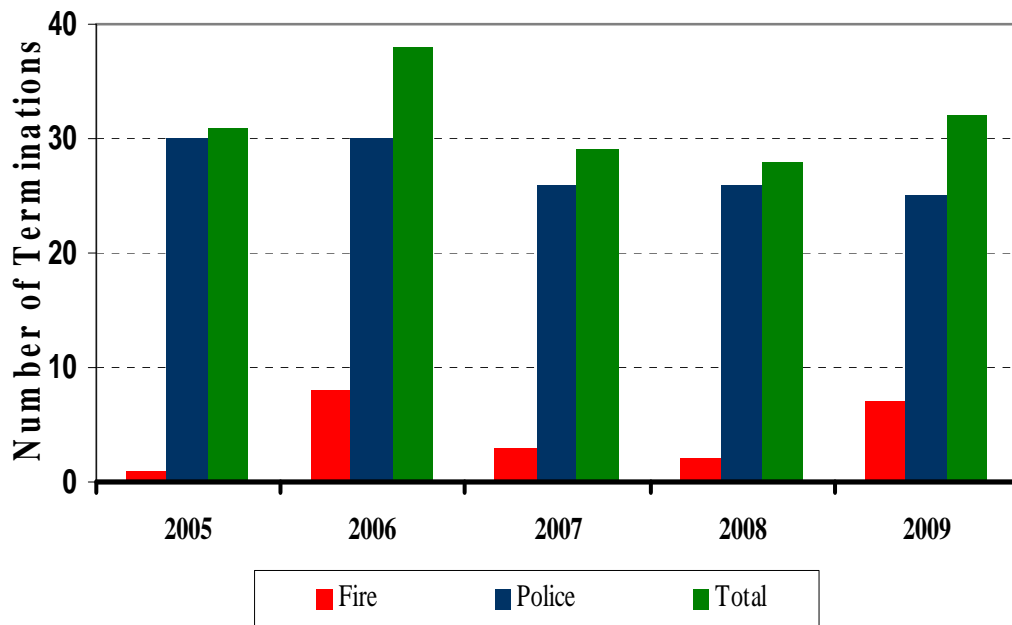
As shown in the table below, the rate of terminations on the whole is almost exactly what we expected. However, rates of termination for Fire were approximately 29% of expected while the termination rates for Police were approximately 161% of expected.

Participant Group	Exposures	Actual Terminations	Expected Terminations	Ratio of Actual Terminations to Expected Terminations
Firefighters	1,831	21	71.2	29%
Police Officers	2,141	137	85.0	161%
Total	**3,972**	**158**	**156.2**	**101%**

Currently, the turnover assumption used in the valuation is based on the members' age, with no distinction between Fire or Police. We recommend adding a five-year select period and adopting different rates for Fire and Police. A select period is proposed because actual turnover is greater in the first five years of employment for both Fire and Police. The current and proposed assumptions are gender-neutral.

We propose that for Fire the current rates be reduced by 50% for the five-year select period and by 80% for the ultimate (5+ years) period. For Police, we propose increasing current rates by 100% for the five-year select period and by 50% for the ultimate period. A comparison of the actual experience, current rates and proposed rates is shown in Tables 7A and 7B for Fire and in Tables 8A and 8B for Police. Graphs 7A, 7B, 8A, and 8B illustrate this information. Complete tables of proposed turnover rates are shown in *Appendix B*.

TABLE 7A:
TURNOVER RATES-FIREFIGHTERS
For the Period January 1, 2005 through December 31, 2009

Average Age	Firefighters With At least 1 Year of Service					
	Actual Count	Actual Rate	Current Count	Current Rate	Proposed Count	Proposed Rate
20-24	0	0.00%	2.36	5.94%	1.22	2.97%
25-29	9	2.82%	13.31	4.40%	6.88	2.20%
30-34	5	1.31%	12.74	3.39%	6.51	1.70%
35-39	1	0.32%	7.93	2.60%	4.08	1.30%
40-44	0	0.00%	5.51	1.91%	2.85	0.96%
45-49	1	0.34%	2.91	1.19%	1.76	0.60%
50-54	0	0.00%	0.36	0.40%	0.34	0.20%
55-59	0	0.00%	0.00	0.00%	0.00	0.00%
Total	16	0.87%	45.12	2.60%	23.65	1.30%

Graph 7A:
TURNOVER RATES
Firefighters with At Least One Year of Service
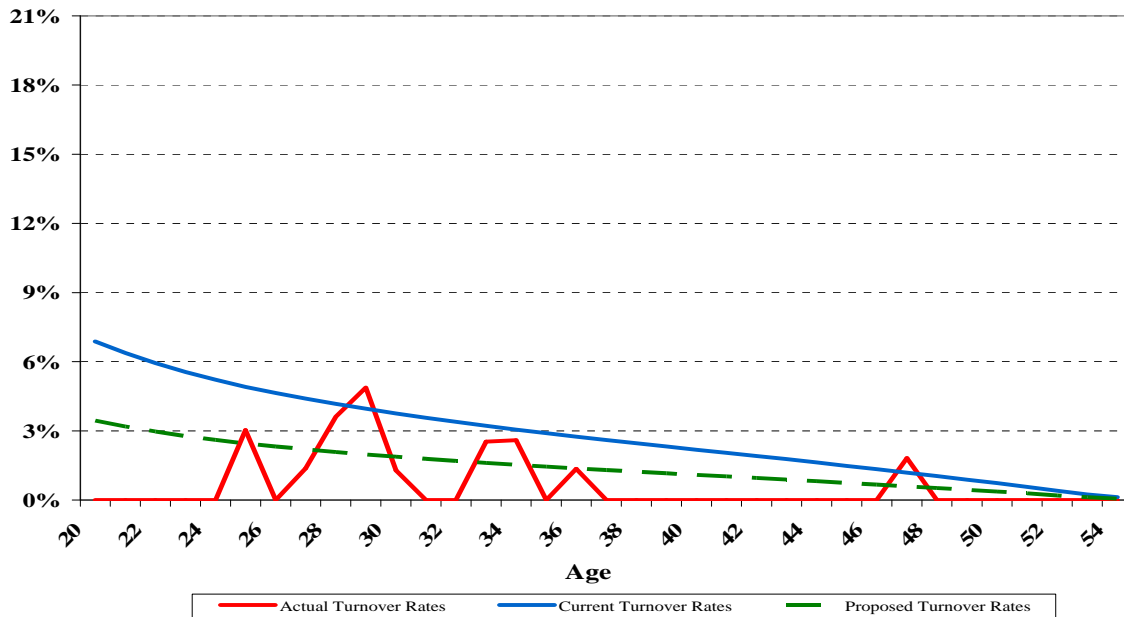
TABLE 7B:
TURNOVER RATES-FIREFIGHTERS
For the Period January 1, 2005 through December 31, 2009

Average Age	Firefighters With Five or More Years of Service					
	Actual Count	Actual Rate	Current Count	Current Rate	Proposed Count	Proposed Rate
20-24	0	0.00%	0.00	5.94%	0.00	1.19%
25-29	0	0.00%	4.01	4.40%	0.83	0.88%
30-34	3	1.24%	8.01	3.39%	1.64	0.68%
35-39	1	0.47%	5.46	2.60%	1.12	0.52%
40-44	0	0.00%	5.31	1.91%	1.10	0.38%
45-49	1	0.34%	2.91	1.19%	0.71	0.24%
50-54	0	0.00%	0.36	0.40%	0.14	0.08%
55-59	0	0.00%	0.00	0.00%	0.00	0.00%
Total	5	0.38%	26.06	2.10%%	5.53	0.42%

GRAPH 7B:
TURNOVER RATES
Firefighters with Five or More Years of Service
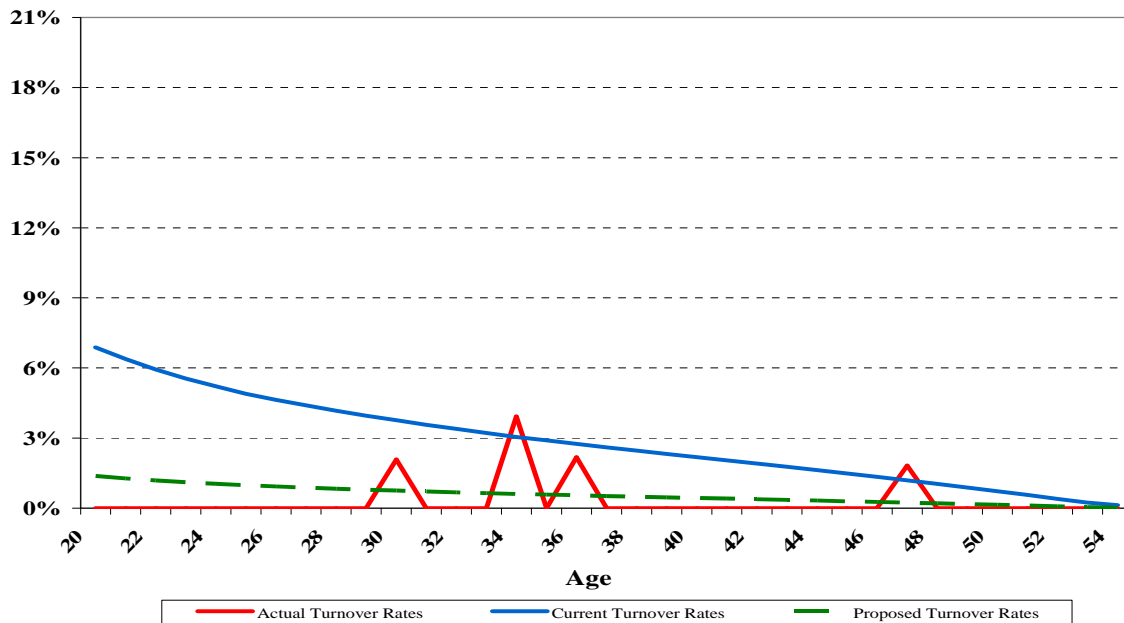
TABLE 8A:
TURNOVER RATES-POLICE OFFICERS
For the Period January 1, 2005 through December 31, 2009

| Average Age | Police Officers With At least 1 Year of Service | | | | | |
	Actual Count	Actual Rate	Current Count	Current Rate	Proposed Count	Proposed Rate
20-24	6	9.84%	3.07	5.94%	6.70	11.88%
25-29	16	5.18%	12.98	4.40%	26.78	8.80%
30-34	29	6.42%	14.59	3.39%	30.53	6.78%
35-39	29	5.63%	12.99	2.60%	26.98	5.20%
40-44	11	2.84%	7.15	1.91%	14.91	3.82%
45-49	1	0.41%	2.51	1.19%	5.92	2.38%
50-54	0	0.00%	0.27	0.40%	1.14	0.80%
55-59	0	0.00%	0.00	0.00%	0.00	0.00%
Total	92	4.30%	53.56	2.65%	112.95	5.30%

Graph 8A:
TURNOVER RATES
Police Officers with At Least One Year of Service

TABLE 8B:
TURNOVER RATES-POLICE OFFICERS
For the Period January 1, 2005 through December 31, 2009

Average Age	Police Officers With Five or More Years of Service					
	Actual Count	Actual Rate	Current Count	Current Rate	Proposed Count	Proposed Rate
20-24	0	0.00%	0.00	5.94%	0.00	8.91%
25-29	1	1.85%	2.14	4.40%	3.30	6.60%
30-34	13	4.41%	9.45	3.39%	14.79	5.09%
35-39	24	5.76%	10.51	2.60%	16.35	3.90%
40-44	6	1.69%	6.58	1.91%	10.25	2.87%
45-49	1	0.42%	2.49	1.19%	4.40	1.79%
50-54	0	0.00%	0.27	0.40%	0.85	0.60%
55-59	0	0.00%	0.00	0.00%	0.00	0.00%
Total	45	2.93%	31.44	2.17%	49.94	3.26%

GRAPH 8B:
TURNOVER RATES
Police Officers with Five or More Years of Service
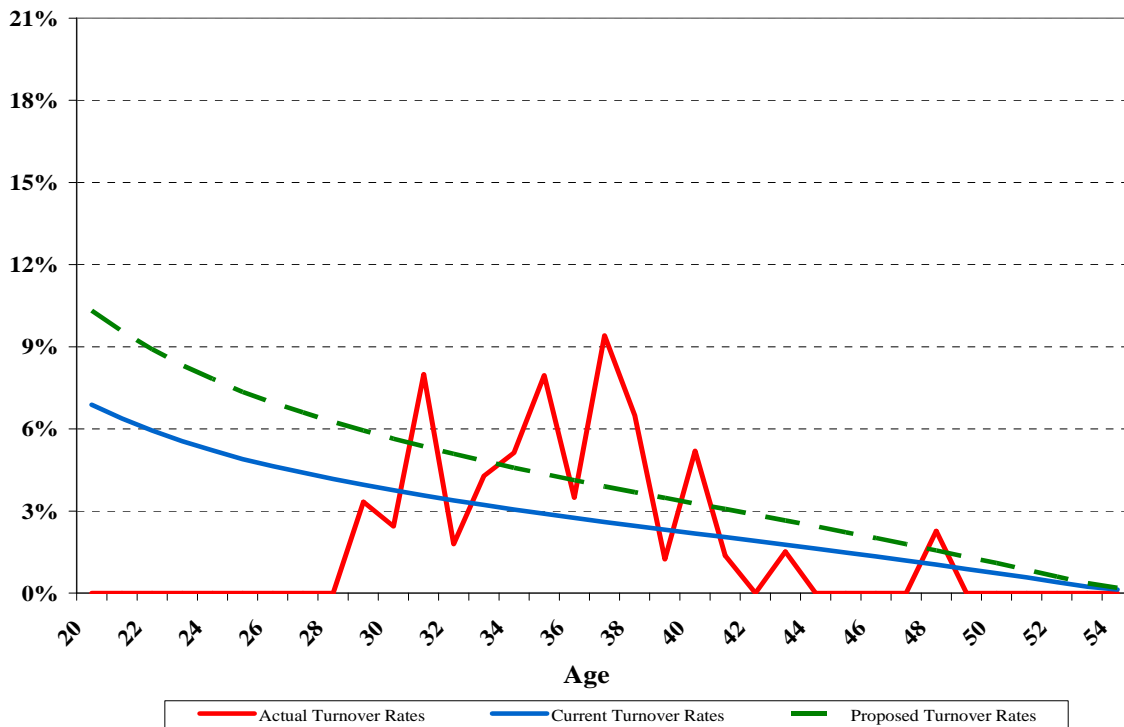
C. Retirement Rates

Under the Plan, participants are eligible to retire after they have attained 25 years of service, regardless of age, or once they have reached 55 years of age with 10 years of service. Participants are eligible to retire with a Back-DROP of up to three years between 25 – 30 years of service, but are not allowed to drop back prior to 25 years of service. The majority of participants retire with the Back-DROP.

Retirement is heavily subsidized due to the ability to leave at any age with 25 years of service. Therefore, an accurate prediction of the ages at which members will retire is essential in order to obtain a realistic assessment of the system's liabilities for retirement benefits. Since retirement accounts for most of the plan's liability, it is essential to review this assumption thoroughly in order to predict the relative importance of retirement benefits versus ancillary (i.e., death and disability) benefits, and to properly measure the overall magnitude of retirement liabilities.

A total of 81 participants retired from active service during the study period. As the graph below illustrates, the actual total number of DROP retirements far exceeded the number of non-DROP retirements during this period.
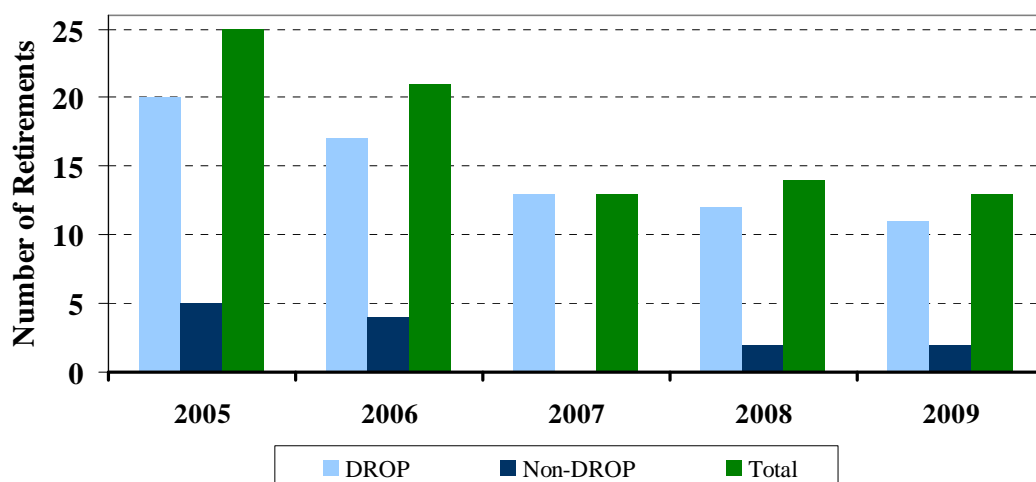
The actual number of retirements for both Fire and Police has been greater than expected as shown by the table below.

Participant Group	Exposures	Actual Retirements	Expected Retirements	Ratio of Actual Retirements to Expected Retirements
Firefighters	118	51	34.7	147%
Police Officers	86	30	28.4	106%
Total	**204**	**81**	**63.1**	**128%**

The fact that there were more Fire exposures and actual retirements during the past five years corresponds with our Turnover findings. Fire Department employees did not terminate during the study as soon or as often as Police Department employees, therefore a greater number of Fire Department employees were working towards retirement age. It appears there may have been a

backlog of Fire Department employees waiting to retire and that this trend may possibly reverse itself over the next few years, as in the January 1, 2010 actuarial valuation there are 14 Fire participants with at least 25 years of service versus 24 Police participants with at least 25 years of service.

As a result of recent changes to the Plan, participants were given the option to increase their employee contribution rate to 9% and keep the current DROP or remain at the 8% employee contribution rate and accept a slightly modified DROP. The DROP for participants hired in 2009 or later is slightly modified as well. Retirement rates were changed for the 8% contribution-rate employees and for new hires in the January 1, 2009 actuarial valuation. Not enough time has passed to warrant changing those rates at this time.

For employees at the 9% contribution rate, we propose slight modifications to account for the fact that the average length of service at retirement during the past five years was approximately 28 years of service and that very few participants work past 30 years of service. In the January 1, 2010 actuarial valuation, only three of 793 active participants have over 30 years of service.

We recommend that the same set of retirement rates be used for both Fire and Police.

Tables 9A and 9B show the actual, expected and proposed number of retirements.

Graphs 9A and 9B display the actual, expected and new proposed retirement rates. A complete table of proposed retirement rates is shown in *Appendix C*.

Table 9A:
RETIREMENT RATES –FIREFIGHTERS
For the Period January 1, 2005 through December 31, 2009

Years of Service at Retirement	Exposures	Actual Non-Disability Retirements	Actual Retirement Rate	Expected Retirements	Current Retirement Rate	Ratio of Actual to Expected Retirements	Proposed Rate	Proposed Retirements
25	38	10	26.32%	7.60	20.00%	131.58%	25.00%	9.50
26	28	3	10.71%	2.80	10.00%	107.14%	10.00%	2.80
27	14	8	57.14%	1.40	10.00%	571.43%	60.00%	8.40
28	27	24	88.89%	13.50	50.00%	177.78%	80.00%	21.60
29	4	4	100.00%	2.80	70.00%	142.86%	80.00%	3.20
30	2	2	100.00%	1.60	80.00%	125.00%	100.00%	2.00
31	0	0	0.00%	0.00	80.00%	0.00%	100.00%	0.00
32 or more	5	0	0.00%	5.00	100.00%	0.00%	100.00%	5.00
Total	**118**	**51**	**43.22%**	**34.70**	**29.41%**	**146.97%**	**44.49%**	**52.50**

Graph 9A:
RETIREMENT RATES – FIREFIGHTERS
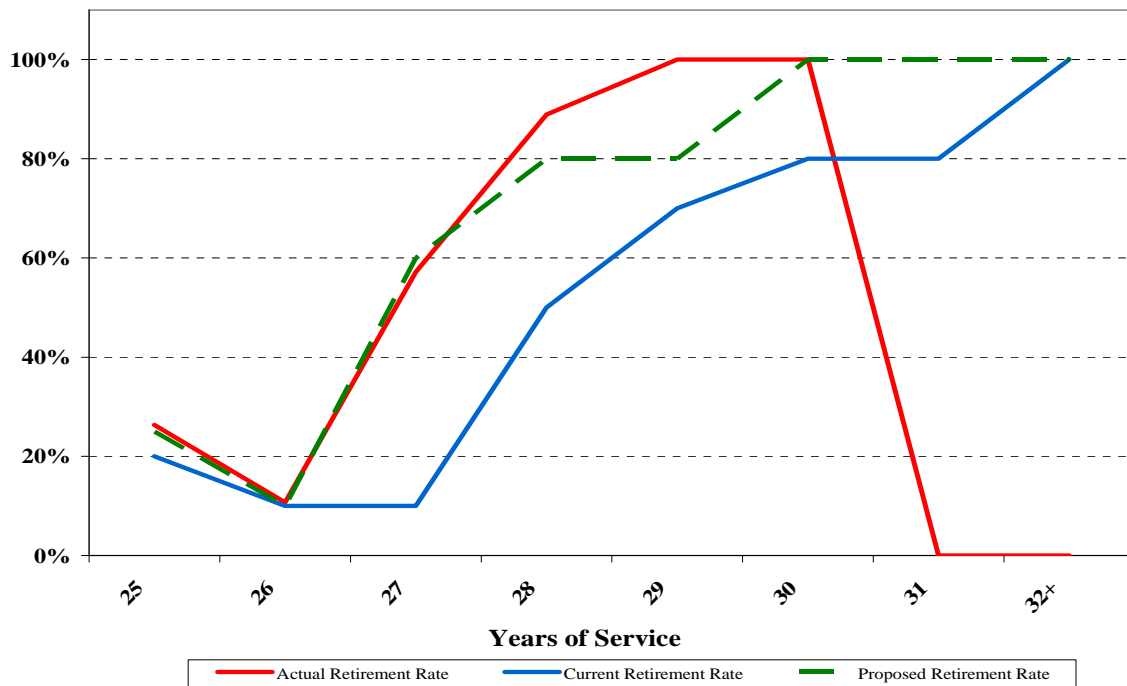
Table 9B:
RETIREMENT RATES –POLICE OFFICERS
For the Period January 1, 2005 through December 31, 2009

Years of Service at Retirement	Number Exposures	Actual Non-Disability Retirements	Actual Retirement Rate	Expected Retirements	Current Retirement Rate	Ratio of Actual to Expected Retirements	Proposed Rate	Proposed Retirements
25	30	7	23.33%	6.00	20.00%	116.67	25.00%	7.50
26	20	3	15.00%	2.00	10.00%	150.00	10.00%	2.00
27	11	8	72.73%	1.10	10.00%	727.27	60.00%	6.60
28	8	7	87.50%	4.00	50.00%	175.00	80.00%	6.40
29	3	3	100.00%	2.10	70.00%	142.86	80.00%	2.40
30	2	1	50.00%	1.60	80.00%	62.50	100.00%	2.00
31	2	0	0.00%	1.60	80.00%	0.00	100.00%	2.0
32 or more	10	1	10.00%	10.00	100.00%	10.00	100.00%	10.00
Total	**86**	**30**	**34.88%**	**28.40**	**33.02%**	**105.63%**	**45.23%**	**38.90**

Graph 9B:
RETIREMENT RATES – POLICE OFFICERS

.
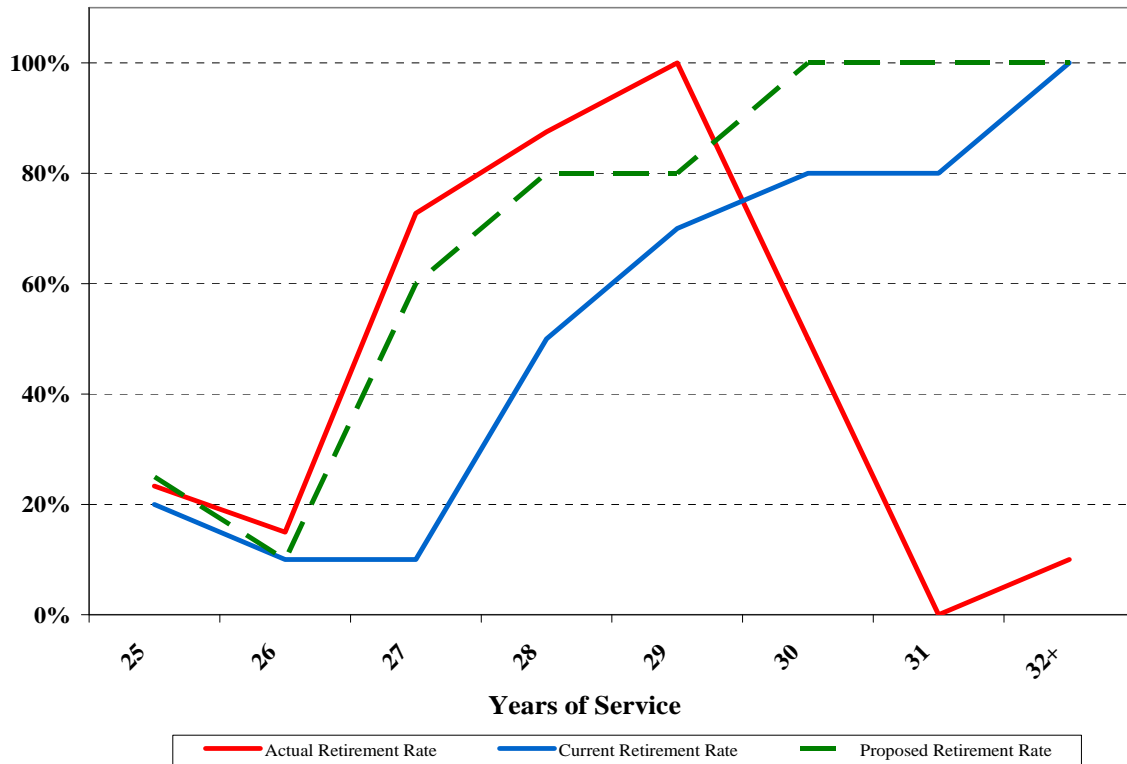
D. Disability Rates

Participants are eligible for immediate disability benefits if they are disabled in the line of duty. A participant must be employed for at least three years to be eligible for immediate disability benefits if they are disabled outside of the line of duty.

Disability rate tables function in the same way as mortality tables. The rate at each age indicates the probability of becoming disabled before the next age. Disability rates add liability for the value of the disability benefits, but lessen the value of retirement benefits ultimately payable, since anyone who becomes disabled is not projected to receive retirement benefits other than the disability benefit.

The current disability table is based on rates developed in previous experience studies. There is no distinction made on the basis of gender. Chart 10 and Graph 10 summarize the experience during the five-year period. There were only three disabilities, which was about 25% of expected disabilities. There were no disability retirements at all for anyone under age 35.

The rate of disabilities was compared against the Old Age, Survivors and Disability Insurance (OASDI or Social Security) to determine if there was a better fit. It was determined that 25% of the OASDI table was a good match, and this is the adjusted table that we are recommending. When compared to the current assumption, this table provides for lower rates at all ages. We found no reason to distinguish between genders or by department for this decrement, and thus the same table is recommended for both males and females, as well as Fire and Police. A complete table of proposed disability rates is shown in *Appendix D*

TABLE 10:
DISABILITY RATES
FOR THE PERIOD JANUARY 1, 2005 THROUGH DECEMBER 31, 2009

Average Age	Number Exposed	Actual Disabilities	Actual Disability Rate	Expected Disabilities	Current Disability Rate	Ratio of Actual Rate to Expected Rate	Proposed Disability Rate
Under 25	106	0	0.00%	0.12	0.12%	0.00%	0.02%
25-29	628	0	0.00%	0.89	0.14%	0.00%	0.02%
30-34	835	0	0.00%	1.43	0.17%	0.00%	0.03%
35-39	823	1	0.12%	1.82	0.22%	54.89%	0.04%
40-44	690	0	0.00%	2.25	0.33%	0.00%	0.07%
45-49	533	1	0.19%	2.65	0.50%	37.79%	0.11%
50-54	269	1	0.37%	2.06	0.77%	48.56%	0.18%
55-59	84	0	0.00%	0.97	1.15%	0.00%	0.29%
60-64	4	0	0.00%	0.07	1.75%	0.00%	0.44%
Total	**3,972**	**3**	**0.08%**	**12.25**	**0.31%**	**24.48%**	**0.03%**

GRAPH 10:
DISABILITY RATES
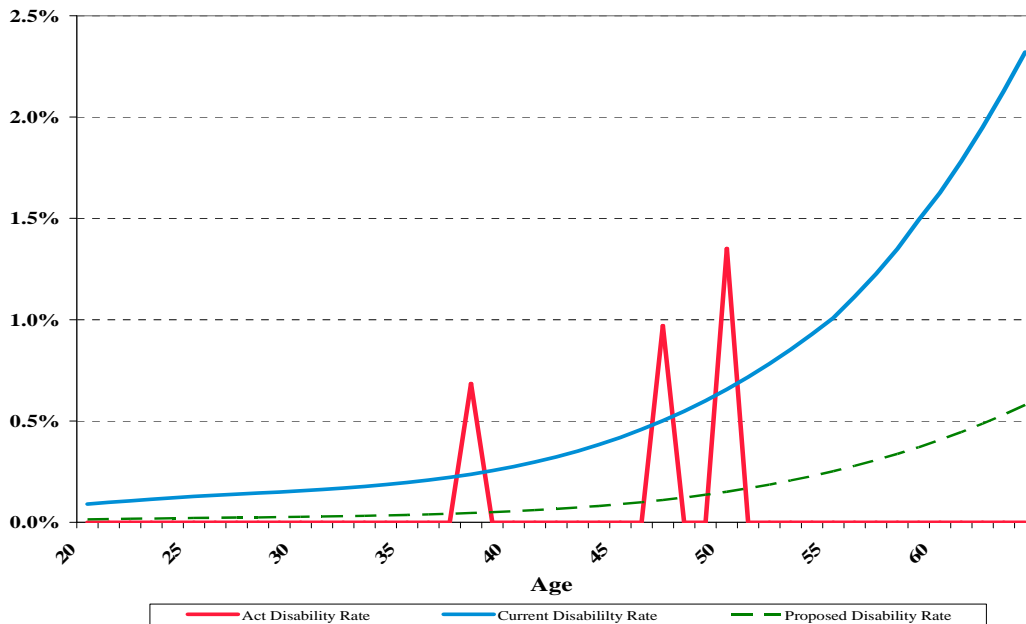
IV. Actuarial Methods

A. Asset Smoothing

The current actuarial value of assets is based on a five-year smoothing of assets. Under this method, the actuarial value of assets is calculated as the market value less unrecognized portions of asset gains or losses. In the first year under this method, the actuarial value equals the market value. In future years asset gains or losses on a market value basis are recognized over five-year periods.

Effective with the January 1, 2009 actuarial valuation, the 20% corridor around market value was removed. Based on recent 30-year projections we performed for the Board, we believe the actuarial value of assets will be back within 20% of the market value of assets within the next few years. For the January 1, 2010 actuarial valuation, the actuarial value of assets is 125.49% of the market value, down from 140.84% one year ago.

Our recommendation is to maintain the current asset method. We believe this method complies with the spirit and letter of ASOP 44, which governs for Actuaries the reasonableness of asset smoothing methods.

B. Actuarial Cost Method

Actuarial cost methods are the means by which the present value of future benefits are allocated over the working lifetime of plan participants. The most commonly used method for public sector plans is the Entry Age Normal Method.

Under the Entry Age Normal method the annual normal cost is a function of the member's plan entry age and represents the share of the cost of the expected retirement benefit that is allocated to each year. The allocation is designed to produce a normal cost that remains level as a percentage of payroll for the working career of the member. The Entry Age Normal method develops a normal cost that stays constant as a percentage of payroll for each member.

The Segal Company uses a variation of the Entry Age Normal method called the Replacement Life method. It recognizes that every member that retires is likely to be *replaced* by a new member. This method bases the normal cost exclusively on the most recent plan provisions, and allows historical plan structures to flow into the actuarial accrued liability calculation. We have found that this approach provides a more stable and level normal cost calculation, because the normal cost for current members and new members are based on exactly the same plan design.

C. Amortization of Unfunded Actuarial Accrued Liability

The recommended contribution is based on a closed 30-year, level percent of payroll amortization. A closed period means that the number of years over which the unfunded actuarial accrued liability is amortized decreases by one each year. Effective with the January 1, 2009 actuarial valuation the Board re-set the amortization period from 27 to 30 years. This amortization period will be 29 years with the January 1, 2010 actuarial valuation and will continue decreasing by one year each valuation thereafter.

We do not suggest a change in the amortization period or amortization methodology for the UAAL at this time.

Graphs 11 and 12 on the following page show the projected contribution rates and funding percentages over the next 30 years based on: the current assumptions; the proposed assumptions with an interest rate assumption of 7.75%; and the proposed assumptions with an interest rate assumption of 8.00%.

The projections on the following page are based on the following:

> Demographic and economic data as of December 31, 2009;

> All demographic and interest rate assumptions are met;

> An open-group forecast, assuming new hires have the same characteristics as the average participant hired in the past five years;

> The closed amortization period does not get re-set and continues decreasing down to a one-year amortization period; and,

> The City contributes the recommended contribution each year.

Graph 11:
PROJECTION OF ANNUAL REQUIRED CONTRIBUTION (ARC)

Prelim 2010 Valuation — Proposed Changes @ 7.75% — Proposed Changes @ 8.00%
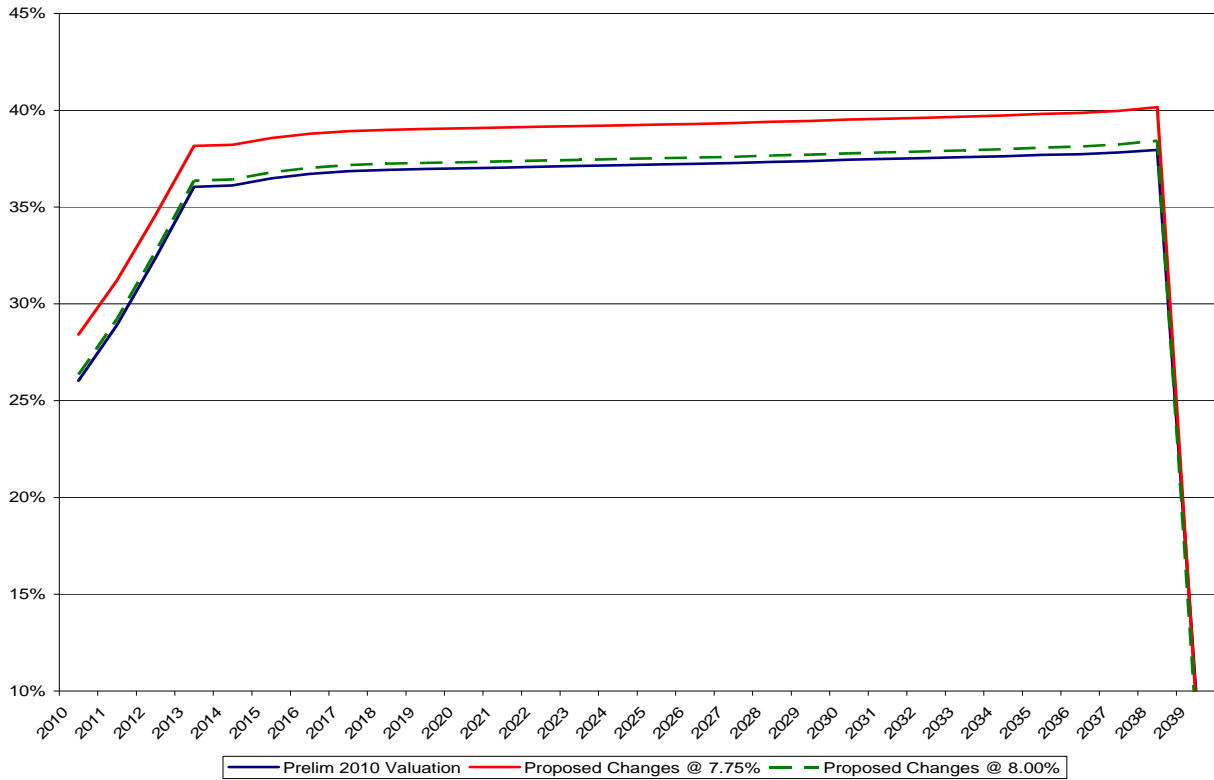
Graph 12:
PROJECTION OF FUNDED PERCENTAGE (%)

Prelim 2010 Valuation — Proposed Changes @ 7.75% — Proposed Changes @ 8.00%
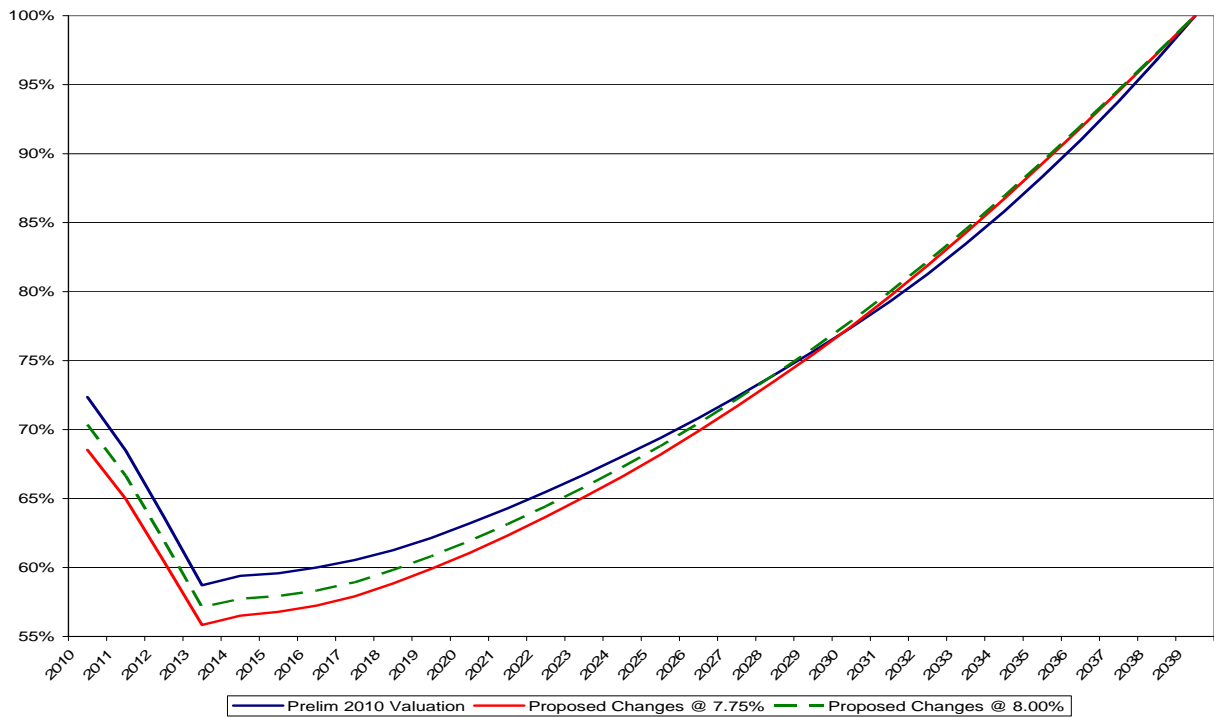
V. Appendix

Appendix A. Proposed Mortality Rates

| | Pre-Retirement Mortality | | | | Post-Retirement Healthy Mortality | | | | Disabled Annuitant Mortality | |
| | Male | Female | | | Male | Female | | | Male | Female |
Age	Proposed	Proposed		Age	Proposed	Proposed		Age	Proposed	Proposed
20	0.04%	0.02%		40	0.04%	0.02%		40	0.21%	0.17%
21	0.04%	0.02%		41	0.04%	0.02%		41	0.23%	0.18%
22	0.04%	0.02%		42	0.04%	0.02%		42	0.24%	0.20%
23	0.04%	0.02%		43	0.04%	0.02%		43	0.27%	0.21%
24	0.04%	0.02%		44	0.04%	0.02%		44	0.30%	0.22%
25	0.04%	0.02%		45	0.04%	0.02%		45	0.33%	0.24%
26	0.04%	0.02%		46	0.04%	0.02%		46	0.36%	0.26%
27	0.04%	0.02%		47	0.04%	0.02%		47	0.42%	0.28%
28	0.07%	0.03%		48	0.07%	0.03%		48	0.50%	0.31%
29	0.08%	0.03%		49	0.08%	0.03%		49	0.56%	0.34%
30	0.09%	0.04%		50	0.09%	0.04%		50	0.64%	0.38%
31	0.09%	0.04%		51	0.09%	0.04%		51	0.73%	0.43%
32	0.10%	0.05%		52	0.10%	0.05%		52	0.83%	0.49%
33	0.11%	0.05%		53	0.11%	0.05%		53	0.94%	0.58%
34	0.12%	0.06%		54	0.12%	0.06%		54	1.08%	0.68%
35	0.12%	0.06%		55	0.12%	0.06%		55	1.23%	0.80%
36	0.13%	0.07%		56	0.13%	0.07%		56	1.38%	0.91%
37	0.13%	0.08%		57	0.13%	0.08%		57	1.55%	1.04%
38	0.14%	0.09%		58	0.14%	0.09%		58	1.76%	1.18%
39	0.14%	0.10%		59	0.14%	0.10%		59	1.95%	1.32%
40	0.15%	0.11%		60	0.15%	0.11%		60	2.17%	1.47%
41	0.16%	0.12%		61	0.16%	0.12%		61	2.39%	1.64%
42	0.17%	0.13%		62	0.17%	0.13%		62	2.68%	1.86%
43	0.18%	0.14%		63	0.18%	0.14%		63	2.93%	2.07%
44	0.19%	0.15%		64	0.19%	0.15%		64	3.22%	2.31%
45	0.20%	0.16%		65	0.20%	0.16%		65	3.54%	2.56%
46	0.21%	0.17%		66	0.21%	0.17%		66	3.91%	2.82%
47	0.23%	0.18%		67	0.23%	0.18%		67	4.31%	3.09%
48	0.24%	0.20%		68	0.24%	0.20%		68	4.77%	3.38%
49	0.27%	0.21%		69	0.27%	0.21%		69	5.27%	3.69%
50	0.30%	0.22%		70	0.30%	0.22%		70	5.81%	4.04%
51	0.33%	0.24%		71	0.33%	0.24%		71	6.41%	4.44%
52	0.36%	0.26%		72	0.36%	0.26%		72	7.05%	4.90%
53	0.42%	0.28%		73	0.42%	0.28%		73	7.82%	5.42%
54	0.50%	0.31%		74	0.50%	0.31%		74	8.64%	6.02%
55	0.56%	0.34%		75	0.56%	0.34%		75	9.52%	6.70%
56	0.64%	0.38%		76	0.64%	0.38%		76	10.47%	7.47%
57	0.73%	0.43%		77	0.73%	0.43%		77	11.51%	8.31%
58	0.83%	0.49%		78	0.83%	0.49%		78	12.64%	9.23%
59	0.94%	0.58%		79	0.94%	0.58%		79	13.86%	10.24%
60	1.08%	0.68%		80	1.08%	0.68%		80	15.19%	11.33%
61	1.23%	0.80%		81	1.23%	0.80%		81	16.63%	12.48%
62	1.38%	0.91%		82	1.38%	0.91%		82	18.18%	13.67%
63	1.55%	1.04%		83	1.55%	1.04%		83	19.64%	14.87%
64	1.76%	1.18%		84	1.76%	1.18%		84	21.16%	16.05%
65	1.95%	1.32%		85	1.95%	1.32%		85	22.74%	17.20%
66	2.17%	1.47%		86	2.17%	1.47%		86	24.32%	18.26%
67	2.39%	1.64%		87	2.39%	1.64%		87	25.95%	19.26%
68	2.68%	1.86%		88	2.68%	1.86%		88	28.39%	20.54%
69	2.93%	2.07%		89	2.93%	2.07%		89	29.99%	21.52%
70	3.22%	2.31%		90	3.22%	2.31%		90	31.53%	22.39%

Pre-retirement and post-retirement mortality rates based on RP-2000 Blue Collar Mortality table set forward 2 years.

Disabled mortality rates are based on the RP-2000 Blue Collar Mortality table set forward 8 years.

V. Appendix

Appendix B. Proposed Turnover Rates

Age	Firefighters First Five Years of Participation Proposed	Firefighters After Five Years of Participation Proposed	Police Officers First Five Years of Participation Proposed	Police Officers After Five Years of Participation Proposed
20	3.44%	1.38%	13.76%	10.32%
21	3.19%	1.28%	12.76%	9.57%
22	2.97%	1.19%	11.88%	8.91%
23	2.78%	1.11%	11.10%	8.33%
24	2.61%	1.04%	10.44%	7.83%
25	2.45%	0.98%	9.80%	7.35%
26	2.32%	0.93%	9.28%	6.96%
27	2.20%	0.88%	8.80%	6.60%
28	2.09%	0.83%	8.34%	6.26%
29	1.98%	0.79%	7.92%	5.94%
30	1.88%	0.75%	7.52%	5.64%
31	1.79%	0.71%	7.14%	5.36%
32	1.70%	0.68%	6.78%	5.09%
33	1.61%	0.64%	6.44%	4.83%
34	1.53%	0.61%	6.10%	4.58%
35	1.45%	0.58%	5.80%	4.35%
36	1.38%	0.55%	5.50%	4.13%
37	1.30%	0.52%	5.20%	3.90%
38	1.23%	0.49%	4.92%	3.69%
39	1.16%	0.46%	4.64%	3.48%
40	1.09%	0.44%	4.36%	3.27%
41	1.03%	0.41%	4.10%	3.08%
42	0.96%	0.38%	3.82%	2.87%
43	0.89%	0.35%	3.54%	2.66%
44	0.82%	0.33%	3.26%	2.45%
45	0.74%	0.30%	2.96%	2.22%
46	0.67%	0.27%	2.68%	2.01%
47	0.60%	0.24%	2.38%	1.79%
48	0.52%	0.21%	2.08%	1.56%
49	0.44%	0.18%	1.76%	1.32%
50	0.37%	0.15%	1.46%	1.10%
51	0.29%	0.11%	1.14%	0.86%
52	0.20%	0.08%	0.80%	0.60%
53	0.12%	0.05%	0.48%	0.36%
54	0.07%	0.03%	0.26%	0.20%
55 & Over	0.00%	0.00%	0.00%	0.00%

V. Appendix

Appendix C. Proposed Retirement Rates

Years of Service	8% Contribution Rate	9% Contribution Rate
	Proposed	Proposed
Less than 25	0.00%	0.00%
25	20.00%	25.00%
26	10.00%	10.00%
27	10.00%	60.00%
28	30.00%	80.00%
29	35.00%	80.00%
30	80.00%	100.00%
31	80.00%	100.00%
32 & Over	100.00%	100.00%

Proposed Salary Scale Rates

Years of Service	Proposed Rates for the 2010 Valuation Year Only		Proposed Rates for the 2011 Valuation and After	
	Firefighters	Police Officers	Firefighters	Police Officers
0-1	4.25%	3.75%	7.50%	7.00%
1-2	4.00%	3.25%	7.25%	6.50%
2-3	3.75%	2.75%	7.00%	6.00%
3-4	3.00%	2.25%	6.25%	5.50%
4-5	2.75%	1.75%	6.00%	5.00%
5-6	2.50%	1.25%	5.75%	4.50%
6-7	2.00%	1.00%	5.25%	4.25%
7-8	1.50%	0.75%	4.75%	4.00%
8-9	1.00%	0.50%	4.25%	3.75%
9-10	0.00%	0.25%	3.25%	3.50%
10 & Over	0.00%	0.00%	3.25%	3.25%

Appendix

Appendix D. Proposed Disability Rates

Age	Proposed
20	0.02%
21	0.02%
22	0.02%
23	0.02%
24	0.02%
25	0.02%
26	0.02%
27	0.02%
28	0.02%
29	0.03%
30	0.03%
31	0.03%
32	0.03%
33	0.03%
34	0.03%
35	0.04%
36	0.04%
37	0.04%
38	0.05%
39	0.05%
40	0.06%
41	0.06%
42	0.07%
43	0.07%
44	0.08%
45	0.09%
46	0.10%
47	0.11%
48	0.12%
49	0.14%
50	0.15%
51	0.17%
52	0.19%
53	0.21%
54	0.23%
55	0.25%
56	0.28%
57	0.31%
58	0.34%
59	0.37%
60	0.41%
61	0.45%
62	0.49%
63	0.53%
64	0.58%
65 & Over	0.00%