

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN**

*ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION FOR THE SIX YEARS ENDED
SEPTEMBER 30, 2015*

August 2016



August 15, 2016

Board of Trustees
City of Largo Municipal Police Officers'
and Firefighters' Retirement Plan
Largo, Florida

**Re: Assumption Study and Experience Investigation for the Six-Year Period Ending
September 30, 2015**

Dear Board Members:

Gabriel, Roeder, Smith & Company is pleased to provide the results of our assumption study and experience investigation for the City of Largo Municipal Police Officers' and Firefighters' Retirement Plan. The period covered by this study is October 1, 2009 through September 30, 2015. Based upon the results, certain changes in actuarial assumptions for valuation purposes are recommended.

The Table of Contents, which immediately follows, sets out the material contained in this report.

This Report was prepared at the request of the Board and is intended for use by the Retirement Plan and those designated or approved by the Board. This Report may be provided to parties other than the Plan only in its entirety and only with the permission of the Board.

The purpose of this Report is to evaluate the assumptions and methods used for the October 1, 2015 and subsequent years' Actuarial Valuations, and to describe the financial effect of the recommended assumption and method changes based on our findings. This Report should not be relied on for any purpose other than the purpose described above.

The study was performed on the basis of participant data and financial information supplied by the Plan Administrator in connection with the valuations performed during the years studied. We checked for internal and year-to-year consistency, but did not otherwise audit this data. We are not responsible for the accuracy or completeness of the information provided by the Plan Administrator.

The enclosed calculations are based upon the Plan provisions as summarized in the October 1, 2015 Actuarial Valuation Report. If you have reason to believe the assumptions used are unreasonable, the Plan provisions are incorrectly described or referenced, or that important Plan provisions relevant to this study are not described, you should contact the undersigned prior to relying on this information.

The measurement date used for calculating the financial effect of the assumption and method changes was October 1, 2015. Future actuarial measurements may differ significantly from the current measurements presented in this Report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the

natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

Melissa R. Moskovitz and Peter N. Strong are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

This Report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the Plan as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Gabriel, Roeder, Smith & Company will be pleased to review this Report with the Board of Trustees and to answer any questions pertaining to the valuation.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

By Melissa R. Moskovitz
Melissa R. Moskovitz, MAAA, FCA
Enrolled Actuary No. 14-6467

By Pete Strong
Peter N. Strong, FSA, MAAA, FCA
Enrolled Actuary No. 14-6975

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN**

ASSUMPTION STUDY AND SIX-YEAR EXPERIENCE INVESTIGATION

TABLE OF CONTENTS

<i>Item</i>	<i>Page No.</i>
Summary of Findings	1
Assumption Study and Experience Investigation Results	3
Methodology	3
Basic Results and Conclusions	4
Rates of Salary Increase	4
Rates of Retirement	5
Rates of Mortality	7
Rates of Employment Separation	9
Rates of Disability	10
Rate of Investment Return	11
Appendices	
Appendix A: Comparison of Actual and Expected Annual Salaries	15
Appendix B: Comparison of Actual and Expected Retirements	16
Appendix C: Comparison of Actual and Expected Separations	17
Appendix D: Comparison of Actual and Expected Disabilities	18
Appendix E: Purpose of an Actuarial Valuation	19
Role of the Actuarial Assumptions	19

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION**

SUMMARY OF FINDINGS

The six-year period (October 1, 2009 to September 30, 2015) covered by this assumption study and experience investigation provided sufficient data to form a basis for recommending updates in the following demographic and financial assumptions used in the actuarial valuation of the Plan.

Recommended changes in actuarial assumptions resulting from this assumption study and experience investigation, including the first-year impact on required contributions as a dollar amount and as a percent of covered payroll, and the first year impact on the funded ratio are summarized below.

For comparison purposes, the required City contribution for the fiscal year ending September 30, 2017 is \$4,195,419 or 29.82% of covered payroll and the funded ratio as of October 1, 2015 was 73.6%. Please note that required City contribution assumes that the State revenue received is the same as the amount received in 2015 (\$614,795 for firefighters and \$562,962 for police officers).

Our recommendations are as follows:

- Update the future salary increase assumption to reflect lower observed salary increases, on average, than expected. In connection with this change, lower the payroll growth assumption for purposes of financing the unfunded actuarial accrued liability from 3.0% to 2.5%. According to the Florida Administrative Code, this rate may not exceed the average growth over the most recent ten years. The most recent ten year average is 0.87%. Therefore, this assumption change has no impact on the current results.

Estimated First Year Impact on Annual Contribution Requirement	Estimated First Year Impact on Funded Ratio
\$(351,503) or (2.39)% of covered payroll	0.85%

- Update assumed rates of future retirement to reflect generally lower observed early and normal retirement than expected.

Estimated First Year Impact on Annual Contribution Requirement	Estimated First Year Impact on Funded Ratio
\$(2,814) or (0.02)% of covered payroll	0.03%

- Update the mortality assumption to the Florida Retirement System (FRS) mortality assumption for Special Risk members. This change is mandated under Florida State law beginning with the October 1, 2016 valuation.

Estimated First Year Impact on Annual Contribution Requirement	Estimated First Year Impact on Funded Ratio
\$(157,579) or (1.12)% of covered payroll	0.69%

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION**

SUMMARY OF FINDINGS (CONTINUED)

- Update assumed rates of future separation from employment to reflect actual experience (to reflect generally lower observed separation experience than expected).

Estimated First Year Impact on Annual Contribution Requirement	Estimated First Year Impact on Funded Ratio
\$102,708 or 0.73% of covered payroll	0.54%

- Combined effect of all of the above assumption changes (salary increase rates, retirement rates, mortality rates, and rates of separation from employment).

Estimated First Year Impact on Annual Contribution Requirement	Estimated First Year Impact on Funded Ratio
\$(415,973) or (2.85)% of covered payroll	2.09%

- Combined effect of all assumption changes noted above PLUS a change in the investment return assumption from 7.5% to 6.75%, net of investment expenses.

Estimated First Year Impact on Annual Contribution Requirement	Estimated First Year Impact on Funded Ratio
\$789,341 or 5.75% of covered payroll	(3.97)%

- Combined effect of all assumption changes noted above PLUS a change in the investment return assumption from 7.5% to 7.0%, net of investment expenses.

Estimated First Year Impact on Annual Contribution Requirement	Estimated First Year Impact on Funded Ratio
\$377,292 or 2.81% of covered payroll	(1.97)%

Note: The sum of the individual cost impacts does not equal the impact of all changes combined due to the interaction of Plan provisions and actuarial assumptions with one another and the effect that one assumption change can have on the impact of another assumption change.

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

The methodology, basic results and conclusions of the six-year experience investigation of the actuarial assumptions are described below.

Methodology

The expected salaries at the end of each year were obtained by use of the salary scale assumption used in the October 1, 2015 actuarial valuation. The resulting expected salaries were higher compared with the actual salaries reported.

The number of members exposed to risk during each period was tabulated (exposure) and the expected incidence of separation (separation of members not eligible for normal retirement), disability, and retirement were obtained by use of the retirement, separation, and disability rates employed in the October 1, 2015 actuarial valuation. The actual number of retirees, separations, and disabilities was tabulated and compared with those expected.

A comparison of the current mortality rates compared to the new required (FRS) mortality rates is included for informational purposes.

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Basic Results and Conclusions

Rates of Salary Increase

Observed rate of pay increases were generally lower than expected during the experience investigation period.

We propose revised assumed rates of salary increase with components as follows. Actual versus expected experience is shown in Appendix A on page 15.

SALARY INCREASE ASSUMPTION							
Age	Current Salary Increase Rates			Age	Proposed Salary Increase Rates		
	Assumed General Inflation	Promotion, Productivity & Seniority	Total Current Rates		Assumed General Inflation	Promotion, Productivity & Seniority	Total Proposed Rates
All	3.00%	2.00%	5.00%	<25	2.50%	3.25%	5.75%
				25-39	2.50%	2.00%	4.50%
				40-49	2.50%	1.50%	4.00%
				50+	2.50%	1.25%	3.75%

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rates of Retirement

The observed number of early and normal retirements (or DROP entries) was lower than that expected under the assumed rates of retirement used in the October 1, 2015 actuarial valuation. The current and proposed retirement rates are shown in the following tables.

We note that the actual normal retirements observed through September 30, 2015 have occurred under the age 55 with 10 years of service and the “23 and out” eligibility provisions, while retirements in the future will occur under the age 55 with 10 years of service or the “25 and out” eligibility provisions for members hired on or after 10/1/2013. Therefore, observed experience under the “23 and Out” provision has been used to approximate the probabilities of retirement for members who are eligible under the “25 and Out” provision. Additionally, there was no observed experience for members who were 62 and older during the study period. Therefore, we propose continued use of the current rate of 100% for members age 62 and older.

Actual versus expected experience is shown in Appendix B on page 16.

CURRENT EARLY RETIREMENT RATES	
Age	Current Rates
50	15%
51 - 54	10%

CURRENT NORMAL RETIREMENT RATES	
Year of Eligibility for Normal Retirement	Current Rates
1st - 3rd	40%
4th	50%
5th	100%
Note: If eligible at age 55 with at least 10 years of service, the probability of retirement is 100%.	

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rates of Retirement (continued)

PROPOSED RETIREMENT RATES - HIRED BEFORE 10/1/2013			PROPOSED RETIREMENT RATES - HIRED ON OR AFTER 10/1/2013		
Year of Eligibility for Early Retirement		Proposed Rates	Year of Eligibility for Early Retirement		Proposed Rates
1st		5%	1st		5%
2nd through 5th		10%	2nd through 5th		10%
Years of Service	Age	Proposed Rates	Years of Service	Age	Proposed Rates
10 - 22	55 - 61	40%	10 - 24	55 - 61	40%
23	Under 51	40%	25	Under 51	40%
	51 - 54	60%		51 - 54	60%
	55 & Over	100%		55 & Over	100%
24 - 25	Under 55	30%	26 - 27	Under 55	30%
	55 & Over	100%		55 & Over	100%
26	Under 55	60%	28	Under 55	60%
	55 & Over	100%		55 & Over	100%
27 & Over	All	100%	29 & Over	All	100%
Note: If age 62 or older, the probability of retirement is 100%.			Note: If age 62 or older, the probability of retirement is 100%.		

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rates of Mortality

The current mortality assumption is based on the RP-2000 Combined Healthy Participant Mortality Tables for males and females, including a provision to project future improvements in mortality to all future years from the year 2000 using Scale AA. For disabled retirees, the regular mortality tables are set forward 5 years in ages to reflect impaired longevity.

The mortality assumption is required to be changed to the FRS mortality assumption for Special Risk Members under Florida state law for the October 1, 2016 funding actuarial valuation. FRS usually updates their mortality assumption once every five years after an experience study is completed. FRS' mortality assumption was last updated effective with their July 1, 2014 actuarial valuation. The current FRS mortality assumption is described below:

Healthy Mortality (Pre-Retirement and Post-Retirement) for Special Risk Members

- Female Non-Disabled: RP2000 Generational, 100% Annuitant White Collar, Scale BB
- Male Non-Disabled: RP2000 Generational, 90% Annuitant Blue Collar / 10% Annuitant White Collar, Scale BB

Disabled Mortality for Special Risk Members

- Female Disabled: RP2000, 60% Disabled Female set forward two years and 40% Annuitant with 100% White Collar Adjustment, no projection scale
- Male Disabled: RP2000, 60% Disabled Male setback four years and 40% Annuitant with 100% White Collar Adjustment, no projection scale

Comparisons of life expectancies with the current healthy mortality rates versus the new FRS healthy mortality rates are shown in the following tables. It should be noted that there is insufficient data (not enough lives) to draw any conclusions from a comparison of actual to expected deaths. Therefore, it is best to turn to published mortality tables, like from FRS, that are developed from an examination of data including many more lives.

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rates of Mortality (continued)

LIFE EXPECTANCY COMPARISON - HEALTHY MORTALITY (Current versus Proposed Mortality Assumption)				
Sample Attained Ages (in 2015)	Current Assumption - RP-2000 Combined Healthy Participant Mortality Table Projected using Scale AA		Proposed Assumption - Current FRS Healthy Mortality Assumption for Special Risk Class Members	
	Male	Female	Male	Female
40	84.77	85.85	83.31	88.43
45	84.55	85.74	83.43	88.22
50	84.35	85.68	83.67	88.11
55	84.23	85.71	84.02	88.09
60	84.29	85.93	84.45	88.20
65	84.68	86.44	85.05	88.46
70	85.48	87.32	85.95	89.02
75	86.68	88.59	87.25	89.96
80	88.45	90.28	89.08	91.36

LIFE EXPECTANCY COMPARISON - DISABLED MORTALITY (Current versus Proposed Mortality Assumption)				
Sample Attained Ages (in 2015)	Current Assumption - RP-2000 Combined Healthy Participant Mortality Table Set Forward 5 Years and Projected using Scale AA		Proposed Assumption - Current FRS Disabled Mortality Assumption for Special Risk Class Members	
	Male	Female	Male	Female
40	80.37	81.14	69.67	75.19
45	80.12	81.04	71.78	76.02
50	79.94	81.01	73.74	77.06
55	79.90	81.15	75.77	78.37
60	80.19	81.64	77.91	79.90
65	80.92	82.51	80.15	81.62
70	82.12	83.80	82.52	83.58
75	83.81	85.50	85.02	85.86
80	86.13	87.67	87.80	88.48

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rates of Employment Separation (withdrawal)

The observed rate of employment separations were generally higher than expected during the experience investigation period.

The current and proposed separation (withdrawal) rates are shown in the following table. Actual versus expected experience is shown in Appendix C on page 17.

WITHDRAWAL RATES					
Sample Ages	Years of Service	Current Rates	Sample Ages	Years of Service	Proposed Rates
ALL	Under 1	25.00%	ALL	Under 1	20.0%
	1	15.00%		1	10.0%
	2	12.00%		2	9.0%
	3	11.00%		3	7.5%
	4	10.00%		4	6.5%
	5	7.00%		5	5.5%
	6	6.00%		6 - 7	5.0%
	7	5.00%		8 - 9	3.0%
	8	4.00%		10 - 14	2.5%
				15 & Over	1.6%
20 - 24	9 & Over	4.00%			
25 - 29		4.00%			
30 - 34		4.00%			
35 - 39		3.60%			
40 - 44		2.40%			
45 - 49		1.40%			
50 - 54		0.01%			
55 & Over		0.01%			

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rates of Disability

There were very few disability retirements over the study period to provide statistically significant experience. We recommend continued use of the current disability rates. For informational purposes, actual versus expected experience is shown in Appendix D on page 18.

CURRENT DISABILITY RATES		
Sample Ages	Non Service-Connected	Service-Connected
20	0.035%	0.105%
25	0.038%	0.113%
30	0.045%	0.135%
35	0.058%	0.173%
40	0.075%	0.225%
45	0.128%	0.383%
50	0.250%	0.750%
55	0.388%	1.163%
60	0.000%	0.000%

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rate of Investment Return

The selection of the actuarial assumed rate of return is a major decision. It has even been a controversial topic for many pension boards and outside observers at times.

HOW TO DETERMINE THE ACTUARIAL ASSUMED RATE OF RETURN

The assumed net long-term expected rate of return is the Plan fiduciaries' best estimate of the future compound investment return of the fund, net of investment-related expenses.

A building block approach should be used, in which the expected real returns (net of inflation) for each asset class in which the Plan is invested are estimated and multiplied by the target asset allocation percentage of that asset class.

City of Largo Municipal Police Officers' and Firefighters' Retirement Plan's Asset Allocation

The fund's Investment Policy Statement provides a broad target asset allocation as follows:

Asset Class	Target	Range
Domestic Equity Securities	52.5%	40% - 50%
Foreign Equity Securities	10%	0% - 25%
<i>Total Equity</i>	62.5%	40% - 75%
Broad Market Fixed Income	30%	20% - 45%
<i>Total Fixed Income</i>	30%	20% - 45%
Real Estate	7.5%	0% - 15%
Alternative Assets	0%	0% - 0%
<i>Real Estate & Alternatives</i>	7.5%	0% - 15%
Cash & Cash Equivalents	0%	0% - 0%

FORWARD-LOOKING CAPITAL MARKET ASSUMPTIONS

Best practice for selecting the net investment return assumption considers a fund's asset allocation and reliable forecasts for capital market assumptions for each relevant asset class.

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rate of Investment Return (Continued)

GRS is not an investment consulting firm and does not provide investment consulting or forecasting services. But GRS maintains a survey of the forecasts of capital market assumptions from the following eight (8) major national investment consulting and forecasting firms to obtain a consensus:

Eight Major National Investment Consultants and Forecasters		
BNY/Mellon	Mercer	R.V. Kuhns & Associates
Aon Hewitt Ennis Knupp	NEPC	Pension Consulting Alliance
J. P. Morgan	Wilshire	

Mapping the Target Asset Allocation

The eight major national investment consultants do not all express their capital market assumptions in exactly the same asset classes as expressed above, so we have mapped the fund's asset allocation to the "best fit" asset classes of each investment consultant.

Build-up of Comparable Net Expected Returns

Column (2) in the following table shows the results of applying the mapping and calculation process of the gross 1-year returns for each of the eight investment consultants. These are called the "arithmetic means".

Investment Consultant	Investment Consultant Expected Nominal Return	Investment Consultant Inflation Assumption	Expected Real Return (2)-(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Investment and Active Management Expenses	Recognized Value for Active Management	Expected Nominal Return Net of Expenses (6)-(7)+(8)	Standard Deviation of Expected Return (1-Year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	6.34%	2.50%	3.84%	2.50%	6.34%	0.50%	0.40%	6.24%	12.18%
2	6.43%	2.25%	4.18%	2.50%	6.68%	0.50%	0.40%	6.58%	12.58%
3	6.73%	2.25%	4.48%	2.50%	6.98%	0.50%	0.40%	6.88%	12.02%
4	6.74%	2.20%	4.54%	2.50%	7.04%	0.50%	0.40%	6.94%	11.21%
5	6.71%	2.00%	4.71%	2.50%	7.21%	0.50%	0.40%	7.11%	12.29%
6	7.18%	2.26%	4.92%	2.50%	7.42%	0.50%	0.40%	7.32%	11.30%
7	6.49%	1.56%	4.93%	2.50%	7.43%	0.50%	0.40%	7.33%	11.80%
8	7.40%	2.20%	5.20%	2.50%	7.70%	0.50%	0.40%	7.60%	12.83%
Average	6.75%	2.15%	4.60%	2.50%	7.10%	0.50%	0.40%	7.00%	12.03%

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rate of Investment Return (Continued)

Normalizing for Inflation

Since each investment consultant uses slightly different inflation assumptions, in columns (3) through (6) the returns are normalized for inflation so that each investment consultant's gross 1-year returns includes the same inflation assumption.

Returns Net of Investment-related Expenses

Investment consultants and forecasters generally provide their expected returns gross of investment-related expenses. However, for funding and financial reporting purposes, the actuarial return assumption is net of investment-related expenses, so that the investment earnings assumed to accumulate over time are net of the fees and costs needed to generate the amounts available to pay benefits. The investment-related expenses for the Plan's fund is approximately 0.50%, including asset custody fees, investment consultant fees, hard dollar investment management fee from individually-managed portfolios and other investment fees.

The Actuarial Standards of Practice suggests the use of an assumption that is net of the expenses that would be required for a passive investment approach for the same portfolio (passive fees are estimated to be 0.10% in this case). Added value from active management can be recognized in excess of that, but not for more than the difference between active and passive management fees. While excess "alpha" returns may be expected by some to be achieved by the Plans' current and future investment managers and investment consultant, we cannot add alpha value in our assessment or development of our recommendation for the net investment return assumption.

Column (9) shows the expected nominal (i.e., including inflation) return for any given 1-year period, net of investment-related expenses. These are called the expected "arithmetic means".

ARITHMETIC AND GEOMETRIC MEANS

Arithmetic expected returns represent the investment forecaster's expectation for any one given year. Geometric expected returns represent the investment forecaster's expectation for the average compound return over a given horizon period. Everything in the table on the previous page relates to arithmetic means.

Geometric compounded average returns are always lower than arithmetic average returns. Actuarial valuations use compounding for measuring costs and liabilities. That is why the expected compound average return (geometric mean) is more appropriate for an actuarial investment return assumption.

**CITY OF LARGO MUNICIPAL POLICE OFFICERS’ AND FIREFIGHTERS’
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION RESULTS**

Rate of Investment Return (Continued)

As an investment return assumption, the geometric expected return is the return assumption that has a 50% chance of being achieved as a compound average over time. The geometric expected returns for the eight investment consultants are shown in the following table.

Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of exceeding 7.50%
	40th	50th	60th	
(1)	(2)	(3)	(4)	(5)
1	4.87%	5.55%	6.24%	23.69%
2	5.14%	5.85%	6.55%	27.78%
3	5.53%	6.21%	6.88%	31.44%
4	5.72%	6.35%	6.98%	32.31%
5	5.72%	6.41%	7.10%	34.50%
6	6.09%	6.73%	7.36%	37.93%
7	6.03%	6.69%	7.35%	37.86%
8	6.13%	6.84%	7.57%	40.90%
Average	5.65%	6.33%	7.00%	33.30%

As shown in the table, the average expected geometric return (or the 50th percentile of compound average returns) among all eight of the investment consultants is 6.33%. The range of expected geometric returns is 5.55% to 6.84%. In other words, the consensus opinion is that there is a 50-50 chance of achieving a 6.33% net investment return compounded over time.

RECOMMENDATION

Over the long-term, we recommend targeting the average geometric mean return. However, based on our analysis and the current average of the arithmetic mean returns among the eight investment consultants, we propose a net investment return assumption for the City of Largo Municipal Police Officers’ and Firefighters’ Retirement Plan of 6.75%. We recognize that the capital market assumptions of the investment consultant for the Plan may vary from the average of the eight investment consultants listed herein, and that an average must be viewed within a reasonable range of possibilities.

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION**

APPENDIX A

COMPARISON OF ACTUAL AND EXPECTED ANNUAL MEMBER SALARIES

ANNUAL SALARY INCREASES By Age									
Age	Prior Year	Current Assumption			Actual Experience		Actual Observed Inflation	Actual Observed Real Incr	Proposed Real Incr
		Expected	% Incr	Assumed Real Incr	Actual	% Incr			
<25	1,554,158	1,631,866	5.00%	2.00%	1,630,313	4.90%	1.63%	3.27%	3.25%
25-39	36,112,831	37,918,473	5.00%	2.00%	37,275,348	3.22%	1.63%	1.59%	2.00%
40-49	30,733,517	32,270,193	5.00%	2.00%	31,487,998	2.45%	1.63%	0.82%	1.50%
50+	3,591,576	3,771,155	5.00%	2.00%	3,642,473	1.42%	1.63%	-0.21%	1.25%
Total	71,992,082	75,591,687	5.00%	2.00%	74,036,132	2.84%	1.63%	1.21%	1.78%

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION**

APPENDIX B

COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS

RETIREMENT EXPERIENCE								
Year of Eligibility	Age	Exposure	Current Assumed Rates	Expected Ret.'s	Actual Ret.'s	Actual Rates	Proposed Retirement Rates	Expected Retirements (New Rates)
1st	50 - 54	32	15.0%	4.8	1	3.1%	5.0%	1.6
2nd through 5th		26	10.0%	2.6	2	7.7%	10.0%	2.6
Total		58	10.0%	7.4	3	5.2%	7.2%	4.2
Years of Service	Age	Exposure	Current Assumed Rates	Expected Ret.'s	Actual Ret.'s	Actual Rates	Proposed Retirement Rates	Expected Retirements (New Rates)
10 - 22	55 - 61	14	100.0%	14.0	5	35.7%	40.0%	5.6
	62 & Over	0	100.0%	0.0	0	N/A	100.0%	0.0
23	Under 51	39	40.0%	15.6	16	41.0%	40.0%	15.6
	51 - 54	14	40.0%	5.6	9	64.3%	60.0%	8.4
	55 & Over	3	100.0%	3.0	3	100.0%	100.0%	3.0
24 - 25	Under 55	20	40.0%	8.0	4	20.0%	30.0%	6.0
	55 & Over	1	100.0%	1.0	1	100.0%	100.0%	1.0
26	Under 55	13	50.0%	6.5	9	69.2%	60.0%	7.8
	55 & Over	0	100.0%	0.0	0	N/A	100.0%	0.0
27 & Over	Under 55	10	100.0%	10.0	8	80.0%	100.0%	10.0
	55 & Over	0	100.0%	0.0	0	N/A	100.0%	0.0
Total		114	55.9%	63.7	55	48.2%	50.4%	57.4

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION**

APPENDIX C

COMPARISON OF ACTUAL AND EXPECTED SEPARATIONS

SEPARATION EXPERIENCE								
Age	Years of Service	Exposure	Expected Separations	Expected %	Actual Separations	Actual %	Proposed Rates	Expected Separation (New Rates)
All	Under 1	33	8.25	25.0%	6	18.2%	20.0%	6.60
	1	72	10.80	15.0%	6	8.3%	10.0%	7.20
	2	66	7.92	12.0%	5	7.6%	9.0%	5.94
	3	68	7.48	11.0%	4	5.9%	7.5%	5.10
	4	76	7.60	10.0%	4	5.3%	6.5%	4.94
	5	84	5.88	7.0%	4	4.8%	5.5%	4.62
	6 - 7	156	8.59	5.5%	7	4.5%	5.0%	7.80
	8 - 9	149	5.96	4.0%	0	0.0%	3.0%	4.47
	10-14	248	6.45	2.6%	6	2.4%	2.5%	6.20
	15 & Over	247	3.87	1.6%	4	1.6%	1.6%	3.95
Total		1,199	72.80	6.1%	46	3.8%	4.74%	56.82

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION**

APPENDIX D

COMPARISON OF ACTUAL AND EXPECTED DISABILITIES

DISABILITY EXPERIENCE					
Group	Exposure	Expected Disabilities	Expected Average Rates	Actual Disabilities	Actual Average Rates
All Actives	1,371	5.40	0.4%	2	0.1%

**CITY OF LARGO MUNICIPAL POLICE OFFICERS' AND FIREFIGHTERS'
RETIREMENT PLAN
ASSUMPTION STUDY AND EXPERIENCE INVESTIGATION**

APPENDIX E

Purpose of the Actuarial Valuation

In a defined benefit pension plan, an employer makes a promise to its employees of a lifetime pension. The amount of the monthly pension is determined by a *benefit formula* which is often based upon a multiplier percentage and the number of years of service and the average final earnings of the employee.

The employer must design and follow a systematic plan for advance-funding this obligation. That is accomplished by establishing a pension fund and performing annual actuarial valuations to measure the liabilities associated with the obligation and to calculate how much the employer must contribute to the pension fund in order to make good on its promise.

The calculations in the actuarial valuation are performed each year to re-measure the liabilities. The stakeholders need to know how the plan is doing in its goal of systematically financing the promised benefits. So it is important to make the actuarial calculations in accordance with the professional actuarial standards of practice and the accounting standards.

Role of Actuarial Assumptions

The nature of the pension promise and its systematic funding require long term projections of the employee workforce (using demographic assumptions) and long term projections of the salaries and investment returns (using economic assumptions). The entire actuarial valuation process depends on the selection and use of reasonable actuarial assumptions as to future demographics and future economics. There are many different actuarial assumptions employed in an actuarial valuation. The primary actuarial assumptions include:

1. Rates of Salary Increases
2. Rates of Retirement
3. Rates of Mortality
4. Rates of Employment Separation
5. Rates of Disability
6. Rate of Investment Return

The actuary and plan management must be comfortable with the actuarial assumptions. The assumptions must be reasonable. Without a level of confidence in the reasonableness of the actuarial assumptions, the stakeholders and users of the valuation results cannot have confidence in the results. However, there is no way to have confidence in the actuarial assumptions unless an actuarial experience study is performed to assess the reasonableness of the current assumptions or to change them to be more in line with past experience and with future expectations.

For this reason the Board has requested that we undertake an actuarial experience study to recommend changes to the actuarial assumptions used in the annual actuarial valuation.