

CITY OF DELTONA  
FIREFIGHTERS' PENSION PLAN  
ACTUARIAL EXPERIENCE STUDY  
July 18, 2016



July 18, 2016

Board of Trustees  
City of Deltona  
Firefighters' Pension Board  
2345 Providence Boulevard  
Deltona, FL 32725

Re: Actuarial Experience Study

Dear Board:

As requested, we have performed an experience study determined as of October 1, 2015. In the course of the analysis, we compiled plan experience from October 1, 2008 through September 30, 2015. While we cannot verify the accuracy of all of the information provided, the supplied information utilized for performance of the annual actuarial valuations was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe it has produced appropriate results.

The purpose of this study is to review the current actuarial assumptions and methods to determine which changes, if any, are necessary in order to achieve the objective of developing costs that are stable, predictable, and represent our best estimate of anticipated experience.

It is important to remember that the ultimate cost of your retirement plan is independent of any actuarial assumptions or methods utilized throughout the valuation process. This cost will be the sum of the benefits paid from the fund and the administrative expenses incurred, less any net investment gains received.

The specific assumptions and methods investigated throughout the remainder of this study are as follows:

- Investment Return
- Salary Increases
- Mortality Rates
- Retirement Rates
- Withdrawal Rates

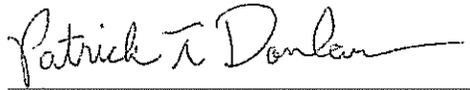
The balance of this Report presents details of the experience analysis. In addition, the report also contains the corresponding actuarial impact on the City's funding requirements and Unfunded Actuarial Accrued Liability (UAAL) for any proposed changes.

To the best of our knowledge, this report is complete and accurate in all aspects.

The undersigned is familiar with the immediate and long-term aspects of pension valuations, and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the actuarial opinions.

Respectfully submitted,

FOSTER & FOSTER INC.

By:   
Patrick T. Donlan, ASA, EA, MAAA

By:   
Drew D. Ballard, EA, MAAA

## ACTUARIAL STANDARDS OF PRACTICE

### **Background**

The Actuarial Standards Board has provided coordinated guidance through a series of Actuarial Standards of Practice (ASOP) for measuring pension obligations and determining pension plan costs or contributions. The ASOPs that apply specifically to valuing pensions are as follows:

- ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*, which ties together the standards shown below, provides guidance on actuarial cost methods, and addresses overall considerations for measuring pension obligations and determining plan costs or contributions
- ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*
- ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*
- ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*

Please note that the contents displayed throughout the remainder of this report are in compliance and consistent with the above mentioned Actuarial Standards of Practice. When applicable, further details of the ASOP associated with the reviewed actuarial assumption will be provided in the experience analysis, which is the basis for the remainder of the report.

### **Additional Required Communications**

Please keep in mind that future actuarial measurements may differ significantly from current measurements due to such factors as the following:

- Plan experience differing from that anticipated by the economic or demographic assumptions
- Changes in demographic assumptions
- Increases or decreases expected as part of the natural operation of the methodology used
- Changes in plan provisions or applicable law

The data used for purposes of this report was compiled from previous actuarial valuations, unless otherwise indicated.

## EXPERIENCE REVIEW SUMMARY

### Economic Assumptions

ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries in selecting (including giving advice on selecting) economic assumptions – primarily investment return, discount rate, and salary scale – for measuring obligations under defined benefit pension plans.

Throughout the remainder of this section, we have used the standards set forth in ASOP No. 27 as a guideline for reviewing and if applicable, selecting proposed changes to the following economic actuarial assumptions:

- Investment Return
- Salary Increases

Please keep in mind that ASOP No. 27 states that “the best an actuary can do is to use professional judgment to estimate possible future economic outcomes based on past experience and future expectations, and to select assumptions based upon that application of professional judgment.”

### Investment Return

The assumed rate of investment return is currently 8.00% per year compounded annually, net of investment related expenses. We believe that the decision to modify the investment return assumption shall be made based upon input from your investment consultant, reflecting any significant changes to the asset allocation, and their judgment of capital market returns. Keep in mind, however, that this assumption should reflect the best estimate of investment returns expected to be realized until the last participant in the plan dies, which could be 70-80 years from now.

In determining the investment return assumption, one determines the average rate of return the Fund expects to achieve based on the target allocation along with the corresponding capital market assumptions. Foster & Foster is an actuarial firm, and we do not have the required expertise to produce our own capital market assumptions. For purposes of illustrating this concept, we have included information disclosed in the GASB 67 report provided by your investment consultant, shown on the following page. Please keep in mind this return is net of investment related expenses, as well as the 3.00% inflation assumption, suggesting an expected return of approximately 8.86%. Therefore, the 8.00% assumption currently utilized seems in line with long-term expectations.

---

**Target Asset Allocation vs. Capital Market Assumptions**  
September 30, 2015

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long Term Expected Real Rate of Return</u>	<u>Expected Investment Return</u>
Domestic Equity	50.00%	7.50%	3.75%
International Equity	10.00%	8.50%	0.85%
Broad Market Fixed Income	20.00%	2.50%	0.50%
TIPS	5.00%	2.50%	0.13%
Global Bond	5.00%	3.50%	0.18%
Real Estate	10.00%	4.50%	0.45%
<b>Total</b>	<b>100.00%</b>		<b>5.86%</b>

Actual plan returns over the past seven (7) years have averaged 5.45% per year, significantly less than the current 8.00% assumption. The actual plan returns since October 1, 2008 are illustrated on the following page. This covers the relatively short period of time that we have been the Board's actuary (this time around).

As previously mentioned, we believe that the decision to modify the investment return assumption shall be made based upon input from your investment consultant. However, for informational purposes, we have determined the impact on the City and State funding requirements if the investment return assumption was decreased from the current 8.00% assumption to either 7.9%, 7.75%, or 7.50% per year.

The impact of decreasing the investment return assumption by 10, 25, or 50 basis points is illustrated below.

<u>Investment Rate</u>	<u>City + State Requirement</u>	<u>Increase*</u>	<u>UAAL</u>
8.00% (Current)	33.8%	n/a	7,035,518
7.90%	34.8%	1.0%	7,377,651
7.75%	36.2%	2.4%	7,902,863
7.50%	38.6%	4.8%	8,811,522

\* As a percentage of payroll.

**Investment Return History (Net-of-Fees)**  
 October 1, 2008 through September 30, 2015

<b>Year Ending</b>	<b>Market Investment Return</b>	<b>Investment Return Assumption</b>
9/30/2015	-0.59%	8.00%
9/30/2014	11.27%	8.00%
9/30/2013	9.50%	8.00%
9/30/2012	13.90%	8.00%
9/30/2011	-3.40%	8.00%
9/30/2010	10.59%	8.00%
9/30/2009	-1.65%	8.00%

<b>Averages</b>	
5 Years	5.91%
All Years	5.45%

Salary Increases

The salary increase assumption is used to project a participant’s salary from the valuation date until the assumed retirement age and plays an important role in measuring individual pension costs and obligations. Salary increase assumptions are typically represented as a flat salary scale assumption or a service-based assumption. A flat salary scale assumption assumes that a participant will get the same rate of salary increase for all years of service, whereas a service-based table may assume different rates based on the participant’s longevity with the plan.

Salary growth is comprised of three basic components:

- Merit increases
- Longevity increases
- Inflation increases

Currently, the valuation utilizes an age-based salary scale assumption that ranges from 5% to 8%, which includes the 3.00% annual inflation assumption. This assumption typically results in an average increase of about 5.7% per year. During the course of our analysis, we compiled the actual average annual increase since October 1, 2005. As you can see from the summary below, the past 10 years has been an average increase around 6.17% per year, which rises above the current 5.70% assumption over the ten

year period. Included in the ten year period was a one year increase of over 30%, which significantly distorts the results. The average over the last 5 years was 1.83%.

**Salary Increases**

October 1, 2005 through September 30, 2015

Averages	
5 Years	1.83%
10 Years	6.17%

Further, we analyzed the actual plan experience since October 1, 2008 utilizing actual salary increases based on completed service at the time of each annual valuation. As shown below, it appears that members receive larger salary increases at the beginning of their career, with the average increase decreasing at higher periods of service. However, it is not consistent (10-14 years was 2.2% and 15-19 years was 3.3%). Therefore, we propose changing to a flat 5% salary increase rate for all years. If salary experience continues to be less than 5% in the future, a change can be made at that time.

**Salary Increases**

October 1, 2008 through September 30, 2015

Service	Exposures	Prior Year Salaries	Expected Salaries	Actual Salaries	Actual Salary Increase	Proposed Salary Increase
0	16	619,987	661,121	670,968	8.2%	5.0%
1	24	970,877	1,038,023	1,007,172	3.7%	5.0%
2	37	1,489,345	1,589,353	1,573,500	5.7%	5.0%
3	34	1,383,450	1,475,538	1,433,489	3.6%	5.0%
4	33	1,438,157	1,532,187	1,467,250	2.0%	5.0%
5-9	153	7,370,186	7,811,761	7,613,707	3.3%	5.0%
10-14	64	4,047,614	4,261,783	4,137,285	2.2%	5.0%
15-19	36	2,576,021	2,707,521	2,661,802	3.3%	5.0%
20-24	53	4,233,000	4,444,650	4,318,744	2.0%	5.0%
25+	20	1,669,514	1,752,990	1,690,761	1.3%	5.0%
<b>Total</b>	<b>470</b>	<b>25,798,151</b>	<b>27,274,927</b>	<b>26,574,678</b>	<b>3.0%</b>	<b>5.0%</b>

Amending the salary increase assumption will have the effect of lowering the projected retirement benefits. The proposed assumption would result in a decrease of 0.5% of payroll to the City and State annual funding requirements. Despite the decrease in the funding requirement, the UAAL would actually increase from 7,035,518 to 7,109,684.

## Demographic Assumptions

ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries in selecting (including giving advice on selecting) demographic and other noneconomic assumptions for measuring obligations under defined benefit pension plans.

Over the following pages, the following applicable assumptions will be reviewed:

- Mortality Rates
- Retirement Rates
- Withdrawal Rates

Generally, demographic assumptions are based on actual plan experience with additional considerations for current trends. ASOP No. 35 states “the actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations, and select assumptions based upon application of that professional judgment.” ASOP No. 35 also states that “a reasonable assumption is one that is expected to approximately model the contingency being measured and is not anticipated to produce significant cumulative actuarial gains or losses...the actuary should not give undue weight to past experience when selecting demographic assumptions.”

Demographic assumptions generally remain consistent over time, absent significant changes in plan provisions. Therefore, the best true indicator of future experience is past experience. For each assumption, this analysis compares actual experience for the studied time period to the current assumptions utilized for purpose of the annual valuation.

Note that actuarial assumptions reflect average experience over long periods of time. A change in actuarial assumptions generally results when experience over a period of years indicates a consistent pattern. Proposed changes to the demographic assumptions better reflect actual plan experience over the studied time period. The proposed changes also meet the objective of developing costs that are stable, predictable, and represent our best estimate of anticipated future experience.

### Mortality Rates

The rate of mortality is the probability of death at a given age. As mortality rates have continued to decline over time, concern has increased about the impact of potential future mortality improvement on the magnitude of pension obligations. ASOP No. 35 discusses the importance of actuaries considering mortality improvements when measuring pension obligations. Specifically, an actuary should adjust mortality rates to reflect mortality improvement prior to the measurement date and include an assumption regarding the expected mortality improvement after the measurement date, if reasonable.

The plan currently assumes rates of mortality based on the RP-2000 Combined Healthy Mortality Table (sex distinct) with no adjustment for future mortality improvements for healthy lives and a 5-year set forward for disabled lives. As stated in our actuarial valuation report, we believe that this table sufficiently accommodates expected future mortality improvements.

However, as you are probably aware, Governor Scott signed HB 1309 (codified as Chapter 2015-157, Laws of Florida) which will require mandatory revisions to the mortality table used in the actuarial valuation to incorporate generational mortality improvements. Specifically, Chapter 2015-157 requires

that beginning with the October 1, 2016 valuation, all public plans must utilize the mortality table used by the Florida Retirement System actuary in one of their previous two actuarial valuations. Generational mortality improvements means that the assumed life expectancy will improve indefinitely. Therefore, someone born today is not expected to live as many years as someone who is born one year from today, who is not expected to live as many years as someone born two years from today, and so on.

To illustrate the impact of Chapter 2015-157, we employed the special risk mortality tables reflected in the Florida Retirement System Actuarial Valuation as of July 1, 2014.

The impact of changing the mortality assumption to utilize this table would be an increase to the City and State funding requirements of 2.2% of payroll and an increase in the UAAL from 7,035,518 to 8,035,403.

### Retirement Rates

A retirement rate is the associated probability at a specific point in time that a participant will retire, given that they have attained the eligibility requirements for retirement. The associated cost due to retirement experience is determined by the age at which participants actually retire.

The current provisions for Normal Retirement are the earlier of (1) Attainment of age 55 and the completion of 10 years of service, or (2) the completion of 25 years of service, regardless of age. Members who have attained age 50 with 10 years of service are eligible for Early Retirement.

The valuation currently uses age- and service-based retirement rates as shown in the table below. During the course of our analysis, it became clear that members with 10 to 24 years of service and members over age 51 with 25 or more years of service exhibited a lower incidence of retirement than expected, while members under age 52 with 25 or more years of service have exhibited a higher incidence of retirement than expected. Based on the experience illustrated below, we propose amending the assumed rates of retirement as shown below.

### Retirement Experience

October 1, 2008 through September 30, 2015

Service	Age	Exposures	Expected Retirements	Actual Retirements	Actual Retirement Rates	Current Retirement Rates	Proposed Retirement Rates
10-24	<52	7	0	0	0.0%	0.0%	0.0%
	52-54	17	0	1	5.9%	0.0%	0.0%
	55-59	19	11.36	1	5.3%	60.0%	20.0%
	60+	0	0	0	N/A	100.0%	100.0%
	<b>Total</b>	<b>43</b>	<b>11.36</b>	<b>2</b>	<b>4.7%</b>		
25-29	<52	12	3.59	5	41.7%	30.0%	40.0%
	52-54	6	3.59	1	16.7%	60.0%	40.0%
	55-59	17	10.17	4	23.5%	60.0%	40.0%
	60+	2	2	1	50.0%	100.0%	100.0%
	<b>Total</b>	<b>37</b>	<b>19.35</b>	<b>11</b>	<b>29.7%</b>		
30+	<52	1	0.3	1	100.0%	30.0%	40.0%
	52-54	0	0	0	N/A	100.0%	100.0%
	55-59	1	1	0	0.0%	100.0%	100.0%
	60+	2	2	0	0.0%	100.0%	100.0%
	<b>Total</b>	<b>4</b>	<b>3.3</b>	<b>1</b>	<b>25.0%</b>		
<b>GRAND TOTAL</b>		<b>84</b>	<b>34.01</b>	<b>14</b>	<b>16.7%</b>		

Adopting the proposed Normal Retirement rates will have the impact of decreasing the City and State funding requirements slightly, a decrease of 0.1% of payroll. The corresponding UAAL impact would be a decrease from 7,035,518 to 6,956,324.

#### Withdrawal Rates

The withdrawal rate, or termination rate, is the probability that a participant will separate employment from a cause other than disability, death, or retirement. Currently, the valuation utilizes a five-year select period with varying probabilities by age after that time.

Since October 1, 2008, the actual rate of withdrawal has been slightly less than the expectation based on the current assumptions in place. During that time period, there have been 10 non-retirement terminations, while approximately 12 were expected. Actual experience during the five-year select period was very close to that expected in the valuation. However, the age-based rates projected more terminations than actual terminations.

Given this trend, we are proposing utilizing the same select assumption during the first five years of service, but reducing the age-based rates by 0.5% at age 35 and later. The actual plan experience, along with the proposed withdrawal rates, are summarized below.

**Withdrawal Experience**  
October 1, 2008 through September 30, 2015

Service	Age	Exposure	Expected	Actual	Actual	Current	Proposed
<1		7	0.7	0	0.0%	10.0%	10.0%
1		18	1.08	2	11.1%	6.0%	6.0%
2		25	1.25	1	4.0%	5.0%	5.0%
3		37	1.48	0	0.0%	4.0%	4.0%
4		37	1.11	3	8.1%	3.0%	3.0%
	Total	124	5.62	6	4.8%		
5+	<35	99	2.97	3	3.0%	3.0%	3.0%
	35-39	60	1.5	0	0.0%	2.5%	2.0%
	40-44	64	1.28	0	0.0%	2.0%	1.5%
	45-49	66	0.99	0	0.0%	1.5%	1.0%
	50-54	8	0.08	1	12.5%	1.0%	0.5%
	55+	1	0	0	0.0%	0.0%	0.0%
	Total	298	6.82	4	1.3%		
<b>Total</b>		<b>422</b>	<b>12.44</b>	<b>10</b>	<b>2.4%</b>	<b>2.9%</b>	<b>2.7%</b>

The proposed changes to the withdrawal rates, if adopted, will increase the City and State funding requirements by 0.5% of payroll. This increase is due to decreasing the withdrawal assumptions in the aggregate, thereby increasing the chance that a member continues employment until retirement. The Plan's UAAL would increase from 7,035,518 to 7,077,393.

**Conclusion**

As stated throughout the content of this report, we have recommended a number of changes to the actuarial assumptions utilized for purposes of completing the annual valuations. It is our belief that these changes reflect sound actuarial principles, are our best estimate of anticipated future experience, and will assist in achieving the objective of developing costs that are stable and predictable.

Below we have provided a summary of the impact on the City and State funding requirements for each of the proposed changes, if made independently of one another. Additionally, if all of the proposed changes were adopted, the impact would be an increase to the City and State annual funding requirements of approximately 2.1% of payroll. It is also important to point out that the UAAL would increase from 7,035,518 to 8,119,947. Please note this combination result reflects no change in the current investment return assumption of 8.00% per year. The impact on the City and State annual funding requirement and UAAL for the combined assumptions with other investment rate assumptions, as well as a summary of all of the proposed changes, are shown below.

### Summary of Results

<u>Proposed Change</u>	<u>City and State Funding Increase/Decrease*</u>	<u>UAAL</u>
Current Assumptions	n/a	\$7,035,518
7.9% Interest Rate	1.0%	\$7,377,651
7.75% Interest Rate	2.4%	\$7,902,863
7.50% Interest Rate	4.8%	\$8,811,522
Salary Increases	-0.5%	\$7,109,684
Mortality Rates	2.2%	\$8,035,403
Retirement Rates	-0.1%	\$6,956,324
Withdrawal Rates	0.5%	\$7,077,393
Combination (8.00% Interest)	2.1%	\$8,119,947
Combination (7.90% Interest)	3.1%	\$8,503,981
Combination (7.75% Interest)	4.7%	\$9,094,782
Combination (7.50% Interest)	7.3%	\$10,120,521

\* As a percentage of payroll.