

CITY OF ST. PETE BEACH
FIREFIGHTERS' RETIREMENT SYSTEM

ACTUARIAL EXPERIENCE STUDY
January 18, 2017



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Board of Trustees
City of St. Pete Beach
Firefighters' Pension Board
7301 Gulf Boulevard
St. Pete Beach, FL 33706

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, 1988 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
- Disability 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

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 7.75% 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 2.50% inflation assumption, suggesting an expected return of approximately 8.15%. Therefore, the 7.75% 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%	7.50%	3.75%
International Equity	10%	8.50%	0.85%
Broad Market Fixed Income	35%	2.50%	0.875%
Global Fixed Income	5%	3.50%	0.175%
Total	100%		5.65%

Actual plan returns over the past 23 years have averaged 6.85% per year, about 90 basis points less than the current 7.75% assumption. The actual plan returns since October 1, 1992 are illustrated on the following page.

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 7.75% assumption to 7.65%, or 7.50% or 7.00% 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>
7.75% (Current)	39.7%	n/a	5,013,057
7.65%	40.5%	0.8%	5,184,022
7.50%	41.7%	2.0%	5,446,363
7.00%	45.9%	6.2%	6,375,085

* As a percentage of payroll.

Investment Return History (Net-of-Fees)

October 1, 1992 through September 30, 2015

Year Ending	Market Investment Return	Investment Return Assumption
9/30/2015	-0.60%	7.75%
9/30/2014	9.74%	7.75%
9/30/2013	11.34%	7.75%
9/30/2012	17.08%	7.75%
9/30/2011	0.90%	8.50%
9/30/2010	9.34%	8.50%
9/30/2009	2.17%	8.50%
9/30/2008	-14.22%	8.50%
9/30/2007	14.01%	8.50%
9/30/2006	3.90%	8.50%
9/30/2005	8.51%	8.50%
9/30/2004	7.62%	8.50%
9/30/2003	9.90%	8.50%
9/30/2002	-3.36%	8.50%
9/30/2001	-6.63%	8.50%
9/30/2000	9.71%	8.50%
9/30/1999	11.74%	8.50%
9/30/1998	7.07%	8.50%
9/30/1997	24.64%	8.50%
9/30/1996	14.86%	8.50%
9/30/1995	18.31%	8.50%
9/30/1994	-1.75%	8.00%
9/30/1993	11.35%	8.00%

Averages	
5 Years	7.49%
10 Years	5.00%
20 Years	6.53%
23 Years	6.85%

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 a flat salary scale assumption of 4.50% per year, which includes the 2.50% annual inflation assumption. During the course of our analysis, we compiled the actual average annual increase since October 1, 1988. As the summary below shows, the average increase over the past ten years has been 2.45% per year, which is less than the 4.50% assumption. The average over the last five years has been 0.76%.

Salary Increases

October 1, 1988 through September 30, 2015

Averages	
5 Years	0.76%
10 Years	2.45%
20 Years	4.07%
All Years	4.91%

Further, we analyzed the actual plan experience since October 1, 2005 utilizing actual salary increases based on completed service at the time of each annual valuation. As shown on the next page, it appears that members receive their largest salary increases during their first 5 years of employment, smaller increases in the next 5 years and even smaller increases after that. Our proposal is to change the expectation to the rates shown in the proposed column on the following page.

Amending the salary increase assumption to the proposed service based table will have little effect on the UAAL and funding, but will be more appropriate. The proposed assumption would result in a decrease of 0.1% of payroll to the City and State annual funding requirements. The UAAL would decrease from 5,013,057 to 5,011,034.

Salary Increase Experience
October 1, 2005 through September 30, 2015

Service	Exposures	Prior Year Salaries	Actual Salaries	Expected Salaries	Actual Salary Increase	Proposed Salary Increase
<1	24	1,016,250	1,069,535	1,061,982	5.2%	5.5%
1-5	73	3,501,398	3,685,476	3,658,961	5.3%	5.0%
6-10	72	4,036,257	4,136,267	4,217,888	2.5%	4.5%
11-15	44	2,732,607	2,772,108	2,855,574	1.4%	4.0%
16+	30	1,951,739	1,985,712	2,039,567	1.7%	4.0%
Total	243	13,238,251	13,649,098	13,833,972	3.1%	4.5%

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
- Disability 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 mean 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 3.8% of payroll and an increase in the UAAL from 5,013,057 to 5,872,210.

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 for the “frozen” piece of benefit are the earlier of (1) Attainment of age 55, or (2) the completion of 25 years of service. Members who have attained (1) age 50 with 10 years of service, or (2) 20 years of service are eligible for Early Retirement on the “frozen” piece of benefit. For Members with less than 10 years of service on December 31, 2012, the Normal Retirement criteria on the “future service” piece of benefit is the earlier of (1) Attainment of age 60, or (2) the completion of 30 years of service and there is no Early Retirement on the future service piece of benefit.

The valuation currently assumes that 5% of members eligible for Early Retirement will retire each year. 100% of members who are eligible for Normal Retirement as of the valuation date are assumed to retire one year following the valuation date. It is assumed that for Members with the old Normal Retirement Date, that 100% of members who reach Normal Retirement after the valuation date are assumed to retire one year after they are first eligible. Members who fall under the new Normal Retirement Date who reach Normal Retirement after the valuation date are assumed to retire on their Normal Retirement Date.

We have looked at the actual retirement experience from October 1, 2005 through September 30, 2015, as shown below, and it can be seen that those who retire under the age requirement tend to work beyond their Normal Retirement Date. Therefore, for those Members under the old Normal Retirement Date, we are proposing to assume that they will retire one year after their Normal Retirement Date if they have less than 25 years of service, no matter if they are currently eligible or not. For those under the old Normal Retirement Date, we are proposing to assume that they will retire at 25 & out, regardless of whether or not they are currently eligible on the valuation date. For those Members who fall under the new Normal Retirement Date we are proposing to assume that they will retire at the earlier of age 60 or 30 years of service, regardless of whether or not they are currently eligible for Normal Retirement on the valuation date.

Retirees 2006 - 2015

<u>Name</u>	<u>Age @ Retirement</u>	<u>Service @ Retirement</u>	
Firefighter A	56.9	27.4	Normal
Firefighter B	52.9	25.0	Normal
Firefighter C	46.5	25.1	Normal
Firefighter D	51.6	13.6	Early
Firefighter E	60.3	10.6	Normal
Firefighter F	46.8	25.0	Normal
Firefighter G	50.3	25.1	Normal
Firefighter H	46.5	24.7	Early
Firefighter I	57.4	6.8	Normal

The impact of changing the retirement assumption would be no change to the City and State funding requirements and a reduction in the UAAL from 5,013,057 to 4,935,439.

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 age-based rates that vary from 17.2% at the younger ages and decrease to 1.7% at the older ages.

Since October 1, 2005, the actual rate of withdrawal has been significantly lower than the expectation based on the current assumptions in place. During that time period, there have been 9 non-retirement terminations, while approximately 17 were expected. A closer examination of the experience shows that the rates of termination appear to be more related to service than to age, with diminishing rates of withdrawal as service increases. Therefore, we are proposing to change to a service based assumption. The actual plan experience, along with the proposed withdrawal rates, are summarized on the following page.

Withdrawal Experience

October 1, 2005 through September 30, 2015

Service	Exposures	Actual Terminations	Expected Terminations	Actual Withdrawal Rates	Expected Withdrawal Rates	Proposed Withdrawal Rates
<1	9	2	1.08	22.2%	12.0%	15.0%
1-4	69	5	7.69	7.2%	11.1%	9.0%
5-9	62	1	4.82	1.6%	7.8%	4.0%
10-14	45	1	2.92	2.2%	6.5%	3.0%
15+	20	0	0.94	0.0%	4.7%	2.0%
Total	205	9	17.45	4.4%	8.5%	5.8%

The proposed changes to the withdrawal rates, if adopted, will increase the City and State funding requirements by 1.7% of payroll. This increase is due to decreasing the withdrawal assumptions, thereby increasing the chance that a member continues employment until retirement. The Plan's UAAL would increase from 5,013,057 to 5,246,940.

Disability Rates

The disability rate assumption is the probability that a member will become disabled while an active member in the plan. Currently, the valuation utilizes an age-based assumption for predicting the occurrence of future disabilities. Additionally, it is assumed that 75% of disablements are service related.

The plan currently has only 3 disability retirees. Based on this limited experience, we do not propose changing the disability rate at this time.

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.

On the following page we have provided a summary of the impact on the City and State funding requirements and the impact on the UAAL for each of the proposed changes, if made independently of one another. We have also disclosed the impacts if all of the proposed changes are made with either the current 7.75%, or with 7.65%, or with 7.50% investment return assumption.

Summary of Results

	UAAL	Increase / (Decrease)	City & State	Increase / (Decrease) *
Current Plan	5,013,057		39.7%	
7.65% Interest	5,184,022	170,965	40.5%	0.8%
7.50% Interest	5,446,363	433,306	41.7%	2.0%
7.00% Interest	6,375,085	1,362,028	45.9%	6.2%
Sal Scale	5,011,034	(2,023)	39.6%	-0.1%
Mort Table	5,872,210	859,153	43.5%	3.8%
Retirement	4,935,439	(77,618)	39.7%	0.0%
Withdrawal	5,246,940	233,883	41.4%	1.7%
Combo	5,945,988	932,931	45.0%	5.3%
Combo 7.65%	6,142,642	1,129,585	46.0%	6.3%
Combo 7.50%	6,445,001	1,431,944	47.3%	7.6%

* As a percentage of payroll.