

NORTH BAY FIRE DISTRICT
FIREFIGHTERS' PENSION TRUST FUND

ACTUARIAL VALUATION
AS OF OCTOBER 1, 2019

CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING SEPTEMBER 30, 2021

GASB 67/68 DISCLOSURE INFORMATION
AS OF SEPTEMBER 30, 2019



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

April 8, 2020

Board of Trustees
North Bay Fire District
Firefighters' Pension Trust Fund

Re: North Bay Fire District Firefighters' Pension Trust Fund

Dear Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the North Bay Fire District Firefighters' Pension Trust Fund. Included are the related results for GASB Statements No. 67 and No. 68. The funding valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to develop the appropriate funding requirements for the applicable plan year. The calculation of the liability for GASB results was performed for the purpose of satisfying the requirements of GASB Statements No. 67 and No. 68. Use of the results for other purposes may not be applicable and may produce significantly different results.

The valuations have been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflect laws and regulations issued to date pursuant to the provisions of Chapters 112 and 175, Florida Statutes, as well as applicable federal laws and regulations. In our opinion, the assumptions used in the valuations, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations. Due to the limited scope of the valuations, we did not perform an analysis of the potential range of such future measurements.

In conducting the valuations, we have relied on personnel, plan design, and asset information supplied by the North Bay Fire District, financial reports prepared by the custodian bank, and the actuarial assumptions and methods described in the Actuarial Assumptions section of this report. While we cannot verify the accuracy of all this information, the supplied information 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 that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

The total pension liability, net pension liability, and certain sensitivity information shown in this report are based on an actuarial valuation performed as of October 1, 2018. The total pension liability was rolled-forward from the valuation date to the plan's fiscal year ending September 30, 2019 using generally accepted actuarial principles. It is our opinion that the assumptions used for this purpose are internally consistent, reasonable, and comply with the requirements under GASB No. 67 and No. 68.

The undersigned are familiar with the immediate and long-term aspects of pension valuations, and meet 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.

To our knowledge, no associate of Foster & Foster, Inc. working on valuations of the program has any direct financial interest or indirect material interest in the North Bay Fire District, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the Firefighters' Pension Trust Fund. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

If there are any questions, concerns, or comments about any of the items contained in this report, please contact us at 239-433-5500.

Respectfully submitted,

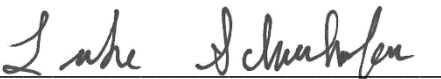
Foster & Foster, Inc.

By:



Drew D. Ballard, EA, MAAA
Enrolled Actuary #20-8193

By:



Luke M. Schoenhofen, ASA

DDB/lke

Enclosures

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SUMMARY OF REPORT

The regular annual actuarial valuation of the North Bay Fire District Firefighters' Pension Trust Fund, performed as of October 1, 2019, has been completed and the results are presented in this Report. The contribution amounts set forth herein are applicable to the plan/fiscal year ending September 30, 2021.

The contribution requirements, compared with those set forth in the November 8, 2019 actuarial impact statement, are as follows:

Valuation Date Applicable to Fiscal Year Ending	10/1/2019 <u>9/30/2021</u>	10/1/2018 <u>9/30/2020</u>
Minimum Required Contribution % of Projected Annual Payroll	31.9%	26.0%
Member Contributions (Est.) % of Projected Annual Payroll	5.0%	5.0%
District And State Required Contribution % of Projected Annual Payroll	26.9%	21.0%
State Contribution (Est.) ¹ % of Projected Annual Payroll	\$67,868 7.0%	\$135,736 13.9%
District Required Contribution ² % of Projected Annual Payroll	19.9%	7.1%

¹ Represents the amount received in calendar 2019. As per a Mutual Consent Agreement between the Membership and the District, all State Monies received each year will be available to offset the District's required contribution. Also, given timing of receipt, the calendar 2019 and 2020 premium tax distributions are both expected to be available to offset the fiscal 2020 contribution.

² The required contribution from the combination of District and State sources for the year ending September 30, 2021, is 26.9% of the actual payroll realized in that year. As a budgeting tool, the District may contribute 19.9% of each Member's Salary and then make a one-time adjustment to account for the actual State Monies received. Please note that a shortfall contribution of \$57,078.93 is due in addition to the above stated requirements for the fiscal year ending September 30, 2020.

As you can see, the Minimum Required Contribution shows an increase when compared to the results determined in the November 8, 2019 actuarial impact statement. The increase is attributable to unfavorable experience and a reduction in the investment return assumption from 7.75% to 7.50%.

Plan experience was unfavorable overall on the basis of the plan's actuarial assumptions. Sources of actuarial loss included unfavorable retirement experience, an average salary increase of 7.77% which exceeded the 6.62% assumption, and an investment return of 7.23% (Actuarial Asset Basis) which fell short of the 7.75% assumption. There were no significant sources of actuarial gain.

CHANGES SINCE PRIOR VALUATION

Plan Changes

Chapter 2019-21, Laws of Florida was signed into effect granting certain disability benefits to firefighters participating in an employer-sponsored retirement plan. Effective July 1, 2019, "the retirement plan must consider the firefighter totally and permanently disabled in the line of duty if he or she meets the retirement plan's definition of totally and permanently disabled due to the diagnosis of cancer or circumstances that arise out of the treatment of cancer." For this purpose, "cancer" is as defined in Section 112.1816(1), Florida Statutes.

Please note that the benefit changes only relate to the disability benefits for the Pension Fund and do not provide for other additional benefits that are provided for in Florida Statutes Section 112.1816.

Actuarial Assumption/Method Changes

The expected percentage of disabilities that are in line-of-duty has increased from 75% to 90%, as a result of the plan change described above. Additionally, the investment return assumption has been lowered from 7.75% to 7.50%.

CONTRIBUTION IMPACT OF ANNUAL CHANGES

(1) Contribution Determined as of October 1, 2018	14.2%
(2) Summary of Contribution Impact by component:	
Change in State Contribution Percentage	-0.2%
Change in Normal Cost Rate	-0.4%
Change in Administrative Expense Percentage	0.9%
Payroll Change Effect on UAAL Amortization	-0.1%
Investment Return (Actuarial Asset Basis)	0.3%
Salary Increases	0.6%
Active Decrements	0.7%
Inactive Mortality	0.1%
Assumption Change	3.0%
Other	<u>0.8%</u>
Total Change in Contribution	5.7%
(3) Contribution Determined as of October 1, 2019	19.9%

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Assump <u>10/1/2019</u>	Old Assump <u>10/1/2019</u>	<u>10/1/2018</u>
A. Participant Data			
Actives	16	16	17
Service Retirees	3	3	1
Beneficiaries	0	0	0
Disability Retirees	3	3	2
Terminated Vested	<u>6</u>	<u>6</u>	<u>9</u>
 Total	 28	 28	 29
 Total Annual Payroll	 \$973,182	 \$973,182	 \$1,004,426
Payroll Under Assumed Ret. Age	973,182	973,182	1,004,426
Annual Rate of Payments to:			
Service Retirees	148,638	148,638	46,335
Beneficiaries	0	0	0
Disability Retirees	38,524	38,524	21,896
Terminated Vested	44,743	44,743	131,809
B. Assets			
Actuarial Value (AVA) ¹	5,335,648	5,335,648	4,920,195
Market Value (MVA) ¹	5,231,892	5,231,892	4,920,195
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	4,689,469	4,436,968	4,531,004
Disability Benefits	65,518	62,763	60,386
Death Benefits	39,714	38,175	36,549
Vested Benefits	388,827	366,235	319,532
Refund of Contributions	23,776	23,580	25,779
Service Retirees	1,818,686	1,775,041	504,679
Beneficiaries	0	0	0
Disability Retirees	439,477	429,195	244,068
Terminated Vested	387,543	375,826	1,129,875
Share Plan Balances ¹	0	0	0
Excess State Monies Reserve	<u>128,294</u>	<u>128,294</u>	<u>128,294</u>
 Total	 7,981,304	 7,636,077	 6,980,166

C. Liabilities - (Continued)	New Assump <u>10/1/2019</u>	Old Assump <u>10/1/2019</u>	<u>10/1/2018</u>
Present Value of Future Salaries	10,395,311	10,227,386	10,139,256
Present Value of Future Member Contributions	519,766	511,369	506,963
Normal Cost (Retirement)	199,108	187,933	199,078
Normal Cost (Disability)	3,796	3,659	4,083
Normal Cost (Death)	2,011	1,937	2,204
Normal Cost (Vesting)	19,300	18,170	16,807
Normal Cost (Refunds)	<u>2,974</u>	<u>2,966</u>	<u>3,198</u>
Total Normal Cost	227,189	214,665	225,370
Present Value of Future Normal Costs	2,395,691	2,226,145	2,238,037
Accrued Liability (Retirement)	2,576,960	2,475,776	2,553,862
Accrued Liability (Disability)	25,906	25,196	22,948
Accrued Liability (Death)	19,248	18,796	17,199
Accrued Liability (Vesting)	185,407	177,716	138,187
Accrued Liability (Refunds)	4,092	4,092	3,017
Accrued Liability (Inactives)	2,645,706	2,580,062	1,878,622
Share Plan Balances ¹	0	0	0
Excess State Monies Reserve	<u>128,294</u>	<u>128,294</u>	<u>128,294</u>
Total Actuarial Accrued Liability (EAN AL)	5,585,613	5,409,932	4,742,129
Unfunded Actuarial Accrued Liability (UAAL)	249,965	74,284	(178,066)
Funded Ratio (AVA / EAN AL)	95.5%	98.6%	103.8%

D. Actuarial Present Value of Accrued Benefits	New Assump <u>10/1/2019</u>	Old Assump <u>10/1/2019</u>	<u>10/1/2018</u>
Vested Accrued Benefits			
Inactives + Share Plan Balances ¹	2,645,706	2,580,062	1,878,622
Actives	1,169,052	1,110,989	1,398,254
Member Contributions	<u>322,852</u>	<u>322,852</u>	<u>316,476</u>
Total	4,137,610	4,013,903	3,593,352
Non-vested Accrued Benefits	<u>151,027</u>	<u>142,184</u>	<u>102,556</u>
Total Present Value Accrued Benefits (PVAB)	4,288,637	4,156,087	3,695,908
Funded Ratio (MVA / PVAB)	122.0%	125.9%	133.1%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	0	0	
Assumption Changes	132,550	0	
Plan Experience	0	333,707	
Benefits Paid	0	(153,994)	
Interest	0	280,466	
Other	<u>0</u>	<u>0</u>	
Total	132,550	460,179	

	New Assump	Old Assump	
Valuation Date	10/1/2019	10/1/2019	10/1/2018
Applicable to Fiscal Year Ending	<u>9/30/2021</u>	<u>9/30/2021</u>	<u>9/30/2020</u>

E. Pension Cost

Normal Cost (with interest)			
% of Total Annual Payroll ²	24.2	22.9	23.3
Administrative Expenses (with interest)			
% of Total Annual Payroll ²	5.3	5.3	4.4
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 20 years (as of 10/1/2019, with interest)			
% of Total Annual Payroll ²	2.4	0.7	(1.7)
Minimum Required Contribution			
% of Total Annual Payroll ²	31.9	28.9	26.0
Expected Member Contributions			
% of Total Annual Payroll ²	5.0	5.0	5.0
Expected District and State Contribution			
% of Total Annual Payroll ²	26.9	23.9	21.0

F. Past Contributions

Plan Years Ending:	<u>9/30/2019</u>
Total Required Contribution	268,277
District and State Requirement	218,225
Actual Contributions Made:	
Members (excluding buyback)	50,052
District	218,225
State	<u>0</u>
Total	268,277

G. Net Actuarial (Gain)/Loss 258,147

¹ The asset values and liabilities include accumulated Share Plan Balances as of 9/30/2019 and 9/30/2018.

² Contributions developed as of 10/1/2019 are expressed as a percentage of total annual payroll at 10/1/2019 of \$973,182.

H. Schedule Illustrating the Amortization of the Total Unfunded Actuarial Accrued Liability as of:

<u>Year</u>	<u>Projected Unfunded Actuarial Accrued Liability</u>
2019	249,965
2020	244,958
2021	239,576
2026	205,967
2030	168,813
2035	104,448
2039	0

I. (i) 5 Year Comparison of Actual and Assumed Salary Increases

	<u>Actual</u>	<u>Assumed</u>
Year Ended 9/30/2019	7.77%	6.62%
Year Ended 9/30/2018	11.24%	6.48%
Year Ended 9/30/2017	3.97%	6.00%
Year Ended 9/30/2016	6.77%	6.00%
Year Ended 9/30/2015	1.76%	6.00%

(ii) 5 Year Comparison of Investment Return on Market Value and Actuarial Value

	<u>Market Value</u>	<u>Actuarial Value</u>	<u>Assumed</u>
Year Ended 9/30/2019	5.15%	7.23%	7.75%
Year Ended 9/30/2018	7.97%	6.53%	7.75%
Year Ended 9/30/2017	12.67%	6.98%	8.00%
Year Ended 9/30/2016	7.62%	7.08%	8.00%
Year Ended 9/30/2015	-1.63%	9.21%	8.00%

(iii) Average Annual Payroll Growth

(a) Payroll as of:	10/1/2019	\$973,182
	10/1/2009	814,977
(b) Total Increase		19.41%
(c) Number of Years		10.00
(d) Average Annual Rate		1.79%

STATEMENT BY ENROLLED ACTUARY

This actuarial valuation was prepared and completed by me or under my direct supervision, and I acknowledge responsibility for the results. To the best of my knowledge, the results are complete and accurate, and in my opinion, the techniques and assumptions used are reasonable and meet the requirements and intent of Part VII, Chapter 112, Florida Statutes. There is no benefit or expense to be provided by the plan and/or paid from the plan's assets for which liabilities or current costs have not been established or otherwise taken into account in the valuation. All known events or trends which may require a material increase in plan costs or required contribution rates have been taken into account in the valuation.



Drew D. Ballard, EA, MAAA
Enrolled Actuary #20-8193

Please let us know when the report is approved by the Board and unless otherwise directed we will provide copies of the report to the following offices to comply with Chapter 112 Florida Statutes:

Mr. Keith Brinkman
Bureau of Local
Retirement Systems
Post Office Box 9000
Tallahassee, FL 32315-9000

Mr. Steve Bardin
Municipal Police and Fire
Pension Trust Funds
Division of Retirement
Post Office Box 3010
Tallahassee, FL 32315-3010

RECONCILIATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES

(1)	Unfunded Actuarial Accrued Liability as of October 1, 2018	(\$178,066)
(2)	Sponsor Normal Cost developed as of October 1, 2018	175,149
(3)	Expected administrative expenses for the year ended September 30, 2019	42,334
(4)	Expected interest on (1), (2) and (3)	1,414
(5)	Sponsor contributions to the System during the year ended September 30, 2019	218,225
(6)	Expected interest on (5)	6,469
(7)	Expected Unfunded Actuarial Accrued Liability as of September 30, 2019 (1)+(2)+(3)+(4)-(5)-(6)	(183,863)
(8)	Change to UAAL due to Assumption Change	175,681
(9)	Change to UAAL due to Actuarial (Gain)/Loss	258,147
(10)	Unfunded Actuarial Accrued Liability as of October 1, 2019	249,965

Type of <u>Base</u>	Date <u>Established</u>	Years <u>Remaining</u>	10/1/2019 <u>Amount</u>	Amortization <u>Amount</u>
Initial Base	10/1/2017	18	(129,759)	(12,436)
Actuarial Loss	10/1/2018	19	85,696	8,004
Method Change	10/1/2018	19	(139,523)	(13,032)
Benefits Change	10/1/2018	19	(277)	(26)
Actuarial Loss	10/1/2019	20	258,147	23,556
Assump Change	10/1/2019	20	<u>175,681</u>	<u>16,031</u>
			249,965	22,097

DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of October 1, 2018	(\$178,066)
(2) Expected UAAL as of October 1, 2019	(183,863)
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	25,939
Salary Increases	61,240
Active Decrements	70,424
Inactive Mortality	11,006
Other ¹	<u>89,538</u>
Increase in UAAL due to (Gain)/Loss	258,147
Assumption Changes	<u>175,681</u>
(4) Actual UAAL as of October 1, 2019	\$249,965

¹ Includes status transitions for members that were vested terminated in prior valuation.

ACTUARIAL ASSUMPTIONS AND METHODS

Mortality Rate

Healthy Active Lives:

Female: RP2000 Generational, 100% Combined Healthy White Collar, Scale BB

Male: RP2000 Generational, 10% Combined Healthy White Collar / 90% Combined Healthy Blue Collar, Scale BB

Healthy Inactive Lives:

Female: RP2000 Generational, 100% Annuitant White Collar, Scale BB

Male: RP2000 Generational, 10% Annuitant White Collar / 90% Annuitant Blue Collar, Scale BB

Disabled Lives:

Female: 60% RP2000 Disabled Female set forward two years / 40% Annuitant White Collar with no setback, no projection scale

Male: 60% RP2000 Disabled Male setback four years / 40% Annuitant White Collar with no setback, no projection scale

The above assumption rates were mandated by Chapter 2015-157, Laws of Florida. This law mandates the use of the assumptions used in either of the two most recent valuations of the Florida Retirement System (FRS). The above rates are those outlined in Milliman's July 1, 2018 FRS valuation report for special risk employees. We feel this assumption sufficiently accommodates future mortality improvements.

Interest Rate

7.50% (prior year 7.75%) per year compounded annually, net of investment related expenses. This is supported by the target asset allocation of the trust and the expected long-term return by asset class.

Salary Increases

8% for the first 4 years of Credited Service and 5.0% thereafter. This assumption was adopted based on the June 6, 2017 actuarial experience study.

Payroll Growth

0.00% for purposes of amortizing the Unfunded Actuarial Accrued Liability. This assumption cannot exceed the ten-year average payroll growth, in compliance with Part VII of Chapter 112, Florida Statutes.

Administrative Expenses

\$49,499 annually, based on the average of actual expenses incurred in the prior two fiscal years. Previously, the actual expense in the prior fiscal year was used. Using a two-year average results in a less volatile estimate than the prior method.

Amortization Method

New UAAL amortization bases are amortized over 20 years.

Retirement Age

Earlier of Age 55 and 10 years of service or Age 52 and 25 years of service. Also, any Member who has reached Normal Retirement is assumed to continue employment for one additional year. We feel this assumption is reasonable based on the plan provisions.

Early Retirement

Commencing with the earliest Early Retirement Age (50), Members are assumed to retire with an immediate subsidized benefit at the rate of 5% per year. We feel this assumption is reasonable based on the plan provisions.

Disability Rate

See table on the following page. It is assumed that 90% (prior year 75%) of disablements and active Member deaths are service related. This assumption was developed from those used by other plans containing Florida municipal Firefighters.

Termination Rate

See table on the following page. This assumption was developed from those used by other plans containing Florida municipal Firefighters.

Funding Method

Entry Age Normal Actuarial Cost.

Asset Valuation Method

All assets are valued at market value with an adjustment to uniformly spread actuarial investment gains and losses (as measured by actual market value investment return against expected market value investment return) over a five-year period.

Termination and Disability Rate Tables

<u>% Terminating During the Year</u>		<u>% Becoming Disabled During the Year</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
20	6.0%	20	0.03%
25	5.7%	25	0.03%
30	5.0%	30	0.04%
35	3.8%	35	0.05%
40	2.6%	40	0.07%
45	1.6%	45	0.10%
50	0.8%	50	0.18%
55	0.3%	55	0.36%
60	0.2%	60	0.90%
65	0.2%	65+	2.22%
70	0.2%		

GLOSSARY

Total Annual Payroll is the projected annual rate of pay as of the valuation date of all covered Members.

Present Value of Benefits is the single sum value on the valuation date of all future benefits to be paid to current Members, Retirees, Beneficiaries, Disability Retirees and Vested Terminations.

Total Required Contribution is equal to the Normal Cost plus an amount sufficient to amortize the Unfunded Accrued Liability over no more than 30 years. The required amount is adjusted for interest according to the timing of contributions during the year.

Entry Age Normal Cost Method (EAN) - Under this method, the normal cost is the sum of the individual normal costs for all active participants. For an active participant, the normal cost is the participant's normal cost accrual rate, multiplied by the participant's current compensation.

- (a) The normal cost accrual rate equals (i) the present value of future benefits for the participant, determined as of the participant's entry age, divided by (ii) the present value of the compensation expected to be paid to the participant for each year of the participant's anticipated future service, determined as of the participant's entry age.
- (b) In calculating the present value of future compensation, the salary scale is applied both retrospectively and prospectively to estimate compensation in years prior to and subsequent to the valuation year based on the compensation used for the valuation.
- (c) The accrued liability is the sum of the individual accrued liabilities for all participants and beneficiaries. A participant's accrued liability equals the present value, at the participant's attained age, of future benefits less the present value at the participant's attained age of the individual normal costs payable in the future. A beneficiary's accrued liability equals the present value, at the beneficiary's attained age, of future benefits. The unfunded accrued liability equals the total accrued liability less the actuarial value of assets.
- (d) Under this method, the entry age used for each active participant is the participant's age at the time he or she would have commenced participation if the plan had always been in existence under current terms, or the age as of which he or she first earns service credits for purposes of benefit accrual under the current terms of the plan.

Unfunded Actuarial Accrued Liability (UAAL) is the difference between the actuarial accrued liability (described above) and the actuarial value of assets.

DISCUSSION OF RISK

ASOP No. 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions, states that the actuary should identify risks that, in the actuary's professional judgment, may reasonably be anticipated to significantly affect the plan's future financial condition.

Throughout this report, actuarial results are determined using various actuarial assumptions. These results are based on the premise that all future plan experience will align with the plan's actuarial assumptions; however, there is no guarantee that actual plan experience will align with the plan's assumptions. It is possible that actual plan experience will differ from anticipated experience in an unfavorable manner that will negatively impact the plan's funded position.

Below are examples of ways in which plan experience can deviate from assumptions and the potential impact of that deviation. Typically, this results in an actuarial gain or loss representing the current-year financial impact on the plan's unfunded liability of the experience differing from assumptions; this gain or loss is amortized over a period of time determined by the plan's amortization method. When assumptions are selected that adequately reflect plan experience, gains and losses typically offset one another in the long term, resulting in a relatively low impact on the plan's contribution requirements associated with plan experience. When assumptions are too optimistic, losses can accumulate over time and the plan's amortization payment could potentially grow to an unmanageable level.

- Investment Return: When the rate of return on the Actuarial Value of Assets falls short of the assumption, this produces a loss representing assumed investment earnings that were not realized. Further, it is unlikely that the plan will experience a scenario that matches the assumed return in each year as capital markets can be volatile from year to year. Therefore, contribution amounts can vary in the future.
- Salary Increases: When a plan participant experiences a salary increase that was greater than assumed, this produces a loss representing the cost of an increase in anticipated plan benefits for the participant as compared to the previous year. The total gain or loss associated with salary increases for the plan is the sum of salary gains and losses for all active participants.
- Demographic Assumptions: Actuarial results take into account various potential events that could happen to a plan participant, such as retirement, termination, disability, and death. Each of these potential events is assigned a liability based on the likelihood of the event and the financial consequence of the event for the plan. Accordingly, actuarial liabilities reflect a blend of financial consequences associated with various possible outcomes (such as retirement at one of various possible ages). Once the outcome is known (e.g. the participant retires) the liability is adjusted to reflect the known outcome. This adjustment produces a gain or loss depending on whether the outcome was more or less favorable than other outcomes that could have occurred.

Impact of Plan Maturity on Risk

For newer pension plans, most of the participants and associated liabilities are related to active members who have not yet reached retirement age. As pension plans continue in operation and active members reach retirement ages, liabilities begin to shift from being primarily related to active members to being shared amongst active and retired members. Plan maturity is a measure of the extent to which this shift has occurred. It is important to understand that plan maturity can have an impact on risk tolerance and the overall risk characteristics of the plan. For example, closed plans with a large amount of retired liability do not have as long of a time horizon to recover from losses (such as losses on investments due to lower than expected investment returns) as plans where the majority of the liability is attributable to active members. For this reason, less tolerance for investment risk may be warranted for highly mature closed plans with a substantial inactive liability. Similarly, mature closed plans paying substantial retirement benefits resulting in a small positive or net negative cash flow can be more sensitive to near term investment volatility, particularly if the size of the fund is shrinking, which can result in less assets being available for investment in the market.

To assist with determining the maturity of the plan, we have provided some relevant metrics in the table following titled “Plan Maturity Measures and Other Risk Metrics”. Highlights of this information are discussed below:

- The Support Ratio, determined as the ratio of active to inactive members, has decreased from 216.7% on October 1, 2016 to 200.0% on October 1, 2019, indicating that the plan has been maturing during the period.
- The Accrued Liability Ratio, determined as the ratio of the Inactive Accrued Liability, which is the liability associated with members who are no longer employed but are due a benefit from the plan, to the Total Accrued Liability, is 47.4%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors may result in lower volatility in contribution requirements when compared to a more mature plan. Please note Chapter 112, Florida Statutes, requires that the plan sponsor contributes the minimum required contribution; thus, there is minimal solvency risk to the plan.
- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability, has stayed approximately the same from October 1, 2016 to October 1, 2019
- The Net Cash Flow Ratio, determined as the ratio of the Net Cash Flow (contributions minus benefit payments and administrative expenses) to the Market Value of Assets, decreased from 4.0% on October 1, 2016 to 1.1% on October 1, 2019. The current Net Cash Flow Ratio of 1.1% indicates that contributions are generally covering the plan's benefit payments and administrative expenses.

It is important to note that the actuary has identified the risks in this section as the most significant risks based on the characteristics of the plan and the nature of the project, however, it is not an exhaustive list of potential risks that could be considered. Additional advanced modeling, as well as the identification of additional risks, can be provided at the request of the audience addressed on page 2 of this report.

PLAN MATURITY MEASURES AND OTHER RISK METRICS

	<u>10/1/2016</u>	<u>10/1/2017</u>	<u>10/1/2018</u>	<u>10/1/2019</u>
<u>Support Ratio</u>				
Total Actives	13	17	17	16
Total Inactives ¹	6	7	7	8
Actives / Inactives ¹	216.7%	242.9%	242.9%	200.0%
 <u>Asset Volatility Ratio</u>				
Market Value of Assets (MVA)	3,803,053	4,399,004	4,920,195	5,231,892
Total Annual Payroll	751,010	910,803	1,004,426	973,182
MVA / Total Annual Payroll	506.4%	483.0%	489.9%	537.6%
 <u>Accrued Liability (AL) Ratio</u>				
Inactive Accrued Liability	1,642,347	1,807,409	1,878,622	2,645,706
Total Accrued Liability (EAN)	4,127,078	4,215,322	4,742,129	5,585,613
Inactive AL / Total AL	39.8%	42.9%	39.6%	47.4%
 <u>Funded Ratio</u>				
Actuarial Value of Assets (AVA)	3,943,988	4,332,200	4,920,195	5,335,648
Total Accrued Liability (EAN)	4,127,078	4,215,322	4,742,129	5,585,613
AVA / Total Accrued Liability (EAN)	95.6%	102.8%	103.8%	95.5%
 <u>Net Cash Flow Ratio</u>				
Net Cash Flow ²	152,043	109,031	164,877	57,619
Market Value of Assets (MVA)	3,803,053	4,399,004	4,920,195	5,231,892
Ratio	4.0%	2.5%	3.4%	1.1%

¹ Excludes terminated participants awaiting a refund of member contributions.

² Determined as total contributions minus benefit payments and administrative expenses.

PARTIAL HISTORY OF PREMIUM TAX REFUNDS

<u>Received During Fiscal Year</u>	<u>Amount</u>	<u>Increase from Previous Year</u>
1998	12,899.20	_____%
1999	16,762.16	29.9%
2000	19,060.35	13.7%
2001	22,546.42	18.3%
2002	24,345.00	8.0%
2003	30,197.67	24.0%
2004	32,799.43	8.6%
2005	38,385.97	17.0%
2006	44,709.46	16.5%
2007	65,574.57	46.7%
2008	104,942.35	60.0%
2009	107,950.54	2.9%
2010	91,832.55	-14.9%
2011	117,749.32	28.2%
2012	96,458.03	-18.1%
2013	108,137.86	12.1%
2014	122,408.31	13.2%
2015	103,271.36	-15.6%
2016	92,377.22	-10.5%
2017	70,246.48	-24.0%
2018	69,082.65	-1.7%
2019	67,868.16	-1.8%

EXCESS STATE MONIES RESERVE

	Regular Distribution			Special Distribution		
	<u>Actual State Contribution</u>	<u>Applicable "Frozen" Amount</u>	<u>Excess State Monies Reserve</u>	<u>Actual State Contribution</u>	<u>Applicable "Frozen" Amount</u>	<u>Excess State Monies Reserve</u>
1999	\$16,762.16	\$12,899.20	\$3,862.96	\$0.00	\$0.00	\$0.00
2000	19,060.35	12,899.20	6,161.15	0.00	0.00	0.00
2001	22,546.42	12,899.20	9,647.22	0.00	0.00	0.00
2002	24,345.00	12,899.20	11,445.80	0.00	0.00	0.00
2003	27,289.56	12,899.20	14,390.36	2,908.11	0.00	2,908.11
2004	27,556.80	12,899.20	14,657.60	5,242.63	0.00	5,242.63
2005	33,356.11	12,899.20	20,456.91	5,029.86	0.00	5,029.86
2006	36,014.94	12,899.20	23,115.74	8,694.52	0.00	8,694.52
2007	48,324.73	46,582.20	1,742.53	17,249.84	0.00	17,249.84
2008	63,785.35	46,582.20	17,203.15	41,157.00	0.00	41,157.00
2009	57,884.45	46,582.20	11,302.25	50,066.09	0.00	50,066.09
2010	61,001.04	61,001.04	0.00	30,831.51	25,276.16	5,555.35
2011	61,546.42	61,546.42	0.00	56,202.90	24,730.78	31,472.12
2012	62,513.71	62,513.71	0.00	33,944.32	23,763.49	10,180.83
2013	70,175.15	70,175.15	0.00	37,962.71	16,102.05	21,860.66
2014	78,818.70	78,818.70	0.00	43,589.61	7,458.50	36,131.11
2015	71,929.79	71,929.79	0.00	31,341.57	14,347.41	16,994.16
2016	73,789.47	71,929.79	1,859.68	18,587.75	14,347.41	4,240.34
2017	66,621.75	71,929.79	0.00	3,624.73	14,347.41	0.00
2018	66,343.88	66,343.88	0.00	2,738.77	2,738.77	0.00
2019	67,868.16	67,868.16	<u>0.00</u>	0.00	0.00	<u>0.00</u>
			135,845.35			256,782.62
			Accumulated Regular Excess			135,845.35
			Accumulated Special Excess			<u>256,782.62</u>
			Total Excess State Monies			392,627.97
			Less Excess Used in Funding			
			Res. No. 07-01 (3.0% BR)			(93,822.60)
			Less Excess Used in Funding			
			Res. No. 10-01 (3.5% MR, 3 Yr AFC)			<u>(170,511.12)</u>
			Equals Current State Monies Reserve			\$128,294.25

STATEMENT OF FIDUCIARY NET POSITION
SEPTEMBER 30, 2019

<u>ASSETS</u>	COST VALUE	MARKET VALUE
Cash and Cash Equivalents:		
Short Term Investments	67,689.72	67,689.72
Total Cash and Equivalents	67,689.72	67,689.72
Receivables:		
Member Contributions in Transit	1,881.94	1,881.94
District Contributions in Transit	29,178.94	29,178.94
Additional District Contributions	57,078.93	57,078.93
Investment Income	3,694.13	3,694.13
Total Receivable	91,833.94	91,833.94
Investments:		
Mutual Funds:		
Fixed Income	1,703,558.80	1,749,775.39
Equity	2,731,057.41	3,339,038.11
Total Investments	4,434,616.21	5,088,813.50
Total Assets	4,594,139.87	5,248,337.16
<u>LIABILITIES</u>		
Payables:		
Refunds of Member Contributions	4,118.93	4,118.93
Benefit Payments	9,520.94	9,520.94
Investment Expenses	1,289.13	1,289.13
Administrative Expenses	1,516.60	1,516.60
Total Liabilities	16,445.60	16,445.60
NET POSITION RESTRICTED FOR PENSIONS	4,577,694.27	5,231,891.56

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR THE YEAR ENDED SEPTEMBER 30, 2019
Market Value Basis

ADDITIONS

Contributions:		
Member		50,051.67
District		218,225.28
Total Contributions		268,276.95
Investment Income:		
Net Realized Gain (Loss)	11,535.39	
Unrealized Gain (Loss)	78,630.47	
Net Increase in Fair Value of Investments		90,165.86
Interest & Dividends		178,547.54
Less Investment Expense ¹		(14,636.76)
Net Investment Income		254,076.64
Total Additions		522,353.59

DEDUCTIONS

Distributions to Members:		
Benefit Payments		123,480.24
Refunds of Member Contributions		30,513.67
Total Distributions		153,993.91
Administrative Expense		56,663.51
Total Deductions		210,657.42
Net Increase in Net Position		311,696.17
NET POSITION RESTRICTED FOR PENSIONS		
Beginning of the Year		4,920,195.39
End of the Year		5,231,891.56

¹Investment related expenses include investment advisory, custodial and performance monitoring fees.

ACTUARIAL ASSET VALUATION
September 30, 2019

Actuarial Assets for funding purposes are developed by recognizing the total actuarial investment gain or loss for each Plan Year over a five year period. In the first year, 20% of the gain or loss is recognized. In the second year 40%, in the third year 60%, in the fourth year 80%, and in the fifth year 100% of the gain or loss is recognized. The actuarial investment gain or loss is defined as the actual return on investments minus the actuarial assumed investment return. Actuarial Assets shall not be less than 80% nor greater than 120% of Market Value of Assets.

Plan Year Ending	Gain/(Loss)	<u>Gains/Losses Not Yet Recognized</u>				
		Amounts Not Yet Recognized by Valuation Year				
		2019	2020	2021	2022	2023
09/30/2019	(129,695)	(103,756)	(77,817)	(51,878)	(25,939)	0
Total		(103,756)	(77,817)	(51,878)	(25,939)	0

<u>Development of Investment Gain/Loss</u>	
Market Value of Assets, including Prepaid Contributions, 09/30/2018	4,925,980
Contributions Less Benefit Payments & Admin Expenses	51,835
Expected Investment Earnings*	383,772
Actual Net Investment Earnings	254,077
2019 Actuarial Investment Gain/(Loss)	<u>(129,695)</u>

*Expected Investment Earnings = $0.0775 * (4,925,980 + 0.5 * 51,835)$

<u>Development of Actuarial Value of Assets</u>	
(1) Market Value of Assets, 09/30/2019	5,231,892
(2) Gains/(Losses) Not Yet Recognized	<u>(103,756)</u>
(3) Actuarial Value of Assets, 09/30/2019, (1) - (2)	5,335,648
(A) 09/30/2018 Actuarial Assets, including Prepaid Contributions:	4,925,980
(I) Net Investment Income:	
1. Interest and Dividends	178,548
2. Realized Gain (Loss)	11,535
3. Unrealized Gain (Loss)	78,630
4. Change in Actuarial Value	103,756
5. Investment Expenses	<u>(14,637)</u>
Total	357,833
(B) 09/30/2019 Actuarial Assets:	5,335,648
Actuarial Assets Rate of Return = $2I/(A+B-I)$:	7.23%
Market Value of Assets Rate of Return:	5.15%
10/01/2019 Limited Actuarial Assets:	5,335,648
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	(25,939)

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
 SEPTEMBER 30, 2019
 Actuarial Asset Basis

REVENUES

Contributions:		
Member	50,051.67	
District	218,225.28	
 Total Contributions		 268,276.95
Earnings from Investments:		
Interest & Dividends	178,547.54	
Net Realized Gain (Loss)	11,535.39	
Unrealized Gain (Loss)	78,630.47	
Change in Actuarial Value	103,756.00	
 Total Earnings and Investment Gains		 372,469.40
 EXPENDITURES		
Distributions to Members:		
Benefit Payments	123,480.24	
Refunds of Member Contributions	30,513.67	
 Total Distributions		 153,993.91
Expenses:		
Investment related ¹	14,636.76	
Administrative	56,663.51	
 Total Expenses		 71,300.27
 Change in Net Assets for the Year		 415,452.17
 Net Assets Beginning of the Year		 4,920,195.39
 Net Assets End of the Year ²		 5,335,647.56

¹Investment related expenses include investment advisory, custodial and performance monitoring fees.

²Net Assets may be limited for actuarial consideration.

RECONCILIATION OF DISTRICT'S SHORTFALL/(PREPAID) CONTRIBUTION
FOR THE FISCAL YEAR ENDED (FYE) SEPTEMBER 30, 2019

(1) Total Required Contribution Rate	26.8%
(2) Pensionable Payroll Derived from Member Contributions	\$1,001,033.40
(3) Total Required Contribution (1) x (2)	268,276.95
(4) Less Actual Member Contributions	(50,051.67)
(5) Less Allowable State Contribution	<u>0.00</u>
(6) Equals Required District Contribution for Fiscal 2019	218,225.28
(7) Less 2018 Prepaid Contribution	(5,784.34)
(8) Less Actual District Contributions	<u>(155,362.01)</u>
(9) Equals District's Shortfall/(Prepaid) Contribution as of September 30, 2019	\$57,078.93

STATISTICAL DATA

	<u>10/1/2016</u>	<u>10/1/2017</u>	<u>10/1/2018</u>	<u>10/1/2019</u>
<u>Actives</u>				
Number	13	17	17	16
Average Current Age	37.6	35.9	36.3	36.2
Average Age at Employment	27.8	28.9	28.3	27.7
Average Past Service	9.8	7.0	8.0	8.5
Average Annual Salary	\$57,770	\$53,577	\$59,084	\$60,824
<u>Service Retirees</u>				
Number	1	1	1	3
Average Current Age	67.5	68.5	69.5	60.3
Average Annual Benefit	\$46,335	\$46,335	\$46,335	\$49,546
<u>Beneficiaries</u>				
Number	0	0	0	0
Average Current Age	N/A	N/A	N/A	N/A
Average Annual Benefit	N/A	N/A	N/A	N/A
<u>Disability Retirees</u>				
Number	2	2	2	3
Average Current Age	57.0	58.0	59.0	52.5
Average Annual Benefit	\$10,948	\$10,948	\$10,948	\$12,841
<u>Terminated Vested</u>				
Number	7	9	9	6
Average Current Age ¹	44.6	42.6	43.6	45.7
Average Annual Benefit ²	\$38,711	\$32,952	\$32,952	\$22,372

¹ The Average Current Age excludes participants awaiting a refund of contributions.

² The Average Annual Benefit excludes participants awaiting a refund of contributions.

AGE AND SERVICE DISTRIBUTION

PAST SERVICE

AGE	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30+	Total
15 - 19												0
20 - 24												0
25 - 29			3									3
30 - 34		1	2				2					5
35 - 39	1			1			1					3
40 - 44			1		1				1			3
45 - 49								1				1
50 - 54									1			1
55 - 59												0
60 - 64												0
65+												0
Total	1	1	6	1	1	0	3	1	2	0	0	16

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 10/1/2018	17
b. Terminations	
i. Vested (partial or full) with deferred annuity	0
ii. Vested in refund of member contributions only	0
iii. Refund of member contributions or full lump sum distribution	(1)
c. Deaths	
i. Beneficiary receiving benefits	0
ii. No future benefits payable	0
d. Disabled	0
e. Retired	(1)
f. Continuing participants	15
g. New entrants	<u>1</u>
h. Total active life participants in valuation	16

2. Non-Active lives (including beneficiaries receiving benefits)

	Service Retirees, Vested Receiving <u>Benefits</u>	Receiving Death <u>Benefits</u>	Receiving Disability <u>Benefits</u>	Vested (Deferred Annuity)	Vested (Due Refund)	<u>Total</u>
a. Number prior valuation	1	0	2	4	5	12
Retired	2	0	0	(1)	0	1
Vested (Deferred Annuity)	0	0	0	0	0	0
Vested (Due Refund)	0	0	0	0	0	0
Hired/Terminated in Same Year	0	0	0	0	1	1
Death, With Survivor	0	0	0	0	0	0
Death, No Survivor	0	0	0	0	0	0
Disabled	0	0	1	0	(1)	0
Refund of Contributions	0	0	0	0	(1)	(1)
Rehires	0	0	0	(1)	0	(1)
Expired Annuities	0	0	0	0	0	0
Data Corrections	0	0	0	0	0	0
b. Number current valuation	3	0	3	2	4	12

SUMMARY OF CURRENT PLAN
(Through Resolution No. 13-03)

<u>Eligibility</u>	Full-time employees who are classified as full-time Firefighters shall participate in the System as a condition of employment.
<u>Credited Service</u>	Total years and fractional parts of years of employment with the District after June 1, 1997, as a Firefighter. Members may purchase service prior to June 1, 1997, by depositing amounts actuarially determined to fully fund the credits.
<u>Salary</u>	Fixed compensation, including tax-deferred and tax-exempt items of income.
<u>Average Final Compensation</u>	Average Salary for the highest 3 years during the 5 years immediately preceding retirement or termination.
<u>Member Contributions</u>	5.0% of Salary.
<u>District / State Contributions</u>	Remaining amounts required in order to pay current costs and amortize unfunded past service cost, if any, as provided in Part VII of Chapter 112, Florida Statutes.
<u>Normal Retirement</u>	
Date	Earlier of: 1) age 55 and 10 years of Credited Service, or 2) age 52 and 25 years of Credited Service.
Benefit	3.5% of Average Final Compensation <u>times</u> Credited Service
Form of Benefit	Ten Year Certain and Life Annuity (options available).
<u>Early Retirement</u>	
Eligibility	Age 50 and 10 Years of Credited Service.
Benefit	Accrued benefit, reduced 3% per year prior to Normal Retirement Date.

Vesting

Schedule	100% after 10 years of Credited Service.
Benefit Amount	Member will receive the vested portion of his (her) accrued benefit payable at the otherwise Normal Retirement Date.

Disability

Eligibility	
Service Incurred	Covered from Date of Employment.
Non-Service Incurred	10 years of Credited Service.
Benefit	Benefit accrued to date of disability but not less than 42% of Average Final Compensation (Service Incurred), or 25% of Average Final Compensation (Non-Service Incurred).
Duration	Payable for life with 10 year guarantee or until recovery (as determined by the Board). Options available.

Death Benefits

Pre-Retirement	
Vested	Monthly accrued benefit payable to designated beneficiary for 10 years.
Non-Vested	Refund of accumulated contributions without interest.
Post-Retirement	Benefits payable to beneficiary in accordance with option selected at retirement.

Board of Trustees

- a. Two District appointees,
- b. Two Members of the Department elected by the membership, and
- c. Fifth Member elected by other 4 and appointed by District.

Share Plan

A Share Plan exists, but is not currently funded.