City of Clearwater Employees' Pension Plan

Actuarial Valuation Report as of January 1, 2019
Annual Employer Contribution for the Fiscal Year Ending September 30, 2020

GRS

P: 954.527.1616 | F: 954.525.0083 | www.grsconsulting.com

March 29, 2019

Board of Trustees
City of Clearwater Employees' Pension Plan
Clearwater, Florida

Dear Board Members:

The results of the January 1, 2019 Annual Actuarial Valuation of the City of Clearwater Employees' Pension Plan are presented in this report.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The purposes of the valuation are to measure the System's funding progress and to determine the employer contribution rate for the fiscal year ending September 30, 2020. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section B of this report. This report includes risk metrics in Section A, but does not include a robust assessment of future experience not meeting the actuarial assumptions. A robust assessment of risks was outside the scope of this assignment.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this Plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The findings in this report are based on data or other information through December 31, 2018. The valuation was based upon information furnished by the City concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the City.

In addition, this report was prepared using certain assumptions approved by the Board as authorized under the Florida and prescribed by the Florida Statutes as described in the section of this report entitled Actuarial Assumptions and Methods. The prescribed assumptions are the assumed mortality rates detailed in the Actuarial Assumptions and Methods section in accordance with Florida Statutes, Chapter 112.63. All actuarial assumptions used in this report are reasonable for purposes of this valuation.

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 Retirement System 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.

Peter N. Strong and Trisha Amrose are members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

This actuarial valuation and/or cost determination was prepared and completed by us or under our direct supervision, and we acknowledge responsibility for the results. To the best of our knowledge, the results are complete and accurate. In our opinion, the techniques and assumptions used are reasonable, meet the requirements and intent of Part VII, Chapter 112, Florida Statutes, and are based on generally accepted actuarial principles and practices. 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.

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

Respectfully submitted,

GABRIEL, ROEDER, SMITH AND COMPANY

Peter N. Strong, FSA, MAAA	Trisha Amrose, MAAA
Enrolled Actuary No. 17-6975	Enrolled Actuary No. 17-8010

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Section A

Discussion of Valuation Results

DISCUSSION OF VALUATION RESULTS

Comparison of Required Employer Contributions

The required employer contribution developed in this year's valuation is compared below to last year's results:

	For FYE 9/30/2020 Based on 1/1/2019 Valuation	For FYE 9/30/2019 Based on 1/1/2018 Valuation	Increase (Decrease)
Required Employer/State Contribution	$ 9,720,956	$ 8,813,297	$ 907,659
As % of Covered Payroll	11.49 %	10.71 %	0.78 %
Estimated State Contribution	12,000	12,000	0
As % of Covered Payroll	0.01 %	0.02 %	(0.01) %
Required Employer Contribution	9,708,956	8,801,297	907,659
As % of Covered Payroll	11.48 %	10.69 %	0.79 %
Credit Balance	26,608,126	22,819,909	3,788,217

The contribution has been adjusted for interest on the basis that payments are made uniformly during the first two quarters of the City's fiscal year. The required employer contribution has been computed under the assumption that the amount to be received from the State on behalf of police officers and firefighters in 2019 and 2020 will be $12,000. If the actual payment from the State falls below this amount, then the City must increase its contribution by the difference.

The actual Employer and State contributions during the year ending December 31, 2018 were $10,992,120 and $12,000, respectively, for a total of $11,004,120, compared to the required contribution of $8,813,297. The excess contribution of $2,190,823 was used to increase the credit balance.

The minimum required City contribution is 7% of covered payroll.

Revisions in Benefits

There have been no revisions in benefits since the last valuation.

Revisions in Actuarial Assumptions or Methods

The assumed investment return assumption has been reduced by 0.25% from 7.00% to 6.75%. Assumed rates of salary increase, retirement, withdrawal, and disability have also been revised based on a 5-year experience study performed for the Plan since the prior valuation. Please see the Actuarial Assumptions and Cost Method subsection of this report as well as the Experience Investigation for the Five Years Ended December 31, 2017, dated December 6, 2018 for additional information on the revised assumptions. The new assumptions were adopted by the Pension Board for initial use in this January 1, 2019 Actuarial Valuation Report.

In the aggregate, the assumption changes mentioned above increased the required contribution by $997,871, or 1.17% of covered payroll.

The Board has also approved lowering the investment return assumption further in the next three valuations. The rate will be decreased from 6.75% to 6.65% effective January 1, 2020, to 6.55% effective January 1, 2021, and to 6.50% effective January 1, 2022.

There was no change in the mortality assumption since this assumption is mandated by Chapter 112.63 of the Florida Statutes. For informational purposes, if this year's valuation had been completed using the mortality rates assumed prior to January 1, 2016 (the RP-2000 Combined Healthy Participant Mortality Table for males and females with mortality improvements projected with Scale BB) rather than the mortality rates used by the Florida Retirement System (FRS) as mandated by the Florida Statutes, the required City contribution for FY 2020 would have been $10,019,095, or 11.84% of covered payroll, and the funded ratio (excluding the credit balance) as of January 1, 2019 would have been 100.95%.

Actuarial Experience

There was a net actuarial experience loss of $5,803,978 during the year, which means that actual experience was less favorable than expected. The loss is due to a recognized investment return (on the smoothed actuarial value of assets) below the assumed rate of 7.0%. The investment return on the market value of assets was (2.48)%, and the investment return was 5.76% based on the actuarial value of assets. The investment losses were partially offset by net liability-related experience gains. There were demographic experience gains resulting from fewer service retirements and more employment terminations than expected. Actual mortality experience was a small source of experience loss which partially offset the other liability gains, as there were slightly fewer retiree deaths during the year than expected (25 versus 28 expected).

Under Chapter 112.66 of the Florida Statutes, the annual payment to amortize the UAL may not reduce the contribution required to fund the Normal Cost. As a result, since the annual payment to amortize the UAL is below $0, the actuarial experience loss had no direct effect on the required employer contribution.

Analysis of Change in Employer Contribution

The components of change in the required City contribution are as follows:

Contribution Rate Last Year	10.69	%
Change in Benefits	0.00	
Change in Assumptions and Methods	1.17	
Amortization Payment on UAAL	0.00	
Normal Cost	(0.40)	
Experience Gain/Loss	0.00	
Change in Administrative Expenses	0.02	
Change in State Revenue	0.00	
Contribution Rate This Year	11.48	

Funded Ratio

One measure of the Plan's funding progress is the ratio of the actuarial value of assets to the actuarial accrued liability. Including the credit balance in the actuarial value of assets, the funded ratio is 104.09% this year (106.88% before the changes in assumptions) compared to 106.96% last year. Not including the credit balance in the actuarial value of assets, the funded ratio is 101.33% this year (104.05% before the changes in assumptions) compared to 104.47% last year.

Variability of Future Contribution Rates

The Actuarial Cost Method used to determine the contribution rate is intended to produce contribution rates which are generally level as a percent of payroll. Even so, when experience differs from the assumptions, as it often does, the employer's contribution rate can vary significantly from year-to-year.

The Actuarial Value of Assets exceeds the Market Value of Assets by $41,529,102 as of the valuation date (see Section C). This difference will be phased in over the next few years in the absence of offsetting gains. If there are no experience gains and the return on the market value of assets is 6.75% in 2019 (net of investment expenses) as assumed, there will be an additional phase-in of market value losses into the actuarial value of assets. Additionally, the investment return assumption is scheduled to be lowered from 6.75% to 6.65% next year. The combination of these two items is expected to bring the Plan's funded ratio below 100% next year, which will create a UAAL amortization payment, putting upward pressure on the City contribution requirement for FY 2021, potentially increasing it by approximately $1 million.

Relationship to Market Value

If Market Value had been the basis for the valuation, the City contribution rate would have been 14.88% of covered payroll (or about $12.6 million), and the funded ratio (excluding the credit balance) would have been 97.03%. The funded ratio based on the market value of assets (excluding the credit balance) last year was 108.73%.

Conclusion

The remainder of this Report includes detailed actuarial valuation results, financial information, miscellaneous information and statistics, and a summary of plan provisions.

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY AND ACTUARIALLY DETERMINED CONTRIBUTION

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; 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. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
3. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
4. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
5. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The computed contribution rate shown on page 1 may be considered as a minimum contribution rate that complies with the Board's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	1/1/2019	1/1/2018
Ratio of the market value of assets to total payroll	11.39	12.38
Ratio of actuarial accrued liability to payroll	11.41	11.13
Ratio of actives to retirees and beneficiaries	1.21	1.21
Ratio of net cash flow to market value of assets	(3.18) %	(2.82) %

Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

SECTION B

VALUATION RESULTS

PARTICIPANT DATA			
	January 1, 2019 *After Assumption Changes*	January 1, 2019 *Before Assumption Changes*	January 1, 2018
ACTIVE MEMBERS			
Number	1,555	1,555	1,523
Covered Annual Payroll	$ 84,608,940	$ 84,462,621	$ 82,317,307
Average Annual Payroll	$ 54,411	$ 54,317	$ 54,049
Average Age	43.9	43.9	44.0
Average Past Service	10.3	10.3	10.6
Average Age at Hire	33.6	33.6	33.4
RETIREES & BENEFICIARIES			
Number	1,155	1,155	1,123
Annual Benefits	$ 43,900,946	$ 43,900,946	$ 42,029,629
Average Annual Benefit	$ 38,009	$ 38,009	$ 37,426
Average Age	67.0	67.0	66.7
DISABILITY RETIREES			
Number	133	133	136
Annual Benefits	$ 4,069,094	$ 4,069,094	$ 4,040,807
Average Annual Benefit	$ 30,595	$ 30,595	$ 29,712
Average Age	64.8	64.8	63.9
TERMINATED VESTED MEMBERS			
Number	86	86	75
Annual Benefits	$ 1,719,905	$ 1,719,905	$ 1,407,716
Average Annual Benefit	$ 19,999	$ 19,999	$ 18,770
Average Age	48.5	48.5	49.4

ACTUARIALLY DETERMINED CONTRIBUTION (ADC)			
A. Valuation Date	January 1, 2019 *After Assumption Changes*	January 1, 2019 *Before Assumption Changes*	January 1, 2018
B. ADC to Be Paid During Fiscal Year Ending	9/30/2020	9/30/2020	9/30/2019
C. Assumed Date of Employer Contrib.	Evenly during first two quarters of fiscal year	Evenly during first two quarters of fiscal year	Evenly during first two quarters of fiscal year
D. Annual Payment to Amortize Unfunded Actuarial Liability	$ 0 *	$ 0 *	$ 0 *
E. Employer Normal Cost	9,106,282	8,152,416	8,236,726
F. ADC if Paid on the Valuation Date: D+E	9,106,282	8,152,416	8,236,726
G. ADC Adjusted for Frequency of Payments	9,720,956	8,723,085	8,813,297
H. ADC as % of Covered Payroll	11.49 %	10.33 %	10.71 %
I. Assumed Rate of Increase in Covered Payroll to Contribution Year	0.00 %	0.00 %	0.00 %
J. Covered Payroll for Contribution Year	84,608,940	84,462,621	82,317,307
K. ADC for Contribution Year: H x J	9,720,956	8,723,085	8,813,297
L. Estimate of State Revenue in Contribution Year	12,000	12,000	12,000
M. Required Employer Contribution (REC) in Contribution Year	9,708,956	8,711,085	8,801,297
N. REC as % of Covered Payroll in Contribution Year: M ÷ J	11.48 %	10.31 %	10.69 %
O. Credit Balance	26,608,126	26,608,126	22,819,909

** The annual payment to amortize the UAL is less than $0; however, under Chapter 112.66 of the Florida Statutes, the annual payment to amortize the UAL may not reduce the contribution below the amount required to fund the Normal Cost.*

ACTUARIAL VALUE OF BENEFITS AND ASSETS			
A. Valuation Date	January 1, 2019 *After Assumption Changes*	January 1, 2019 *Before Assumption Changes*	January 1, 2018
B. Actuarial Present Value of All Projected Benefits for			
1. Active Members			
a. Service Retirement Benefits	$ 366,373,759	$ 350,263,150	$ 349,500,746
b. Vesting Benefits	32,775,263	34,025,504	34,245,751
c. Disability Benefits	18,314,541	14,302,517	14,192,268
d. Preretirement Death Benefits	6,514,460	5,992,410	5,977,601
e. Return of Member Contributions	3,916,877	3,408,942	3,004,156
f. Total	427,894,900	407,992,523	406,920,522
2. Inactive Members			
a. Service Retirees & Beneficiaries	596,727,046	577,281,219	556,713,663
b. Disability Retirees	53,960,615	51,404,381	51,685,695
c. Terminated Vested Members	18,970,922	18,362,415	14,735,991
d. Total	669,658,583	647,048,015	623,135,349
3. Total for All Members	1,097,553,483	1,055,040,538	1,030,055,871
C. Actuarial Accrued (Past Service) Liability	965,611,907	940,408,824	916,334,666
D. Actuarial Value of Accumulated Plan Benefits per FASB No. 35	913,458,490	893,436,141	866,723,368
E. Plan Assets			
1. Market Value	963,571,264	963,571,264	1,019,110,192
2. Actuarial Value	1,005,100,366	1,005,100,366	980,134,451
3. Actuarial Value Excluding Credit Balance	978,492,240	978,492,240	957,314,542
F. Actuarial Present Value of Projected Covered Payroll	695,032,441	647,577,400	628,628,623
G. Actuarial Present Value of Projected Member Contributions	61,737,378	57,460,638	55,880,281
H. Accumulated Value of Active Member Contributions	62,268,307	62,268,307	60,969,115
I. Unfunded Actuarial Accrued Liability (UAAL) Based on EAN Method = C. - E.3.	(12,880,333)	(38,083,416)	(40,979,876)
J. Funded Ratio = E.2. / C.	104.09%	106.88%	106.96%
K. Funded Ratio Excluding Credit Balance = E.3. / C.	101.33%	104.05%	104.47%

CALCULATION OF EMPLOYER NORMAL COST ENTRY AGE NORMAL METHOD			
A. Valuation Date	January 1, 2019 *After Assumption Changes*	January 1, 2019 *Before Assumption Changes*	January 1, 2018
B. Normal Cost for			
1. Service Retirement Benefits	$ 11,370,851	$ 10,745,382	$ 10,742,727
2. Vesting	2,130,683	2,101,517	2,058,733
3. Disability Benefits	1,644,733	1,410,706	1,410,003
4. Death Benefits	265,837	256,143	253,393
5. Refund of Contributions	815,818	743,373	714,178
6. Total for Future Benefits	16,227,922	15,257,121	15,179,034
7. Assumed Amount for Administrative Expenses	318,903	318,903	294,925
8. Total Normal Cost	16,546,825	15,576,024	15,473,959
C. Expected Member Contributions	7,440,543	7,423,608	7,237,233
D. Employer Normal Cost: B8 - C	9,106,282	8,152,416	8,236,726
E. Employer Normal Cost as % of Covered Payroll	10.76%	9.65%	10.01%

Reconcilation of Credit Balance		
Credit Balance at Beginning of Year	$	22,819,909
Required Employer Contribution	-	8,801,297
Employer Contribution Made	+	10,992,120
Interest on Credit Balance	+	1,597,394
Credit Balance at End of Year		26,608,126

LIQUIDATION OF THE
UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)

UAAL Amortization Period and Payments						
Original UAAL			Current UAAL			
					Payment	
Date Established	Source	Amount	Years Remaining	Amount	*After Assumption Changes*	*Before Assumption Changes*
1/1/2015	Fresh Start	$ (5,212,649)	19	$ (6,921,448)	$ (615,615)	$ (625,861)
1/1/2016	(Gain)/Loss	475,313	12	586,565	68,261	69,018
1/1/2016	Assumption Change	(4,280,409)	22	(5,273,485)	(437,391)	(445,564)
1/1/2017	(Gain)/Loss	(18,096,188)	13	(20,766,436)	(2,294,735)	(2,322,170)
1/1/2017	Assumption Change	303,943	23	348,610	28,355	28,903
1/1/2018	(Gain)/Loss	(11,075,148)	14	(11,861,200)	(1,251,528)	(1,267,540)
1/1/2019	(Gain)/Loss	5,803,978	15	5,803,978	587,560	595,557
1/1/2019	Assumption Change	25,203,083	25	25,203,083	1,980,523	N/A
		(6,878,077)		(12,880,333)	(1,934,570)	(3,967,657)

Amortization Schedule

The UAAL is being liquidated as a level dollar amount over the number of years remaining in the amortization period. The expected amortization schedule is as follows:

Amortization Schedule	
Year	**Expected UAAL**
2019	$ (12,880,333)
2020	(11,684,622)
2021	(10,408,181)
2022	(9,045,579)
2023	(7,591,002)
2024	(6,038,242)
2029	-

ACTUARIAL GAINS AND LOSSES

The assumptions used to anticipate mortality, employment turnover, investment income, expenses, salary increases, and other factors have been based on long range trends and expectations. Actual experience can vary from these expectations. The variance is measured by the gain and loss for the period involved. If significant long term experience reveals consistent deviation from what has been expected and that deviation is expected to continue, the assumptions should be modified. The net actuarial gain (loss) for the past year is computed as follows:

A. Derivation of the Current UAAL	
1. Last Year's UAAL	$ (40,979,876)
2. Employer Normal Cost for Contribution Year	8,236,726
3. Last Year's Contributions	8,813,297 *
4. Interest at the Assumed Rate on:	
a. 1 and 2 for one year	(2,292,021)
b. 3 from dates paid	38,926
c. a - b	(2,330,947)
5. This Year's Expected UAAL: 1 + 2 - 3 + 4c	(43,887,394)
6. This Year's Actual UAAL (Before any changes in benefits and assumptions)	(38,083,416)
7. Net Actuarial Gain (Loss): (5) - (6)	(5,803,978)
8. Gain (Loss) Due to Investments	(11,776,532)
9. Gain (Loss) Due to other sources	5,972,554

** Excludes the portion of the actual contribution above the required contribution that was used to increase the credit balance.*

Gains (losses) in previous years have been as follows:

Year Ending 12/31	Gain (Loss)	Change in Employer Cost Rate*	
2009	$32,358,262	(4.89)	%
2010	2,311,412	(0.37)	
2011	(13,721,771)	2.28	
2012	(7,015,253)	1.15	
2013	62,452,347	(11.02)	
2014	34,213,347	(6.01)	
2015	(475,313)	0.07	**
2016	18,096,188	(2.51)	**
2017	11,075,148	(1.48)	**
2018	(5,803,978)	0.75	**

** Before 2015, Change in Normal Cost Rate.*
*** Before reflecting Chapter 112.66 of the Florida Statutes. Since the annual payment to amortize the UAAL is less than $0, the net effect of these gains and losses on the required employer contribution is $0 after reflecting Chapter 112.66 of the Florida Statutes (the requirement to fund at least the normal cost).*

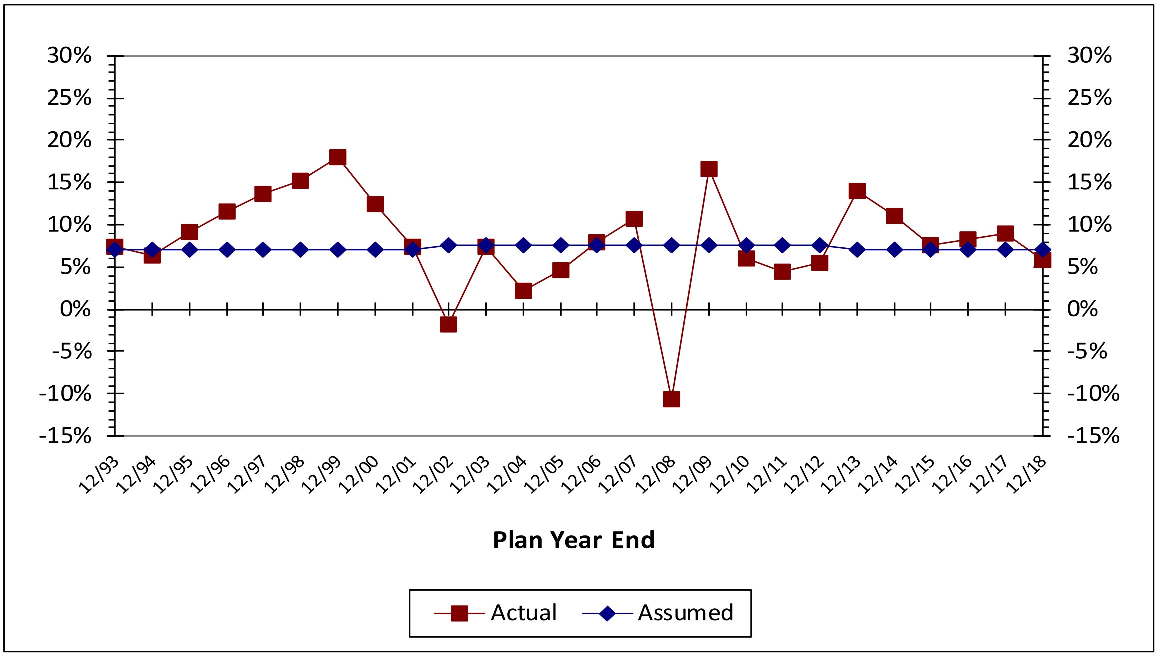
The fund earnings and salary increase assumptions have considerable impact on the cost of the Plan so it is important that they are in line with the actual experience. The following table shows the actual fund earnings and salary increase rates compared to the assumed rates for the last few years:

Year Ending	Investment Return		Salary Increases	
	Actual	Assumed	Actual	Assumed
12/31/1986	N/A	7.00 %	7.40 %	5.00 %
12/31/1987	N/A	7.00	5.90	5.00
12/31/1988	N/A	7.00	9.10	5.00
12/31/1989	N/A	7.00	8.70	5.00
12/31/1990	N/A	7.00	5.30	5.00
12/31/1991	N/A	7.00	6.10	5.00
12/31/1992	N/A	7.00	6.80	5.00
12/31/1993	7.42 %	7.00	1.20	5.00
12/31/1994	6.28	7.00	4.40	5.00
12/31/1995	9.14	7.00	6.40	5.00
12/31/1996	11.54	7.00	6.70	5.00
12/31/1997	13.74	7.00	5.60	5.00
12/31/1998	15.28	7.00	7.40	5.00
12/31/1999	17.96	7.00	4.20	5.00
12/31/2000	12.42	7.00	5.80	5.00
12/31/2001	7.40	7.00	5.90	5.00
12/31/2002	(1.85)	7.50	5.80	6.00
12/31/2003	7.45	7.50	6.40	6.00
12/31/2004	2.18	7.50	6.38	6.00
12/31/2005	4.58	7.50	5.49	6.00
12/31/2006	7.87	7.50	5.15	6.00
12/31/2007	10.68	7.50	6.62	6.00
12/31/2008	(10.61)	7.50	4.25	6.00
12/31/2009	16.53	7.50	3.29	6.00
12/31/2010	5.98	7.50	1.27	6.00
12/31/2011	4.46	7.50	2.56	6.00
12/31/2012	5.50	7.50	4.48	6.00
12/31/2013	14.04	7.00	3.16	4.07
12/31/2014	11.04	7.00	3.38	4.04
12/31/2015	7.64	7.00	8.65 *	4.09
12/31/2016	8.22	7.00	1.23 *	4.13
12/31/2017	8.89	7.00	7.35	4.16
12/31/2018	5.76	7.00	4.08	4.18
Averages	7.90 %	---	5.33 %	---

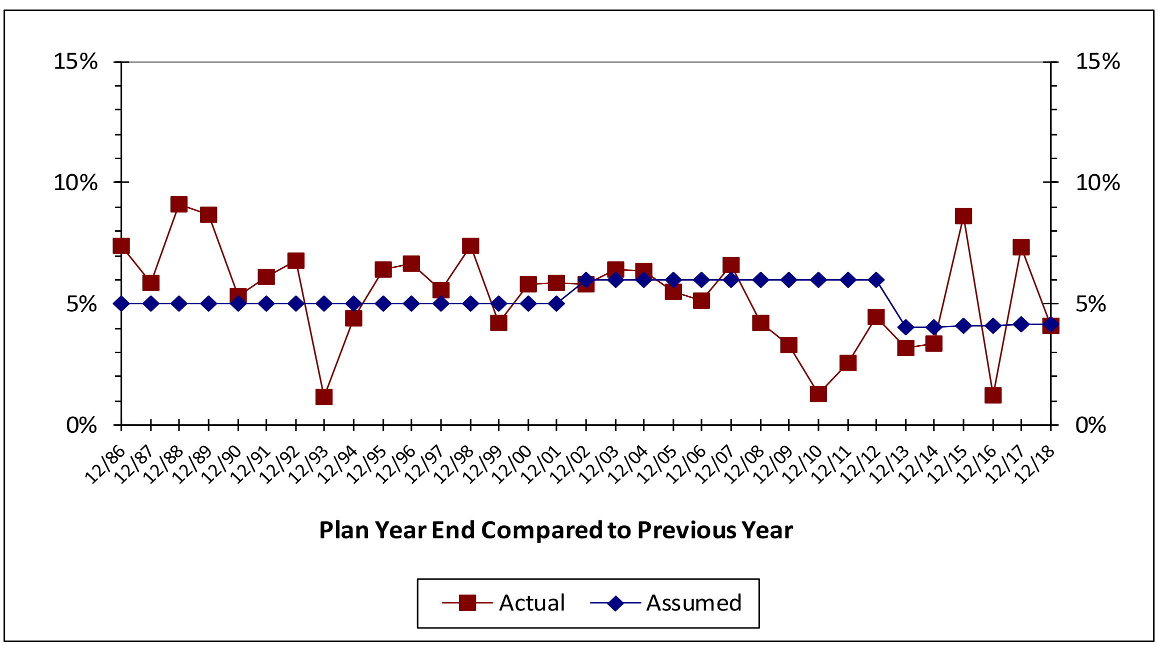
** Salary for the year ending 12/31/2015 included 27 pay periods rather than 26.*

The actual investment return rates shown above are based on the actuarial value of assets. The actual salary increase rates shown above are the increases received by those active members who were included in the actuarial valuations both at the beginning and the end of each year.

History of Investment Return Based on Actuarial Value of Assets



History of Salary Increases



Actual (A) Compared to Expected (E) Decrements Among Active Employees														
	Number Added During Year		Service Retirement		Disability Retirement		Death		Terminations					Active Members
									Vested	Other	Totals			End of
Year Ended	A	E	A	E	A	E	A	E	A	A	A	E		Year
12/31/2009	49	110	54	57	0	6	0	2	10	46	56	93		**1,567**
12/31/2010	78	137	68	51	2	6	3	2	15	49	64	85		**1,508**
12/31/2011	84	124	43	49	6	6	0	2	11	64	75	84		**1,468**
12/31/2012	119	113	51	52	3	6	1	2	18	40	58	81		**1,474**
12/31/2013	102	98	27	42	2	3	4	2	11	54	65	79		**1,478**
12/31/2014	135	131	45	51	5	3	2	2	21	58	79	78		**1,482**
12/31/2015	145	122	43	52	7	3	1	2	18	53	71	82		**1,505**
12/31/2016	159	144	49	60	4	3	2	3	18	71	89	89		**1,520**
12/31/2017	164	161	47	59	2	3	2	2	25	85	110	91		**1,523**
12/31/2018	207	175	45	65	1	3	0	2	27	102	129	92		**1,555**
12/31/2019				52		4		2				99		
10 Yr Totals *	1242	1315	472	538	32	42	15	21	174	622	796	854		

* Totals are through current Plan Year only.

Actual (A) Compared to Expected (E) Deaths Among Retirees and Beneficiaries				
	Actual During Year		Expected During Year	
Year Ended	Number	Annual Pensions	Number	Annual Pensions
12/31/2009	12	$ 142,606	16	$ 313,189
12/31/2010	12	139,508	18	363,242
12/31/2011	13	220,877	19	416,467
12/31/2012	12	232,755	20	466,010
12/31/2013	20	401,192	20	480,787
12/31/2014	16	275,728	21	510,892
12/31/2015	19	385,405	22	558,603
12/31/2016	20	498,746	25	708,907
12/31/2017	15	288,110	26	753,482
12/31/2018	25	762,324	28	831,241
12/31/2019			28	885,857

RECENT HISTORY OF VALUATION RESULTS									
Valuation Date	Number of Active Members	Number of Inactive Members	Covered Annual Payroll	Actuarial Value of Assets	Actuarial Accrued Liability (Entry Age)	Unfunded Actuarial Liability (Entry Age)*	Funded Ratio	Employer Normal Cost* Amount	Employer Normal Cost* % of Payroll
1/1/07	1,692	819	$ 79,385,090	$ 559,830,590	N/A	N/A	N/A	$ 9,192,407	11.58 %
1/1/08	1,641	878	80,371,617	610,979,087	N/A	N/A	N/A	6,920,400	8.61
1/1/09	1,628	903	82,104,837	536,834,473	N/A	N/A	N/A	20,005,238	24.37
1/1/10	1,567	955	80,443,199	618,444,906	$ 647,167,565	$ 28,722,659	95.6 %	15,879,628	19.74
1/1/11	1,508	1,024	76,505,599	646,956,800	672,786,812	25,830,012	96.2	15,461,725	20.21
1/1/12	1,468	1,072	74,765,020	664,087,199	702,438,432	38,351,233	94.5	17,064,100	22.82
1/1/13	1,474	1,127	74,422,344	688,731,221	774,749,811	86,018,590	88.9	12,845,501	17.26
1/1/14	1,478	1,144	74,254,159	772,411,068	795,927,127	23,516,059	97.0	4,626,039	6.23
1/1/15	1,482	1,194	75,078,542	829,486,793	824,274,144	(5,212,649)	100.6	8,194,115	10.91
1/1/16	1,505	1,237	80,250,993	866,598,975	857,177,619	(9,421,356)	101.1	8,358,975	10.42
1/1/17	1,520	1,278	79,276,100	908,229,246	880,316,652	(27,912,594)	103.2	8,092,922	10.21
1/1/18	1,523	1,334	82,317,307	957,314,542	916,334,666	(40,979,876)	104.5	8,236,726	10.01
1/1/19	1,555	1,374	84,608,940	978,492,240	965,611,907	(12,880,333)	101.3	9,106,282	10.76

* *Starting with the January 1, 2015 valuation, the Employer Normal Cost is calculated under the Entry Age Normal Method and the Credit Balance is excluded from the Actuarial Value of Assets.*

Results before January 1, 2010 are from the January 1, 2009 Report prepared by PricewaterhouseCoopers.

RECENT HISTORY OF REQUIRED AND ACTUAL CONTRIBUTIONS										
	End of Year To Which Valuation Applies	Required Contributions								
		Employer & State		Estimated State		Net Employer		Actual Contributions		
Valuation Date		Amount	% of Payroll	Amount	% of Payroll	Amount	% of Payroll	Employer	State	Total
1/1/07	9/30/08	$ 12,532,399	15.79 %	$ 12,000	0.02 %	$ 12,520,399	15.77 %	$ 12,520,399	$ 12,000	$ 12,532,399
1/1/08	9/30/09	10,086,978	12.55	12,000	0.01	10,074,978	12.54	10,074,978	12,000	10,086,978
1/1/09	9/30/10	23,960,586	29.18	12,000	0.01	23,948,586	29.17	23,948,586	12,000	23,960,586
1/1/10	9/30/11	19,373,992	24.08	12,000	0.01	19,361,992	24.07	19,361,992	12,000	19,373,992
1/1/11	9/30/12	18,898,567	24.70	12,000	0.01	18,886,567	24.69	18,886,567	12,000	18,898,567
1/1/12	9/30/13	20,925,720	27.99	12,000	0.02	20,913,720	27.97	20,913,720	12,000	20,925,720
1/1/13	9/30/14	19,608,078	26.35	12,000	0.02	19,596,078	26.33	19,596,078	12,000	19,608,078
1/1/14	9/30/15	10,803,098	14.55	12,000	0.02	10,791,098	14.53	10,791,098	12,000	10,803,098
1/1/15	9/30/16	8,767,703	11.68	12,000	0.02	8,755,703	11.66	8,755,703	12,000	8,767,703
1/1/16	9/30/17	8,944,103	11.15	12,000	0.02	8,932,103	11.13	8,932,103	12,000	8,944,103
1/1/17	9/30/18	8,659,427	10.92	12,000	0.01	8,647,427	10.91	8,647,427	12,000	8,659,427
1/1/18	9/30/19	8,813,297	10.71	12,000	0.02	8,801,297	10.69	8,801,297	12,000	8,813,297
1/1/19	9/30/20	9,720,956	11.49	12,000	0.01	9,708,956	11.48	---	---	---

Results before January 1, 2010 are from the January 1, 2009 Report prepared by PricewaterhouseCoopers.

ACTUARIAL ASSUMPTIONS AND COST METHOD

Valuation Methods

Actuarial Cost Method - Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

Financing of Unfunded Actuarial Accrued Liabilities - Unfunded Actuarial Accrued Liabilities (full funding credit if assets exceed liabilities) were amortized by level (principal & interest combined) dollar amount contributions over a reasonable period of future years.

Actuarial Value of Assets - The Actuarial Value of Assets phase in the difference between the expected and actual return on market value of assets at the rate of 20% per year. The Actuarial Value of Assets will be further adjusted to the extent necessary to fall within the corridor whose lower limit is 80% of the Market Value of plan assets and whose upper limit is 120% of the Market Value of plan assets. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than Market Value. During periods when investment performance is less than assumed rate, Actuarial Value of Assets will tend to be greater than Market Value.

Valuation Assumptions

The actuarial assumptions used in the valuation are shown in this Section. Both the economic and decrement assumptions were established following the Experience Investigation for the Five Years Ended December 31, 2017, dated December 6, 2018. The mortality assumption is mandated by Chapter 112.63, Florida Statutes.

Economic Assumptions

The investment return rate assumed in the valuation is 6.75% per year, compounded annually (net rate after investment expenses). This assumption was changed this year (based on the results of a 5-year experience study) from 7.00%.

The **Inflation Rate** assumed in this valuation is 2.25% per year. The Inflation Rate is defined to be the expected long-term rate of increases in the prices of goods and services.

The assumed **real rate of return** over inflation is defined to be the portion of total investment return that is more than the assumed inflation rate. Considering other economic assumptions, the 6.75% investment return rate translates to an assumed real rate of return over inflation of 4.50%.

The rate of salary increase used for individual members can be seen in the tables below. Part of the assumption is for merit and/or seniority increases and productivity increases, and 2.25% recognizes inflation. This assumption is used to project a member's current salary to the salaries upon which benefits will be based. This assumption was changed this year (based on the results of a 5-year experience study) from the service-based rates used in the prior valuation, which varied from 3.5% to 7.9%.

% Increase in Salary - Hazardous Duty

Years of Service	Merit and Seniority	Inflation	Total Increase
1 - 2	5.35%	2.25%	7.60%
3 - 4	4.00%	2.25%	6.25%
5 - 9	3.25%	2.25%	5.50%
10 - 14	3.00%	2.25%	5.25%
15 and Higher	2.25%	2.25%	4.50%

% Increase in Salary - Non-Hazardous Duty

Years of Service	Merit and Seniority	Inflation	Total Increase
1	4.25%	2.25%	6.50%
2	3.35%	2.25%	5.60%
3	2.25%	2.25%	4.50%
4 - 9	1.50%	2.25%	3.75%
10 - 14	1.30%	2.25%	3.55%
15 - 19	0.80%	2.25%	3.05%
20 and Higher	0.50%	2.25%	2.75%

Demographic Assumptions

The mortality table for Hazardous Duty members is the RP-2000 Combined Healthy Participant Mortality Table (for pre-retirement mortality) and the RP-2000 Mortality Table for Annuitants (for post-retirement mortality) with future improvements in mortality projected to all future years using Scale BB. For females, the base mortality rates include a 100% white collar adjustment. For males, the base mortality rates include a 90% blue collar adjustment and a 10% white collar adjustment. These are the same rates used for Special Risk Class members of the Florida Retirement System (FRS), as required under Florida Statutes, Chapter 112.63.

FRS Healthy Post-Retirement Mortality for Special Risk Class Members

Sample Attained	Probability of Dying Next Year		Future Life Expectancy (years)	
Ages (in 2019)	Men	Women	Men	Women
50	0.53 %	0.23 %	34.12	38.50
55	0.66	0.32	29.49	33.48
60	0.89	0.46	24.92	28.58
65	1.28	0.72	20.51	23.83
70	1.95	1.21	16.36	19.36
75	3.17	2.04	12.61	15.26
80	5.21	3.42	9.37	11.62

This assumption is used to measure the probabilities of each benefit payment being made after retirement.

FRS Healthy Pre-Retirement Mortality for Special Risk Class Members

Sample Attained	Probability of Dying Next Year		Future Life Expectancy (years)	
Ages (in 2019)	Men	Women	Men	Women
50	0.22 %	0.15 %	35.11	38.85
55	0.39	0.24	30.00	33.70
60	0.70	0.39	25.12	28.68
65	1.20	0.69	20.55	23.86
70	1.95	1.21	16.36	19.36
75	3.17	2.04	12.61	15.26
80	5.21	3.42	9.37	11.62

This assumption is used to measure the probabilities of active members dying prior to retirement. All deaths before retirement are assumed to be non-service connected.

For disabled retirees, the mortality table used was 60% of the RP-2000 Mortality Table for Disabled Annuitants with ages set back 4 years for males and set forward 2 years for females, and 40% of the RP-2000 Annuitants Mortality Table with a White Collar adjustment with no age set back, both with no provision being made for future mortality improvements. These are the same rates used for Special Risk Class members of the Florida Retirement System (FRS), as required under Florida Statutes, Chapter 112.63.

FRS Disabled Mortality for Special Risk Class Members

Sample Attained	Probability of Dying Next Year		Future Life Expectancy (years)	
Ages	Men	Women	Men	Women
50	1.67 %	0.91 %	23.74	27.06
55	2.03	1.26	20.77	23.37
60	2.47	1.67	17.91	19.90
65	3.07	2.24	15.15	16.62
70	3.90	3.18	12.52	13.58
75	5.30	4.60	10.02	10.86
80	7.59	6.66	7.80	8.48

The mortality table for Nonhazardous Duty members is the RP-2000 Combined Healthy Participant Mortality Table (for pre-retirement mortality) and the RP-2000 Mortality Table for Annuitants (for post-retirement mortality) with future improvements in mortality projected to all future years using Scale BB. For females, the base mortality rates include a 100% white collar adjustment. For males, the base mortality rates include a 50% blue collar adjustment and a 50% white collar adjustment. These are the same rates currently in use for Non-Special Risk Class members of the Florida Retirement System (FRS), as required under Florida Statutes, Chapter 112.63.

FRS Healthy Post-Retirement Mortality for Non-Special Risk Class Members

Sample Attained	Probability of Dying Next Year		Future Life Expectancy (years)	
Ages (in 2019)	Men	Women	Men	Women
50	0.55 %	0.23 %	34.88	38.50
55	0.60	0.32	30.26	33.48
60	0.75	0.46	25.59	28.58
65	1.12	0.72	21.06	23.83
70	1.73	1.21	16.79	19.36
75	2.88	2.04	12.91	15.26
80	4.88	3.42	9.54	11.62

This assumption is used to measure the probabilities of each benefit payment being made after retirement.

FRS Healthy Pre-Retirement Mortality for Non-Special Risk Class Members

Sample Attained Ages (in 2019)	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	0.21 %	0.15 %	35.80	38.85
55	0.35	0.24	30.68	33.70
60	0.61	0.39	25.75	28.68
65	1.06	0.69	21.10	23.86
70	1.73	1.21	16.79	19.36
75	2.88	2.04	12.91	15.26
80	4.88	3.42	9.54	11.62

This assumption is used to measure the probabilities of active members dying prior to retirement. All deaths before retirement are assumed to be non-service connected.

For disabled retirees, the mortality table used was the RP-2000 mortality for disabled annuitants, set-back 4 years for males and set-forward 2 years for females, with no provision being made for future mortality improvements. These are the same rates currently in use for Non-Special Risk Class members of the Florida Retirement System (FRS), as required under Florida Statutes, Chapter 112.63.

FRS Disabled Mortality for Non-Special Risk Class Members

Sample Attained Ages	Probability of Dying Next Year		Future Life Expectancy (years)	
	Men	Women	Men	Women
50	2.38 %	1.35 %	20.25	23.74
55	3.03	1.87	17.78	20.46
60	3.67	2.41	15.55	17.43
65	4.35	3.13	13.44	14.58
70	5.22	4.29	11.39	11.96
75	6.58	5.95	9.43	9.65
80	8.70	8.23	7.65	7.66

The rates of retirement used to measure the probability of eligible members retiring under normal and early retirement eligibility during the next year were as follows:

Hazardous Duty Retirement

Years of Service	Age	Probability of Retirement
10 - 19	50 - 54	5 %
	55 - 59	15
	60 - 64	40
	65 & Over	100
20 & Over	Under 55	15
	55 - 59	30
	60 - 64	40
	65 & Over	100

Non-Hazardous Duty Retirement

Years of Service	Age	Probability of Retirement
10 - 19	65 - 74	30 %
	75 & Over	100
20 - 29	55 - 64	20
	65 - 69	30
	70 & Over	100
30 & Over	Under 55	45
	55 - 59	20
	60 - 64	30
	65 - 69	50
	70 & Over	100

This assumption was changed this year (based on the results of a 5-year experience study) from the age-and-service-based rates used in the prior valuation, which varied from 10% to 100%.

Rates of separation from active membership were as shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members separating from employment prior to becoming eligible for retirement.

Hazardous Duty Withdrawal - Males

Years of Service	Age	% of Active Members Separating Within Next Year
Under 1	All Ages	8.5 %
1	All Ages	7.5
2 - 5	Under 40	4.5
	40 & Over	2.5
6 & Over	Under 40	2.0
	40 & Over	1.5

Hazardous Duty Withdrawal - Females

Years of Service	Age	% of Active Members Separating Within Next Year
Under 1	All Ages	20.0 %
1 & Over	All Ages	4.0

Non-Hazardous Duty Withdrawal - Males

Years of Service	Age	% of Active Members Separating Within Next Year
Under 1	Under 35	25.0 %
	35 & Over	11.0
1 - 2	All Ages	16.0
3 - 4	Under 40	11.0
	40 & Over	5.0
5 - 9	Under 30	12.5
	30 - 49	5.0
	50 - 59	3.0
	60 & Over	7.5
10 & Over	Under 35	7.5
	35 - 39	4.0
	40 - 49	3.5
	50 - 54	2.0
	55 - 59	3.0
	60 & Over	4.5

Non-Hazardous Duty Withdrawal - Females

Years of Service	Age	% of Active Members Separating Within Next Year
Under 3	Under 30	22.0 %
	30 - 34	15.0
	35 - 44	5.0
	45 - 49	14.0
	50 - 59	18.0
	60 & Over	25.0
3 - 4	Under 30	18.0
	30 - 39	14.0
	40 - 59	5.0
	60 & Over	20.0
5 - 9	Under 35	5.0
	35 - 44	6.0
	45 - 59	4.5
	60 & Over	3.0
10 & Over	Under 40	6.0
	40 - 44	5.0
	45 - 49	3.75
	50 - 54	3.25
	55 - 59	2.75
	60 & Over	6.0

This assumption was changed this year (based on the results of a 5-year experience study) from age-and-service-based rates used in the prior valuation, which varied from 0% to 35%.

Rates of disability among active members (100% of disabilities are assumed to be service-connected).

Hazardous Duty Disability

Sample Ages	% of Active Members Becoming Disabled Within Next Year: Males	% of Active Members Becoming Disabled Within Next Year: Females
20	0.25 %	0.50 %
25	0.25	0.50
30	0.25	0.75
35	0.30	1.00
40	0.45	1.25
45	0.60	1.50
50	0.60	1.50
55	0.60	1.50
60	0.75	1.50
65	1.00	1.50
70	1.50	1.50

Non-Hazardous Duty Disability

Sample Ages	% of Active Members Becoming Disabled Within Next Year: Males	% of Active Members Becoming Disabled Within Next Year: Females
20	0.03 %	0.03 %
25	0.03	0.03
30	0.03	0.03
35	0.04	0.04
40	0.07	0.07
45	0.10	0.10
50	0.14	0.14
55	0.24	0.24
60	0.29	0.29
65	0.34	0.34
70	0.44	0.44

This assumption was changed this year (based on the results of a 5-year experience study) from age-based rates used in the prior valuation.

Miscellaneous and Technical Assumptions

Administrative & Investment Expenses	The investment return assumption is intended to be the net return after investment expenses. Annual administrative expenses are assumed to be equal to the administrative expenses of the previous year. Assumed administrative expenses are added to the Normal Cost.
Benefit Service	Exact fractional service is used to determine the amount of benefit payable.
Cost of Living Increases	The adjustment is 1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. There is a five-year delay in the COLA for non-grandfathered non-hazardous duty members for benefits accrued after January 1, 2013. There is no COLA for non-grandfathered hazardous duty members for benefits accrued after January 1, 2013.
Decrement Operation	Disability and mortality decrements operate during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur at the beginning of the year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Forfeitures	For vested separations from service, it is assumed that 0% of members separating will withdraw their contributions and forfeit an employer financed benefit. It was further assumed that the liability at termination is the greater of the vested deferred benefit (if any) or the member's accumulated contributions.
Incidence of Contributions	Employer contributions are assumed to be made in equal installments during the first two quarters of the fiscal year. Member contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

Marriage Assumption	75% of males and 75% of females are assumed to be married for purposes of death-in-service benefits and to determine the normal form of benefit when applicable. Male spouses are assumed to be three years older than female spouses for all active members and for members who became inactive before January 1, 2015. For members who became inactive on or after January 1, 2015, spouses ages are based on the beneficiary dates of birth provided by the Plan Administrator.
Normal Form of Benefit	The normal form of benefit is a life annuity for non-grandfathered non-hazardous duty members. For all other members, the normal form of benefit is a life annuity that includes a survivor benefit where after the participant's death, 100% is payable to the spouse for five years, after which the benefit is reduced to 50%.
Pay Increase Timing	End of fiscal year. This is equivalent to assuming that reported pays represent the annual rate of pay on the valuation date. The pay used for the valuation is equal to the greater of the actual pay for the plan year increased by the salary scale assumption rate (which varies by years of service) and the annual rate of pay on the valuation date.
Service Credit Accruals	It is assumed that members accrue one year of service credit per year.

GLOSSARY

Actuarial Accrued Liability (AAL)	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
Actuarial Assumptions	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement, and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
Actuarial Cost Method	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of Future Normal Costs and the Actuarial Accrued Liability.
Actuarial Equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV)	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
Actuarial Present Value of Future Benefits (APVFB)	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of the Funded Ratio and the Actuarially Determined Contribution (ADC).
Actuarial Value of Assets	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Actuarially Determined Contribution (ADC).

Actuarially Determined Contribution (ADC)	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and Amortization Payment.
Amortization Method	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.
Amortization Payment	That portion of the plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Amortization Period	The period used in calculating the Amortization Payment.
Closed Amortization Period	A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.
Employer Normal Cost	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Equivalent Single Amortization Period	For plans that do not establish separate amortization bases (separate components of the UAAL), this is the same as the Amortization Period. For plans that do establish separate amortization bases, this is the period over which the UAAL would be amortized if all amortization bases were combined upon the current UAAL payment.
Experience Gain/Loss	A measure of the difference between the normal cost rate from last year and the normal cost rate from this year.
Funded Ratio	The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability.
Normal Cost	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.

Open Amortization Period	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.
Unfunded Actuarial Accrued Liability	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
Valuation Date	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.

SECTION C

PENSION FUND INFORMATION

Statement of Plan Assets at Market Value

Item	December 31 2018	December 31 2017
A. Cash and Cash Equivalents (Operating Cash)	$ -	$ -
B. Receivables		
1. Member Contributions	$ -	$ -
2. Employer Contributions	5,075,757	4,898,468
3. Investment Income and Other Receivables	4,974,583	5,736,629
4. Total Receivables	$ 10,050,340	$ 10,635,097
C. Investments		
1. Short-Term Investments	$ 15,241,276	$ 28,627,149
2. Domestic Equities	374,546,281	432,388,268
3. International Equities	159,926,512	185,785,460
4. Domestic Fixed Income	297,341,842	280,945,411
5. International Fixed Income	-	-
6. Real Estate	93,435,527	88,936,244
7. Infrastructure	37,781,686	31,973,181
8. Private Equity	-	-
9. Total Investments	$ 978,273,124	$ 1,048,655,713
D. Liabilities		
1. Benefits Payable	$ -	$ -
2. Accrued Expenses and Other Payables	(24,752,200)	(40,180,618)
3. Total Liabilities	$ (24,752,200)	$ (40,180,618)
E. Total Market Value of Assets Available for Benefits	$ 963,571,264	$ 1,019,110,192
F. Allocation of Investments		
1. Short-Term Investments	1.56%	2.73%
2. Domestic Equities	38.29%	41.23%
3. International Equities	16.35%	17.72%
4. Domestic Fixed Income	30.39%	26.79%
5. International Fixed Income	0.00%	0.00%
6. Real Estate	9.55%	8.48%
7. Infrastructure	3.86%	3.05%
8. Private Equity	0.00%	0.00%
9. Total Investments	100.00%	100.00%

Reconciliation of Plan Assets

Item	December 31 2018		December 31 2017	
A. Market Value of Assets at Beginning of Year	$	1,019,110,192	$	905,261,405
B. Revenues and Expenditures				
1. Contributions				
a. Employee Contributions	$	7,172,027	$	7,070,641
b. Employer Contributions		10,992,120		10,660,241
c. State Contributions		12,000		12,000
d. Total	$	18,176,147	$	17,742,882
2. Investment Income				
a. Interest, Dividends, and Other Income	$	20,589,882	$	18,750,403
b. Net Realized Gains/(Losses)		59,848,063		53,515,048
c. Net Unrealized Gains/(Losses)		(98,752,444)		76,499,841
d. Investment Expenses		(6,623,785)		(6,169,286)
e. Net Investment Income	$	(24,938,284)	$	142,596,006
3. Benefits and Refunds				
a. Refunds	$	(1,050,810)	$	(1,028,495)
b. Regular Monthly Benefits		(47,209,075)		(44,639,425)
c. Partial Lump-Sum Benefits Paid		(198,003)		(527,256)
d. Total	$	(48,457,888)	$	(46,195,176)
4. Administrative and Miscellaneous Expenses	$	(318,903)	$	(294,925)
5. Transfers	$	-	$	-
C. Market Value of Assets at End of Year	$	963,571,264	$	1,019,110,192

Development of Actuarial Value of Assets

Valuation Date - December 31	2017	2018	2019	2020	2021	2022
A. Actuarial Value of Assets Beginning of Year	$ 927,675,129	$ 980,134,451				
B. Market Value End of Year	1,019,110,192	963,571,264				
C. Market Value Beginning of Year	905,261,405	1,019,110,192				
D. Non-Investment/Administrative Net Cash Flow	(28,747,219)	(30,600,644)				
E. Investment Income						
E1. Actual Market Total: B-C-D	142,596,006	(24,938,284)				
E2. Assumed Rate of Return	7.00%	7.00%	6.75%	6.65%	6.55%	6.50%
E3. Assumed Amount of Return	62,170,412	70,071,393				
E4. Amount Subject to Phase-In: E1–E3	80,425,594	(95,009,677)				
F. Phase-In Recognition of Investment Income						
F1. Current Year: 0.2 x E4	16,085,119	(19,001,935)				
F2. First Prior Year	(465,144)	16,085,119	(19,001,935)			
F3. Second Prior Year	(12,846,426)	(465,144)	16,085,119	(19,001,935)		
F4. Third Prior Year	1,723,554	(12,846,426)	(465,144)	16,085,119	(19,001,935)	
F5. Fourth Prior Year	14,539,026	1,723,552	(12,846,427)	(465,145)	16,085,118	(19,001,937)
F6. Total Phase-Ins	19,036,129	(14,504,834)	(16,228,387)	(3,381,961)	(2,916,817)	(19,001,937)
G. Actuarial Value of Assets End of Year						
G1. Preliminary Actuarial Value of Assets	$ 980,134,451	$ 1,005,100,366				
G2. Upper Corridor Limit: 120%*B	$ 1,222,932,230	$ 1,156,285,517				
G3. Lower Corridor Limit: 80%*B	$ 815,288,154	$ 770,857,011				
G4. Funding Value End of Year	$ 980,134,451	$ 1,005,100,366				
G5. Credit Balance	$ 22,819,909	$ 26,608,126				
G6. Final Actuarial Value of Assets	$ 957,314,542	$ 978,492,240				
H. Recognized Investment Earnings	$ 81,206,541	$ 55,566,559				
I. Difference between Market & Actuarial Value	$ 38,975,741	$ (41,529,102)				
J. Actuarial Rate of Return	8.89%	5.76%				
K. Market Value Rate of Return	16.01%	-2.48%				
L. Ratio of Actuarial Value of Assets to Market Value	96.18%	104.31%				

The Actuarial Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment income (Line E4) are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than Market Value. If assumed rates are exactly realized for 5 consecutive years, Actuarial Value of Assets will become equal to Market Value.

Investment Rate of Return

Plan Year Ending December 31	Market*	Actuarial*
1986	13.21 %	N/A
1987	10.78	N/A
1988	9.12	N/A
1989	20.84	N/A
1990	6.21	N/A
1991	28.52	N/A
1992	6.49	N/A
1993	9.29	7.42 %
1994	0.89	6.28
1995	23.36	9.14
1996	14.80	11.54
1997	17.49	13.74
1998	16.74	15.28
1999	18.61	17.96
2000	(3.43)	12.42
2001	(5.16)	7.40
2002	(8.83)	(1.85)
2003	20.08	7.45
2004	9.73	2.18
2005	6.67	4.58
2006	11.80	7.87
2007	7.29	10.68
2008	(27.01)	(10.61)
2009	30.93	16.53
2010	17.50	5.98
2011	(0.32)	4.46
2012	13.92	5.50
2013	16.90	14.04
2014	7.99	11.04
2015	(0.28)	7.64
2016	6.70	8.22
2017	16.01	8.89
2018	(2.48)	5.76
Average returns:		
Last five years:	5.39 %	8.30 %
Last ten years:	10.26 %	8.74 %
All years:	8.90 %	7.90 %

**Before investment expenses prior to 2013.*

The above rates are based on the retirement system's financial information reported to the actuary. They may differ from figures that the investment consultant reports, in part because of differences in the handling of administrative and investment expenses, and in part because of differences in the handling of cash flows.

SECTION D

FINANCIAL ACCOUNTING INFORMATION

FASB NO. 35 INFORMATION

		January 1, 2019	January 1, 2018
A.	Valuation Date	January 1, 2019	January 1, 2018
B.	Actuarial Present Value of Accumulated Plan Benefits		
	1. Vested Benefits		
	a. Members Currently Receiving Payments	$ 650,687,661	$ 608,399,358
	b. Terminated Vested Members	18,970,922	14,735,991
	c. Other Members	229,609,403	230,918,891
	d. Total	899,267,986	854,054,240
	2. Non-Vested Benefits	14,190,504	12,669,128
	3. Total Actuarial Present Value of Accumulated Plan Benefits: 1d + 2	913,458,490	866,723,368
	4. Accumulated Contributions of Active Members	62,268,307	60,969,115
C.	Changes in the Actuarial Present Value of Accumulated Plan Benefits		
	1. Total Value at Beginning of Year	866,723,368	835,933,687
	2. Increase (Decrease) During the Period Attributable to:		
	a. Plan Amendment	0	0
	b. Change in Actuarial Assumptions	20,022,349	0
	c. Latest Member Data, Benefits Accumulated and Decrease in the Discount Period	75,170,661	76,984,857
	d. Benefits Paid	(48,457,888)	(46,195,176)
	e. Net Increase	46,735,122	30,789,681
	3. Total Value at End of Period	913,458,490	866,723,368
D.	Market Value of Assets	963,571,264	1,019,110,192
E.	Actuarial Assumptions - See page entitled Actuarial Assumptions and Methods		

SECTION E

MISCELLANEOUS INFORMATION

RECONCILIATION OF MEMBERSHIP DATA		
	From 1/1/2018 To 1/1/2019	**From 1/1/2017 To 1/1/2018**
A. Active Members		
1. Number Included in Last Valuation	1,523	1,520
2. New Members Included in Current Valuation	206	163
3. Non-Vested Employment Terminations	(102)	(85)
4. Vested Employment Terminations	(27)	(25)
5. Service Retirements	(45)	(47)
6. Disability Retirements	(1)	(2)
7. Deaths	0	(2)
8. Rehired Members/Data Corrections	1	1
9. Number Included in This Valuation	1,555	1,523
B. Terminated Vested Members		
1. Number Included in Last Valuation	75	66
2. Additions from Active Members	27	25
3. Lump Sum Payments/Refund of Contributions	(5)	(3)
4. Payments Commenced	(9)	(13)
5. Deaths	0	0
6. Conversion from Disability/Rehired Members	(2)	(1)
7. Data Corrections	0	1
8. Number Included in This Valuation	86	75
C. Service Retirees, Disability Retirees and Beneficiaries		
1. Number Included in Last Valuation	1,259	1,212
2. Additions from Active Members	46	48
3. Additions from Terminated Vested Members	9	13
4. Deaths Resulting in No Further Payments	(24)	(13)
5. Deaths Resulting in New Survivor Benefits	0	1
6. End of Certain Period - No Further Payments	(1)	(2)
7. Data Correction/Waiver of Benefits	(1)	0
8. Number Included in This Valuation	1,288	1,259

ACTIVE PARTICIPANT DISTRIBUTION
ALL ACTIVE MEMBERS

	Years of Service to Valuation Date												
Age Group	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35+	Totals
15-19 NO.	0	0	0	0	0	0	0	0	0	0	0	0	0
TOT PAY	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG PAY	0	0	0	0	0	0	0	0	0	0	0	0	0
20-24 NO.	30	15	9	5	2	0	0	0	0	0	0	0	61
TOT PAY	983,963	515,449	394,614	185,560	68,698	0	0	0	0	0	0	0	2,148,284
AVG PAY	32,799	34,363	43,846	37,112	34,349	0	0	0	0	0	0	0	35,218
25-29 NO.	45	37	30	22	15	13	0	0	0	0	0	0	162
TOT PAY	1,656,955	1,628,234	1,368,638	974,534	781,803	543,528	0	0	0	0	0	0	6,953,692
AVG PAY	36,821	44,006	45,621	44,297	52,120	41,810	0	0	0	0	0	0	42,924
30-34 NO.	32	24	23	19	17	51	26	1	0	0	0	0	193
TOT PAY	1,255,723	1,037,798	1,033,400	937,621	911,992	2,739,815	1,610,027	59,346	0	0	0	0	9,585,722
AVG PAY	39,241	43,242	44,930	49,348	53,647	53,722	61,924	59,346	0	0	0	0	49,667
35-39 NO.	25	16	13	10	9	31	57	13	0	0	0	0	174
TOT PAY	945,488	770,394	619,018	492,822	425,912	1,782,872	3,645,304	806,442	0	0	0	0	9,488,252
AVG PAY	37,820	48,150	47,617	49,282	47,324	57,512	63,953	62,034	0	0	0	0	54,530
40-44 NO.	16	14	8	5	9	32	62	53	8	0	0	0	207
TOT PAY	526,276	555,589	276,609	196,314	418,175	1,679,995	4,378,355	3,740,423	604,863	0	0	0	12,376,599
AVG PAY	32,892	39,685	34,576	39,263	46,464	52,500	70,619	70,574	75,608	0	0	0	59,790
45-49 NO.	23	11	6	9	11	26	43	49	35	6	0	0	219
TOT PAY	846,944	463,062	237,016	498,489	518,694	1,258,429	2,688,097	3,785,121	3,083,030	497,290	0	0	13,876,172
AVG PAY	36,824	42,097	39,503	55,388	47,154	48,401	62,514	77,247	88,087	82,882	0	0	63,362
50-54 NO.	18	5	5	5	2	17	30	42	55	19	2	0	200
TOT PAY	633,530	336,173	262,587	230,256	84,799	790,757	1,618,162	2,772,330	3,959,567	1,490,989	151,334	0	12,330,484
AVG PAY	35,196	67,235	52,517	46,051	42,400	46,515	53,939	66,008	71,992	78,473	75,667	0	61,652
55-59 NO.	14	6	5	6	9	19	29	33	25	14	8	1	169
TOT PAY	633,558	237,994	210,813	319,958	493,938	809,632	1,512,562	1,802,466	1,477,340	1,024,460	645,070	46,520	9,214,311
AVG PAY	45,254	39,666	42,163	53,326	54,882	42,612	52,157	54,620	59,094	73,176	80,634	46,520	54,523
60-64 NO.	1	2	2	1	1	11	19	30	26	8	10	1	112
TOT PAY	70,380	64,675	78,385	38,725	55,448	524,360	914,710	1,395,363	1,424,766	598,352	597,099	46,528	5,808,791
AVG PAY	70,380	32,338	39,192	38,725	55,448	47,669	48,143	46,512	54,799	74,794	59,710	46,528	51,864
65+ NO.	2	1	1	2	1	6	19	11	6	3	4	2	58
TOT PAY	87,174	25,890	30,847	93,886	45,583	281,057	858,956	559,645	306,158	163,927	277,328	96,182	2,826,633
AVG PAY	43,587	25,890	30,847	46,943	45,583	46,843	45,208	50,877	51,026	54,642	69,332	48,091	48,735
TOT NO.	206	131	102	84	76	206	285	232	155	50	24	4	1,555
TOT AMT	7,639,991	5,635,258	4,511,927	3,968,165	3,805,042	10,410,445	17,226,173	14,921,136	10,855,724	3,775,018	1,670,831	189,230	84,608,940
AVG AMT	37,087	43,017	44,235	47,240	50,066	50,536	60,443	64,315	70,037	75,500	69,618	47,308	54,411

ACTIVE PARTICIPANT DISTRIBUTION
HAZARDOUS DUTY MEMBERS

	Years of Service to Valuation Date												
Age Group	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35+	Totals
15-19 NO.	0	0	0	0	0	0	0	0	0	0	0	0	0
TOT PAY	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG PAY	0	0	0	0	0	0	0	0	0	0	0	0	0
20-24 NO.	6	1	3	1	0	0	0	0	0	0	0	0	11
TOT PAY	316,017	65,895	189,695	62,515	0	0	0	0	0	0	0	0	634,122
AVG PAY	52,670	65,895	63,232	62,515	0	0	0	0	0	0	0	0	57,647
25-29 NO.	11	14	12	7	8	2	0	0	0	0	0	0	54
TOT PAY	582,933	884,367	742,238	474,420	523,079	132,293	0	0	0	0	0	0	3,339,330
AVG PAY	52,994	63,169	61,853	67,774	65,385	66,147	0	0	0	0	0	0	61,839
30-34 NO.	11	5	6	7	8	19	11	0	0	0	0	0	67
TOT PAY	570,353	303,194	384,147	459,827	551,796	1,391,181	962,992	0	0	0	0	0	4,623,490
AVG PAY	51,850	60,639	64,025	65,690	68,975	73,220	87,545	0	0	0	0	0	69,007
35-39 NO.	4	3	4	3	3	15	25	4	0	0	0	0	61
TOT PAY	215,195	191,371	255,074	204,129	202,763	1,066,639	2,197,586	410,958	0	0	0	0	4,743,715
AVG PAY	53,799	63,790	63,769	68,043	67,588	71,109	87,903	102,740	0	0	0	0	77,766
40-44 NO.	0	1	0	0	1	10	37	25	4	0	0	0	78
TOT PAY	0	68,191	0	0	66,312	724,022	3,120,909	2,460,878	420,403	0	0	0	6,860,715
AVG PAY	0	68,191	0	0	66,312	72,402	84,349	98,435	105,101	0	0	0	87,958
45-49 NO.	3	2	0	2	1	3	17	29	22	2	0	0	81
TOT PAY	169,265	145,658	0	144,392	65,579	220,636	1,493,881	2,721,180	2,404,371	280,718	0	0	7,645,680
AVG PAY	56,422	72,829	0	72,196	65,579	73,545	87,875	93,834	109,290	140,359	0	0	94,391
50-54 NO.	1	1	1	1	0	1	7	15	17	8	0	0	52
TOT PAY	62,504	160,848	78,022	84,370	0	83,249	576,237	1,447,713	1,773,171	850,422	0	0	5,116,536
AVG PAY	62,504	160,848	78,022	84,370	0	83,249	82,320	96,514	104,304	106,303	0	0	98,395
55-59 NO.	1	0	0	1	2	0	3	5	3	3	3	0	21
TOT PAY	62,504	0	0	98,593	219,448	0	347,057	421,283	289,767	300,542	368,267	0	2,107,461
AVG PAY	62,504	0	0	98,593	109,724	0	115,686	84,257	96,589	100,181	122,756	0	100,355
60-64 NO.	0	0	0	0	0	0	1	0	0	1	0	0	2
TOT PAY	0	0	0	0	0	0	122,498	0	0	86,972	0	0	209,470
AVG PAY	0	0	0	0	0	0	122,498	0	0	86,972	0	0	104,735
65+ NO.	0	0	0	0	0	0	1	0	0	0	0	0	1
TOT PAY	0	0	0	0	0	0	91,216	0	0	0	0	0	91,216
AVG PAY	0	0	0	0	0	0	91,216	0	0	0	0	0	91,216
TOT NO.	37	27	26	22	23	50	102	78	46	14	3	0	428
TOT AMT	1,978,771	1,819,524	1,649,176	1,528,246	1,628,977	3,618,020	8,912,376	7,462,012	4,887,712	1,518,654	368,267	0	35,371,735
AVG AMT	53,480	67,390	63,430	69,466	70,825	72,360	87,376	95,667	106,255	108,475	122,756	0	82,644

ACTIVE PARTICIPANT DISTRIBUTION
NON-HAZARDOUS DUTY MEMBERS

	Years of Service to Valuation Date												
Age Group	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35+	Totals
15-19 NO.	0	0	0	0	0	0	0	0	0	0	0	0	0
TOT PAY	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG PAY	0	0	0	0	0	0	0	0	0	0	0	0	0
20-24 NO.	24	14	6	4	2	0	0	0	0	0	0	0	50
TOT PAY	667,946	449,554	204,919	123,045	68,698	0	0	0	0	0	0	0	1,514,162
AVG PAY	27,831	32,111	34,153	30,761	34,349	0	0	0	0	0	0	0	30,283
25-29 NO.	34	23	18	15	7	11	0	0	0	0	0	0	108
TOT PAY	1,074,022	743,867	626,400	500,114	258,724	411,235	0	0	0	0	0	0	3,614,362
AVG PAY	31,589	32,342	34,800	33,341	36,961	37,385	0	0	0	0	0	0	33,466
30-34 NO.	21	19	17	12	9	32	15	1	0	0	0	0	126
TOT PAY	685,370	734,604	649,253	477,794	360,196	1,348,634	647,035	59,346	0	0	0	0	4,962,232
AVG PAY	32,637	38,663	38,191	39,816	40,022	42,145	43,136	59,346	0	0	0	0	39,383
35-39 NO.	21	13	9	7	6	16	32	9	0	0	0	0	113
TOT PAY	730,293	579,023	363,944	288,693	223,149	716,233	1,447,718	395,484	0	0	0	0	4,744,537
AVG PAY	34,776	44,540	40,438	41,242	37,192	44,765	45,241	43,943	0	0	0	0	41,987
40-44 NO.	16	13	8	5	8	22	25	28	4	0	0	0	129
TOT PAY	526,276	487,398	276,609	196,314	351,863	955,973	1,257,446	1,279,545	184,460	0	0	0	5,515,884
AVG PAY	32,892	37,492	34,576	39,263	43,983	43,453	50,298	45,698	46,115	0	0	0	42,759
45-49 NO.	20	9	6	7	10	23	26	20	13	4	0	0	138
TOT PAY	677,679	317,404	237,016	354,097	453,115	1,037,793	1,194,216	1,063,941	678,659	216,572	0	0	6,230,492
AVG PAY	33,884	35,267	39,503	50,585	45,312	45,121	45,931	53,197	52,205	54,143	0	0	45,148
50-54 NO.	17	4	4	4	2	16	23	27	38	11	2	0	148
TOT PAY	571,026	175,325	184,565	145,886	84,799	707,508	1,041,925	1,324,617	2,186,396	640,567	151,334	0	7,213,948
AVG PAY	33,590	43,831	46,141	36,472	42,400	44,219	45,301	49,060	57,537	58,233	75,667	0	48,743
55-59 NO.	13	6	5	5	7	19	26	28	22	11	5	1	148
TOT PAY	571,054	237,994	210,813	221,365	274,490	809,632	1,165,505	1,381,183	1,187,573	723,918	276,803	46,520	7,106,850
AVG PAY	43,927	39,666	42,163	44,273	39,213	42,612	44,827	49,328	53,981	65,811	55,361	46,520	48,019
60-64 NO.	1	2	2	1	1	11	18	30	26	7	10	1	110
TOT PAY	70,380	64,675	78,385	38,725	55,448	524,360	792,212	1,395,363	1,424,766	511,380	597,099	46,528	5,599,321
AVG PAY	70,380	32,338	39,193	38,725	55,448	47,669	44,012	46,512	54,799	73,054	59,710	46,528	50,903
65+ NO.	2	1	1	2	1	6	18	11	6	3	4	2	57
TOT PAY	87,174	25,890	30,847	93,886	45,583	281,057	767,740	559,645	306,158	163,927	277,328	96,182	2,735,417
AVG PAY	43,587	25,890	30,847	46,943	45,583	46,843	42,652	50,877	51,026	54,642	69,332	48,091	47,990
TOT NO.	169	104	76	62	53	156	183	154	109	36	21	4	1,127
TOT AMT	5,661,220	3,815,734	2,862,751	2,439,919	2,176,065	6,792,425	8,313,797	7,459,124	5,968,012	2,256,364	1,302,564	189,230	49,237,205
AVG AMT	33,498	36,690	37,668	39,354	41,058	43,541	45,431	48,436	54,752	62,677	62,027	47,308	43,689

INACTIVE PARTICIPANT DISTRIBUTION

	Terminated Vested		Disabled		Retired		Deceased with Beneficiary	
Age Group	Number	Total Benefits	Number	Total Benefits	Number	Total Benefits	Number	Total Benefits
Under 20	-	-	-	-	-	-	3	66,662
20-24	-	-	-	-	-	-	1	9,018
25-29	-	-	-	-	-	-	-	-
30-34	5	76,685	-	-	-	-	1	16,760
35-39	12	261,690	3	126,576	-	-	3	95,502
40-44	13	273,145	3	127,927	3	123,509	2	53,253
45-49	20	449,103	10	460,902	21	870,110	2	44,623
50-54	17	369,533	9	304,575	54	2,669,165	7	201,475
55-59	10	170,376	16	569,719	145	6,412,605	8	317,129
60-64	9	119,373	24	698,727	197	8,772,289	22	458,446
65-69	-	-	23	643,236	248	9,733,877	14	354,549
70-74	-	-	21	552,283	204	7,564,560	23	557,750
75-79	-	-	11	218,909	68	2,681,832	22	486,293
80-84	-	-	10	294,640	44	1,290,249	24	411,968
85-89	-	-	3	71,600	17	448,557	5	73,406
90-94	-	-	-	-	4	88,379	10	72,503
95-99	-	-	-	-	1	21,701	2	4,776
100 & Over	-	-	-	-	-	-	-	-
Total	86	1,719,905	133	4,069,094	1,006	40,676,833	149	3,224,113
Average Age		48		65		67		70

SECTION F

SUMMARY OF PLAN PROVISIONS

SUMMARY OF PLAN PROVISIONS

A. Ordinances

The Plan was established under the Code of Ordinances for the City of Clearwater, Florida, Chapter 2, Article V, Division 3 and was most recently amended under Ordinance No. 8333-12 passed and adopted on July 19, 2012 and enacted by public referendum in November 2012. The Plan is also governed by certain provisions of Part VII, Chapter 112, Florida Statutes (F.S.) and the Internal Revenue Code.

B. Effective Date

Restated Plan Effective Date: January 1, 2013 (previous restated Plan Effective Date was January 1, 1996).

C. Plan Year

January 1 through December 31.

D. Type of Plan

Qualified, governmental defined benefit retirement plan; for GASB purposes it is a single employer plan.

E. Eligibility Requirements

All full-time permanent employees of the City are required to participate and become participants on their date of hire.

F. Grandfathered Members

Members who are eligible for normal retirement as of January 1, 2013 are grandfathered in the plan provisions in effect before Ordinance No. 8333-12.

G. Credited Service

Credited Service is measured as the total number of years and fractional parts of years from the date of employment to the date of termination or retirement. No service is credited for any periods of employment for which a participant received a refund of their contributions.

H. Compensation

The total compensation for services rendered to the City reportable on the participant's W-2 form, plus all tax deferred, tax sheltered or tax exempt items of income derived from elective employee payroll deductions or salary reductions, but excluding any lump sum payments of unused vacation and sick leave, pay for off-duty employment, and clothing, car or meal allowances.

Effective January 1, 2013: For non-grandfathered hazardous duty members, the amount of overtime included in Compensation is limited to 300 hours per year; For non-grandfathered non-hazardous duty members, Compensation excludes overtime and additional pay above the base rate of pay.

I. Average Monthly Compensation (AMC)

One-twelfth of the average of Compensation during the highest 5 years out of the last 10 years preceding termination or retirement.

J. Normal Retirement

Eligibility: <u>For Non-Hazardous Duty Employment</u>

A participant hired before January 1, 2013 may retire on the first day of the month coincident with or next following the earliest of:

(1) age 55 with 20 years of Credited Service, or
(2) 30 years of Credited Service regardless of age, or
(3) age 65 with 10 years of Credited Service.

A participant hired on or after January 1, 2013 may retire on the first day of the month coincident with or next following the earliest of:

(1) age 60 with 25 years of Credited Service, or
(2) age 65 with 10 years of Credited Service

<u>For Hazardous Duty Employment-Police Officers and Firefighters</u>

A participant may retire on the first day of the month coincident with or next following the earlier of:

(1) age 55 with 10 years of Credited Service, or
(2) 20 years of Credited Service regardless of age.

Benefit: 2.75% of AMC multiplied by years of Credited Service.

For Non-Hazardous Duty participants hired on or after January 1, 2013, 2.00% of AMC multiplied by years of Credited Service.

Normal Form of Benefit: For Non-Hazardous Duty Employment (Non-Grandfathered)

A monthly annuity is paid for the life of the participant.

For Hazardous Duty Employment-Police Officers and Firefighters (and Grandfathered Non-Hazardous Duty Employment)

A monthly annuity is paid for the life of the participant. After the participant's death, 100% of the Normal Retirement Benefit shall be paid as a survivor annuity to the spouse for 5 years. After 5 years, such survivor annuity is reduced to 50% of the original amount. The survivor annuity ceases upon death or remarriage of the spouse. 120 monthly payments are guaranteed for police officers and firefighters. Optional forms of benefits are available.

COLA: For Non-Hazardous Duty Employment

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is a five-year delay (after the retirement date) until this COLA is applied to benefits accrued after January 1, 2013.

For Hazardous Duty Employment-Police Officers and Firefighters

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

K. Early Retirement

Eligibility: Police Officers and Firefighters may elect to retire earlier than the Normal Retirement Eligibility upon the attainment of age 50 with 10 years of Credited Service.

Benefit: The Normal Retirement Benefit is reduced by 3.0% for each year by which the Early Retirement date precedes age 55.

Normal Form of Benefit: A monthly annuity is paid for the life of the participant. After the participant's death, 100% of the Normal Retirement Benefit shall be paid as a survivor annuity to the spouse for 5 years. After 5 years, such survivor annuity is reduced to 50% of the original amount. The survivor annuity ceases upon death or remarriage of the spouse. 120 monthly payments are guaranteed for police officers and firefighters. Optional forms of benefits are available.

COLA: 1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

L. Delayed Retirement

Same as Normal Retirement taking into account Compensation earned and service credited until the date of actual retirement.

M. Service Connected Disability

Eligibility: Any participant who becomes totally and permanently disabled due to an illness or injury contracted in the line of duty and is deemed to be unable to perform useful and efficient service to the City is immediately eligible for a disability benefit.

Benefit: For Non-Hazardous Duty Employment

Participant's accrued Normal Retirement Benefit taking into account Compensation earned and service credited until the date of disability. Benefit is guaranteed to be no less than 42% of the participant's AMC (66 2/3% of the participant's AMC if grandfathered). Disability benefits, when combined with Worker's Compensation benefits, cannot exceed and will be limited to 100% of the participant's AMC on the date of disability.

For Hazardous Duty Employment-Police Officers and Firefighters

Participant's accrued Normal Retirement Benefit taking into account Compensation earned and service credited until the date of disability. Benefit is guaranteed to be no less than 66 2/3% of the participant's AMC. Disability benefits, when combined with Worker's Compensation benefits, cannot exceed and will be limited to 100% of the participant's AMC on the date of disability.

Normal Form of Benefit: For Non-Hazardous Duty Employment (Non-Grandfathered)

A monthly annuity is paid for the life of the participant.

For Hazardous Duty Employment-Police Officers and Firefighters (and Grandfathered Non-Hazardous Duty Employment)

A monthly annuity is paid for the life of the participant. After the participant's death, 100% of the Normal Retirement Benefit shall be paid as a survivor annuity to the spouse for 5 years. After 5 years, such survivor annuity is reduced to 50% of the original amount. The survivor annuity ceases upon death or remarriage of the spouse. 120 monthly payments are guaranteed for police officers and firefighters. Optional forms of benefits are available.

COLA: For Non-Hazardous Duty Employment

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is a five-year delay (after the retirement date) until this COLA is applied to benefits accrued after January 1, 2013.

For Hazardous Duty Employment-Police Officers and Firefighters

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

N. Non-Service Connected Disability

Eligibility: Any participant who has 10 or more years of Credited Service and becomes totally and permanently disabled and is deemed to be unable to perform useful and efficient service to the City is immediately eligible for a disability benefit.

Benefit: Participant's accrued Normal Retirement Benefit taking into account Compensation earned and service credited until the date of disability. Disability benefits, when combined with Worker's Compensation benefits, cannot exceed and will be limited to 100% of the participant's AMC on the date of disability.

Normal Form of Benefit: For Non-Hazardous Duty Employment (Non-Grandfathered)

A monthly annuity is paid for the life of the participant.

For Hazardous Duty Employment-Police Officers and Firefighters (and Grandfathered Non-Hazardous Duty Employment)

A monthly annuity is paid for the life of the participant. After the participant's death, 100% of the Normal Retirement Benefit shall be paid as a survivor annuity to the spouse for 5 years. After 5 years, such survivor annuity is reduced to 50% of the original amount. The survivor annuity ceases upon death or remarriage of the spouse. 120 monthly payments are guaranteed for police officers and firefighters. Optional forms of benefits are available.

COLA: For Non-Hazardous Duty Employment

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is a five-year delay (after the retirement date) until this COLA is applied to benefits accrued after January 1, 2013.

For Hazardous Duty Employment-Police Officers and Firefighters

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

O. Death in the Line of Duty

Eligibility: Any participant whose employment is terminated by reason of death in the line of duty is eligible for survivor benefits.

Benefit: Beneficiary will be paid the participant's accrued benefit based upon Credited Service and AMC as of the date of death. Benefit is guaranteed to be no less than 66 2/3% of the participant's AMC.

Normal Form of Benefit: 100% of the participant's accrued benefit shall be paid as a survivor annuity to the spouse for 5 years. After 5 years, such survivor annuity is reduced to 50% of the original amount. The survivor annuity ceases upon death or remarriage of the spouse. 120 monthly payments are guaranteed for police officers and firefighters.

COLA: <u>For Non-Hazardous Duty Employment</u>

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is a five-year delay (after the retirement date) until this COLA is applied to benefits accrued after January 1, 2013.

<u>For Hazardous Duty Employment-Police Officers and Firefighters</u>

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

In lieu of the benefits described above, the participant's beneficiary can elect to receive a refund of participant's accumulated contributions with interest.

P. Other Pre-Retirement Death

Eligibility: Any participant who dies with 10 or more years of Credited Service is eligible for survivor benefits.

Benefit: Beneficiary will be paid the participant's accrued benefit based upon Credited Service and AMC as of the date of death.

Normal Form of Benefit: 100% of the participant's accrued benefit shall be paid as a survivor annuity to the spouse for 5 years. After 5 years, such survivor annuity is reduced to 50% of the original amount. The survivor annuity ceases upon death or remarriage of the spouse. 120 monthly payments are guaranteed for police officers and firefighters.

COLA: <u>For Non-Hazardous Duty Employment</u>

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is a five-year delay (after the retirement date) until this COLA is applied to benefits accrued after January 1, 2013.

<u>For Hazardous Duty Employment-Police Officers and Firefighters</u>

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

In lieu of the benefits described above, a participant's beneficiary can elect to receive a refund of the participant's accumulated contributions with interest. Accumulated contributions, plus interest, will be refunded for all participants with less than 10 years of Credited Service.

Q. Post Retirement Death

Benefit determined by the form of benefit elected upon retirement.

R. Optional Forms

In lieu of electing the Normal Form of benefit, the optional forms of benefits available to all retirees are a Single Life Annuity, a 10 Year Certain and Life Annuity, or the 50%, 66 2/3% (for police officers and firefighters), 75% or 100% Joint and Survivor options. Members may also elect a partial lump sum equal to 10%, 20%, or 30% of the value of the normal retirement benefit with the remaining monthly retirement benefit reduced accordingly.

S. Vested Termination

Eligibility: A participant has earned a non-forfeitable right to Plan benefits after the completion of 10 years of Credited Service provided employee contributions are not refunded.

Vesting is determined in accordance with the following table.

Years of Credited Service	**% of Normal Retirement Benefits**
Less Than 10	0%
10 or more	100%

Benefit: The participant's accrued Normal Retirement Benefit as of the date of termination. Benefit begins on the member's Normal Retirement date. Alternatively, police officers and firefighters may elect to receive an actuarially reduced Early Retirement Benefit any time after age 50.

Normal Form of Benefit: For Non-Hazardous Duty Employment (Non-Grandfathered)

A monthly annuity is paid for the life of the participant.

For Hazardous Duty Employment-Police Officers and Firefighters (and Grandfathered Non-Hazardous Duty Employment)

A monthly annuity is paid for the life of the participant. After the participant's death, 100% of the Normal Retirement Benefit shall be paid as a survivor annuity to the spouse for 5 years. After 5 years, such survivor annuity is reduced to 50% of the original amount. The survivor annuity ceases upon death or remarriage of the spouse. 120 monthly payments are guaranteed for police officers and firefighters. Optional forms of benefits are available.

COLA: For Non-Hazardous Duty Employment

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is a five-year delay (after the retirement date) until this COLA is applied to benefits accrued after January 1, 2013.

For Hazardous Duty Employment-Police Officers and Firefighters

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

Plan participants with less than 10 years of Credited Service will receive a refund of their own accumulated contributions with interest.

T. Refunds

Eligibility: All participants terminating employment with less than 10 years of Credited Service are eligible. Optionally, vested members (those with 10 or more years of credited service) may elect a refund in lieu of the vested benefits otherwise due.

Benefit: Refund of the member's contributions with 5% simple interest paid in a single lump sum.

U. Member Contributions

8% of Compensation for Non-Hazardous Duty participants.
10% of Compensation for Hazardous Duty participants (8% of Compensation if grandfathered).

V. Employer Contributions

Each plan year, the Employer must contribute a minimum of 7% of the Compensation of all employees participating in the plan, plus any additional amount determined by the actuary needed to fund the plan properly according to State laws.

W. Cost of Living Increases

For Non-Hazardous Duty Employment

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is a five-year delay (after the retirement date) until this COLA is applied to benefits accrued after January 1, 2013.

For Hazardous Duty Employment-Police Officers and Firefighters

1.5% annually commencing on each April 1 for all retirees and beneficiaries who have received at least 6 monthly benefit payments. For non-grandfathered members (not eligible for normal retirement on January 1, 2013), there is no COLA for benefits accrued after January 1, 2013.

X. 13th Check

Not Applicable

Y. Deferred Retirement Option Plan

Not Applicable

Z. Other Ancillary Benefits

There are no ancillary retirement type benefits not required by statutes but which might be deemed a City of Clearwater Employees' Pension Plan liability if continued beyond the availability of funding by the current funding source.

AA. Changes from Previous Valuation

There have been no changes from the previous valuation.