

City of Fort Pierce
Retirement and Benefit System
Sixtieth Annual Actuarial Valuation Report
for the Year Ending September 30, 2018



Outline of Contents

Report of September 30, 2018 Actuarial Valuation

Section	Page	Items
	--	Cover Letter
A		Summary of Valuation Results and Certification
	1-4	Summary of valuation results
	5	Certification
	6-7	Other observations
	8-9	Risk Measures
B		Valuation Results
	1	Contribution requirement
	2	Contribution comparative statement
	3	Experience gain/(loss)
	4	Development of funding value of assets
	5	Funding progress indicators
	6-9	Unfunded Actuarial Accrued Liability (UAAL)
	10	Actuarial balance sheet
	11	Cumulative experience gains (losses)
C		Summary of Benefit Provisions and Valuation Data Submitted by the Retirement and Benefit System
	1-3	Benefit provisions
	4	Financial data
	5-16	Participant data
D		Actuarial Cost Method, Actuarial Estimates and Definitions of Technical Terms
	1	Actuarial cost method
	2-4	Amortization of UAAL
	5-12	Actuarial Assumptions
	13	Definition of technical terms
E		Additional Disclosure Information
	1	Schedule of funding progress & schedule of employer contributions
	2	Supplementary Information
F		State Required Data
	1-2	Valuation summary
	3	Reconciliation of membership data

March 15, 2019

City Commission
and Retirement Board
City of Fort Pierce Retirement and Benefit System
Fort Pierce, Florida

Dear City Commission and Retirement Board:

The results of the September 30, 2018 Annual Actuarial Valuation of the City of Fort Pierce Retirement and Benefit System 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 Fund 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 Fund's funding progress and to determine the employer contribution rate for the 2019-2020 fiscal years. Information required by Statement Nos. 67 and 68 of the Governmental Accounting Standards Board (GASB) are provided in separate reports. 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 amount in this report is determined using the actuarial assumptions and methods disclosed in Section D of this report. This report includes risk metrics on page A-9 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional 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 and other information through September 30, 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 reasonability 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.

This report was prepared using assumptions adopted by the Board. All actuarial assumptions used in this report are reasonable for the purposes of this valuation. Additional information about the actuarial assumptions is included in the section of this report entitled Actuarial Cost Methods and Assumptions.

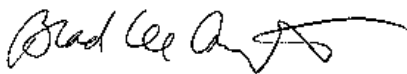
This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the City of Fort Pierce Retirement and Benefit System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

Brad Lee Armstrong and Jeffrey T. Tebeau are Members of the American Academy of Actuaries (MAAA). These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein. Our statement by the Enrolled Actuary is contained in Section A.

The signing actuaries are independent of the plan sponsor.

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,



Brad Lee Armstrong, ASA, EA, FCA, MAAA



Jeffrey T. Tebeau, ASA, EA, MAAA

BLA/JTT:dj

SECTION A

SUMMARY OF VALUATION RESULTS AND CERTIFICATION

Summary of Valuation Results

September 30, 2018

Funding Objective

The basic funding objective of the Retirement and Benefit System is to avoid transfer of the cost of benefit obligations between generations of taxpayers. This objective is implemented by contributions sufficient to:

- Pay for costs allocated to the current year on account of service rendered by participants in the current year (Normal Cost).
- Pay for costs allocated to prior years on account of service rendered by participants in prior years (Unfunded Actuarial Accrued Liability) over a maximum 30-year period.

The annual actuarial valuation measures the relationship between Retirement and Benefit System obligations and assets and determines the contribution rates for the ensuing year. When appropriate, amortization bases were combined in order to moderate scheduled contribution rate volatility.

Funding Progress Indicators

The September 30, 2018 actuarial valuation indicates that the actuarial accrued liabilities of the Retirement and Benefit System are 90% funded by valuation assets. This is an increase from last year's funded ratio of 89%. Although not historically referred to, the ratio of the market value of assets to the Actuarial Accrued Liabilities is 93% which is an increase from last years market value funded ratio of 91%.

Trends to Monitor

The market value of assets currently exceeds the funding value of assets by approximately \$6.9 million. Absent investment returns below the 7.75% assumed or losses from other sources, this will create a downward pressure on contribution requirements and a coinciding upward pressure on the funded ratios in subsequent valuation years. Please also refer to page A-7 and pay particular attention to the discussion at the end of the risks section.

Assumption Changes

There were no assumption or method changes as of the September 30, 2018 valuation.

Summary of Valuation Results

September 30, 2018

Benefit Changes

The September 30, 2018 valuation reflects changes in relation to City Ordinance Nos. 18-037, 18-038 and 18-42 described as follows:

City Ordinance Nos. 18-37 & 18-42

- Restores the 5 year vesting requirement from 10 years for members hired after October 1, 2012
- Results in a small increase in the contribution rates and actuarial accrued liabilities

City Ordinance Nos. 18-38

- Human resources shall inform the member in writing of his or her entitlement to claim military service credit immediately upon the member's return from active duty
- De Minimis Impact

Summary of Valuation Results

September 30, 2018

Observed Experience

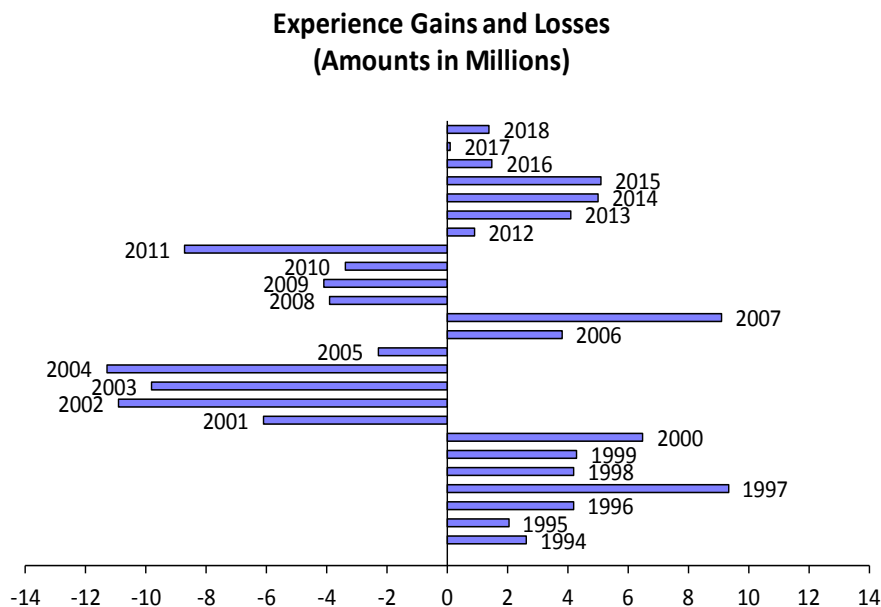
While the investment return on market value was 10.27%, the recognized rate of investment return was 8.07% due to averaging investment experience over the last four years. The recognized investment return was greater than 7.75% assumed return for fiscal year 2017. This was favorable and contributed to more than one-third of the aggregate experience gain. Note that each year's investment experience gain (loss) is spread over four years in equal dollar installments to reduce the effect of market volatility on contribution rates.

Demographic experience varied among the divisions. The principal deviations from projected experience were:

- 2.9% average pay increases across all the divisions vs. 5.2% expected (favorable)
- Greater than expected retiree mortality experience (favorable)
- 10-year average payroll growths were less than the 4.0% assumed (unfavorable for unfunded liability contribution rates)

The net effect of the preceding experience factors was an aggregate experience gain of \$1,383,263.

Year-to-year experience variations are expected and normal in the operation of a retirement system as members vary their activities and economic conditions change. The expectation is that the favorable years and unfavorable years will tend to cancel over 5 to 10 year periods.



Derivation of the current year's gain is located on Page B-3.

Summary of Valuation Results

September 30, 2018

Valuation Results - Contribution Requirement

The percent-of-payroll contribution requirements for the 2019-2020 fiscal year are:

	General	Utilities Authority	Police
Members			
-Bargaining	5.16 %	6.16 %	5.16 %
-Non-Bargaining	5.16	6.16	5.16
Employer for			
-Bargaining	16.77 %	17.58 %	11.99 %
-Non-Bargaining	16.77	17.58	11.99
-Illustrative	\$1,596,725	\$2,592,714	\$885,165

For comparison, the percent-of-payroll contribution requirements for the 2018-2019 fiscal year based on last year's valuation are:

	General	Utilities Authority	Police
Members			
-Bargaining	5.16 %	6.16 %	5.16 %
-Non-Bargaining	5.16	6.16	5.16
Employer for			
-Bargaining	16.99 %	18.11 %	12.00 %
-Non-Bargaining	16.99	18.11	12.00
-Illustrative	\$1,627,793	\$2,500,994	\$900,394

Comparative contribution information is shown on page B-2. Composition of the current contribution rates is shown on page B-1.

Summary of Valuation Results

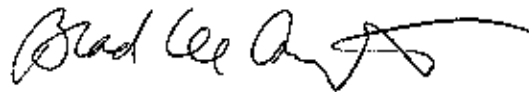
September 30, 2018

Cost-of-Living Adjustment (COLA)

Section 13 - 43 of the City's Code of Ordinances provides for a COLA if the investment return of the fund exceeds that required to satisfy the actuarial interest assumption, which did happen this year. In addition, the cumulative value of any COLA's granted since 1999 may not exceed the cumulative net actuarial gains since 1999. Page B-11 shows the cumulative value of COLA's and net actuarial gains/(losses) since 1999. The present balance is (\$33,813,064). So even though the recognized rate of investment return for the last fiscal year of 8.03% exceeded the actuarial interest assumption of 7.75%, no COLA could be provided under Section 13 - 43 until the Retirement and Benefit System's future actuarial gains exceed \$33,813,064 plus interest. Given the cumulative net actuarial loss balance, this COLA provision is not likely to operate for the indefinite future.

Certification

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 report. 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 report.



Brad Lee Armstrong, ASA, FCA, EA, MAAA [17-5614]

3/15/2019

Date

Other Observations

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Contributions and Funded Status

Given the System's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the Retirement and Benefit System earning 7.75% on the Market Value of Assets), it is expected that:

1. The employer normal cost is sufficient to cover the cost of benefits accruing each year;
2. The Unfunded Actuarial Accrued Liabilities (UAAL) will continue to be amortized according to the schedules on pages B-7 through B-9, but may not be completely paid off in the definite future; and
3. The funded status of the Retirement and Benefit System will continue to increase gradually towards a 100% funded ratio.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the Actuarial Accrued Liability (AAL) and the Funding Value of Assets (FVA). Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1. The measurement is inappropriate for assessing the sufficiency of Retirement System assets to cover the estimated cost of settling the Retirement and Benefit System's benefit obligations, for example: transferring the liability to an unrelated third party in a market value type transaction.
2. The measurement is dependent upon the Actuarial Cost Method which, in combination with the Retirement System's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. Even if the funded status is over 100%, the Retirement and Benefit System would still require future normal cost contributions (i.e., contributions to cover the cost of active membership accruing an additional year of service credit).
3. The measurement would produce a different result if the Market Value of Assets (MVA) were used instead of the FVA, unless the MVA is used in the measurement.

Other Observations

Limitations of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entities to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Risks to Future Employer Contribution Requirements

There are ongoing risks to future employer contribution requirements to which the Retirement and Benefit System is exposed, such as:

- Actual and Assumed Investment Rate of Return
- Actual and Assumed Mortality Rates
- Amortization Policy

In particular, the assumed investment rate of return, while reasonable, is likely to produce annual losses over 50% of the time, even if average returns over a multi-year period meet the assumed rate. We believe the Board should ask the investment consultant and the actuary to perform an analysis of the economic assumptions including the investment rate of return, price inflation, and wage inflation prior to completion of the September 30, 2019 actuarial valuation.

Risk Measures - 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 System'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. **Asset/Liability mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. **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;
4. **Salary and Payroll risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **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 shown on page B-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.

Risk Measures

(\$ Amounts in Thousands)

Actuarial Valuation Date (9/30)	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL)	(3) Unfunded AAL (UAAL) (2) - (1)	(4) Payroll	(5) Funded Ratio (1) / (2)	(6) Retiree Liabilities (RetLiab)	(7) RetLiab / AAL (6)/(2)	(8) AAL / Payroll (2) / (4)	(9) Assets / Payroll (1) / (4)	(10) UAAL / Payroll (3) / (4)	(11) Non-Invest. Cash Flow (NICF)	(12) NICF / Assets (11)/(1)	(13) Market Rate of Return	(14) 5-year Trailing Average
2014	\$ 167,451	\$ 182,407	\$14,956	\$25,150	91.8%	\$ 118,456	64.9%	725.3%	665.8%	59.5%	\$ (6,582)	(3.9)%	10.2%	N/A
2015 *	177,624	191,986	14,362	25,475	92.5%	125,232	65.2%	753.6%	697.2%	56.4%	(7,470)	(4.2)%	1.7%	N/A
2016 *	185,171	207,945	22,774	27,493	89.0%	133,353	64.1%	756.4%	673.5%	82.8%	(7,900)	(4.3)%	9.7%	N/A
2017	192,300	215,142	22,842	28,563	89.4%	134,409	62.5%	753.2%	673.2%	80.0%	(7,446)	(3.9)%	10.6%	N/A
2018 *	200,087	221,431	21,344	29,264	90.4%	137,926	62.3%	756.7%	683.7%	72.9%	(7,435)	(3.7)%	10.3%	8.4%

* Revised actuarial assumptions.

(5). The funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7). The ratio of retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio change. A ratio on the order of 50% indicates a maturing system.

(8) and (9). The ratio of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

(10) The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.

(11) and (12). The ratio of Non-Investment Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately (4)%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.

(13) and (14). Investment return is probably the largest single risk that most systems face. The year-by-year return and the five-year geometric average both give an indication of the reasonableness of the system's assumed return. Of course past performance is not a guarantee of future results. Market rate shown is based on an actuarial estimation method and will differ modestly from figures reported by the investment consultant.

SECTION B

VALUATION RESULTS

**Contributions to Finance Benefits of the
Retirement and Benefit System
for the Plan Year Beginning October 1, 2019
to be Contributed during the Fiscal Year
Beginning October 1, 2019**

Contributions for	Contributions Expressed as Percents of Active Member Payroll		
	General Members	Utilities Authority	Police Members
Normal Cost			
Service pensions	11.18 %	10.48 %	12.58 %
Disability pensions	0.46	0.42	0.92
Death-in-service pensions	0.47	0.50	0.36
Deferred service pensions	2.67	2.58	2.05
Refunds of member contributions	0.63	0.76	0.39
Total Normal Cost	15.41	14.74	16.30
Unfunded Actuarial Accrued Liability ⁽¹⁾			
Retired members and beneficiaries	0.00	0.00	0.00
Active and vested terminated members	3.64	6.02	0.00
Total Unf'd. Actuarial Accrued Liability	3.64	6.02	0.00
Administrative Expenses	0.71	0.71	0.71
Total Unadjusted Computed Contribution	19.76	21.47	17.01
Adjustments to Computed Contribution			
FS 112.64 (5) Compliance	2.17	2.27	0.82
Full funding credit ⁽²⁾	0.00	0.00	(0.68)
Total Adjustments	2.17	2.27	0.14
Total Adjusted Contribution Requirement ⁽³⁾	21.93	23.74	17.15
Member portion	5.16	6.16	5.16
Employer portion	16.77	17.58	11.99

(1) Financing period schedules begin on page B-7.

(2) This is a temporary credit toward the contribution requirement; see page B-9.

(3) FS 112.64 (2) states that "the total contributions to the retirement system or plan shall be sufficient to meet the normal cost of the retirement system or plan and to amortize the unfunded liability." Therefore, the Total Adjusted Contribution for the System shall be no less than Total Normal Cost for the System including the Administrative Expense Load.

FS 112.64 requires employer contributions to be deposited not less frequently than quarterly. Member contributions, which are in addition to the Employer contributions, must be deposited immediately after each pay period.

Recommended and Actual Contributions Comparative Statement

Fiscal Date	Valuation Date	Percentage-of-Payroll Contributions Recommended Percents*			Dollar Contributions@	
		General Members	Utilities Authority	Police Members	Proj. Funding Requirement	Actual \$
79/80 (b)	9/78	7.75 %	8.05 %	10.21 %	\$ 700,500	\$ 785,821
84/85	9/83	7.61	7.82	9.59	1,189,618	1,349,378
89/90	9/88	6.02	7.76	9.17	1,779,600	2,021,209
94/95	9/93	4.99	6.80	4.77	1,846,977	2,386,067
99/00 (b)	9/98 #	0.51	1.20	1.45	709,194	982,054
00/01 (b)	9/99	0.00	0.26	0.00	801,012	1,195,351
01/02 (b)	9/00	0.00	0.26	0.00	906,649	2,158,784
02/03 (b)	9/01	2.91	1.10	0.00	2,048,079	2,271,079
03/04	9/02	4.67	3.23	1.38	2,893,397	3,610,663
04/05	9/03	6.15	4.93	3.76	3,948,626	5,634,357
05/06	9/04	8.01	6.23	6.76	6,283,117	8,975,380
06/07	9/05	11.05	11.94	14.14	3,624,157	4,114,963
07/08 (b)	9/06	11.59	11.01	14.88	3,939,766	4,082,846
08/09 (b)	9/07	9.71	10.06	12.26	3,517,935	3,580,089
09/10	9/08	10.36	10.67	12.79	3,964,443	3,377,350
10/11	9/09	11.06	11.86	12.97	3,999,560	3,181,447
11/12 (b)	9/10	12.59	14.08	13.51	3,937,037	3,566,751
12/13 (b)	9/11	16.50	18.51	15.83	4,860,538	4,266,803
13/14 (b)	9/12	16.20	17.41	15.33	4,676,221	4,356,127
14/15	9/13	14.61	16.81	13.76	4,242,676	4,093,268
15/16	9/14	15.03	16.30	13.76	4,196,009	4,211,311
16/17 (b)	9/15	14.89	16.23	14.61	4,296,532	4,565,884
17/18 (b)	9/16	17.35	17.92	11.98	4,878,739	4,909,654
18/19	9/16	16.99	18.11	12.00	5,029,181	
19/20	9/17	16.45	17.39	11.96	5,013,900	
19/20 (b)	9/17	16.77	17.58	11.99	5,074,604	

* Prior to 9/30/96 the minimum employer contribution required in accordance with Sec. 21.3 of the Retirement and Benefit System Ordinance was 7.60% for General and Utilities Authority, 9.61% for Police.

@ Actual Employer contributions are determined by applying the Employer's contribution rate to the emerging payroll. Projected funding requirement is derived from the City portion of the contribution rates on page B-1. The payroll was increased by a factor of 1.0816 (1.04²) to reflect projected payroll growth to the beginning of the fiscal year during which the contribution will be made. Prior to the valuation date of 9/30/05, dollar contributions included Fire members.

(b) After changes in benefit provisions and/or actuarial assumptions and cost methods.

Prior to the 9/98 actuarial valuation reimbursement of investment expenses (approx. 2% of payroll) were included in the contribution requirement. The plan was amended 4/98 to allow payment of investment expenses out of investment income.

Experience Gain/(Loss) Year Ended September 30, 2018

	Divisions			Total
	General Members	Utilities Authority	Police Members	
Derivation				
(1) UAAL* at start of year	\$7,351,596	\$12,800,846	\$2,689,647	\$22,842,089
(2) Employer normal cost for year	951,604	1,235,371	800,638	2,987,613
(3) Employer contributions	1,606,547	2,401,880	901,227	4,909,654
(4) Interest accrued: .0775 x [(1) + ½ [(2) – (3)]]	544,370	946,863	204,550	1,695,783
(5) Expected UAAL before changes: [(1) + (2) - (3) + (4)]	7,241,023	12,581,200	2,793,608	22,615,831
(6) Effect of assumption changes	0	0	0	0
(7) Effect of cost method changes/ accounting and timing differences	0	0	0	0
(8) Effect of benefit changes	54,741	57,583	(508)	111,816
(9) Expected UAAL after changes	7,295,764	12,638,783	2,793,100	22,727,647
(10) Actual UAAL	6,801,522	12,283,308	2,259,554	21,344,384
(11) Gain/(loss): (9) - (10)	494,242	355,475	533,546	1,383,263

* UAAL represents Unfunded Actuarial Accrued Liability.

Development of Funding Value of Retirement System Assets

Year Ended September 30:	2015	2016	2017	2018	2019	2020	2021
A. Funding Value Beginning of Year	\$167,451,348	\$177,623,515	\$185,171,022	\$192,299,566			
B. Market Value End of Year	174,633,807	183,206,017	194,774,112	206,965,262			
C. Market Value Beginning of Year	179,120,149	174,633,807	183,206,017	194,774,112			
D. Non-Investment Net Cash Flow	(7,470,414)	(7,899,981)	(7,445,730)	(7,434,910)			
E. Investment Income							
E1. Market Total: B - C - D	2,984,072	16,472,191	19,013,825	19,626,060			
E2. Amount for Immediate Recognition (8.0%)	13,097,291	13,893,882	14,062,232	14,615,114			
E3. Amount for Phased-In Recognition: E1 - E2	(10,113,219)	2,578,309	4,951,593	5,010,946			
F. Phased-In Recognition of Investment Income							
F1. Current Year: 0.25 x E3	(2,528,305)	644,577	1,237,898	1,252,737			
F2. First Prior Year	1,157,874	(2,528,305)	644,577	1,237,898	\$ 1,252,737		
F3. Second Prior Year	2,279,460	1,157,874	(2,528,305)	644,577	1,237,898	\$ 1,252,737	
F4. Third Prior Year	<u>3,636,261</u>	<u>2,279,460</u>	<u>1,157,872</u>	<u>(2,528,304)</u>	<u>644,578</u>	<u>1,237,899</u>	<u>\$ 1,252,735</u>
F5. Total Recognized Investment Gain	4,545,290	1,553,606	512,042	606,908	3,135,213	2,490,636	1,252,735
G. Funding Value End of Year: A + D + E2 + F5	177,623,515	185,171,022	192,299,566	200,086,678			
H. Difference between Market & Funding Value	(2,989,708)	(1,965,005)	2,474,546	6,878,584			
I. Recognized Rate of Return	10.78%	8.89%	8.03%	8.07%			
J. Market Value Return	1.70%	9.65%	10.59%	10.27%			

The Funding Value of Assets recognizes assumed investment income (Line E2) fully each year. Differences between actual and assumed investment income (Line E3) are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, the Funding Value of Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, the Funding Value of Assets will tend to be greater than Market Value. If assumed rates are exactly realized for three consecutive years, it will become equal to Market Value.

Funding Indicators[#] – Historical Comparison

(\$ Amounts in Thousands)

Valuation Date	Indicator (1)	Indicator (2)			Indicator (3)		
	Gain/ (Loss)	Valuation Assets	AAL*	Funded Ratio	Unfunded AAL	Member Payroll	Ratio to Payroll
9/30/94	\$ 2,627	\$ 83,023	\$ 77,060	108 %	\$ (5,963)	\$24,137	(25) %
9/30/95 (b)	2,031	92,515	86,560	107	(5,955)	26,174	(23)
9/30/96 (b)	4,188	103,164	93,874	110	(9,290)	27,529	(34)
9/30/97	9,324	119,224	100,121	119	(19,103)	29,986	(64)
9/30/98 (b)	4,181	132,975	109,210	122	(23,765)	30,296	(78)
9/30/99 (b)	4,315	146,903	120,514	122	(26,389)	31,688	(83)
9/30/00 (b)	6,465	162,020	129,969	125	(32,051)	33,312	(96)
9/30/01 (b)	(6,086)	165,023	137,067	120	(27,955)	35,600	(79)
9/30/02 (b)	(10,908)	167,050	149,437	112	(17,610)	37,037	(48)
9/30/03	(9,845)	168,943	162,127	104	(6,816)	40,313	(17)
9/30/04	(11,328)	171,558	186,671	92	15,113	43,544	35
9/30/05	(2,296)	185,776	216,534	86	30,758	48,880	63
9/30/06 (b)	3,801	120,062	130,861	92	10,800	30,532	35
9/30/07 (b)	9,087	135,944	138,610	98	2,666	30,984	9
9/30/08	(3,888)	143,467	150,475	95	7,008	32,952	21
9/30/09	(4,060)	147,094	158,755	93	11,661	31,016	38
9/30/10 (b)	(3,429)	148,691	164,865	90	16,174	26,779	60
9/30/11 (b)	(8,690)	142,463	167,683	85	25,220	25,744	98
9/30/12 (b)	854	147,618	171,745	86	24,127	25,842	93
9/30/13	4,086	157,145	177,505	89	20,360	25,199	81
9/30/14	4,960	167,451	182,407	92	14,956	25,150	59
9/30/15 (b)	5,140	177,624	191,986	93	14,362	25,475	56
9/30/16 (b)	1,460	185,171	207,945	89	22,774	27,493	83
9/30/17	69	192,300	215,142	89	22,842	28,563	80
9/30/18	1,383	200,087	221,319	90	21,232	29,264	73
9/30/18 (b)	1,383	200,087	221,431	90	21,344	29,264	73

Excludes Fire after 9/05 valuation date.

* Actuarial Accrued Liabilities.

(b) After changes in benefit provisions and/or actuarial assumptions.

Unfunded Actuarial Accrued Liability

(\$ Amounts in Thousands)*

	September 30, 2018			September 30, 2017		
	General Members	Utilities Authority	Police Members	General Members	Utilities Authority	Police Members
A. Actuarial present value of future benefits	\$75,784	\$112,633	\$63,778	\$74,104	\$108,836	\$62,106
B. Actuarial present value of future normal costs	9,338	13,231	8,195	9,249	12,398	8,257
C. Actuarial accrued liability	66,446	99,402	55,583	64,855	96,438	53,848
D. Actuarial value of assets	59,645	87,118	53,324	57,504	83,637	51,159
E. Unfunded actuarial accrued liability	6,802	12,283	2,260	7,352	12,801	2,690
F. Funded Ratio	89.8%	87.6%	95.9%	88.7%	86.7%	95.0%

* Totals may be off due to rounding.

Sources and Financing of Unfunded Actuarial Accrued Liability General Members

Year Established	Initial Years	Years Remaining	Unf'd. Act. Accr. Liab.		Amortization Factor	Amortization Payment*	% of Payroll Contribution*
			Initial Amount	Current Amount			
Initial Unfunded							
1981	34	3	\$ 2,135,178	\$ 276,932	2.6878	\$ 103,032	1.17 %
Experience Changes							
1991	30	3	(8,308)	(3,054)	2.6878	(1,136)	(0.01)
1992	30	4	(260,310)	(123,207)	3.4581	(35,629)	(0.40)
1993	30	5	(1,200,305)	(680,205)	4.1730	(163,003)	(1.85)
1994	30	6	(298,407)	(193,374)	4.8364	(39,983)	(0.45)
1995	30	7	(571,245)	(411,261)	5.4521	(75,431)	(0.86)
1996	30	8	(328,506)	(256,778)	6.0236	(42,629)	(0.48)
1997	30	9	(1,697,188)	(1,415,002)	6.5539	(215,902)	(2.45)
1998	30	10	(1,095,283)	(960,635)	7.0461	(136,335)	(1.55)
1999	30	11	(888,248)	(810,446)	7.5029	(108,018)	(1.23)
2000	30	12	(1,366,921)	(1,285,577)	7.9268	(162,180)	(1.84)
2001	30	13	1,108,179	1,069,482	8.3203	128,539	1.46
2002	30	14	2,074,314	2,040,845	8.6854	234,973	2.67
2003	30	15	2,097,459	2,092,290	9.0243	231,850	2.63
2004	30	16	2,013,373	2,026,617	9.3388	217,010	2.47
2005	30	17	208,003	210,366	9.6307	21,843	0.25
2006	30	18	(1,561,550)	(1,580,897)	9.9016	(159,661)	(1.81)
2007	30	19	(3,153,776)	(3,186,021)	10.1530	(313,800)	(3.56)
2008	30	20	1,535,312	1,543,168	10.3863	148,577	1.69
2009	30	21	1,306,244	1,302,919	10.6029	122,883	1.40
2010	30	22	301,258	297,466	10.8039	27,533	0.31
2011	30	23	3,140,943	3,063,954	10.9904	278,785	3.17
2012	30	24	(171,717)	(165,152)	11.1635	(14,794)	(0.17)
2013	30	25	(1,386,129)	(1,312,003)	11.3241	(115,859)	(1.32)
2014	30	26	(1,482,476)	(1,432,971)	11.4732	(124,897)	(1.42)
2015	30	27	(2,209,363)	(2,144,830)	11.6116	(184,715)	(2.10)
2016	30	28	(358,467)	(353,598)	11.7400	(30,119)	(0.34)
2017	30	29	91,437	89,116	11.8592	7,515	0.09
2018	30	30	(494,242)	(494,242)	11.9698	(41,291)	(0.47)
Benefit Changes							
1996	30	8	(126,041)	(98,522)	6.0236	(16,356)	(0.19)
1998	30	10	(4,204)	(3,688)	7.0461	(523)	(0.01)
2000	30	12	416,125	391,362	7.9268	49,372	0.56
2004	30	16	603,572	607,541	9.3388	65,055	0.74
2005	30	17	2,422,727	2,450,250	9.6307	254,420	2.89
2006	30	18	1,820,155	1,842,705	9.9016	186,102	2.11
2010	30	22	421,454	416,149	10.8039	38,519	0.44
2011	30	23	(604,106)	(589,298)	10.9904	(53,619)	(0.61)
2012	30	24	(520,387)	(500,489)	11.1635	(44,833)	(0.51)
2018	30	30	54,741	54,741	11.9698	4,573	0.05
Assumption Changes							
1995	30	7	822,391	589,873	5.4521	108,191	1.23
2001	30	13	(571,357)	(550,847)	8.3203	(66,205)	(0.75)
2011	30	23	154,468	150,729	10.9904	13,715	0.16
2015	30	27	1,398,986	1,358,887	11.6116	117,029	1.33
2016	30	28	3,523,964	3,478,227	11.7400	296,271	3.37
Totals				\$6,801,522		\$508,869	5.81 %

* Actual wage growth over the past 10 years has been (2.26)%, versus the 4.0% assumed. FS 112 requires use of the 10-year average if less than assumed. Because the 10-year average is less than 0%, 0% has been used in the above calculation as required.

Sources and Financing of Unfunded Actuarial Accrued Liability Utilities Authority Members

Year Established	Initial Years	Years Remaining	Unf'd. Act. Accr. Liab.		Amortization Factor	Amortization Payment*	% of Payroll Contribution*
			Initial Amount	Current Amount			
Initial Unfunded							
1981	34	1	\$3,349,127	\$ 275,560	0.9651	\$ 285,520	2.09 %
Experience Changes							
1989	30	1	(130,266)	(10,658)	0.9651	(11,043)	(0.08)
1990	30	2	407,412	73,547	1.8637	39,463	0.29
1991	30	3	(238,416)	(67,022)	2.7003	(24,820)	(0.18)
1992	30	4	(388,969)	(146,457)	3.4792	(42,095)	(0.31)
1993	30	5	(1,360,632)	(651,131)	4.2045	(154,867)	(1.14)
1994	30	6	(978,978)	(530,708)	4.8797	(108,759)	(0.80)
1995	30	7	(974,186)	(596,799)	5.5083	(108,344)	(0.79)
1996	30	8	(940,560)	(634,235)	6.0937	(104,081)	(0.76)
1997	30	9	(2,192,535)	(1,594,845)	6.6386	(240,237)	(1.76)
1998	30	10	(2,534,640)	(1,957,898)	7.1460	(273,984)	(2.01)
1999	30	11	(1,141,977)	(925,042)	7.6184	(121,422)	(0.89)
2000	30	12	(1,309,143)	(1,100,630)	8.0583	(136,584)	(1.00)
2001	30	13	1,593,737	1,383,143	8.4678	163,342	1.20
2002	30	14	2,859,829	2,543,475	8.8490	287,430	2.11
2003	30	15	2,692,574	2,439,183	9.2040	265,013	1.94
2004	30	16	1,574,647	1,445,287	9.5345	151,585	1.11
2005	30	17	225,846	209,037	9.8422	21,239	0.16
2006	30	18	(2,695,199)	(2,505,361)	10.1287	(247,352)	(1.81)
2007	30	19	(3,178,605)	(2,957,156)	10.3955	(284,465)	(2.09)
2008	30	20	1,783,264	1,655,083	10.6439	155,497	1.14
2009	30	21	2,272,126	2,097,856	10.8751	192,905	1.41
2010	30	22	2,668,679	2,444,661	11.0904	220,431	1.62
2011	30	23	4,692,517	4,255,411	11.2908	376,891	2.76
2012	30	24	(1,001,517)	(897,138)	11.4774	(78,165)	(0.57)
2013	30	25	(1,332,212)	(1,176,502)	11.6512	(100,977)	(0.74)
2014	30	26	(2,039,760)	(1,983,624)	11.8130	(167,919)	(1.23)
2015	30	27	(1,615,435)	(1,576,690)	11.9636	(131,791)	(0.97)
2016	30	28	178,810	178,929	12.1038	14,783	0.11
2017	30	29	(528,606)	(524,433)	12.2344	(42,865)	(0.31)
2018	30	30	(355,475)	(355,475)	12.3560	(28,769)	(0.21)
Benefit Changes							
1996	30	8	1,797,497	1,212,081	6.0937	198,908	1.46
1998	30	10	(6,868)	(5,305)	7.1460	(742)	(0.01)
2000	30	12	217,608	182,947	8.0583	22,703	0.17
2005	30	17	5,714,128	5,288,871	9.8422	537,364	3.94
2007	30	19	879,772	818,480	10.3955	78,734	0.58
2011	30	23	(859,973)	(779,867)	11.2908	(69,071)	(0.51)
2012	30	24	(837,844)	(750,523)	11.4774	(65,391)	(0.48)
2018	30	30	57,583	57,583	12.3560	4,660	0.03
Assumption Changes							
1990	30	2	(71,195)	(12,852)	1.8637	(6,896)	(0.05)
1995	30	7	1,262,801	773,614	5.5083	140,444	1.03
2001	30	13	(1,106,750)	(960,505)	8.4678	(113,431)	(0.83)
2011	30	23	695,546	630,756	11.2908	55,865	0.41
2015	30	27	2,088,919	2,038,818	11.9636	170,418	1.25
2016	30	28	4,976,532	4,979,842	12.1038	411,427	3.02
Totals				\$12,283,308		\$1,130,552	8.29 %

* Actual wage growth over the past 10 years has been 0.32%, versus the 4.0% assumed. FS 112 requires use of the 10-year average if less than assumed. This has been used in the above calculation as required.

Sources and Financing of Unfunded Actuarial Accrued Liability Police Members

Year Established	Initial Years	Years Remaining	Unf'd. Act. Accr. Liab.		Amortization Factor	Amortization Payment*	% of Payroll Contribution*
			Initial Amount	Current Amount			
Initial Unfunded							
1981	34	5	\$ (92,516)	\$ (267,514)	4.2025	\$ (63,656)	(0.93) %
Experience Changes							
1991	30	5	(203,783)	(93,350)	4.2025	(22,213)	(0.33)
1992	30	5	(212,982)	(109,785)	4.2025	(26,124)	(0.38)
1993	30	5	(924,672)	(555,201)	4.2025	(132,113)	(1.94)
1994	30	6	(461,122)	(303,030)	4.8769	(62,135)	(0.91)
1995	30	7	(631,047)	(455,986)	5.5048	(82,834)	(1.21)
1996	30	8	(985,977)	(766,945)	6.0892	(125,951)	(1.85)
1997	30	9	(2,131,299)	(1,755,598)	6.6333	(264,666)	(3.88)
1998	30	10	769,031	662,317	7.1397	92,766	1.36
1999	30	11	(1,200,250)	(1,069,693)	7.6111	(140,544)	(2.06)
2000	30	12	(597,465)	(546,347)	8.0499	(67,870)	(0.99)
2001	30	13	578,886	541,010	8.4584	63,961	0.94
2002	30	14	1,258,164	1,194,466	8.8386	135,142	1.98
2003	30	15	1,317,638	1,264,297	9.1926	137,535	2.01
2004	30	16	2,033,822	1,963,613	9.5221	206,217	3.02
2005	30	17	(40,822)	(39,498)	9.8288	(4,019)	(0.06)
2006	30	18	455,702	440,361	10.1143	43,539	0.64
2007	30	19	(2,754,392)	(2,650,410)	10.3800	(255,338)	(3.74)
2008	30	20	569,652	544,336	10.6274	51,220	0.75
2009	30	21	481,424	455,726	10.8577	41,973	0.61
2010	30	22	458,881	429,324	11.0720	38,776	0.57
2011	30	23	856,807	790,773	11.2716	70,156	1.03
2012	30	24	319,593	290,415	11.4573	25,348	0.37
2013	30	25	(1,367,523)	(1,221,439)	11.6302	(105,023)	(1.54)
2014	30	26	(1,437,583)	(1,273,306)	11.7912	(107,988)	(1.58)
2015	30	27	(1,315,599)	(1,159,600)	11.9410	(97,111)	(1.42)
2016	30	28	(1,280,599)	(1,141,659)	12.0805	(94,505)	(1.38)
2017	30	29	368,606	361,001	12.2103	29,565	0.43
2018	30	30	(533,546)	(533,546)	12.3311	(43,268)	(0.63)
Benefit Changes							
1996	30	8	(52,503)	(40,841)	6.0892	(6,707)	(0.10)
1998	30	10	866,643	746,385	7.1397	104,540	1.53
2000	30	12	154,856	141,607	8.0499	17,591	0.26
2002	30	14	(2,757)	(2,618)	8.8386	(296)	(0.00)
2005	30	17	3,376,647	3,267,191	9.8288	332,411	4.87
2006	30	18	21,867	21,132	10.1143	2,089	0.03
2010	30	22	144,060	134,781	11.0720	12,173	0.18
2011	30	23	(576,034)	(531,637)	11.2716	(47,166)	(0.69)
2012	30	24	(211,273)	(191,985)	11.4573	(16,757)	(0.25)
2018	30	30	(508)	(508)	12.3311	(41)	(0.00)
Assumption Changes							
1995	30	7	576,369	416,476	5.5048	75,657	1.11
2000	30	12	93,418	85,425	8.0499	10,612	0.16
2001	30	13	418,050	390,697	8.4584	46,190	0.68
2011	30	23	577,020	532,550	11.2716	47,247	0.69
2015	30	27	1,193,697	1,052,185	11.9410	88,115	1.29
2016	30	28	1,395,375	1,243,982	12.0805	102,975	1.51
Totals				\$2,259,554		\$9,473	0.14 %

* Actual wage growth over the past 10 years has been 0.30%, versus the 4.0% assumed. FS 112 requires use of the 10-year average if less than assumed. This has been used in the above calculation as required.

Actuarial Balance Sheet - September 30, 2018

(\$ Amounts in Thousands)*

Present Resources and Expected Future Resources

	General Members	Utilities Authority Members	Police Members	Total
A. Funding value of plan assets:				
1. Net assets from plan financial statements (Market)	\$61,695	\$ 90,113	\$55,157	\$206,965
2. Funding value adjustment	(2,050)	(2,995)	(1,833)	(6,878)
3. Funding value of assets	\$59,645	\$ 87,118	\$53,324	\$200,087
B. Actuarial present value of expected future employer contributions:				
1. For normal costs	\$ 6,168	\$ 7,515	\$ 5,521	\$ 19,204
2. For unfunded actuarial accrued liability	6,802	12,283	2,260	21,345
3. Total	\$12,970	\$ 19,798	\$ 7,781	\$ 40,549
C. Actuarial present value of expected future member contributions	3,169	5,717	2,674	11,560
D. Total Present and Future Resources	\$75,784	\$112,633	\$63,779	\$252,196

Actuarial Present Value of Expected Future Benefit Payments and Reserves

	General Members	Utilities Authority Members	Police Members	Total
A. To retired members and beneficiaries	\$41,265	\$ 61,605	\$35,057	\$137,927
B. To vested terminated members	2,263	2,232	393	4,888
C. To present active members:				
1. Allocated to service rendered prior to valuation date	\$22,918	\$ 35,565	\$20,134	\$ 78,617
2. Allocated to service likely to be rendered after valuation date	9,338	13,231	8,195	30,764
3. Total	\$32,256	\$ 48,796	\$28,329	\$109,381
D. Total actuarial present value of expected future benefit payments	\$75,784	\$112,633	\$63,779	\$252,196

* Totals may be off due to rounding.

Cumulative Experience Gains/(Losses)

Year Ended September 30	Balance at Beginning of Year	Interest	Gain/(Loss) During Year	Value of Cost- of-Living Adjustment During Year	Balance at End of Year
1999	\$ -	\$ -	\$ 4,314,699	\$ 709,305	\$ 3,605,394
2000	3,605,394	288,432	6,465,035	1,219,607	9,139,254
2001	9,139,254	731,140	(6,086,030)	1,186,656	2,597,708
2002	2,597,708	207,817	(10,907,939)	-	(8,102,414)
2003	(8,102,414)	(648,193)	(9,844,539)	-	(18,595,145)
2004	(18,595,145)	(1,487,612)	(11,328,205)	-	(31,410,961)
2005	(31,410,961)	(2,512,877)	(2,296,402)	-	(36,220,240)
2006*	(18,683,996)	(1,494,720)	3,801,047	-	(16,377,668)
2007	(16,377,668)	(1,310,213)	9,086,773	-	(8,601,108)
2008	(8,601,108)	(688,089)	(3,888,228)	-	(13,177,425)
2009	(13,177,425)	(1,054,194)	(4,059,794)	-	(18,291,413)
2010	(18,291,413)	(1,463,313)	(3,428,818)	-	(23,183,544)
2011	(23,183,544)	(1,854,684)	(8,690,267)	-	(33,728,495)
2012	(33,728,495)	(2,698,280)	853,641	-	(35,573,134)
2013	(35,573,134)	(2,845,851)	4,085,864	-	(34,333,121)
2014	(34,333,121)	(2,746,650)	4,959,820	-	(32,119,951)
2015	(32,119,951)	(2,569,596)	5,140,356	-	(29,549,191)
2016	(29,549,191)	(2,290,062)	1,460,257	-	(30,378,996)
2017	(30,378,996)	(2,354,372)	68,563	-	(32,664,805)
2018	(32,664,805)	(2,531,522)	1,383,263	-	(33,813,064)

* After removing the estimated impact of Fire members.

SECTION C

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA SUBMITTED BY THE RETIREMENT AND BENEFIT SYSTEM

Summary of Benefit Provisions (September 30, 2018)

Participation: Participation in the Retirement and Benefit System begins upon employment.

Normal Retirement (no reduction factor for age):

Eligibility - Original members: 20 or more years of service.

All members - General, Utilities Authority: 25 or more years of service regardless of age, or age 60 with 5 or more years of service.

- Police: 25 or more years of service, regardless of age, or age 55 with 5 or more years of service.

Mandatory Retirement Age - None.

Annual Amount - All members: Total service times 3.0% of final average salary.

For members hired prior to October 1, 2012:

- The maximum pension benefit is \$100,000 annually.

For members hired on or after October 1, 2012:

- The maximum annual pension benefit shall not exceed 75% of final average salary.
- The maximum pension benefit is \$100,000 annually.

The normal form of benefit is a benefit payable for life. Optional forms are available on an actuarial equivalent basis.

Type of Final Average Salary - General: Highest 5 consecutive years out of last 10. Police, Utilities Authority: Highest 5 years out of last 10. Overtime hours included in compensation are limited to 300 hours per fiscal year.

For members hired prior to October 1, 2012: Payments for unused sick and vacation time included in compensation are limited to unused sick and vacation time accrued through September 20, 2012 for General and Police, and July 1, 2011 for Utilities Authority.

For members hired on or after October 1, 2012: Payments for unused sick and vacation time are not included in compensation.

Deferred Retirement Option Plan (DROP) Retirement:

Eligibility - General, Police, and Utilities Authority members: Same as Normal Retirement, election may be made on or after normal retirement eligibility, but not after reaching 30 years of service. Participation in the DROP ends after five years.

Annual Amount - Computed as a normal retirement but based upon service and final average salary at time of DROP election. Member contributions cease and monthly benefits (and post-retirement increases, if any) accumulate in a self-directed DROP account and are payable to the member upon termination of employment.

Deferred Retirement (vested benefit):

Eligibility - 5 or more years of service. Benefit begins upon attaining age 60.

Annual Amount - Computed as a normal retirement but based upon service and final average salary at time of termination.

Duty Disability Retirement:

Eligibility - No age or service requirements if the Retirement Board finds the member to be in receipt of weekly workers' compensation on account of disability in the course of duty.

Annual Amount - Computed as a normal retirement based upon service projected to the end of the duty disability period and final average salary at time of disability. Minimum benefit is 75% of final average salary during the duty disability period. The duty disability period ends on the earlier of the 25th anniversary of the member's hire date or the date the member attains age 65 but not prior to 5 years from the date of duty disability retirement.

Non-Duty Disability Retirement:

Eligibility - 5 or more years of service.

Annual Amount - Computed as a normal retirement but based upon service and final average salary at time of disability.

Duty Death Before Retirement:

Eligibility - No age or service requirements. Benefits begin upon termination of workers' compensation.

Annual Amount - A benefit equal to the same amount that was paid by workers' compensation to the spouse until death, to unmarried children under 18 and dependent parents.

Non-Duty Death Before Retirement:

Eligibility - 5 or more years of service.

Annual Amount - Computed as a normal retirement but actuarially reduced in accordance with a 100% joint and survivor election.

Post-Retirement Increases: COLA may be granted from investment returns in excess of actuarial interest assumption, not to exceed 3%.

Military Service: May be purchased by members who meet the eligibility conditions.

Member Contributions:

- General: 5.16% of annual salary
- Police: 5.16% of annual salary
- Utilities Authority: 6.16% of annual salary

Employer Contributions: Actuarially determined amounts which together with member contributions are sufficient to at least cover the requirements of the funding objective stated on page A-1.

Changes in Plan Provisions: There were no changes in Plan Provisions since the last valuation.

Accounting Information Submitted for Valuation

Revenues and Expenditures

	Year Ended	
	9/30/2018	9/30/2017
Revenues:		
a. Member contributions:		
General	\$ 475,054	\$ 467,700
Police	390,284	387,859
Utilities Authority	825,473	813,648
b. Employer contributions:		
General	1,606,547	1,356,423
Police	901,227	1,062,131
Utilities Authority	2,401,880	2,147,330
c. Investment income:		
1. Interest and dividends	3,787,868	3,451,878
2. Gain or loss on sales	417,068	4,777,142
3. Unrealized gain/loss	16,227,539	11,499,060
d. Total revenues	<u>\$ 27,032,940</u>	<u>\$ 25,963,171</u>
Expenditures:		
a. Refunds of member contributions:		
General	\$ 111,191	\$ 106,162
Police	24,572	38,145
Utilities Authority	113,018	113,280
b. Benefits paid:		
General	4,304,336	4,066,919
Police	3,127,897	3,087,513
Utilities Authority	6,100,340	6,014,520
c. Investment expenses	806,415	714,255
d. Administrative expenses	207,265	209,251
e. Other	46,756	45,031
f. Total expenditures	<u>\$ 14,841,790</u>	<u>\$ 14,395,076</u>
Adjustments:	\$ -	\$ -
Reserve Increase:	\$ 12,191,150	\$ 11,568,095

Market Value of Assets

	9/30/2018	9/30/2017
Cash	\$ 0	(1,850,000)
Receivables & Accruals	667,402	522,063
Other short-term	3,724,112	4,702,303
Real Estate	20,292,935	21,671,230
Bonds - corporate	25,512,177	25,818,039
- government	19,834,863	19,458,250
Stocks - common	17,613,492	14,901,644
- mutual funds	119,590,852	109,577,169
Other - prepaid expenses	(230,751)	3,936
Total assets	<u>207,005,082</u>	<u>194,804,634</u>
Less accounts payable	39,820	30,522
Net assets	<u>\$ 206,965,262</u>	<u>\$ 194,774,112</u>

Retired Member and Beneficiary Data September 30, 2018 Tabulated by Valuation Divisions

Valuation Divisions	No.	Annual Benefits	Average Benefit	Actuarial Value of Benefits
General Members	206	\$ 4,274,607	\$ 20,751	\$ 41,264,792
Utilities Authority Members	226	6,113,806	27,052	61,604,573
Police Members	85	3,317,801	39,033	35,056,649
Totals	517	\$13,706,214	\$26,511	\$137,926,014

Divisions	All Retirement's Averages			New Age and Service Retired Members Added During Year Ended 9/30/2018		
	Attained Age	Retirement Age	Current Annual	Averages		
			Benefits	No.	Age	Annual Benefits
General Members	70.5	59.8	\$20,751	10	62.9	\$14,452
Utilities Authority Members	69.6	58.0	27,052	9	59.2	26,507
Police Members	65.4	53.9	39,033	4	52.4	54,045

Retired Member and Beneficiary Data Historical Comparison

Period	Added		Removed		Net Increase		End of Period		Expected	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Removals Benefits
9/30/84	16	\$ 74,505	6	\$ 14,486	10	\$ 60,019	157	\$ 738,851	4.3	\$ 15,103
9/30/85	11	87,916	6	16,055	5	71,861	162	810,712	4.8	17,129
9/30/86	21	237,533	8	34,936	13	202,597	175	1,013,309	5.3	20,394
9/30/87	17	182,208	7	18,904	10	163,304	185	1,176,613	5.7	25,092
9/30/88	16	176,569	6	18,144	10	158,425	195	1,335,038	6.0	29,181
9/30/89	18	210,866	7	29,378	11	181,488	206	1,516,526	6.6	34,395
9/30/90	19	284,294	8	50,713	11	233,581	217	1,750,107	7.2	40,904
9/30/91	12	166,933	12	40,397	-	126,536	217	1,876,643	7.8	48,142
9/30/92	19	279,791	6	12,185	13	267,606	230	2,144,249	7.4	46,602
9/30/93	26	505,107	8	102,192	18	402,915	248	2,547,164	8.1	53,142
9/30/94	20	319,610	8	59,627	12	259,983	260	2,807,147	8.7	58,237
9/30/95	22	481,651	9	41,888	13	439,763	273	3,246,910	9.2	64,542
9/30/96	12	177,476	9	54,301	3	123,175	276	3,370,085	8.4	61,052
9/30/97	20	311,526	11	62,949	9	248,577	285	3,618,662	8.9	66,449
9/30/98	35	833,113	9	47,534	27	785,579	311	4,404,241	9.1	72,632
9/30/99	25	507,447	15	126,797	10	380,650	321	4,784,891	9.7	82,380
9/30/00	27	646,116	14	129,198	13	516,918	334	5,301,809	9.9	90,589
9/30/01	23	628,192	15	97,296	8	530,896	342	5,832,705	9.9	97,991
9/30/02	23	526,601	3	33,319	20	493,282	362	6,325,987	9.7	109,931
9/30/03	17	313,250	5	42,129	12	271,121	374	6,597,108	10.6	121,871
9/30/04	25	705,692	3	44,505	22	661,187	396	7,258,295	11.2	132,981
9/30/05	11	354,475	22	266,853	(11)	87,622	385	7,345,917	12.4	149,279
9/30/06 *	37	1,017,845	99	2,907,201	(62)	(1,889,356)	323	5,456,561	10.0	109,462
9/30/07	32	820,021	18	202,924	14	617,097	337	6,073,658	11.0	126,496
9/30/08	23	635,039	12	184,195	11	450,844	348	6,524,502	11.2	138,459
9/30/09	55	1,551,148	16	182,856	39	1,368,292	387	7,892,794	11.7	149,577
9/30/10	56	2,229,035	14	177,196	42	2,051,839	429	9,944,633	12.3	170,609
9/30/11	26	672,328	16	239,318	10	433,010	439	10,377,643	12.9	197,045
9/30/12	27	746,421	14	251,747	13	494,674	452	10,872,317	13.5	196,990
9/30/13	32	927,561	15	134,978	17	792,583	469	11,664,900	14.2	214,174
9/30/14	40	890,500	20	262,625	20	627,875	489	12,292,775	14.2	232,649
9/30/15	31	739,422	19	262,533	12	476,889	501	12,769,664	15.2	249,235
9/30/16	24	653,823	26	380,819	(2)	273,004	499	13,042,668	16.1	270,359
9/30/17	19	382,822	13	154,607	6	228,215	505	13,270,883	13.8	249,276
9/30/18	32	777,459	20	342,128	12	435,331	517	13,706,214	14.4	285,051

* Removed 90 Fire retirees and beneficiaries, and \$2,811,761 annual benefits in the 9/30/2006 valuation.

Retired Members and Beneficiaries Historical Comparison

Valuation Date	% Increase in Annual Benefits	No. of Active Per Retired	Annual Benefits as % of Active Payroll	Average Benefits
9/30/84	8.8 %	4.7	5.5 %	\$ 4,706
9/30/85	9.7	4.7	5.4	5,004
9/30/86	25.0	4.4	6.1	5,790
9/30/87	16.1	4.2	6.6	6,360
9/30/88	13.5	4.2	6.8	6,846
9/30/89	13.6	4.0	7.5	7,362
9/30/90	15.4	3.9	7.8	8,065
9/30/91	7.2	3.9	7.9	8,648
9/30/92	14.3	3.6	8.6	9,323
9/30/93	18.8	3.1	10.8	10,271
9/30/94	10.2	3.0	11.6	10,797
9/30/95	15.7	3.0	12.4	11,893
9/30/96	3.8	3.0	12.2	12,210
9/30/97	7.4	3.2	12.1	12,697
9/30/98	21.7	2.8	14.5	14,162
9/30/99	8.6	2.7	15.1	14,906
9/30/00	10.8	2.7	15.9	15,874
9/30/01	10.0	2.7	16.4	17,055
9/30/02	8.5	2.5	17.1	17,475
9/30/03	4.3	2.5	16.4	17,639
9/30/04	10.0	2.4	16.7	18,329
9/30/05	1.2	2.6	15.0	19,080
9/30/06 *	20.3	2.0	17.9	16,893
9/30/07	11.3	2.0	19.6	18,023
9/30/08	7.4	2.0	19.8	18,749
9/30/09	21.0	1.7	25.4	20,395
9/30/10	26.0	1.3	37.1	23,181
9/30/11	4.4	1.3	40.3	23,639
9/30/12	4.8	1.2	42.1	24,054
9/30/13	7.3	1.1	46.3	24,872
9/30/14	5.4	1.1	48.9	25,139
9/30/15	3.9	1.0	50.1	25,488
9/30/16	2.1	1.1	47.4	26,138
9/30/17	1.7	1.1	46.5	26,279
9/30/18	3.3	1.1	46.8	26,511

* Removed 90 Fire retirees and beneficiaries, and \$2,811,761 annual benefits in the 9/30/2006 valuation.

Retired Member and Beneficiary Data as of September 30, 2018 by Type of Benefit Being Paid

Type of Benefit Being Paid	No.	Annual Benefits	Average Benefits
Age and Service Benefits			
Straight Life - benefit terminating at death of retirant	174	\$ 4,744,395	\$27,267
Option A - 100% joint and survivor benefit*	110	3,170,771	28,825
Option B/D/E - 50%/75%/67% joint and survivor benefit*	103	3,360,160	32,623
Option C - 10-year certain and life	24	607,689	25,320
Surviving beneficiaries	65	905,993	13,938
Other Age and Service Benefits	<u>0</u>	<u>0</u>	<u>0</u>
Total Age and Service Benefits	476	12,789,008	26,868
Casualty Benefits			
Duty disability	9	321,415	35,713
Non-duty disability	10	158,890	15,889
Duty death	2	47,846	23,923
Non-duty death	14	307,433	21,960
Surviving beneficiaries	<u>6</u>	<u>81,622</u>	<u>13,604</u>
Total Casualty Benefits	41	917,206	22,371
Total Benefits Being Paid	517	\$13,706,214	\$26,511

* Includes Pop-Up provision.

Retired Members and Beneficiaries as of September 30, 2018 by Attained Age

Age Last Birthday	Age and Service		Casualty		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	1	\$ 4,252	1	\$ 33,018	2	\$ 37,270
45-49	7	236,144	1	32,925	8	269,069
50-54	19	906,319	8	204,930	27	1,111,249
55-59	38	1,474,086	6	138,654	44	1,612,740
60-64	104	3,169,898	7	127,723	111	3,297,621
65-69	96	2,560,767	7	174,585	103	2,735,352
70-74	82	2,254,790	4	88,598	86	2,343,388
75-79	58	1,160,521	6	84,758	64	1,245,279
80-84	27	396,283	0	-	27	396,283
85-89	24	404,640	0	-	24	404,640
90 & Over	20	221,308	1	32,015	21	253,323
Totals	476	\$ 12,789,008	41	\$ 917,206	517	\$ 13,706,214

Inactive Vested Members as of September 30, 2018 by Attained Age

Attained Age	General Members		Utilities Authority*		Police Members*		TOTAL	
	No.	Estimated Annual Benefits	No.	Estimated Annual Benefits	No.	Estimated Annual Benefits	No.	Estimated Annual Benefits
30-34	1	\$ 10,435	1	\$ 26,772			2	\$ 37,207
35-39	3	34,333			1	\$ 23,159	4	57,492
40-44			1	26,280	2	16,617	3	42,897
45-49	1	38,381	4	49,259	4	67,565	9	155,205
50-54	8	152,324	2	45,480	1	7,094	11	204,898
55-59	6	67,549	9	172,903			15	240,452
60-64	2	49,315	1	9,027			3	58,342
TOTALS	21	\$352,337	18	\$329,721	8	\$114,435	47	\$796,493

* Deferred annuities were estimated for 2 Utilities Authority members and 1 General member who terminated during the 2017-2018 plan year.

Active Members Included in Valuation General Members

Valuation September 30	Active Members	Vested		Valuation Payroll	Average		
		Term. Members			Age	Service	Pay
1999	242	2		\$ 6,892,761	45.3 yrs.	8.6 yrs.	\$ 28,482
2000	260	2		7,717,224	45.8	8.5	29,682
2001	268	3		8,308,758	45.1	8.3	31,003
2002	275	7		8,901,179	45.5	8.1	32,368
2003	302	5		9,994,351	46.5	7.7	33,094
2004	294	7		10,546,747	46.1	8.1	35,873
2005	297	7		11,854,374	46.4	8.6	39,914
2006	287	6		11,206,771	46.5	8.0	39,048
2007	289	6		11,131,329	47.3	8.3	38,517
2008	281	6		11,949,389	47.9	9.0	42,525
2009	265	8		11,108,762	47.5	8.6	41,920
2010	226	13		8,874,396	46.8	8.0	39,267
2011	219	16		8,488,894	47.1	8.2	38,762
2012	216	16		8,625,945	47.8	8.9	39,935
2013	198	17		7,765,325	48.2	9.4	39,219
2014	198	14		7,912,918	48.3	9.3	39,964
2015	185	15		7,383,853	48.9	9.8	39,913
2016	203	20		8,738,017	48.5	8.8	43,044
2017	199	19		8,858,072	48.7	9.1	44,513
2018	197	21		8,802,993	48.4	8.9	44,685

Number Added to and Removed from Active Membership General Members

Year Ended September 30	Number Added During Year		Normal Retirement		Disability Retirement		Died-in- Service		Terminations				Active Members End of Year	
	A	E	A	E	A	E	A	E	Withdrawal		Totals			Transfer
									A	E	A	E		
2009	20	36	23	18.2	0	0.4	1	0.5	10	2	12	17.0		265
2010	10	49	23	12.9	0	0.4	0	0.5	21	5	26	16.1		226
2011	17	24	11	7.5	1	0.4	1	0.5	8	3	11	12.3		219
2012	10	13	4	7.0	0	0.5	3	0.3	5	1	6	12.3		216
2013	9	27	10	9.8	0	0.5	1	0.4	13	3	16	11.0		198
2014	23	23	10	8.4	0	0.5	0	0.4	13	0	13	9.5		198
2015	14	26	8	10.1	0	0.4	2	0.4	14	2	16	10.9	(1)	185
2016	41	23	7	8.3	0	0.5	0	0.4	10	6	16	9.9		203
2017	17	23	7	6.7	1	0.4	0	0.3	14	1	15	16.5	2	199
2018	32	33	8	8.4	1	0.4	1	0.3	19	4	23	14.7	(1)	197
10-Year Totals	193	277	111	97.3	3	4.4	9	4.0	127	27	154	130.2		

A represents actual number; E represents expected number.

Active Members Included in Valuation Utilities Authority Members

Valuation September 30	Active Members	Vested Term. Members	Valuation Payroll	Average		
				Age	Service	Pay
1999	247	10	\$ 9,431,774	44.0 yrs.	9.3 yrs.	\$ 38,185
2000	244	12	9,750,426	44.1	9.5	39,961
2001	257	13	10,236,646	44.1	9.0	39,831
2002	253	9	10,675,070	44.9	9.7	42,194
2003	248	10	10,744,695	45.3	10.0	43,325
2004	245	11	11,193,220	45.8	10.1	45,687
2005	256	12	12,754,845	46.5	10.1	49,824
2006	263	11	12,551,346	46.6	9.6	47,724
2007	278	10	13,494,349	46.5	9.3	48,541
2008	282	12	13,970,069	46.5	9.1	49,539
2009	266	7	13,244,000	46.0	9.3	49,789
2010	248	8	12,119,371	46.2	9.3	48,868
2011	237	10	11,893,916	47.0	9.9	50,185
2012	237	10	11,801,344	47.2	9.9	49,795
2013	232	9	11,534,243	46.7	9.6	49,717
2014	219	15	11,071,951	46.4	9.3	50,557
2015	228	18	11,841,919	46.3	9.1	51,938
2016	229	16	12,588,492	46.3	9.4	54,972
2017	230	18	12,768,134	46.5	9.8	55,514
2018	242	18	13,635,436	46.4	9.5	56,345

Number Added to and Removed from Active Membership Utilities Authority Members

Year Ended September 30	Number Added During Year		Normal Retirement		Disability Retirement		Died-in- Service		Terminations				Active Members End of Year
	A	E	A	E	A	E	A	E	Withdrawal		Totals	Transfer	
									A	A			
2009	11	27	13	8.2	2	0.5	1	0.5	10	1	11	18.3	266
2010	11	29	19	9.7	0	0.5	0	0.5	9	1	10	15.3	248
2011	5	16	7	5.8	0	0.5	0	0.5	7	2	9	13.4	237
2012	20	20	8	8.6	0	0.6	0	0.4	11	1	12	11.0	237
2013	25	30	14	9.0	0	0.6	1	0.5	15	0	15	12.0	232
2014	23	36	18	8.8	0	0.6	0	0.4	12	6	18	13.3	219
2015	27	19	10	6.1	1	0.5	0	0.4	4	4	8	13.5	1 228
2016	25	24	6	5.3	0	0.5	0	0.3	15	3	18	15.0	229
2017	19	18	2	6.8	0	0.5	0	0.3	10	6	16	16.7	230
2018	31	19	7	7.9	0	0.5	0	0.3	10	2	12	15.5	242
10-Year Totals	197	238	104	76.2	3	5.3	2	4.1	103	26	129	144.0	

A represents actual number; E represents expected number.

Active Members Included in Valuation Police Members

Valuation September 30	Active Members	Vested Term. Members	Payroll	Average		
				Age	Service	Pay
1999	106	2	\$ 4,224,186	38.1 yrs.	8.4 yrs.	\$ 39,851
2000	112	2	4,503,739	38.6	7.9	40,212
2001	107	1	4,418,980	38.5	8.1	41,299
2002	102	2	4,567,931	39.7	9.0	44,784
2003	103	3	4,921,744	39.9	9.1	47,784
2004	103	3	5,496,631	40.3	9.9	53,365
2005	105	3	5,943,309	40.9	10.6	56,603
2006	111	2	6,773,879	39.3	9.4	61,026
2007	106	2	6,358,225	38.9	9.4	59,983
2008	117	2	7,032,172	39.2	9.4	60,104
2009	111	3	6,663,530	38.6	9.2	60,032
2010	102	3	5,785,106	38.4	9.0	56,717
2011	101	4	5,361,391	38.9	9.7	53,083
2012	99	3	5,415,125	39.0	9.8	54,698
2013	106	3	5,899,165	39.2	9.2	55,653
2014	109	2	6,165,492	38.4	8.9	56,564
2015	107	4	6,249,587	39.0	9.1	58,407
2016	100	6	6,166,648	38.3	9.0	61,666
2017	110	8	6,937,207	37.9	8.6	63,066
2018	111	8	6,825,562	37.9	8.6	61,492

Number Added to and Removed from Active Membership Police Members

Year Ended September 30	Number Added During Year		Normal Retirement		Disability Retirement		Died-in- Service		Terminations				Active Members End of Year	
	A	E	A	E	A	E	A	E	Withdrawal		Totals			Transfer
									A	E	A	E		
2009	12	18	5	5.1	0	0.2	0	0.1	12	1	13	5.1		111
2010	4	13	9	4.4	0	0.2	0	0.1	4	0	4	5.3		102
2011	5	6	1	1.7	0	0.2	0	0.1	4	1	5	5.3		101
2012	14	16	1	0.9	3	0.3	0	0.1	12	0	12	3.7		99
2013	17	10	2	1.4	0	0.2	0	0.1	8	0	8	4.4		106
2014	19	16	4	2.0	0	0.2	0	0.1	12	0	12	5.3		109
2015	14	16	2	2.0	1	0.2	0	0.1	11	2	13	5.8		107
2016	15	22	4	3.4	0	0.2	0	0.1	15	3	18	5.8		100
2017	17	5	1	1.5	0	0.2	1	0.1	2	1	3	6.6	(2)	110
2018	10	11	4	1.9	0	0.3	0	0.1	5	1	7	7.2	1	111
10-Year Totals	127	133	33	24.3	4	2.2	1	1.0	85	9	95	54.5		

A represents actual number; E represents expected number.

General Members as of September 30, 2018 by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	1							1	\$ 32,157
25-29	10							10	359,153
30-34	12	1	3					16	617,459
35-39	12	1	3	2				18	670,287
40-44	11	2	3	4	2			22	988,045
45-49	15	4	5	7	7			38	1,925,928
50-54	12	4	9	3	2			30	1,410,620
55-59	8	2	6	10	8			34	1,882,322
60	1	1		3	1			6	240,625
61	3	1						4	161,070
62	1							1	47,112
63	1	1			1			3	178,599
64	1							1	51,950
65		2						2	56,319
67	1							1	9,177
68	1	1	1					3	84,856
69	2							2	42,970
72	1							1	7,390
73		1						1	7,928
74				1				1	9,558
79					2			2	19,468
Totals	93	21	30	30	23	0	0	197	\$8,802,993

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 48.4 years
Service: 8.9 years
Annual Pay: \$44,685

Utilities Authority Members as of September 30, 2018 by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	2							2	\$ 61,776
25-29	15	2						17	642,411
30-34	18	7	4	1				30	1,424,913
35-39	12	5	8	3				28	1,527,762
40-44	10	4	5	5	1			25	1,454,930
45-49	10	4	8	1	4	5		32	1,973,065
50-54	11	4	13	7	5	2		42	2,547,619
55-59	7	4	7	4	7			29	1,751,132
60	2	2	4	1	1			10	505,041
61	2	1	5	2	1			11	654,640
62	1	2			1		1	5	387,950
63		1	1					2	116,929
64	2	1			1			4	252,149
66		1						1	59,731
67				1				1	150,010
68	2							2	78,978
74			1					1	46,400
Totals	94	38	56	25	21	7	1	242	\$13,635,436

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 46.4 years
Service: 9.5 years
Annual Pay: \$56,345

Police Members as of September 30, 2018 by Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	10							10	\$ 456,636
25-29	16	3						19	918,723
30-34	15	3	1					19	945,157
35-39	6	4	3					13	691,132
40-44	3	5	3	6	1			18	1,266,978
45-49	3		2	4	5			14	1,061,833
50-54	2	2		2	7			13	1,090,044
55-59				1	2			3	244,913
60			1					1	71,099
61				1				1	79,047
Totals	55	17	10	14	15	0	0	111	\$6,825,562

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 37.9 years
Service: 8.6 years
Annual Pay: \$61,492

SECTION D

ACTUARIAL COST METHOD, ACTUARIAL ESTIMATES AND DEFINITIONS OF TECHNICAL TERMS

Actuarial Cost Method Used for the Valuation

The actuarial cost method is a procedure for allocating the actuarial present value of future benefits and expenses to time periods. The method used for this valuation is the individual entry-age actuarial cost method, and has the following characteristics:

Actuarial Present Value of Future Benefits. Actuarial present values are calculated using the benefit provisions applicable to active members, vested terminated members, and retirees and beneficiaries as of the valuation date using the assumptions summarized elsewhere in this report.

Normal Costs. The actuarial present values for each year of service rendered before and after the valuation date are determined so that:

- (i) the annual normal costs for each individual active member, payable from the member's effective date of employment (or entry age) to projected date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) each annual normal cost is a constant percentage of the active member's year-by-year projected pensionable pay.

Actuarial Accrued Liabilities. The actuarial present value of future benefits minus the actuarial present value of normal costs rendered after the valuation date is the Actuarial Accrued Liabilities.

Funding Value of Assets. The accrued assets recognized as of the valuation date for the purpose of determining contribution requirements.

Unfunded Actuarial Accrued Liabilities. The Actuarial Accrued Liabilities minus the funding value of assets are the Unfunded Actuarial Accrued Liabilities.

Amortization of Unfunded Actuarial Accrued Liabilities. Unfunded Actuarial Accrued Liabilities were amortized by level (principal & interest combined) percent-of-payroll contributions over periods shown elsewhere in this report. Active member payroll was assumed to increase 4.0% a year for the purpose of determining the level percent contributions, unless the 10-year average annual payroll growth is lower than 4.0%.

Actuarial Assumptions. Assumptions are established by the Board after consulting with the actuary. Non-economic assumptions are generally selected on the basis of the System's historical activity, modified for expected future differences. The reasonableness of the economic assumptions is based upon capital market expectations provided by various investment consultants and other sources such as the Social Security Trustees report. All actuarial assumptions are based on future expectations, not market measures.

Level Percent of Active Member Covered Payroll Amortization of Unfunded Actuarial Accrued Liability*

General Members

(\$ Amounts in Thousands)

Year	Pay		Unfunded		Contribution	
	Inflated Dollars	Constant Dollars	Inflated Dollars	Constant Dollars	Inflated Dollars	Constant Dollars
2018	\$ 8,803	\$8,803	\$ 6,802	\$6,802	\$ 322	\$ 322
2019	9,155	8,803	6,987	6,719	335	322
2020	9,521	8,803	7,174	6,633	349	322
2021	9,902	8,803	7,361	6,543	254	226
2022	10,298	8,803	7,662	6,549	303	259
2027	12,529	8,803	8,051	5,657	924	649
2032	15,244	8,803	3,963	2,288	1,229	710
2037	18,547	8,803	1,596	757	667	316
2047	27,453	8,803	(73)	(23)	(74)	(24)
2048	28,552	8,803	0	0	0	0

	* \$	(439,501)	over 30 years	\$ 2,092,290	over 15 years
		89,116	over 29 years	2,040,845	over 14 years
		3,124,629	over 28 years	518,635	over 13 years
		(785,943)	over 27 years	(894,215)	over 12 years
		(1,432,971)	over 26 years	(810,446)	over 11 years
		(1,312,003)	over 25 years	(964,323)	over 10 years
		(665,641)	over 24 years	(1,415,002)	over 9 years
		2,625,385	over 23 years	(355,300)	over 8 years
		713,615	over 22 years	178,612	over 7 years
		1,302,919	over 21 years	(193,374)	over 6 years
		1,543,168	over 20 years	(680,205)	over 5 years
		(3,186,021)	over 19 years	(123,207)	over 4 years
		261,808	over 18 years	273,878	over 3 years
		2,660,616	over 17 years	0	over 2 years
		2,634,158	over 16 years	0	over 1 year
				\$ 6,801,522	TOTAL

Level percent-of-payroll financing of unfunded actuarial accrued liabilities treats each generation of taxpayers equally during the financing period. The alternative, level-dollar financing, produces declining percent-of-payroll contributions and places a greater relative burden on current taxpayers.

The annual rate of increase in member payroll used to compute the level percent-of-payroll contribution is the same rate of payroll growth used to compute actuarial liabilities and costs. It reflects across-the-board salary increases not group size increases.

If future payroll growth is less than the assumed rate due to smaller than projected salary increases, the percent-of-payroll contribution rate for unfunded actuarial accrued liabilities will tend to decline.

If future payroll growth is less than the assumed rate due to decreases in the number of members, the percent-of-payroll contribution rate for unfunded actuarial accrued liabilities will tend to increase but dollar contributions will be less than indicated in the preceding schedule.

Level Percent of Active Member Covered Payroll Amortization of Unfunded Actuarial Accrued Liability*

Utility Authority Members

(\$ Amounts in Thousands)

Year	Pay		Unfunded		Contribution	
	Inflated Dollars	Constant Dollars	Inflated Dollars	Constant Dollars	Inflated Dollars	Constant Dollars
2018	\$13,635	\$13,635	\$12,283	\$12,283	\$ 821	\$ 821
2019	14,181	13,635	12,366	11,890	573	551
2020	14,748	13,635	12,717	11,758	562	520
2021	15,338	13,635	13,108	11,653	611	544
2022	15,952	13,635	13,476	11,520	682	583
2027	19,407	13,635	13,929	9,786	1,307	919
2032	23,612	13,635	8,972	5,181	1,863	1,076
2037	28,728	13,635	4,793	2,275	1,392	661
2047	42,524	13,635	(49)	(16)	(50)	(16)
2048	44,225	13,635	0	0	0	0

	* \$	(297,892)	over 30 years	\$	2,439,183	over 15 years
		(524,433)	over 29 years		2,543,475	over 14 years
		5,158,771	over 28 years		422,638	over 13 years
		462,128	over 27 years		(917,683)	over 12 years
		(1,983,624)	over 26 years		(925,042)	over 11 years
		(1,176,502)	over 25 years		(1,963,203)	over 10 years
		(1,647,661)	over 24 years		(1,594,845)	over 9 years
		4,106,300	over 23 years		577,846	over 8 years
		2,444,661	over 22 years		176,815	over 7 years
		2,097,856	over 21 years		(530,708)	over 6 years
		1,655,083	over 20 years		(651,131)	over 5 years
		(2,138,676)	over 19 years		(146,457)	over 4 years
		(2,505,361)	over 18 years		(67,022)	over 3 years
		5,497,908	over 17 years		60,695	over 2 years
		1,445,287	over 16 years		264,902	over 1 year
				\$ 12,283,308		TOTAL

Level percent-of-payroll financing of unfunded actuarial accrued liabilities treats each generation of taxpayers equally during the financing period. The alternative, level-dollar financing, produces declining percent-of-payroll contributions and places a greater relative burden on current taxpayers.

The annual rate of increase in member payroll used to compute the level percent-of-payroll contribution is the same rate of payroll growth used to compute actuarial liabilities and costs. It reflects across-the-board salary increases not group size increases.

If future payroll growth is less than the assumed rate due to smaller than projected salary increases, the percent-of-payroll contribution rate for unfunded actuarial accrued liabilities will tend to decline.

If future payroll growth is less than the assumed rate due to decreases in the number of members, the percent-of-payroll contribution rate for unfunded actuarial accrued liabilities will tend to increase but dollar contributions will be less than indicated in the preceding schedule.

Level Percent of Active Member Covered Payroll Amortization of Unfunded Actuarial Accrued Liability*

Police Members

(\$ Amounts in Thousands)

Year	Pay		Unfunded		Contribution	
	Inflated Dollars	Constant Dollars	Inflated Dollars	Constant Dollars	Inflated Dollars	Constant Dollars
2018	\$ 6,826	\$6,826	\$2,260	\$2,260	\$ (46)	\$ (46)
2019	7,099	6,826	2,484	2,388	(48)	(46)
2020	7,383	6,826	2,727	2,521	(50)	(46)
2021	7,678	6,826	2,991	2,659	(52)	(46)
2022	7,985	6,826	3,278	2,802	(54)	(46)
2027	9,715	6,826	3,312	2,327	831	584
2032	11,820	6,826	(79)	(46)	639	369
2037	14,380	6,826	(1,137)	(540)	9	4
2047	21,287	6,826	(89)	(28)	(90)	(29)
2048	22,138	6,826	0	0	0	0

	* \$	(534,054)	over 30 years	\$	1,264,297	over 15 years
		361,001	over 29 years		1,191,848	over 14 years
		102,323	over 28 years		931,707	over 13 years
		(107,415)	over 27 years		(319,315)	over 12 years
		(1,273,306)	over 26 years		(1,069,693)	over 11 years
		(1,221,439)	over 25 years		1,408,702	over 10 years
		98,430	over 24 years		(1,755,598)	over 9 years
		791,686	over 23 years		(807,786)	over 8 years
		564,105	over 22 years		(39,510)	over 7 years
		455,726	over 21 years		(303,030)	over 6 years
		544,336	over 20 years		(1,025,850)	over 5 years
		(2,650,410)	over 19 years		0	over 4 years
		461,493	over 18 years		0	over 3 years
		3,227,693	over 17 years		0	over 2 years
		1,963,613	over 16 years		0	over 1 year
				\$	2,259,554	TOTAL

Level percent-of-payroll financing of unfunded actuarial accrued liabilities treats each generation of taxpayers equally during the financing period. The alternative, level-dollar financing, produces declining percent-of-payroll contributions and places a greater relative burden on current taxpayers.

The annual rate of increase in member payroll used to compute the level percent-of-payroll contribution is the same rate of payroll growth used to compute actuarial liabilities and costs. It reflects across-the-board salary increases not group size increases.

If future payroll growth is less than the assumed rate due to smaller than projected salary increases, the percent-of-payroll contribution rate for unfunded actuarial accrued liabilities will tend to decline.

If future payroll growth is less than the assumed rate due to decreases in the number of members, the percent-of-payroll contribution rate for unfunded actuarial accrued liabilities will tend to increase but dollar contributions will be less than indicated in the preceding schedule.

Actuarial Estimates Used for the Valuation

Funding objective contribution requirements and actuarial present values are calculated by applying estimates of future activities (actuarial estimates) to the benefit provisions and people information of the System.

The principal areas of risk which require estimates of future activities are:

- (i) long-term rates of investment return to be generated by the assets of the System
- (ii) patterns of pay increases to members
- (iii) rates of mortality among members, retirants, and beneficiaries
- (iv) rates of withdrawal of active members
- (v) rates of disability among active members
- (vi) the age patterns of actual retirements

In a valuation, the monetary effect of each activity is calculated for as long as a present covered person survives - - - a period of time which can be as long as a century.

Actual activities of the System will not coincide exactly with estimated activities, due to the nature of the activities. Each valuation provides a complete recalculation of estimated future activities and takes into account the effect of differences between estimated and actual activities to date. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time-to-time one or more of the estimates are modified to reflect experience trends (but not random or temporary year-to-year fluctuations).

In accordance with Chapter 112, Florida Statutes, 112.661(9), the Retirement Board adopts the assumed rate of return assumption used for actuarial valuation purposes. The actuarial assumptions are set by the Board. The rationale for certain actuarial assumptions is described in the October 1, 1995 through September 30, 2000 experience study report. All actuarial assumptions are estimates of future experience.

Actuarial estimates regarding the net investment return, inflation, real investment return, and salary increase rates are used, in combination with the other assumptions, to (i) determine the present value of amounts expected to be paid in the future and (ii) establish rates of contribution which are expected to remain relatively level as a percent of total valuation payroll.

Net Rate of Investment Return. 7.75% per annum, compounded annually, net of investment expenses.

Inflation. 2.75% per annum, compounded annually. This is the rate at which growth in the supply of money and credit is estimated to exceed growth in the supply of goods and services. It may be thought of as the rate of depreciation of the purchasing power of the dollar. There are a number of indices for measuring the inflation rate. The recent inflation rate, as measured by the Consumer Price Index, has been:

	Year Ended September 30					Average for Period
	2018	2017	2016	2015	2014	
Actual	2.30%	2.20%	1.50%	0.00%	1.70%	1.54%
Assumed	2.75%	2.75%	3.00%	4.50%	4.50%	3.50%

Real Investment Return. 5.00% per annum, compounded annually. This is the rate of return assumed to be produced by investing a pool of assets in an inflation-free environment. Recent real investment return for the Retirement and Benefit System has been:

	Year Ended September 30					Average for Period
	2018	2017	2016	2015	2014	
Total Rate of Return	8.10%	8.00%	8.90%	10.80%	11.00%	9.36%
Less Inflation Rate	2.30%	2.20%	1.50%	0.00%	1.70%	1.54%
Actual Real Rate of Return	5.80%	5.80%	7.40%	10.80%	9.30%	7.82%
Assumed Real Rate of Return	5.00%	5.00%	5.00%	3.50%	3.50%	4.40%
Assumed Net Rate of Return	7.75%	7.75%	8.00%	8.00%	8.00%	7.90%

The total investment return rate was computed using the approximate formula $i = I$ divided by $1/2 (A + B - I)$, where I is actual realized investment income plus market value adjustments, A is the beginning of year asset value, and B is the end of year asset value.

The preceding investment return rates reflect the particular characteristics of this Retirement and Benefit System and should not be used to measure an investment advisor's performance or for comparison with other retirement systems. Such use will usually mislead.

Salary Increases. Employee salaries are estimated to increase between the date of hire and date of retirement. Salary increases occur in recognition of (i) individual merit and seniority, (ii) inflation related depreciation of the purchasing power of salaries, and (iii) competition from other employers for personnel.

A schedule of estimated rates of increases in individual salaries for sample ages follows:

Annual Rates of Salary Increases for Sample Ages						
Age	General and Utilities Authority			Police Officers		
	Merit & Seniority	Wage Inflation	Total	Merit & Seniority	Wage Inflation	Total
20	2.5 %	4.0 %	6.5 %	4.0 %	4.0 %	8.0 %
30	1.7 %	4.0 %	5.7 %	2.8 %	4.0 %	6.8 %
40	1.1 %	4.0 %	5.1 %	2.2 %	4.0 %	6.2 %
50	0.6 %	4.0 %	4.6 %	1.2 %	4.0 %	5.2 %
55	0.5 %	4.0 %	4.5 %	0.7 %	4.0 %	4.7 %
60	0.5 %	4.0 %	4.5 %	0.2 %	4.0 %	4.2 %

The merit and seniority rates for General and Utilities Authority were first used in the September 30, 2016 valuation.

The merit and seniority rates for Police Officers were first used in the September 30, 2001 valuation.

It is estimated that the group size will remain constant and that total payroll for the group will increase at the rate of the general increase in wage levels due to inflation, which in this case is 4.0%.

A schedule of recent salary change experience follows:

	% Change in Salaries					Average 5-Year
	Year Ended September 30					
	2018	2017	2016	2015	2014	
Rate of Change in Salaries						
- Total	2.9 %	5.7 %	10.1 %	3.9 %	4.5 %	5.4 %
- General	3.9	6.1	11.9	1.0	3.5	5.2
- U.A.	3.7	4.6	8.8	5.2	4.0	5.2
- Police	0.2	7.2	10.6	5.2	6.9	6.0
Expected - Total						
- Total	5.2	5.0	5.5	5.8	5.9	5.4 %
- General	4.7	4.7	5.2	5.5	5.6	5.0
- U.A.	4.8	4.8	5.3	5.7	5.7	5.2
- Police	6.3	6.3	6.5	6.8	6.8	6.5

	% Change in Total Payroll					Average*	
	Year Ended September 30					5-Year	10-Year
	2018	2017	2016	2015	2014		
- Total	2.5 %	3.9 %	7.9 %	1.3 %	(0.2) %	1.1 %	(0.6) %
- General	(0.6)	1.4	18.3	(6.7)	1.9	0.9	(2.3)
- U.A.	6.8	1.4	6.3	7.0	(4.0)	1.2	0.3
- Police	(1.6)	12.5	(1.3)	1.4	4.5	1.2	0.3

* 5-year and 10-year averages include DROP payroll.

In order to achieve the funding objective of a contribution rate which remains level as a percent-of-payroll, the total rate of investment return must exceed the rate of average increase in salaries by an amount equal to the estimated real investment return rate.

Mortality Tables. The mortality tables used to measure retired life mortality were the Florida Retirement System (FRS) Mortality Tables, as described below:

- Male non-disabled retiree mortality (General & Utilities Authority): fully generational mortality. 50% of the RP-2000 Annuitant White Collar Table and 50% of the RP-2000 Annuitant Blue Collar Table, projected with scale BB. Sample values shown below.
- Male non-disabled retiree mortality (Police): fully generational mortality. 10% of the RP-2000 Annuitant White Collar Table and 90% of the RP-2000 Annuitant Blue Collar Table, projected with scale BB. Sample values shown below.
- Female non-disabled retiree mortality (All Divisions): fully generational mortality. 100% of the RP-2000 Annuitant White Collar Table, projected with scale BB. Sample values shown below.
- Male employee mortality (General & Utilities Authority): fully generational mortality. 50% of the RP-2000 Employee White Collar Table and 50% of the RP-2000 Employee Blue Collar Table, projected with scale BB.
- Male employee mortality (Police): fully generational mortality. 10% of the RP-2000 Employee White Collar Table and 90% of the RP-2000 Employee Blue Collar Table, projected with scale BB.
- Female employee mortality (All Divisions): fully generational mortality. 100% of the RP-2000 Employee White Collar Table, projected with scale BB.
- Male disabled mortality (General & Utilities Authority): 100% of the RP-2000 Disabled Male Table set back 4 years.
- Male disabled mortality (Police): 60% of the RP-2000 Disabled Male Table set back 4 years and 40% of the RP-2000 Annuitant White Collar Table.
- Female disabled mortality (General & Utilities Authority): 100% of the RP-2000 Disabled Female Table, set forward 2 years.
- Female disabled mortality (Police): 60% of the RP-2000 Disabled Female Table, set forward 2 years and 40% of the RP-2000 Annuitant White Collar Table.

Sample Ages in 2018	Single Life Retirement Values					
	Present Value of \$1 Monthly for Life			Future Life Expectancy (Years)		
	General & UA Males	Police Males	All Divisions Females	General & UA Males	Police Males	All Divisions Females
45	\$144.61	\$143.83	\$149.73	39.44	38.72	43.47
50	140.51	139.28	145.85	34.73	33.97	38.36
55	135.26	133.48	140.64	30.10	29.33	33.34
60	127.63	125.65	133.69	25.44	24.76	28.44
65	117.55	115.57	124.53	20.91	20.35	23.70
70	105.00	103.08	113.15	16.65	16.22	19.23
75	90.22	88.60	99.67	12.78	12.48	15.15
80	74.13	73.02	84.44	9.43	9.26	11.51

The margin for future mortality improvements is included in projection scales. 100% of deaths were assumed to be non-duty related.

Rates of separation from active membership. The rates do not apply to members eligible to retire and do not include separation on account of death or disability. This estimate measures the probabilities of members remaining in employment.

Samples Ages	Years of Service	Percent Separating Within Next Year	
		General and Utilities Authority	Police
ALL	0	22.00 %	15.00 %
	1	16.50	12.00
	2	12.00	10.00
	3	10.00	8.00
	4	8.00	6.00
20	5 & Over	8.00	6.00
25		8.00	6.00
30		8.00	6.00
35		8.00	6.00
40		8.00	6.00
45		5.00	3.50
50		2.25	1.00
55		2.25	1.00
60		2.25	1.00
65		2.25	1.00

The rates for all divisions were first used in the September 30, 2016 valuation.

Rates of Disability. These estimates represent the probabilities of active members becoming disabled.

Sample Ages	Percent Becoming Disabled Within Next Year	
	General and Utilities Authority	Police
20	0.04 %	0.07 %
25	0.04	0.09
30	0.04	0.10
35	0.05	0.14
40	0.10	0.21
45	0.17	0.32
50	0.36	0.52
55	0.59	0.92
60	0.90	1.53
65	1.00	1.65

The mortality table was set forward ten years for projecting disability costs. 100% of the disability retirements were assumed to be non-duty related for General and Utilities Authority members. 75% of the disability retirements were assumed to be non-duty for Police members.

Rates of Retirement. These rates are used to measure the probabilities of an eligible member retiring during the next year.

Service Years	Service Based		Age Based		
	General and Utilities Authority	Police	Retirement Ages	General and Utilities Authority	Police
25	40 %	75 %	55		35 %
26	40	75	56		30
27	40	75	57		30
28	40	75	58		30
29	40	75	59		30
30	40	100	60	10 %	30
31	40	100	61	5	30
32	40	100	62	12	30
33	40	100	63	6	30
34	40	100	64	14	40
35	100	100	65	65	100
			66	25	
			67	30	
			68	40	
			69	50	
			70	100	

These rates were first used for the September 30, 1995 valuation with the exception of the Police service based rates, which were first used for the September 30, 2000 valuation, Police age based rates which were first used for the September 30, 2001 valuation, and Utilities Authority service based rates which were first used for the September 30, 2007 valuation.

Marital Status. It is estimated that 80% of active members who meet the age and service requirements for pre-retirement survivor benefits are married. Female spouses are estimated to be 3 years younger than the male participant. Male spouses are estimated to be 3 years older than the female participant.

Vested members who terminate with a benefit worth less than 100% of their own accumulated contributions were presumed to elect a refund of accumulated contributions and forfeit the vested benefit.

Lump sum payments included in the calculation of the average pay upon which benefits are computed were estimated to increase benefits by the following percents.

General members	3.5 %
Utilities Authority members	3.0
Police members	4.0

Administrative Expenses. Administrative expenses for the next year are assumed to be equal to the previous year's amount.

Investment Expenses. Investment expenses are paid out of investment income.

Active Member Group Size. The valuation was based on a constant active member group size.

Definitions of Technical Terms

Accrued Service. Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability. The difference between the actuarial present value of future benefit payments and the actuarial present value of future normal costs. Also referred to as "accrued liability" or "past service liability."

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future benefit payments" between future normal costs and actuarial accrued liability. Sometimes referred to as the "actuarial valuation cost method."

Actuarial Equivalent. A single amount or series of amounts of equal actuarial present value to another single amount or series of amounts, computed on the basis of appropriate actuarial activities.

Actuarial Present Value. The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payment. Also referred to as "present value."

Amortization. Paying off an interest-discounted amount with periodic payments of interest and principal -- as opposed to paying off with lump sum payment.

Experience Estimates (Assumptions). Estimates of expected future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement estimates (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic estimates (salary increases and investment income) consist of the underlying rates in an inflation-free environment plus a provision for a long-term average rate of inflation.

Experience Gain (Loss). The difference between actual actuarial costs and estimated actuarial costs -- during the period between two valuation dates.

Funding Value of Assets. The actuarial value of assets used to determine contribution amounts.

Normal Cost. The actuarial cost allocated to the current year by the actuarial cost method. Sometimes referred to as "current service cost."

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and the actuarial value of system assets. Sometimes referred to as "unfunded past service liability," "unfunded accrued liability" or "unfunded supplemental present value."

Most retirement systems have an unfunded actuarial accrued liability. They arise each time new benefits are added and each time an experience loss is realized.

Unfunded actuarial accrued liability does not represent a debt that is payable today. What is important is the ability to control the amount of unfunded actuarial accrued liability and the trend in its amount (after due allowance for devaluation of the dollar).

SECTION E

ADDITIONAL DISCLOSURE INFORMATION

GASB Statements No. 67 and No. 68 are the accounting standards which replaced GASB Statements No. 25 and No. 27. GASB Statement No. 67 is first effective for fiscal year 2014 and GASB Statement No. 68 is first effective for fiscal year 2015. A separate GASB Statements No. 67 and No. 68 report has been issued outside of this report. This section contains historical GASB Statements No. 25 and No. 27 reporting information for prior fiscal years and illustrative information for fiscal year 2015 and after.

Additional Disclosure Information

Schedule of Funding Progress

(\$ Amounts in Thousands)

Valuation Date	Valuation Assets	AAL*	Funded Ratio	Unfunded AAL*	Member Payroll	Ratio to Payroll
9/30/08	\$ 143,467	\$ 150,475	95 %	\$ 7,008	\$32,952	21 %
9/30/09	147,094	158,755	93	11,661	31,016	38
9/30/10 (b)	148,691	164,865	90	16,174	26,779	60
9/30/11 (b)	142,463	167,683	85	25,220	25,744	98
9/30/12 (b)	147,618	171,745	86	24,127	25,842	93
9/30/13	157,145	177,505	89	20,360	25,199	81
9/30/14	167,451	182,407	92	14,956	25,150	59
9/30/15 (b)	177,624	191,986	93	14,362	25,475	56
9/30/16 (b)	185,171	207,945	89	22,774	27,493	83
9/30/17	192,300	215,142	89	22,842	28,563	80
9/30/18	200,087	221,431	90	21,344	29,264	73

* Actuarial Accrued Liabilities.

(b) After changes in benefit provisions and/or actuarial assumptions.

Schedule of Employer Contributions

Fiscal Year	Aggregate Contribution Rates as Percents of Valuation Payroll	Projected Dollar Contribution Based on Valuation Payroll	Actual Contribution Based on Actual Payroll@
10/11	11.81 %	\$ 3,999,560	\$ 3,181,447
11/12	13.46	3,937,037	3,566,751
12/13	17.29	4,860,538	4,266,803
13/14	16.57	4,676,221	4,356,127
14/15	15.42	4,242,676	4,093,268
15/16	15.28	4,196,009	4,211,311
16/17	15.44	4,296,532	4,565,884
17/18	16.41	4,878,739	4,909,654
18/19	16.28	5,029,181	
19/20	16.03	5,074,604	

@ Actual Employer contributions are determined by applying the Employer's contribution rate to the emerging payroll. Projected funding requirement is based on a stable work force and projected salary increases.

Additional Disclosure Information

Supplementary Information

The information presented in the additional disclosure schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation Date	September 30, 2018
Actuarial Cost Method	Individual Entry Age
Amortization Method	Level Percent-of-Payroll, Closed
Remaining Amortization Periods#	2-30 years
Asset Valuation Method	4-year smoothed market
Actuarial Assumptions:	
Investment Rate of Return*	7.75%
Projected Salary Increases**	General & U.A.: 4.0% - 6.5%
	Police: 4.0% - 8.0%
* Includes Price Inflation at	2.75%
**Includes Wage Inflation and other general increases at	4.00%
Cost-of-living adjustments	None
Retirees and beneficiaries receiving benefits	517
Terminated plan members entitled to but not yet receiving benefits	47
Active plan members	
- Vested	308
- Non-vested	242
Total	1,114

The periods are in compliance with Florida Statutes and Actuarial Standards of Practice, but do not necessarily produce an Annual Required Contribution with an aggregate amortization of the unfunded actuarial accrued liability under 30 years.

SECTION F

STATE REQUIRED DATA

Actuarial Present Value of Accrued Benefits

(\$ Amounts in Thousands)*

	September 30, 2018								September 30, 2017			
	After				Before				General Members	Utilities Authority	Police Members	Total
	General Members	Utilities Authority	Police Members	Total	General Members	Utilities Authority	Police Members	Total				
(i) Actuarial present value of active member benefits:												
Service retirement	\$27,608	\$41,986	\$25,208	\$ 94,802	\$27,608	\$41,986	\$25,208	\$ 94,802	\$26,942	\$39,995	\$25,464	\$ 92,401
Vested termination benefits	2,968	4,412	1,671	9,051	2,594	3,918	1,476	7,988	2,735	3,877	1,485	8,097
Disability retirement	645	883	920	2,448	645	883	920	2,448	664	867	945	2,476
Survivor benefits (pre-retirement)	812	1,310	431	2,553	812	1,310	431	2,553	854	1,270	444	2,568
Termination benefits - refunds	223	205	99	527	381	512	285	1,178	266	421	241	928
Total	32,256	48,796	28,329	109,381	32,040	48,609	28,320	108,969	31,461	46,430	28,579	106,470
(ii) Actuarial present value of terminated vested members	2,263	2,232	393	4,888	2,263	2,232	393	4,888	1,687	2,071	407	4,165
(iii) Actuarial present value of retired members & beneficiaries:												
Present value of benefits	41,265	61,605	35,057	137,927	41,265	61,605	35,057	137,927	40,956	60,335	33,118	134,409
Reserve	0	0	0	0	0	0	0	0	0	0	0	0
Total	41,265	61,605	35,057	137,927	41,265	61,605	35,057	137,927	40,956	60,335	33,118	134,409
(iv) Total actuarial present value of future benefit payments	75,784	112,633	63,779	252,196	75,568	112,446	63,770	251,784	74,104	108,836	62,104	245,044
(v) Present value of active member future payroll	61,411	92,801	51,822	206,035	61,411	92,801	51,822	206,035	61,633	88,071	52,663	202,367
(vi) Present value of future active member contributions	3,169	5,717	2,674	11,559	3,169	5,717	2,674	11,559	3,180	5,425	2,717	11,323
(vii) Active member accumulated contributions	4,541	8,611	3,634	16,786	4,541	8,611	3,634	16,786	4,484	8,256	3,568	16,309
(viii) Plan costs for fiscal year beginning October 1, 2019												
Normal costs												
Service pensions	11.18%	10.48%	12.58%		11.18%	10.48%	12.58%		11.25%	10.34%	12.47%	
Disability pensions	0.46%	0.42%	0.92%		0.46%	0.42%	0.92%		0.46%	0.42%	0.92%	
Death-in-service pensions	0.47%	0.50%	0.36%		0.47%	0.50%	0.36%		0.49%	0.50%	0.36%	
Deferred service pensions	2.67%	2.58%	2.05%		2.23%	2.21%	1.80%		2.27%	2.30%	1.83%	
Refunds of member contributions	0.63%	0.76%	0.39%		0.80%	0.97%	0.61%		0.77%	0.93%	0.58%	
Total normal cost	15.41%	14.74%	16.30%		15.14%	14.58%	16.27%		15.24%	14.49%	16.16%	
Payment to amortize unf'd act. accr. liab.	3.64%	6.02%	0.00%		3.61%	6.00%	0.00%		3.87%	6.41%	0.00%	
Administrative expenses	0.71%	0.71%	0.71%		0.71%	0.71%	0.71%		0.73%	0.73%	0.73%	
FS112.64(5) Requirement/Temporary Funding Credits	2.17%	2.27%	0.14%		2.15%	2.26%	0.14%		2.31%	2.64%	0.27%	
Amount to be paid by participants	5.16%	6.16%	5.16%		5.16%	6.16%	5.16%		5.16%	6.16%	5.16%	
Expected plan sponsor contribution												
% of payroll	16.77%	17.58%	11.99%	16.03%	16.45%	17.39%	11.96%	15.84%	16.99%	18.11%	12.00%	16.28%
dollars	1,597	2,593	885	5,075	1,566	2,565	883	5,014	1,628	2,501	900	5,029

* Totals may be off due to rounding.

Actuarial Present Value of Accrued Benefits

(\$ Amounts in Thousands)*

	September 30, 2018								September 30, 2017				
	After				Before				General Members	Utilities Authority	Police Members	Total	
	General Members	Utilities Authority	Police Members	Total	General Members	Utilities Authority	Police Members	Total					
Actuarial Present Value of Accrued Benefits (calculated in accordance with FASB Statement No. 35)													
(i) Vested accrued benefits													
Retired members and beneficiaries	\$ 41,265	\$ 61,605	\$ 35,057	\$ 137,927	\$ 41,265	\$ 61,605	\$ 35,057	\$ 137,927	\$ 40,956	\$ 60,335	\$ 33,118	\$ 134,409	
Terminated members	2,263	2,232	393	4,888	2,263	2,232	393	4,888	1,687	2,071	407	4,165	
Active members (includes non-forfeitable accum. member contributions)	14,523	23,880	14,066	52,469	14,438	23,418	13,613	51,469	13,852	22,467	13,342	49,661	
Total	\$ 58,051	\$ 87,717	\$ 49,516	\$ 195,284	\$ 57,966	\$ 87,255	\$ 49,063	\$ 194,284	\$ 56,495	\$ 84,873	\$ 46,867	\$ 188,235	
(ii) Non-vested accrued benefits	1,443	2,074	1,209	4,726	1,537	2,604	1,749	5,890	1,192	1,988	1,380	4,560	
(iii) Total actuarial p.v. of accrued benefits	\$ 59,494	\$ 89,791	\$ 50,725	\$ 200,010	\$ 59,503	\$ 89,859	\$ 50,812	\$ 200,174	\$ 57,687	\$ 86,861	\$ 48,247	\$ 192,795	
(iv) Actuarial p.v. of accrued benefits at begin. of year	\$ 57,687	\$ 86,861	\$ 48,247	\$ 192,795	\$ 57,687	\$ 86,861	\$ 48,247	\$ 192,795	\$ 55,432	\$ 84,424	\$ 45,883	\$ 185,739	
(v) Changes attributable to:													
Amendments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Assumption change	(9)	(68)	(87)	(164)	-	-	-	-	-	-	-	-	
Operation of decrements	6,232	9,211	5,717	21,160	6,232	9,211	5,717	21,160	6,428	8,565	5,490	20,483	
Benefit payments	(4,416)	(6,213)	(3,152)	(13,781)	(4,416)	(6,213)	(3,152)	(13,781)	(4,173)	(6,128)	(3,126)	(13,427)	
Other	-	-	-	-	-	-	-	-	-	-	-	-	
(vi) Net change	1,807	2,930	2,478	7,215	1,816	2,998	2,565	7,379	2,255	2,437	2,364	7,056	
(vii) Actuarial p.v. of Accr. benefits at end of year	\$ 59,494	\$ 89,791	\$ 50,725	\$ 200,010	\$ 59,503	\$ 89,859	\$ 50,812	\$ 200,174	\$ 57,687	\$ 86,861	\$ 48,247	\$ 192,795	

* Totals may be off due to rounding.

Reconciliation of Membership Data

	<u>From 10/1/17 To 9/30/18</u>	<u>From 10/1/16 To 9/30/17</u>
A. Active Members		
1. Number Included in Last Valuation	539	532
2. New Members Included in Current Valuation	73	53
3. Non-Vested Employment Terminations	(34)	(26)
4. Vested Employment Terminations	(7)	(8)
5. Service Retirements	(19)	(10)
6. Disability Retirements	(1)	(1)
7. Deaths	(1)	(1)
8. Other	0	0
9. Number Included in this Valuation	550	539
B. Terminated Vested Members		
1. Number Included in Last Valuation	45	42
2. Additions from Active Members	7	9
3. Lump Sum Payments	(1)	(1)
4. Payments Commenced	(3)	(4)
5. Deaths	0	0
6. Other	(1)	(1)
7. Number Included in this Valuation	47	45
C. Service Retirees, Disability Retirees and Beneficiaries		
1. Number Included in Last Valuation	505	499
2. Additions from Active Members	20	12
3. Additions from Terminated Vested Members	3	4
4. Removals Resulting in No Further Payments	(20)	(13)
5. Deaths Resulting in New Survivor Benefits	7	3
6. Other	2	0
7. Number Included in this Valuation	517	505



March 15, 2019

Ms. Johnna Morris, CGFO, CPPT, MBA
Director of Finance
City of Fort Pierce Retirement and Benefit System
100 North U.S. Highway 1
Fort Pierce, Florida 34950

Dear Johnna:

Enclosed are 15 copies of the September 30, 2018 Annual Actuarial Valuation of the City of Fort Pierce Retirement and Benefit System.

As directed by the Board, we have sent a copy directly to the following:

DiBartolomeo, McBee, Hartley & Barnes, P.A.

One copy should be sent, within 60 days to:

Bureau of Local Retirement Systems
Division of Retirement
P.O. Box 9000
Tallahassee, Florida 32315-9000

Office of Municipal Police Officers'
& Firefighters' Retirement Funds
P.O. Box 3010
Tallahassee, Florida 32315-3010

We welcome your questions and comments.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Brad Lee Armstrong", with a long horizontal flourish extending to the right.

Brad Lee Armstrong, ASA, FCA, EA, MAAA

BLA:dj
Enclosures