

City of Jacksonville Beach  
Police Officers' Retirement System  
Sixty-Eighth Annual Actuarial Valuation Report  
October 1, 2018



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April 17, 2019

Board of Trustees  
City of Jacksonville Beach  
Police Officers' Retirement System  
Jacksonville Beach, Florida

The results of the October 1, 2018 Annual Actuarial Valuation of the City of Jacksonville Beach Police Officers' Retirement System are presented in this report. The purpose of the annual valuation is to measure the System's funding progress and to determine the City's contribution rate for the fiscal year beginning October 1, 2019 in accordance with established funding policies. The results of the valuation may not be applicable for other purposes. Disclosures under the Governmental Accounting Board (GASB) Statements No. 67 and No. 68 were issued in a separate report.

This report should not be relied on for any purposes other than those described above. It was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report. The signing actuaries are independent of the plan sponsor.

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; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. We did not perform an analysis of the potential range of such future measurements under the scope of this assignment.

Valuation results, comments, recommendation and our certification are contained in Section A.

The valuation was based upon information, compiled during the fiscal year ending September 30, 2018, furnished by the City, concerning pension fund benefits, financial transactions, and individual members, terminated members, retired members and beneficiaries. Data was checked for reasonableness and missing information, but was not audited. GRS is not responsible for the accuracy or completeness of the data provided to us. This information is summarized in Section B.

A description of the actuarial valuation process, actuarial assumptions and definitions of technical terms are contained in Section C. Additional disclosure information is contained in Section D and a summary of valuation results in the State format is contained in Section E.

Board of Trustees

April 17, 2019

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This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. We certify that the information contained in this report is accurate and fairly presents the actuarial position of the City of Jacksonville Beach Police Officers' Retirement 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. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Brad Lee Armstrong and Jeffrey T. Tebeau are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Brad Lee Armstrong, ASA, EA, FCA, MAAA



Jeffrey T. Tebeau, FSA, EA, MAAA

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## **SECTION A**

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**VALUATION RESULTS, COMMENTS, CONCLUSION,  
RECOMMENDATIONS (IF ANY) AND STATEMENT BY ENROLLED  
ACTUARY**

## Funding Objective

The funding objective of the Retirement System is to establish and receive contributions, expressed as percents of active member payroll, which will achieve progress towards 100% funding status and will remain approximately level from year-to-year and will not have to be increased for future generations of citizens in the absence of benefit improvements. This objective is stated in the Ordinance and meets the requirements of Part VII, Chapter 112, Florida Statutes.

## Contribution Rates

The Retirement System is supported by member contributions, casualty insurance premium tax monies received from the State pursuant to Chapter 185 Florida Statutes, City contributions, and investment income from Retirement System assets.

Contributions which satisfy the funding objective are determined by the actuarial valuation and are sufficient to:

- (1) cover the actuarial costs allocated to the current year (the normal cost) by the actuarial cost methods described in Section C; and
- (2) finance over a period of future years the actuarial costs not covered by present assets and anticipated future normal costs (unfunded actuarial accrued liability).

**Contribution requirements** for the plan and fiscal year beginning October 1, 2019 are shown on page A-2.

# Contributions to Finance Benefits of the Retirement 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 unDROPEd Active Member Payroll
<i>Normal Cost</i>	
Service pensions	9.11 %
Disability pensions	0.98
Survivor pensions	
Pre-retirement	0.50
Termination benefits	
Deferred service pensions	2.52
Refunds of member contributions	<u>1.13</u>
Total Normal Cost	14.24
<i>Unfunded Actuarial Accrued Liability <sup>(1)</sup></i>	
Retired members and beneficiaries	0.00
Active and vested terminated members	<u>9.59</u>
Total unfunded actuarial accrued liability	9.59
<i>Administrative Expenses</i>	1.99
<i>Total Calculated Contribution Requirement</i>	25.82
<i>Adjustments to Calculated Contribution Requirement</i>	
Temporary full funding credit	0.00
FS 112.64(5) compliance	<u>0.41</u>
Total adjustments	0.41
<i>Total Adjusted Contribution Requirement</i>	26.23 %
Member portion	7.95 %
Estimated Chapter 185 portion (FY 97/98 frozen dollars) and Additional premium tax revenue	4.27 %
City portion	14.01 %

(1) Unfunded actuarial accrued liability was financed as level percents of member payroll. Please refer to page A-13 for a schedule of financing periods.

FS 112.64 requires that City contributions be deposited not less frequently than quarterly. FS 185.11 requires that Chapter 185 monies be deposited within 5 days of receipt from the state. Member contributions, which are in addition to the City/Chapter contributions, must be deposited immediately after each pay period.

Procedures for determining dollar contributions are shown on page A-3.

Comparative contribution amounts for prior fiscal years are shown on page A-15.

## Chapter 99-1, Laws of Florida Minimum Compliance and Extra Benefits

	<u>Prior Year</u>	<u>Cumulative</u>
A. Additional premium tax revenues as of 9/30/2017	\$ 107,852	
B. Chapter 185 receipts during fiscal year ending 9/30/2018	211,654	\$3,491,690
C. Chapter 185 "frozen" receipts during fiscal year ending 9/30/2018	79,233	1,580,064 *
D. Qualifying benefit improvements since Chapter 99-1 effective date	118,192	1,503,761
E. Additional premium tax revenues as of 9/30/2018 [ A + B - C - D ] not less than 0	122,081	122,081

\* This reflects \$74,637 for the first year of implementation per correspondence dated September 7, 1999 from the Division of Retirement.

### Potential Future Benefits

#### Minimum Compliance

A. None

#### Extra Benefits

A. None proposed

## Determining Dollar Contributions for the Fiscal Year Beginning October 1, 2019

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollar amounts. We recommend the following procedure.

Contribute the City/Chapter amount indicated in the following schedule. Included in these amounts is the projected increase in salary level between the valuation date and the fiscal year in which the contribution is made. The projection factor of 1.037733  $[(1.025)^{1.5}]$  is consistent with that used to calculate the actuarial liability. The member contribution amounts should not be used to reconcile actual member contributions.

Total Contribution Requirement	\$1,211,632
Less Member Contributions	367,231
Total Employer Contribution Requirement	844,401
Less Estimated Chapter 185 Contrib. "frozen" and Funding from Additional Premium Tax Revenue	197,425
<b>Base City Contribution</b>	<b>\$646,976 *</b>

\* *Chapter 185 Florida Statutes. The base City contribution amount may need to be increased if the amount received under the provisions of Chapter 185, Florida Statutes, is not sufficient to meet the total employer contribution requirement. CAUTION: If the amount received under the provisions of Chapter 185, Florida Statutes, exceeds \$197,425, the City may NOT use any of the excess to reduce the City contribution shown.*

The above City/Chapter contribution amounts are estimated to be contributed, on average, halfway through the fiscal year. If contributions are made on a later schedule, interest should be added at the rate of .62% (.0062) for each month of delay.

## Funding Progress Achievement Indicators

There is no single all-encompassing measure of a retirement system's funding progress and current funded status.

A traditional measure has been the relationship of valuation assets to unfunded actuarial accrued liability - a measure that is influenced by the choice of actuarial cost method. This relationship is shown on page A-14.

**We believe a better understanding** of funding progress and status can be achieved using the following indicators.

**Indicator (1) *The actuarial present value of gains or losses realized in the operation of the retirement system.*** Gains and losses are expected to cancel each other over an economic cycle but sizable year-to-year fluctuations are common. An experience gain can result from assets increasing in value by more than anticipated, or by the system's obligation increasing by less than anticipated, or by other favorable combinations or deviation from expected asset and liability changes. Further details on the derivation of the gain (loss) are shown on page A-12.

**Indicator (2) *The ratio of valuation assets to the actuarial present value of credited projected benefits*** allocated in the proportion credited service is to projected total service. The ratio is expected to increase over time, but the basic trend may be interrupted by benefit improvements. This ratio is the most appropriate of the three described here for assessing the need for future contributions needed to fund the normal cost.

**Indicator (3) *The ratio of the unfunded actuarial present value of credited projected benefits to member payroll.*** The unfunded actuarial present value of credited projected benefits is controlled by the funding program. The ratio to payroll is a relative index of condition where inflation is present in both components. The ratio is expected to decrease over time, but the basic trend may be interrupted by benefit improvements.

## Funding Progress Indicators\* - Historical Development (\$ amounts in thousands)

Valuation Date	Indicator (1)		Indicator (2)			Indicator (3)		
	Gain/(Loss)		Funding Value of Assets	APVCPB <sup>^</sup>	Funded Ratio	Unfunded APVCPB <sup>^</sup>	Member Payroll	Ratio to Payroll
	Amount	% of AAL						
10/1/1995 (a) #	\$ 1,315	4.5 %	\$ 30,791	\$ 28,889	106.6 %	\$ (1,902)	\$ 10,601	(17.90) %
10/1/2000 (aa)	545	4.9	13,280	11,234	118.2	(2,047)	2,419	(84.60)
10/1/2004 (a)	(492)	(3.5)	12,833	13,244	96.9	411	2,820	14.58
10/1/2005	(965)	(6.7)	13,021	14,466	90.0	1,445	3,231	44.72
10/1/2006	306	1.9	13,707	14,988	91.5	1,281	3,181	40.28
10/1/2007	220	1.3	14,694	15,751	93.3	1,057	3,572	29.59
10/1/2008 (a)	(998)	(5.1)	15,104	17,470	86.5	2,366	3,931	60.19
10/1/2009	(220)	(1.1)	15,342	18,047	85.0	2,705	3,873	69.84
10/1/2010	(103)	(0.5)	15,646	18,602	84.1	2,956	3,896	75.87
10/1/2011	(1,043)	(4.8)	15,458	19,479	79.4	4,021	3,786	106.21
10/1/2012	517	2.4	16,365	19,925	82.1	3,560	3,743	95.10
10/1/2013	597	2.7	17,469	20,657	84.6	3,188	3,559	89.56
10/1/2014 (a)	816	3.6	18,367	20,779	88.4	2,412	3,946	61.13
10/1/2015 (a)	557	2.7	19,489	22,018	88.5	2,529	4,006	63.13
10/1/2016 (a)	361	1.6	20,651	23,397	88.3	2,746	4,254	64.55
10/1/2017 (a)	(211)	(0.9)	21,889	24,750	88.4	2,861	4,431	64.57
<b>10/1/2018 (a)</b>	<b>339</b>	<b>1.4</b>	<b>23,213</b>	<b>26,047</b>	<b>89.1</b>	<b>2,834</b>	<b>4,451</b>	<b>63.67</b>

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

(aa) After minimum benefit changes.

# Prior to 1999 valuation, results include General, Police and Fire.

<sup>^</sup> Actuarial Accrued Liability starting in 2014.

\* None of these funding progress indicators are appropriate for assessing the sufficiency of plan assets to cover the estimated cost of setting the Plan's benefit obligations.

## Comments and Conclusion

**Comment A:** For the fiscal year ended September 30, 2018, the Police System had a \$338,603 experience gain. The gain was primarily due to lower than expected pay increases and fewer retirements than expected. The 10-year average payroll growth rate was 1.3% (less than the current wage inflation assumptions of 2.5%). Therefore, there was a 0.41% increase in the City's contribution rate due to Florida Statute 112.64(5). Additional experience information is reported on pages B-8, B-14, C-4, C-5 and C-6. The funded ratio increased from 88.4% to 90.6% (before assumption changes) from 2017 to 2018 on a funding value of assets basis and increased from 89.2% to 92.8% (before assumption changes) on a market value of assets basis.

**Comment B:** For the fiscal year ended September 30, 2018, the assumed annual interest rate was decreased from 7.90% to 7.75%. This change increased the City's computed contribution rate from 12.92% to 14.01% and decreased the funded ratio from 90.6% to 89.1%. The funded ratio on a market value basis is 91.3% after assumption changes. The Board's plan to lower the assumed rate of return to 7.60% for the 2019 valuation and 7.50% for the 2020 valuation will temporarily slow funding progress and increase the City's contribution rate absent significant future gains.

**Looking Forward:** Due to the Board's use of a four-year smoothed market asset valuation method, greater-than-expected market returns during 2017 and 2018 and lower-than-expected market returns during 2016 have only been partially recognized in developing the funding value of assets as of September 30, 2018. The Market Value of Assets currently exceeds the Funding Value of Assets by \$566,279. If losses from investment returns below the 7.75% assumed or losses from other sources do not emerge, this will create a downward pressure on contribution requirements and a coinciding upward bias on the funded ratios in subsequent valuation years. An additional risk factor to the level of the contribution rate is the 10-year average payroll growth, which was 1.3% for the 10 years ending September 30, 2018. If the average payroll growth is lower in subsequent reports, this will increase the City's contribution requirement pursuant to compliance with Florida Statute 112.64(5).

## Comments and Conclusion (Concluded)

**Risks to Future Employer Contribution Requirements:** There are ongoing risks to future employer contribution requirements to which the Retirement System is exposed, such as:

- Actual and Assumed Investment Rate of Return
- Actual and Assumed Mortality Rates
- Amortization Policy
- F.S. 112.65(5) Compliance Regarding Payroll Growth

We are recommending the Retirement System perform an experience study, as discussed in our April 8, 2015 correspondence.

**Conclusion:** It is the actuary's opinion that the required contribution rates determined by the most recent actuarial valuation are sufficient to meet the Retirement System's funding objective, presuming continued timely receipt of required contributions.

## 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 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 schedule on page A-13, but may not be completely paid off in the definite future; and
3. The funded status of the Retirement 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 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 though the funded status is over 100%, the Retirement 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.

### 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.

# 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 A-2 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

(\$ in thousands)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Actuarial Valuation Date (9/30)	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) (2) - (1)	Payroll	Funded Ratio (1) / (2)	Retiree Liabilities (RetLiab)	RetLiab / AAL (6)/(2)	AAL / Payroll (2) / (4)	Assets / Payroll (1) / (4)	UAAL / Payroll (3) / (4)	Non-Invest. Cash Flow (NICF)	NICF / Assets (11)/(1)	Market Rate of Return	5-year Trailing Average
2014 *	\$ 18,367	\$ 20,779	\$ 2,412	\$ 3,946	88.4%	\$ 11,633	56.0%	526.6%	465.5%	61.1%	\$ (713)	(3.9)%	10.2%	N/A
2015 *	19,489	22,018	2,529	4,006	88.5%	11,739	53.3%	549.6%	486.5%	63.1%	(506)	(2.6)%	(0.3)%	N/A
2016 *	20,651	23,397	2,746	4,254	88.3%	11,256	48.1%	550.0%	485.4%	64.6%	(278)	(1.3)%	8.1%	N/A
2017 *	21,889	24,750	2,861	4,431	88.4%	11,055	44.7%	558.6%	494.0%	64.6%	(292)	(1.3)%	11.9%	N/A
2018 *	23,213	26,047	2,834	4,451	89.1%	10,876	41.8%	585.1%	521.5%	63.7%	(261)	(1.1)%	9.1%	7.7%

\* 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.

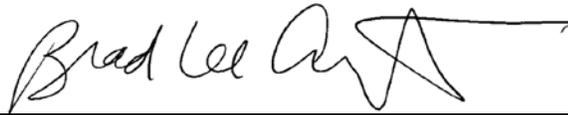
(13) and (14). Investment return is probably the largest single risk that most systems face. The year-by-year return and the five-year geometric average both give an indication of the reasonableness of the system's assumed return. Of course past performance is not a guarantee of future results. Market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

## Statement by Enrolled Actuary

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

4/17/2019

Date



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

## Experience Gain (Loss) Year Ended October 1, 2018

### DERIVATION

(1) UAAL at start of year	\$2,860,713
(2) Normal cost for year (ER normal cost & expenses from the prior corresponding valuation x current valuation pay)	346,311
(3) Actual City/Chapter contribution made toward ER normal cost, expenses and UAAL	677,094
(4) Interest accrual .079 x [(1) + 1/2 [(2)-(3)]]	212,930
(5) Expected UAAL before changes	2,742,860
(6) Effect of timing/accounting	0
(7) Effect of assumption/cost method changes	429,749
(8) Effect of benefit changes	0
(9) Expected UAAL after changes	3,172,609
(10) Actual UAAL at end of year	2,834,006
(11) Gain (loss) (9) - (10)	\$ 338,603
(12) % of AAL at start of year	<b>1.4%</b>

UAAL represents unfunded actuarial accrued liability.

Valuation Date September 30	Actuarial Gain (Loss) as a % of Beginning Accrued Liabilities
2009	(1.1) %
2010	1.1
2011	(5.0)
2012	2.4
2013	2.7
2014	3.6
2015	2.7
2016	1.6
2017	(0.9)
<b>2018</b>	<b>1.4</b>

# Sources and Financing of Unfunded Actuarial Accrued Liability

Unfunded Act. Accrued Liability			Current Amount	Remaining Financing Period 9/30/2018	Amort. Factor	Contribution		FS112.64(5) Compliance
Source of Unfunded Act. Accrued Liab.	Initial					Dollar	% of Payroll	
	Amount	Fin. Per.						
<b>Initial Unf'd. actuarial accrued liability</b>								
			(\$253,616)	4 yrs.	3.625726	\$(69,949)	(1.57)%	(0.04)%
<b>Changes from experience deviations</b>								
9/30/2002	\$ 1,136,957	25 yrs.	\$ 1,193,738	9 Yrs.	7.248904	\$ 164,678	3.70 %	0.18%
9/30/2003	586,136	25	642,773	10	7.871141	81,662	1.83 %	0.11%
9/30/2004	492,455	25	558,538	11	8.463060	65,997	1.48 %	0.09%
9/30/2005	964,532	25	1,122,433	12	9.026138	124,354	2.79 %	0.18%
9/30/2006	(306,132)	25	(363,106)	13	9.561780	(37,975)	(0.85) %	(0.06)%
9/30/2007	(220,348)	25	(264,821)	14	10.071324	(26,295)	(0.59) %	(0.04)%
9/30/2008	997,763	25	1,209,149	15	10.556040	114,546	2.57%	0.21%
9/30/2009	219,770	25	267,444	16	11.017139	24,275	0.55%	0.04%
9/30/2010	102,832	25	122,428	17	11.455771	10,687	0.24%	0.02%
9/30/2011	1,043,104	25	1,237,359	18	11.873031	104,216	2.34%	0.22%
9/30/2012	(516,717)	25	(601,217)	19	12.269961	(48,999)	(1.10) %	(0.11)%
9/30/2013	(597,024)	25	(691,644)	20	12.647550	(54,686)	(1.23) %	(0.12)%
9/30/2014	816,103	25	(898,124)	21	13.006742	(69,051)	(1.55) %	(0.16)%
9/30/2015	(556,507)	25	(592,676)	22	13.348432	(44,400)	(1.00) %	(0.11)%
9/30/2016	(360,779)	25	(376,367)	23	13.673473	(27,525)	(0.62) %	(0.07)%
9/30/2017	211,107	25	216,965	24	13.982677	15,517	0.35%	0.04%
9/30/2018	(338,603)	25	(338,603)	25	14.276816	(23,717)	(0.53) %	(0.07)%
<b>Changes from actuarial assumption and actuarial cost method revisions.</b>								
9/30/1995	\$ 291,716	25 yrs.	\$ 125,225	4 yrs.	3.625726	\$ 34,538	0.78 %	0.01%
9/30/2002	(143,237)	25	(150,392)	9	7.248904	(20,747)	(0.47) %	(0.02)%
9/30/2015	714,017	25	760,423	22	13.348432	56,967	1.28%	0.14%
9/30/2016	667,012	25	695,833	23	13.673473	50,889	1.14%	0.13%
9/30/2017	31,486	25	32,359	24	13.982677	2,314	0.05%	0.01%
9/30/2018	429,749	25	439,782	25	14.276816	30,804	0.69%	0.09%
<b>Changes from amendments to benefit provisions.</b>								
9/30/1997	\$ 197,204	25 yrs.	\$ 128,093	4 yrs.	3.625726	\$ 35,329	0.79 %	0.02%
9/30/2000	285,181	25	265,466	7	5.907185	44,940	1.01 %	0.04%
9/30/2004	116,892	25	132,579	11	8.463060	15,666	0.35 %	0.02%
9/30/2008	499,931	25	605,847	15	10.556040	57,393	1.29 %	0.10%
9/30/2014	(2,173,428)	25	(2,391,862)	21	13.006742	(183,894)	(4.13)%	(0.44)%
<b>Totals</b>			<b><u>\$2,834,006</u></b>			<b><u>\$427,534</u></b>	<b><u>9.59 %</u></b>	<b><u>0.41%</u></b>

Weighted average remaining financing period: 16.9 yrs.

## Unfunded Actuarial Accrued Liability

	October 1, 2018	October 1, 2017
A. Actuarial present value of future benefits	<b>\$30,289,290</b>	\$29,019,487
B. Actuarial present value of future normal costs	<b>4,242,631</b>	4,269,692
C. Actuarial accrued liability	<b>26,046,659</b>	24,749,795
D. Funding value of assets	<b>23,212,653</b>	21,889,082
E. Unfunded actuarial accrued liability	<b>\$ 2,834,006</b>	\$ 2,860,713

Unfunded actuarial accrued liability is not a good measure of the System's funded status because the amount is dependent upon the actuarial cost method (please refer to page C-1). The funding progress indicators (2) and (3) on pages A-4 and A-5 are less dependent of the actuarial cost method and are a better guide to funded status and funding progress. The funded status and the funding progress indicators would be different if based on the market value of assets instead of the funding value of assets.

## Recommended and Actual Contributions Comparative Statement

Fiscal Year	Valuation Date	City/Chapter Dollar Contributions#		Recommended City/Chapter % of Payroll Contributions
		Recommended	Actual	
95/96	10/1/1994	\$ 790,417	\$ 818,057	10.13 %
96/97	10/1/1995 (a)	612,267	618,521	7.58
97/98	10/1/1996	563,577	563,577	7.48
98/99	10/1/1996 (a)	242,436	250,954	10.08
99/00	10/1/1998	190,095	228,463	8.12
00/01	10/1/1999	133,981	193,862	5.49
01/02	10/1/2000 (aa)	186,100	186,100	7.15
02/03	10/1/2001	158,486	184,912	6.46
03/04	10/1/2002 (a)	223,716	273,477	8.26
04/05	10/1/2003	335,787	403,589	10.38
05/06	10/1/2004 (a)	376,586	425,205	12.50
06/07	10/1/2005	443,557	532,674	12.85
07/08	10/1/2006	470,310	528,361	13.84
08/09	10/1/2007	503,281	550,995	13.19
09/10	10/1/2008 (a)	713,865	690,515	17.00
10/11	10/1/2009	777,408	777,408	18.79
11/12	10/1/2010	818,251	818,251	19.66
12/13	10/1/2011	930,958	930,958	23.02
13/14	10/1/2012 (a)	490,666	530,453	12.27
14/15	10/1/2013 (a)	511,049	542,504	13.44
15/16	10/1/2014 (a)	630,183	630,194	14.95
16/17	10/1/2015 (a)	678,304	678,304 *	16.08
17/18	10/1/2016 (a)	691,323	691,323 **	15.66
18/19	10/1/2017 (a)	770,582		16.76
<b>19/20</b>	<b>10/1/2018 (a)</b>	<b>844,401</b>		<b>18.28</b>

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

(aa) After minimum benefit changes.

# Prior to the fiscal year ending 9/30/99, results include General, Police and Fire.

\* Includes City Contribution of \$460,548, State Contribution of \$197,425 pursuant to Chapter 185 F.S., and \$20,331 from the prepaid employer reserve.

\*\* Includes City Contribution of \$479,669, State Contribution of \$197,425 pursuant to Chapter 185 F.S., and \$14,229 from the prepaid employer reserve.

# Actuarial Balance Sheet - October 1, 2018

## Present Resources and Expected Future Resources

A. Funding value of System assets:	
1. Net assets from System financial statements (market value)	\$23,778,932
2. Funding value adjustment	<u>(566,279)</u>
3. Funding value of assets	23,212,653
B. Actuarial present value of expected future employer contributions:	
1. For normal costs	1,803,904
2. For unfunded actuarial accrued liability	<u>2,834,006</u>
3. Totals	4,637,910
C. Actuarial present value of expected future member contributions	<u>2,438,727</u>
D. Total present and expected future resources	<u><u>\$30,289,290</u></u>

## Actuarial Present Value of Expected Future Benefit Payments and Reserves

A. To retired members and beneficiaries	\$10,876,355
B. To vested terminated members	420,261
C. To present active members:	
1. Allocated to service rendered prior to valuation date	14,602,842
2. Allocated to service likely to be rendered after valuation date	<u>4,242,631</u>
3. Totals	18,845,473
D. Total actuarial present value of expected future benefit payments	30,142,089
E. Reserve for DROP balances	0
F. Extra benefit reserve	122,081
G. Prepaid Employer Reserve	25,120
H. Total actuarial present value of expected future benefit payments and reserves	<u><u>\$30,289,290</u></u>

## 5-Year Projections of Future Funded Ratios and Future Employer Contributions

Year Ended 9/30	Active Count	Benefit Payroll	Benefit Payments	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio	Total Employer Contribution			Less Estimated Chapter 185 and Additional Premium Tax Revenue	Estimated City's Contributions
							Fiscal Year	% of Payroll	Dollar Amount		
2018	61	\$ 4,451,301	\$ 1,139,501	\$ 26,046,658	\$ 23,212,653	89.1%	2020	18.28%	\$ 844,401	\$ 197,425	\$ 646,976
2019	61	4,531,040	1,251,774	27,426,493	25,037,304	91.3%	2021	17.76%	835,118	197,425	637,693
2020	61	4,632,368	1,366,959	28,802,253	26,975,361	93.7%	2022	17.23%	828,368	197,425	630,943
2021	61	4,736,879	1,444,993	30,212,061	28,797,426	95.3%	2023	17.04%	837,593	197,425	640,168
2022	61	4,797,018	1,564,395	31,609,575	30,579,809	96.7%	2024	16.82%	837,121	197,425	639,696
2023	61	4,853,428	1,750,822	32,921,337	32,296,741	98.1%	2025	16.57%	834,338	197,425	636,913

*Chapter 185 monies are assumed to stay level in future years.*

*Uses 2.5% wage growth assumption.*

*We have reflected compliance with F.S. 112.64(5) to remain constant with year ended 9/30/18.*

*We have not determined any additional possible impact due to F.S. 112.64(5).*

*Actuarial assumptions were those used for the 9/30/18 valuation.*

*Future experience was assumed to be consistent with the actuarial assumptions. If experience differs from the actuarial assumptions, future results could significantly differ from the projected results above.*

*Existing schedule of unrecognized investment gains and losses are reflected in this projection.*

## **SECTION B**

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

# Summary of Benefit Provisions (as of October 1, 2018)

## **Normal Retirement** (NO REDUCTION FACTOR FOR AGE):

### **Eligibility**

*Members Eligible for Normal Retirement or 10 years of service at June 23, 2014:* 30 years of service regardless of age, or age 52 with 25 or more years of service, or age 55 with 5 or more years of service.

*Members with less than 10 years of service at June 23, 2014:* 30 years of service regardless of age, or age 52 with 25 or more years of service, or age 55 with 10 or more years of service.

**Mandatory Retirement Age** - None.

### **Pension Amount**

*Members Eligible for Normal Retirement at June 23, 2014:* Final average compensation times the sum of a) 3.0% for each of the first 30 years of service, plus, b) 2.0% for each year of service in excess of 30 years. Maximum pension is 100% of final average compensation (FS 112.65).

*Members Not Eligible for Normal Retirement at June 23, 2014:* Total credited service times 3.0% of final average compensation. Maximum pension is 90% of final average compensation or \$90,000, whichever is less. Accrued benefits at June 23, 2014 in excess of the maximum amount are retained.

The normal form of benefit is a benefit payable for the life of the retired member with the first 10 years guaranteed. Optional benefit forms are available on an actuarial equivalent basis.

**Final Average Compensation** - Highest 5 years out of last 10. Compensation includes base pay plus longevity, incentive pay, and overtime. Overtime is limited to 300 hours per calendar year after June 23, 2014. Excludes all other compensation.

## Summary of Benefit Provisions (Continued)

### Early Retirement:

**Eligibility** - 20 years of service or age 50 with 10 years of service at June 23, 2014. Members that do not meet these conditions are not eligible for Early Retirement.

**Pension Amount** - Computed as regular retirement, but reduced to take into account earlier commencement of retirement income payments, as follows:

***3.0% per year reduction for all years prior to Normal Retirement.***

### Deferred Retirement (vested benefit):

**Eligibility** - 10 or more years of service for members with less than 5 years of service and new hires as of June 23, 2014. Benefit begins at the earlier of: age 55 with 10 years of service, age 52 with 25 years of service, and age 65 with 5 years of service. The commencement date also applies to members with less than 10 years of service at June 23, 2014.

*Members with 10 or more years of service on June 23, 2014:* 5 or more years of service. Benefit begins at regular retirement age of 55.

**Pension Amount** - Computed as a normal retirement but based upon service and final average compensation at time of termination.

### Duty Disability Retirement:

**Eligibility** - No age or service requirements.

**Pension Amount** - Computed as a normal retirement to regular retirement age. Minimum benefit is not less than 50% of final average compensation. At regular retirement age, the participant has the option to have the benefit re-computed as a normal retirement with additional service credit granted from date of retirement to the later of normal retirement age or five years after date of disability. Minimum benefit is not less than 42% of final average compensation.

# Summary of Benefit Provisions (Continued)

## **Non-Duty Disability Retirement:**

**Eligibility** - 10 or more years of service.

**Pension Amount** - Computed as a normal retirement. Minimum benefit is not less than 25% of final average compensation.

## **Duty Death Before Retirement:**

**Eligibility** - No age or service requirements.

**Pension Amount** - To spouse: 100% of the normal retirement benefit. Minimum benefit is not less than 35% of final average compensation.

## **Non-Duty Death Before Retirement:**

**Eligibility** - 5 or more years of service for members with more than 5 years of service as of July 21, 2014. 10 or more years of service for members with less than 5 years of service and new hires as of July 21, 2014.

**Pension Amount** - To spouse: 100% of the normal retirement benefit.

**Member Contributions:** 7.95% of pay.

**Premium Tax Monies:** A distribution of casualty insurance premium tax monies collected by the State pursuant to Chapter 185, Florida Statutes.

**City Contributions:** Actuarially determined amounts which together with member contributions and premium tax monies are sufficient to at least cover the requirements of the funding objective.

**Forfeiture of Retirement Benefits:** Retirement benefits granted by the Retirement System are subject to forfeiture if an employee is convicted of an offense specified in Sections 112.3173 and 185.185, Florida Statutes, pursuant to the procedures set forth in the cited statute.

## Summary of Benefit Provisions (Continued)

**Prior Service Purchases:** A former member with credited service who wishes to return to City employment may restore the forfeited credited service to receive credit for prior service within ninety (90) days after return to City employment.

**Deferred Retirement Option Program (DROP):** Any eligible member of the Retirement System who meets the requirements of retirement may elect to participate, deferring receipt of retirement benefits while continuing employment with the City. The deferred monthly benefits shall accrue in the reserve for pension payments fund on behalf of the participant, plus 3.5% annual interest compounded monthly less a service fee, for the specified period of the DROP participation not to exceed 36 consecutive months. Upon termination from the DROP, the participant shall receive all accrued DROP benefits either by lump sum, direct rollover or partial lump sum. The DROP was closed to new members on June 23, 2014.

### **Backwards Deferred Retirement Option Program (BackDROP):**

**Eligibility** – Same as normal retirement. Member must not be participating in the DROP on June 23, 2014 and must continue employment beyond the normal retirement date. The member may elect a BackDROP period for the number of months worked beyond their normal retirement date, up to a maximum of 36 months.

**Amount of Pension** – Computed as if the member had chosen to terminate on a day chosen by the member but not before the member's normal retirement date, using credited service and final average salary at the BackDROP date. In addition to the pension, there will be a lump sum payment, equal to the pension benefits the member would have received had he/she retired on the BackDROP date with interest at the rate of 3.0% per year.

**Claims Procedure:** Claims for benefits should be filed with the Human Resources Department. If a claim is denied, you will be notified and informed of the procedure to request a hearing before the Board of Trustees. An applicant for benefits must appeal said denial within 20 days of being informed of the denial by filing an appeal with the Board Secretary. If no appeal is filed within the time period then the denial shall be final.

## Summary of Benefit Provisions (Concluded)

**Disclaimer:** The preceding summary briefly described the principle benefits of the Retirement System. Detailed benefit conditions and limitations are contained in the City of Jacksonville Beach Police Officers' Retirement System Ordinance as amended, which establishes the System. The Internal Revenue Code, Florida Statutes, and the Ordinance all govern the operation of the System, and should be consulted before you take any action concerning your membership or benefits. In case of any conflict between this Summary and the Ordinance or other applicable law, the Ordinance or other applicable law will prevail. Copies of the Ordinance are available at the office of the City Clerk.

# Accounting Information Submitted for Valuation

## Revenues and Expenditures

	Year Ended September 30, 2018	Year Ended September 30, 2017
<b>Revenues:</b>		
a. Member contributions	\$ 362,140	\$ 353,277
b. City contributions	479,669	460,548
c. Premium taxes from State	211,654	245,435
d. Total contributions to System	<u>\$ 1,053,463</u>	<u>\$ 1,059,260</u>
e. Investment income:		
1. Interest and dividends	543,002	499,947
2. Realized gain on investments	675,208	577,484
3. Unrealized gain on investments	837,793	1,341,148
4. Investment expense	(64,330)	(50,636)
f. Total investment income	<u>\$1,991,673</u>	<u>\$2,367,943</u>
g. Total revenues	<u>\$3,045,136</u>	<u>\$3,427,203</u>
<b>Expenditures:</b>		
a. Refunds of member contributions	65,031	94,019
b. Benefits paid	1,161,010	1,176,786
c. Administrative expenses	88,504	80,293
d. Total expenditures	<u>\$ 1,314,545</u>	<u>\$ 1,351,098</u>
<b>Reserve Increase:</b>		
Total revenues minus total expenditures	\$ 1,730,591	\$2,076,105

## Summary of Assets (Market Value)

	Year Ended September 30, 2018	Year Ended September 30, 2017
Cash and Short-term Investments	\$ 770,906	\$ 438,238
Receivables less payables	36,348	36,310
Real Estate	1,249,514	1,148,905
U.S. Government Securities	3,257,343	1,831,922
Bonds - government	none	none
- corporate	2,685,604	4,003,444
Stocks - common	none	none
- preferred	none	none
Other (equity mutual funds)	15,779,217	14,589,522
Total assets	<u>\$ 23,778,932</u>	<u>\$22,048,341</u>

## Derivation of Funding Value of Retirement System Assets

	Values as of September 30				
	2017	2018	2019	2020	2021
<b>Beginning of Year Values</b>					
(1) Market Value	\$19,972,236	\$22,048,341			
(2) Funding Value	20,650,774	21,889,082			
<b>End of Year</b>					
(3) Market Value	22,048,341	23,778,932			
(4) Net Addition to Assets Excluding Investment Income#	(291,838)	(261,082)			
(5) Total Net Investment Income# =(3)-(1)-(4)	2,367,943	1,991,673			
(6) Projected Net Rate of Return#	7.90%	7.90%	7.75%		
(7) Projected Investment Income =(6) x [ (2)+0.5 x (4) ]	\$ 1,619,884	\$ 1,718,925			
(8) Investment Income in Excess of Projected <b>Excess Investment Income Recognized</b>	748,059	272,748			
(9a) From Current Year = .25 x (8)	187,015	68,187			
(9b) From One Year Prior	(12,311)	187,015	\$ 68,187		
(9c) From Two Years Prior	(377,162)	(12,311)	187,015	\$ 68,187	
(9d) From Three Years Prior	112,720	(377,163)	(12,311)	187,014	\$ 68,187
(9e) Total Cap. Val. Change Recogn. = (9a)+(9b)+(9c)+(9d)	(89,738)	(134,272)	242,891	255,201	68,187
(10) Increase(Decr.) in Funding Value = (4) + (7) + (9e)	1,238,308	1,323,571			
<b>End of Year</b>					
(11) Market Value	22,048,341	23,778,932			
(12) Funding Value = (2)+(10)	21,889,082	23,212,653			
(13) Market Value Rate of Return	11.9%	9.1%			
(14) Funding Value Rate of Return	7.5%	7.3%			
(15) Ratio of Market Value to Funding Value	100.7%	102.4%			

# Net of expenses paid from investment income.

## Retired Member and Beneficiary Data Historical Schedule

Year Ended	Added		Removed		Net Increase		End of Year		Expected Removals	
	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions	No.	Pensions
9/30/1975			3	\$ 5,238	(3)	\$ (5,238)	38	\$ 96,998		
9/30/1980	4	\$ 12,535	2	6,322	2	6,213	43	126,043		
9/30/1985	6	38,897	3	9,338	3	29,559	54	206,265	1.7	\$ 4,085
9/30/1990	6	63,868	5	14,043	1	49,825	63	346,855	1.9	6,447
9/30/1994	12	187,409	2	14,164	10	173,245	83	855,174	2.1	12,465
9/30/1995	8	184,693	6	24,617	2	160,076	85	1,015,250	2.3	14,657
9/30/1996	14	247,257	7	33,348	7	213,909	92	1,229,159	1.9	14,218
9/30/1997	5	65,068	4	22,208	1	42,860	93	1,272,018	2.0	16,685
9/30/1998 #							18	468,055	2.0	16,685
9/30/1999	3	63,905	1	25,870	2	38,035	20	506,090	0.2	4,687
9/30/2000	2	100,698		3,890	2	96,808	22	602,898	0.3	5,328
9/30/2001	2	83,928			2	83,928	24	686,826	0.3	6,281
9/30/2002	3	75,810 *			3	75,810	27	761,435	0.3	7,492
9/30/2003	2	22,825	1	12,935	1	9,890	28	771,325	0.4	8,401
9/30/2004	2	45,760			2	45,760	30	817,085	0.5	9,148
9/30/2005	2	78,914	1	3,600	1	75,314	31	892,399	0.5	10,221
9/30/2006	2	54,624			2	54,624	33	947,023	0.5	11,512
9/30/2007	0	0	1	3,600	(1)	(3,600)	32	943,423	0.6	13,132
9/30/2008	2	69,969	1	34,909	1	35,060	33	978,483	0.6	14,333
9/30/2009	2	63,898		2,303 @	2	61,595	35	1,040,078	0.7	16,425
9/30/2010	1	3,895			1	3,895	36	1,043,973	0.7	18,502
9/30/2011	6	171,322	2	32,490	4	138,832	40	1,182,805	0.7	19,567
9/30/2012	2	69,773	2	72,887	0	(3,114)	40	1,179,691	0.9	22,884
9/30/2013	2	97,458			2	97,458	42	1,277,149	0.9	24,431
9/30/2014	0	0	1	13,274	(1)	(13,274)	41	1,263,875	1.0	27,155
9/30/2015	3	50,301	2	57,882	1	(7,581)	42	1,256,294	1.1	29,416
9/30/2016	0	0	3	74,648	(3)	(74,648)	39	1,181,646	1.2	31,283
9/30/2017	0	0	1	5,315	(1)	(5,315)	38	1,176,331	1.0	27,536
<b>9/30/2018</b>	<b>0</b>	<b>42</b>	<b>1</b>	<b>36,872</b>	<b>(1)</b>	<b>(36,830)</b>	<b>37</b>	<b>1,139,501</b>	<b>0.9</b>	<b>29,091</b>

Expected for  
**9/30/2019**

**0.8**      **25,115**

# Prior to 1998 valuation, results include General, Police and Fire.

\* Includes changes in benefits due to the minimum benefit requirement.

@ This amount is being paid from the General Employees' Retirement System.

## Normal (Age and Service) Retirements

Valuation Year	No.	Average Attained Age	Retirement Age	Annual Pensions	Newly Retired During Year			
					Averages			Annual Pensions
					No.	Ret. Age	Service	
2009	27	65.4 yrs.	54.7 yrs.	\$ 30,171	2	55.0 yrs.	14.5 yrs.	\$ 31,949
2010	28	66.0	54.7	29,233	1	55.0	10.9	3,894
2011	29	62.5	52.4	31,138	4	51.8	14.3	35,881
2012	29	65.4	54.6	30,068	1	55.4	10.2	19,368
2013	31	65.3	54.3	31,272	1	49.4	20.3	47,578
2014	30	65.9	54.4	31,872	0	0.0	0.0	0
2015	29	66.0	54.2	31,698	1	50.8	19.9	20,971
2016	28	66.7	54.2	31,466	0	-	-	-
2016	28	66.7	54.2	31,466	0	-	-	-
<b>2018</b>	<b>27</b>	<b>67.9</b>	<b>53.8</b>	<b>31,267</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>

## Retired Members and Beneficiaries

### Historical Comparison

Valuation Date	% Incr. in Annual Pensions#	No. of Active Per Retired	Pension	
			Payroll as % of Active Payroll	Average Pension#
10/1/1990	16.8 %			\$ 5,506
10/1/1995	18.7	4.0	13.2 %	11,944
10/1/2000	19.1	2.5	24.9	27,404
10/1/2005	9.2	1.8	27.6	28,787
10/1/2006	6.1	1.7	29.8	28,698
10/1/2007	(0.4)	1.9	26.4	29,482
10/1/2008	3.7	1.8	24.9	29,651
10/1/2009	6.3	1.7	26.9	29,717
10/1/2010	0.4	1.6	26.8	28,999
10/1/2011	13.3	1.4	31.2	29,570
10/1/2012	(0.3)	1.4	31.5	29,492
10/1/2013	8.3	1.3	35.9	30,408
10/1/2014	(1.0)	1.5	32.0	30,826
10/1/2015	(0.6)	1.5	31.4	29,912
10/1/2016	(5.9)	1.6	27.8	30,299
10/1/2017	(0.4)	1.7	26.6	30,956
<b>10/1/2018</b>	<b>(3.1)</b>	<b>1.6</b>	<b>25.6</b>	<b>30,797</b>

# Prior to 1999 valuation, results include General, Police and Fire.

## Retired Members and Beneficiaries as of October 1, 2018 By Type of Pension Being Paid\*

New Plan Pensions				
Type of Pension Being Paid	No.	Annual Pension	Average Pension	Actuarial Liability
<i>Age and Service Pensions</i>				
Regular	2	\$ 100,698	\$ 50,349	\$ 809,543
Option I	8	251,319	31,415	2,362,677
Option II	7	142,598	20,371	1,678,547
Option III	9	344,184	38,243	3,320,047
Surviving Beneficiaries	4	119,113	29,778	1,097,109
<b>Total Age and Service Pensions</b>	<b>30</b>	<b>957,912</b>	<b>31,930</b>	<b>9,267,923</b>
<i>Disability Pensions</i>				
Regular	1	29,466	29,466	226,740
Option I	3	74,888	24,963	581,274
Option II	1	35,060	35,060	408,100
Option III	1	36,760	36,760	334,176
<b>Total Disability Pensions</b>	<b>6</b>	<b>176,174</b>	<b>29,362</b>	<b>1,550,290</b>
<b>Total New Plan Pensions</b>	<b>36</b>	<b>\$1,134,086</b>	<b>\$31,502</b>	<b>\$10,818,213</b>

\* *Regular - benefit terminating upon death of retired member.  
Option I - 10-year certain.  
Option II - 100% joint and survivor benefit.  
Option III - 50%/66.7%/75% joint and survivor benefit.  
Surviving Beneficiaries - benefit terminating upon death of beneficiary.*

## Retired Members and Beneficiaries as of October 1, 2018 By Type of Pension Being Paid\*

<b>Old Plan Pensions</b>				
<b>Type of Pension Being Paid</b>	<b>No.</b>	<b>Annual Pension</b>	<b>Average Pension</b>	<b>Actuarial Liability</b>
<i>Age and Service Pensions</i>				
Option II	1	\$ 5,415	\$ 5,415	\$ 58,142
Total Age and Service Pensions	1	5,415	5,415	58,142
<i>Disability Pensions</i>				
Surviving Beneficiaries	0	0	0	0
Total Disability Pensions	0	0	0	0
<b>Total Old Plan Pensions</b>	<b>1</b>	<b>\$ 5,415</b>	<b>\$ 5,415</b>	<b>\$ 58,142</b>
 <i>Total New &amp; Old Plan Pensions Being Paid</i>				
	<b>37</b>	<b>\$1,139,501</b>	<b>\$30,797</b>	<b>\$10,876,355</b>

\* Regular - benefit terminating upon death of retired member.  
 Option I - 10 year certain.  
 Option II - 100% joint and survivor benefit.  
 Option III - 50%/66.7%/75% joint and survivor benefit.  
 Surviving Beneficiaries - benefit terminating upon death of beneficiary.

## Retired Member and Beneficiary Data as of October 1, 2018 By Attained Ages

Attained Ages	New Plan		Old Plan		Totals	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
50	1	\$ 36,247			1	\$ 36,247
53	1	33,891			1	33,891
54	1	20,885			1	20,885
56	2	90,731			2	90,731
59	3	61,751			3	61,751
60	1	34,909			1	34,909
62	1	19,368			1	19,368
63	2	60,879			2	60,879
64	1	35,060			1	35,060
66	2	62,749			2	62,749
67	1	23,168			1	23,168
69	4	110,555			4	110,555
70			1	\$ 5,415	1	5,415
71	4	119,748			4	119,748
72	4	202,769			4	202,769
75	1	38,728			1	38,728
76	3	99,889			3	99,889
78	2	31,311			2	31,311
79	1	27,638			1	27,638
81	1	23,810			1	23,810
<b>Totals</b>	<b>36</b>	<b>\$1,134,086</b>	<b>1</b>	<b>\$5,415</b>	<b>37</b>	<b>\$1,139,501</b>

## Vested Terminated Members as of October 1, 2018 By Attained Ages

<b>Attained Ages</b>	<b>No.</b>	<b>Annual Benefits</b>
40	1	\$24,002
45	1	19,318
47	1	25,339
54*	1	12,284
<b>Totals</b>	<b>4</b>	<b>\$80,943</b>

\* Pending Disability. Estimated benefit was based on most recent pay and service.

## Active and Vested Terminated Members (Excluding DROP Members)

Valuation Date	Active Members	Vested Terminated Members	Valuation Payroll	Average		
				Age	Service	Pay
10/1/2009	59	2	\$ 3,873,001	38.9 yrs.	8.2 yrs.	\$ 65,644
10/1/2010	59	2	3,896,087	39.2	8.4	66,035
10/1/2011	57	1	3,785,736	38.7	8.4	66,416
10/1/2012	57	2	3,743,405	39.4	9.1	65,674
10/1/2013	56	3	3,559,498	39.8	8.8	63,562
10/1/2014	62	2	3,945,943	38.8	8.7	63,644
10/1/2015	63	3	4,006,158	39.1	8.9	63,590
10/1/2016	62	4	4,254,054	40.9	9.8	68,614
10/1/2017	64	3	4,430,567	41.1	10.3	69,228
<b>10/1/2018</b>	<b>61</b>	<b>4</b>	<b>4,451,301</b>	<b>42.1</b>	<b>11.4</b>	<b>72,972</b>

### Number Added to and Removed from Active Membership

Year Ended September 30	Number Added During Year		Terminations During Year										Active Members End of Year
			Normal Retirement		Disability Retirement	Died-in-Service		Withdrawal					
	A	E	A	E	A	E	A	E	A	A	A	E	
2009	5	7	2	1.4	0	0.1	0	0.0	0	5	5	3.4	59
2010	4	4	0	1.2	0	0.1	0	0.0	1	3	4	3.2	59
2011	8	10	2	1.5	1	0.1	0	0.0	1	6	7	2.8	57
2012	5	5	1	0.5	0	0.1	0	0.0	1	3	4	3.0	57
2013	6	7	2	0.2	0	0.1	0	0.0	1	4	5	2.9	56
2014	10	4	0	0.2	0	0.1	0	0.0	0	4	4	2.9	62
2015	9	8	1	0.5	0	0.1	0	0.0	1	6	7	3.4	63
2016	5	6	0	0.9	0	0.1	0	0.0	1	5	6	3.4	62
2017	8	6	0	0.6	0	0.2	0	0.1	0	6	6	4.3	64
<b>2018</b>	<b>4</b>	<b>7</b>	<b>0</b>	<b>0.6</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.1</b>	<b>1</b>	<b>6</b>	<b>7</b>	<b>4.3</b>	<b>61</b>
5-yr. Totals													
2014 - 2018	36	31	1	2.7	0	0.7	0	0.2	3	27	30	18.3	
Expected for 2019				1.8		0.2		0.1				3.7	

A Represents actual number.

E Represents expected number.

## Active Members as of October 1, 2018 By Near Age and Years of Service (Excluding DROP Members)

Near 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
25-29	5							5	\$ 270,112
30-34	6	4	2					12	722,964
35-39	5	4	1					10	629,059
40-44		1	1	2	1			5	388,779
45-49	1		1	6	4			12	1,013,958
50-54	2		2	4	4	1		13	1,054,734
55-59		2				2		4	371,695
<b>Totals</b>	<b>19</b>	<b>11</b>	<b>7</b>	<b>12</b>	<b>9</b>	<b>3</b>		<b>61</b>	<b>\$4,451,301</b>

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

Age: 42.1 years

Service: 11.4 years

Annual Pay: \$72,972

## **SECTION C**

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### **ACTUARIAL COST METHOD, ACTUARIAL ASSUMPTIONS, AND DEFINITIONS OF TECHNICAL TERMS**

## Actuarial Cost Method

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

- (i) The annual normal cost for each individual active member is sufficient to accumulate the value of the member's pension at time of retirement or DROP.
- (ii) Each annual normal cost is a constant percentage of the member's year by year projected pensionable compensation.

The entry-age actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's pensionable compensation between the entry age of the member and the estimated active status exit ages. This is based on our understanding of the approach preferred by the Florida Division of Retirement.

The portion of the actuarial present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called the actuarial accrued liability. Deducting accrued assets from the actuarial accrued liability determines the unfunded actuarial accrued liability. The unfunded actuarial accrued liability was financed as a level percent of member payroll. Please refer to page A-13 for a schedule of financing periods.

The characteristics of this method of financing the unfunded actuarial accrued liability are shown on page C-2.

The sum of active & DROP member payroll was assumed to increase 2.5% a year for the purpose of determining the level percent contributions, except to the extent needed for FS 112.64(5) compliance. This assumption is consistent with the base rate of increase in salaries used to calculate actuarial present values. Expressing contributions, as on page A-2, as a percent of active member payroll excluding DROP members may cause fluctuations due to the level of participation in the DROP.

## Level Percent of Active Member Payroll Amortization of Unfunded Actuarial Accrued Liability\* (amortization schedule \$ amounts in thousands)

Year Ended September 30	Payroll		Unfunded		Contribution	
	Inflated Dollars	Constant Value	Inflated Dollars	Constant Value	Inflated Dollars	Constant Value
2018	\$ 4,451	\$4,451	\$2,834	\$2,834	\$ 428	\$ 428
2019	4,563	4,451	2,604	2,541	438	428
2020	4,677	4,451	2,346	2,233	449	428
2021	4,794	4,451	2,055	1,908	460	428
2022	4,913	4,451	1,731	1,568	472	428
2027	5,559	4,451	(402)	(322)	298	239
2032	6,290	4,451	(1,300)	(920)	22	15
2037	7,116	4,451	(479)	(299)	(395)	(247)
2041	7,855	4,451	54	31	44	25
2042	8,051	4,451	13	7	13	7
2043	8,252	4,451	0	0	0	0
* \$ 101,179 over 25 years			\$ (264,821) over 14 years			
249,324 over 24 years			(363,106) over 13 years			
319,466 over 23 years			1,122,433 over 12 years			
167,747 over 22 years			691,117 over 11 years			
(3,289,986) over 21 years			642,773 over 10 years			
(691,644) over 20 years			1,043,346 over 9 years			
(601,217) over 19 years			0 over 8 years			
1,237,359 over 18 years			265,466 over 7 years			
122,428 over 17 years			0 over 6 years			
267,444 over 16 years			0 over 5 years			
1,814,996 over 15 years			(298) over 4 years			
			<b><u>\$2,834,006</u></b>		<b>TOTAL</b>	

Level percent-of-payroll financing of unfunded actuarial accrued liability 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 participant payroll used to compute the level percent-of-payroll contribution is the same rate of payroll growth used to compute actuarial liability 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 liability will tend to decline.

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

## Actuarial Assumptions Used for the Valuation

Funding objective contribution requirements and actuarial present values are calculated by applying estimates of future plan activities (actuarial assumptions) to the benefit provisions and people information of the system, using the actuarial cost method described on page C-1. All actuarial assumptions used in this report are estimates of future experience.

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

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

In making 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.

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Actual activities of the system will not coincide exactly with estimated activities, due to their nature. Each valuation provides a complete recalculation of estimated future activities and takes into account the effect of differences between estimated and actual activity 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 assumptions 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 Board of Trustees 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. The reasonableness of economic assumptions was based upon capital market expectations provided by various investment consultants (including the System's) and other sources such as the Social Security Trustees report. All actuarial assumptions are estimates of future experience.

The actuarial assumptions regarding the INVESTMENT RETURN, the INFLATION rate, the SALARY INCREASE rates, and REAL INVESTMENT RETURN were effective October 1, 2018. These actuarial assumptions are used, in combination with the other actuarial 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 covered payroll.

The annual interest rate used in making this valuation was 7.75%. It is composed of inflation and real investment return.

**PRICE INFLATION.** 2.5% 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	
	2018	2017	2016	2015	2014	3-Year	5-Year
Actual	<b>2.3%</b>	2.2%	1.5%	(0.0)%	1.7%	2.0%	1.5%
Assumed	<b>2.5%</b>	2.5%	3.0%	3.5%	3.5%	2.7%	3.0%

**REAL INVESTMENT RETURN.** 5.25% per annum, compounded annually. This is the rate of return estimated to be produced by investing a pool of assets in an inflation-free environment. Recent real investment return for the Retirement System has been:

	Year Ended September 30					Average	
	2018	2017	2016	2015	2014	3-Year	5-Year
Net Rate	<b>7.3%</b>	7.5%	7.4%	9.0%	9.4%	7.4%	8.1%
Less Inflation Rate	<b>2.3%</b>	<u>2.2%</u>	<u>1.5%</u>	<u>(0.0)%</u>	<u>1.7%</u>	<u>2.0%</u>	<u>1.5%</u>
Net Real Rate	<b>5.0%</b>	5.2%	6.0%	9.0%	7.8%	5.4%	6.6%
Target Real Rate	<b>5.4%</b>	5.4%	5.0%	4.5%	4.5%	5.3%	5.0%

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 funding asset value and B is the end of year funding value of assets.

The preceding investment return rates reflect the particular characteristics of this Retirement 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:

Attributable to:	Annual Rates for Salary Increase for Sample Ages				
	20	30	40	50	60
Merit & Seniority	3.8 %	2.7 %	2.1 %	1.1 %	0.2 %
General Increase in Wage Level Due to:					
Price Inflation	2.5	2.5	2.5	2.5	2.5
Other Factors	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total	6.3 %	5.2 %	4.6 %	3.6 %	2.7 %

The valuation is based on a constant group size and total payroll increasing at the rate of the general increase in wage levels due to inflation and other causes, which in this case is 2.5% a year.

A schedule of recent salary change experience, as measured by average reported pay, follows:

	Year Ended September 30					Average		
	2018	2017	2016	2015	2014	3-Year	5-Year	10-Year
% Change:								
Actual (1)	4.5%	3.6%	8.9%	3.0%	3.9%	5.6%	4.7%	3.9%
Assumed	4.2%	4.3%	5.4%	6.1%	6.1%	4.6%	5.2%	5.7%
% Change in Total Payroll (2)	0.5%	4.1%	6.2%	1.5%	10.9%	3.6%	4.6%	1.3%

(1) Excluding terminations and new members.

(2) Including pays of members electing DROP participation but still working.

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. The following schedule illustrates the recent history of the relationship between total investment return and average pay changes.

	Year Ended September 30					Average	
	2018	2017	2016	2015	2014	3-Year	5-Year
Net Investment Return Rate	7.3%	7.5%	7.4%	9.0%	9.4%	7.4%	8.1%
Rate of Change in Average Pay	4.5%	3.6%	8.9%	3.0%	3.9%	5.6%	4.7%
Difference: Actual	2.8%	3.8%	(1.4)%	6.0%	5.5%	1.8%	3.4%
Target	5.4%	5.4%	5.0%	4.5%	4.5%	5.3%	5.0%

**MORTALITY TABLE.** 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: 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.
- Female non-disabled retiree mortality: fully generational mortality. 100% of the RP-2000 Annuitant White Collar Table, projected with scale BB.
- Male employee mortality: 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: fully generational mortality. 100% of the RP-2000 Employee White Collar Table, projected with scale BB.
- Male disabled mortality: 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: 60% of the RP-2000 Disabled Female Table, set forward 2 years and 40% of the RP-2000 Annuitant White Collar Table. Sample values follow:

Sample Ages in 2018	RP-2000 Fully Generational Mortality Tables			
	Value of \$1 Monthly for Life		Future Life Expectancy (Years)	
	Men	Women	Men	Women
50	\$139.28	\$145.85	33.97	38.36
55	133.48	140.64	29.33	33.34
60	125.65	133.69	24.76	28.44
65	115.57	124.53	20.35	23.70
70	103.08	113.15	16.22	19.23
75	88.60	99.67	12.48	15.15
80	73.02	84.44	9.26	11.51

The margin for future mortality improvements is included in projection scales. 75% of pre-retirement deaths were assumed to be duty related.

**RATES OF WITHDRAWAL 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 assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	% of Active Members
		Separating During Next Year
	0	20.00%
	1	15.00%
	2	12.00%
	3	10.00%
	4	7.00%
25	5 & Over	9.90%
30		9.68%
35		7.81%
40		4.84%
45		2.53%
50		2.09%
55		2.09%
60		2.09%

These rates were first used for the October 1, 2016 valuation.

**RATES OF DISABILITY.** These estimates represent the probabilities of active members becoming disabled.

Sample Ages	% of Active Members
	Becoming Disabled During Next Year
20	0.07%
25	0.09%
30	0.10%
35	0.14%
40	0.21%
45	0.32%
50	0.52%
55	0.92%
60	1.53%
65	1.65%

The rates assume 75% of disabilities will be duty related.

These rates were first used for the October 1, 1995 valuation.

**RATES OF RETIREMENT.** These rates are used to measure the probabilities of an eligible member retiring during the next year.

Retirement		Yrs. of Service	Service Based	Early Retirement	Early Retirement
Ages	Age Based			Ages	Rates
52	50%	30	100%	45	5%
53	30%			46	5%
54	30%			47	5%
55	30%			48	5%
56	30%			49	5%
57	20%			50	5%
58	20%			51	5%
59	20%			52	5%
60	20%			53	5%
61	20%			54	5%
62	100%				

A Police member is eligible for normal retirement after 30 years of service, or after attaining age 52 with 25 years of service, or after attaining age 55 with 5 or more years of service (10 years if less than 10 years of service as of June 23, 2014).

A Police member is eligible for early retirement after 20 years of service or after attaining age 50 with 10 years of service, if eligible for early retirement by June 23, 2014.

These rates were first used for the October 1, 2002 valuation.

**ADMINISTRATIVE EXPENSES.** Administrative expenses are projected to continue at the same percent-of-payroll as experienced during the preceding fiscal year.

**INVESTMENT EXPENSES.** Investment expenses are offset against gross investment income.

**ACTIVE MEMBER GROUP SIZE.** The valuation was based on a constant active member group size. This is unchanged from previous valuations.

**VESTED MEMBERS** who terminate with a benefit worth less than 100% of their own accumulated contributions were assumed to forfeit their vested benefit.

**COMPENSATION** reported for the actuarial valuation includes all amounts included in final average compensation for benefit purposes with the exception of lump sums for accumulated sick and vacation time.

# Summary of Assumptions Used September 30, 2018

## Pensions in an Inflationary Environment

### Value of \$1,000/Month Retirement Benefit to an Individual Who Retires at Age 52 in an Environment of 2.5% Inflation

<u>Age</u>	<u>Value</u>
52	\$1,000
53	976
54	952
55	929
60	820
65	724
70	640
75	566
80	500
85	442

The life expectancy of a 55 year old male retiree is age 84. The life expectancy for a 55 year old female retiree is age 88. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age.

# Summary of Assumptions Used

## Miscellaneous and Technical Assumptions

**Marriage Assumption.** 100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits.

**Pay Increase Timing.** Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

**Decrement Timing.** Decrements of all types are assumed to occur mid-year.

**Eligibility Testing.** Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

**Benefit Service.** Exact fractional service is used to determine the amount of benefit payable.

**Decrement Relativity.** Decrement rates are used without adjustment for multiple decrement table effects.

**Decrement Operation.** Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.

**Normal Form of Benefit.** The normal form of benefit is a benefit payable for the life of the retired member with the first 10 years guaranteed. Optional benefit forms are available on an actuarial equivalent basis.

**Loads.** None.

**Incidence of Contributions.** Contributions are assumed to be received continuously throughout the year based upon the computed percent-of-payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

## 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 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.

**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 liabilities. 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 assumptions.

**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 a lump sum payment.

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

**Funding Value of Assets.** Also referred to as actuarial value of assets, smoothed market value of assets, or valuation assets.

Valuation assets recognize assumed investment return fully each year. Differences between actual and assumed investment return are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, valuation assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, valuation assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, valuation assets will become equal to market value.

## Definitions of Technical Terms (Concluded)

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

**Pension Benefit Obligation.** A standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The PBO is independent of the actuarial funding method used to determine contributions.

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

Most retirement systems have unfunded actuarial accrued liability. An amount arises each time new benefits are added and each time an experience loss occurs.

The existence of unfunded actuarial accrued liability is not in itself bad, any more than a mortgage on a house is bad. 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 the amount (after due allowance for devaluation of the dollar).

## SECTION D

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### **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.

## Contributions Required and Contributions Made

The City's funding policy provides for periodic employer contributions at actuarially determined rates that, expressed as percentages of annual covered payroll, are designed to accumulate sufficient assets to pay benefits when due. The normal cost and actuarial accrued liability are determined using an entry-age actuarial funding method. Unfunded actuarial accrued liability is being amortized as a level percent-of-payroll over periods of 4 to 25 years.

During the year ended September 30, 2018, contributions totaling \$1,053,463 -- \$691,323 employer and \$362,140 employee -- were made in accordance with contribution requirements determined by an actuarial valuation of the plan as of October 1, 2016. The employer contributions consisted of \$346,311 for normal cost and administrative expenses and \$330,783 for amortization of the unfunded actuarial accrued liability and \$14,229 for additional premium tax revenue. In addition, \$14,229 was released from the prepaid contribution reserve. Employer contributions represented 15.5% of covered payroll.

Significant actuarial assumptions used to compute contribution requirements were the same as those used to compute the standardized measure of the actuarial accrued liability.

### Computed Employer Contribution Comparative Schedule

Fiscal Year	Valuation Beginning October 1	Valuation Date	Contribution Rates		Dollar Contribution For Fiscal Year	
			As Percents of Valuation Payroll	Valuation Payroll	Computed	Actual
2009	10/01/2008 *		17.0 %	\$ 3,930,907	\$ 713,865	\$690,515
2010	10/01/2009		18.8	3,873,001	777,408	777,408
2011	10/01/2010		19.7	3,896,087	818,251	818,251
2012	10/01/2011		23.0	3,785,736	930,958	930,958
2013	10/01/2012 *		12.3	3,743,405	490,666	530,453
2014	10/01/2013 *		13.4	3,559,498	511,049	562,835
2015	10/01/2014 *		15.0	3,945,943	630,183	662,694
2016	10/01/2015 *		16.1	4,006,158	678,304	726,314 **
2017	10/01/2016 *		15.7	4,254,054	691,323	705,552 **
2018	10/01/2017 *		16.8	4,430,567	770,582	
<b>2019</b>	<b>10/01/2018 *</b>		<b>18.3</b>	<b>4,451,301</b>	<b>844,401</b>	

\* After changes in benefit provisions and/or actuarial assumptions.

\*\* Includes amount released from prepaid employer reserve and/or additional premium tax revenue.

## Actuarial Accrued Liability

The actuarial accrued liability is a measure intended to help users assess (i) a pension fund's funded status on a going-concern basis, and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the individual entry-age actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the Fund's level percent-of-payroll annual required contribution between entry-age and assumed exit age. Entry-age was established by subtracting credited service from current age on the valuation date.

The preceding methods comply with the financial reporting standards established by the Governmental Accounting Standards Board.

The entry age actuarial accrued liability was determined as part of an actuarial valuation of the plan as of October 1, 2018. Significant actuarial assumptions used in determining the entry age actuarial accrued liability include (a) a rate of return on the investment of present and future assets of 7.75% per year compounded annually, (b) projected salary increases of 2.5% per year compounded annually, 2.5% attributable to inflation and 0.0% attributable to other causes, (c) additional projected salary increases of 3.8% to 0.0% per year, depending on age, attributable to seniority/merit, and (d) the assumption that benefits will not increase after retirement.

As of October 1, 2018, the unfunded actuarial accrued liability was \$2,834,006, determined as follows:

Actuarial Accrued Liability:	
Active participants (31 vested and 30 non-vested)	\$ 14,602,842
Retired participants and beneficiaries currently receiving benefits (37 vested)	10,876,355
Vested terminated participants not yet receiving benefits (4 vested)	420,261
Extra Benefit Reserve	122,081
Prepaid Employer Reserve	25,120
Total Actuarial Accrued Liability	26,046,659
Actuarial Value of Assets (market value was \$23,778,932)	23,212,653
Unfunded Actuarial Accrued Liability	\$ 2,834,006

During the year ended September 30, 2018 the plan experienced a net change of \$1,296,864 in the Actuarial Accrued Liability, of which \$429,749 was due to changes in actuarial assumptions. There were no changes in benefit provisions or methods.

## Supplementary Information Schedule of Funding Progress

Actuarial Valuation Date October 1	Actuarial Value of Assets# (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (b)-(a)	Funded Ratio (a)/(b)	Active Participant Covered Payroll (c)	Unfunded AAL as a Percentage of Active Member Covered Payroll ((b-a)/c)
1998	\$43,678	\$39,897	\$ (3,781)	109.5 %	\$ 10,536	(35.9) %
1999 @	12,142	11,171	(971)	108.7	2,268	(42.8)
2000 *	13,280	12,005	(1,275)	110.6	2,419	(52.7)
2001	13,634	12,607	(1,026)	108.1	2,280	(45.0)
2002	13,350	13,415	64	99.5	2,535	2.5
2003	13,162	14,023	861	93.9	3,028	28.4
2004 *	12,833	14,497	1,664	88.5	2,820	59.0
2005	13,021	15,867	2,846	82.1	3,231	88.1
2006	13,707	16,513	2,806	83.0	3,181	88.2
2007	14,694	17,434	2,740	84.3	3,572	76.7
2008 *	15,104	19,480	4,376	77.5	3,931	111.3
2009	15,342	20,083	4,741	76.4	3,873	122.4
2010	15,646	20,688	5,042	75.6	3,896	129.4
2011	15,458	21,630	6,172	71.5	3,786	163.0
2012	16,365	22,171	5,806	73.8	3,743	155.1
2013	17,469	22,653	5,184	77.1	3,559	145.6
2014 *	18,367	20,779	2,412	88.4	3,946	61.1
2015 *	19,489	22,018	2,529	88.5	4,006	63.1
2016 *	20,651	23,397	2,746	88.3	4,254	64.6
2017 *	21,889	24,750	2,861	88.4	4,431	64.6
<b>2018 *</b>	<b>23,213</b>	<b>26,047</b>	<b>2,834</b>	<b>89.1</b>	<b>4,451</b>	<b>63.7</b>

Dollar amounts are in thousands.

\*After changes in benefits and/or actuarial assumptions and/or actuarial cost methods.

#The Actuarial Value of Assets is four-year smoothed market value.

@Prior to 1999, results include General, Police and Fire.

Analysis of the dollar amounts of the actuarial value of assets, actuarial accrued liability, or unfunded actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the System's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the System is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

## **SECTION E**

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### **SUMMARY OF VALUATION RESULTS IN STATE FORMAT**

## Summary of Valuation Results in State Format (\$ amounts in thousands)

	October 1, 2018		October 1, 2017
	After	Before	
<b>(a) Participant Data</b>			
(i) Active members - number	61	61	64
- annual payroll	\$ 4,451	\$ 4,451	\$ 4,431
(ii) Retired members & beneficiaries (excl. disability)			
- number	31	31	32
- annualized benefit payroll	\$ 963	\$ 963	\$ 1,000
(iii) Disabled members & beneficiaries			
- number	6	6	6
- annualized benefit payroll	\$ 176	\$ 176	\$ 176
(iv) Terminated vested members			
- number	4	4	3
- annualized deferred benefit payroll	\$ 81	\$ 81	\$ 69
<b>(b) Assets</b>			
(i) Actuarial value for funding	23,213	23,213	21,889
(ii) Market value	23,779	23,779	22,048
<b>(c) Actuarial Liability</b>			
(i) Actuarial present value of active member benefits:			
service retirement	\$15,909	\$15,523	\$14,586
termination benefits - pension	1,582	1,532	1,540
disability retirement	692	678	699
survivor benefits (pre-retirement)	467	455	452
termination benefits - refunds	196	196	210
extra benefit reserve	122	122	108
prepaid employer reserve	25	25	39
Total	\$18,993	\$18,531	\$17,634
(ii) Actuarial present value of terminated vested member benefits			
	420	409	331
(iii) Actuarial present value of retired member benefits:			
service retirement & survivors	\$9,326	\$9,159	\$9,497
DROP reserve	0	0	0
disability retirement & survivors	1,550	1,593	1,558
Total	\$10,876	\$10,752	\$11,055
(iv) Total actuarial present value of future benefit payments	30,289	29,692	29,019
(v) Payables	0	0	0
(vi) Actuarial accrued liability	26,047	25,617	24,750
(vii) Unfunded actuarial accrued liability(1)	2,834	2,404	2,861

(1) Please refer to page A-13 for requested detail.

## Summary of Valuation Results in State Format (\$ amounts in thousands)

	October 1, 2018		October 1, 2017
	After	Before	
(d) Actuarial Present Value of Accrued Benefits (calculated in accordance with FASB Statement No. 35)			
(i) Vested accrued benefits			
Retired members and beneficiaries	\$ 11,024	\$ 10,899	\$ 11,202
Terminated members	420	409	331
Active members (includes non-forfeitable accum. member contributions of \$4,325 for 2018 and \$3,925 for 2017)	11,378	11,130	9,940
Total	\$ 22,822	\$ 22,438	\$ 21,473
(ii) Non-vested accrued benefits	795	761	730
(iii) Total actuarial p.v. of accrued benefits	23,617	23,199	22,203
(iv) Actuarial p.v. of accrued benefits at begin. of year	22,203	22,203	20,834
(v) Changes attributable to:			
Amendments	0	0	0
Assumption change	418	0	34
Operation of decrements	2,222	2,222	2,605
Benefit payments and refunds	(1,226)	(1,226)	(1,271)
Other	none	none	none
(vi) Net change	1,414	996	1,369
(vii) Actuarial p.v. of accr. benefits at end of year	\$ 23,617	\$ 23,199	\$ 22,203
(e) Plan costs for fiscal year beginning October 1, 2019 and October 1, 2018 (EANC)			
(i) Normal costs			
Service pensions	9.11%	8.80%	8.95%
Disability pensions	0.98%	0.95%	0.94%
Survivor pensions (pre-retirement)	0.50%	0.49%	0.49%
Deferred service pensions	2.52%	2.42%	2.42%
Refunds of member contributions	1.13%	1.14%	1.12%
Total normal cost	14.24%	13.80%	13.92%
(ii) Payment to amortize unf'd. act. accr. liab.	9.59%	8.96%	8.89%
(iii) FS112.64(5) Compliance	0.41%	0.39%	0.09%
(iv) Administrative expenses	1.99%	1.99%	1.81%
(v) Amount to be paid by members	7.95%	7.95%	7.95%
(vi) Expected plan sponsor/Chapter 185 contribution	18.28%	17.19%	16.76%
- dollars	844	794	771

## Summary of Valuation Results in State Format (\$ amounts in thousands)

		October 1, 2018		October 1, 2017
		After	Before	
(f)	Past Contributions (fiscal year ending 9/30/2018 & 2017)			
	(i) Required minimum:			
	Plan sponsor/Chapter 185 monies	\$ 691	\$ 691	\$ 678
	Members	351	351	335
	Total	\$ 1,042	\$ 1,042	\$ 1,014
	(ii) Actual:			
	Plan sponsor/Chapter 185 monies	677	677	658
	Prepaid contribution reserve	14	14	20
	Members	362	362	353
	Total	\$ 1,053	\$ 1,053	\$ 1,031
(g)	Net Experience Gain (Loss)	339	339	(211)
(h)	Other Disclosures			
	(i) Present value of active member future salaries			
	from attained age	\$30,676	\$30,421	\$31,287
	from entry age		not applicable to individual EANC method	
	(ii) Present value of active member future contribs.			
	from attained age	\$ 2,439	\$ 2,418	\$ 2,487

## Reconciliation of Membership for the Plan Year Ended September 30, 2018

	Active Members	Vested Terminated Members	Pension Recipients		
			Service Retired	Disability Retired	All Beneficiaries
<b>No. at Start of Year</b>	<b>64</b>	<b>3</b>	<b>28</b>	<b>6</b>	<b>4</b>
Increase (Decrease) from					
Service Retirement					
DROP Retirement					
Disability Retirement					
Deaths			(1)		
Other Pension Terminations					
Vested Terminations	(1)	1			
Non-Vested Terminations	(6)				
Refund					
New Entrants/Rehires	4				
<b>No. at End of Year</b>	<b>61</b>	<b>4</b>	<b>27</b>	<b>6</b>	<b>4</b>