Segal Consulting

City of Jacksonville Corrections Officers Retirement Plan

Actuarial Valuation and Review as of October 1, 2017

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April 20, 2018

Board of Trustees
City of Jacksonville Corrections Officers Retirement Plan
117 West Duval Street, Suite 330
Jacksonville, FL 32202

Dear Board Members:

I am pleased to submit this Actuarial Valuation and Review as of October 1, 2017. The census information on which our calculations were based was prepared by the Retirement System Administrative Office and the financial information was provided by the City's Finance Department. That assistance is gratefully acknowledged.

Statement by Enrolled Actuary: This actuarial valuation and/or cost determination 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.

The actuarial calculations were directed under the supervision of Jeffrey S. Williams. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

I look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: Jeffrey S. Williams

Jeffrey S. Williams, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary
Enrolled Actuary No. 17-7009

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City of Jacksonville Corrections Officers Retirement Plan Actuarial Valuation and Review as of October 1, 2017

Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal Consulting to present a valuation of the Plan as of October 1, 2017. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. 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; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of September 30, 2017, provided by the Retirement System Administrative Office;
- The assets of the Plan as of September 30, 2017, provided by the City's Finance Department;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. and
- The funding policy adopted by the Board, subject to the requirements of Part VII, Chapter 112, Florida Statutes.

Significant Issues

1. Segal Consulting ("Segal") strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance.
2. The actuarial determined contribution calculated in the October 1, 2017 actuarial valuation is for the plan year beginning October 1, 2018 (fiscal 2019).
3. Actual contributions made during the fiscal year ending September 30, 2017 were $19,162,000, 100.03% of the actuarially determined employer contribution for fiscal 2017. In the prior fiscal year, actual contributions were $18,864,000, 100.00% of the prior year actuarially determined employer contribution. For fiscal 2016 and fiscal 2017, contributions were made based on the actuarially determined employer contribution percentage. This policy has been changed for fiscal 2018 and the required contribution dollar amount is being contributed.
4. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 50.81%, compared to the prior year funded ratio of 49.50%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio is 52.30%, compared to 47.25% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.
5. Actuarial Standard of Practice No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions, states that an actuary preparing calculations of actuarially determined contributions should assess the material implications of the funding policy. This report includes two distinct contribution amounts, each with different implications.
    a. The **Actuarially Determined Employer Contribution (ADEC)** is an amount consistent with a funding policy which seeks to stabilize the unfunded actuarial accrued liability (UAAL) as a percentage of total Corrections Officers Retirement Plan (CORP) payroll, including Defined Contribution participants, where UAAL is measured relative to assets currently available to make benefit payments. Under this policy, assuming that all assumptions are met in aggregate, the UAAL is expected to be reduced to zero over a period of 30 years after reflecting an amortization period reset. Over the short term, this contribution policy would be expected to keep the UAAL roughly level over the next few years, primarily making payments on interest, and begin paying down the UAAL after that point.
    b. The **City's required contribution**, which is the ADEC adjusted to comply with state law, reduced by amortization of discounted allocated surtax revenue, is an amount consistent with a funding policy which seeks to stabilize the contribution requirement as a percentage of total CORP payroll, including Corrections Officers Defined Contribution Plan participants, relative to an anticipated increase in contribution income set to begin in the fiscal year beginning October 1, 2030. Under this policy, assuming that all assumptions are met in aggregate, the UAAL is expected to be reduced to zero by October 1, 2060, after all of the surtax revenue allocated to the plan is collected and contributed. Over the short term, this contribution policy is expected to lead to an increase in the UAAL, prior to the revenue stream commencing and paying it down.

Use of this contribution policy has been authorized by the Florida State Legislature and Jacksonville City Council

6. The actuarially determined employer contribution for fiscal 2019 is $19,141,501, an increase of $498,268 from the amount being contributed in fiscal 2018. The contribution as a percentage of projected payroll decreased from 69.26% of projected payroll to 68.63% of projected payroll.
7. The City's required contribution (the amount which will be contributed) for fiscal 2019 is $14,497,788, an increase of $524,683 from the amount being contributed in fiscal 2018. The contribution as a percentage of projected payroll increased from 51.91% of projected payroll to 51.98% of projected payroll.
8. The unfunded actuarial accrued liability (UAAL) is $185,639,499, which is an increase of $6,738,231 since the prior valuation.
9. The actuarial gain from investment and other experience was $2,042,013, or 0.54% of actuarial accrued liability.
10. The actuarial gain from investment experience was $63,293, or 0.02% of actuarial accrued liability.
11. The net experience gain from sources other than investment experience was $1,978,720, or 0.52% of the actuarial accrued liability.
12. The rate of return on the market value of assets was 15.83% for the October 1, 2016 to September 30, 2017 plan year. The return on the actuarial value of assets was 7.44% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial gain when measured against the assumed rate of return of 7.40%.
13. The following actuarial assumptions were approved by the Board and changed with this valuation:

    - The discount rate was lowered from 7.40% to 7.20%.

    As a result of this assumption change, the employer normal cost increased by $388,128 and the actuarial accrued liability increased by $9,863,395. The total impact was an increase in the actuarially determined employer contribution of $850,509, or 3.05% of projected payroll, and an increase in the City's required contribution of $704,936, or 2.53% of projected payroll.
14. The following plan change is included for the first time in this valuation:

    - The employee contribution rate increased from 8.00% to 10.00%.

    As a result of this plan change, the employer normal cost decreased by $485,392 and the actuarial accrued liability decreased by $283,924. The total impact was a decrease in the actuarially determined employer contribution of $531,352, or 1.90% of projected payroll. The City's required contribution decreased by the same amount as a result of this change.
15. The City changed the surtax allocation percentage from the prior valuation to the current valuation. In the 2016 valuation, CORP's allocation percentage was 6.00%; in the 2017 valuation, the allocation percentage has been decreased to 5.60%. This change was directed by the City based on its updated calculation of the Corrections Officers Retirement Plan's share of the City's unfunded liabilities. The change in the surtax allocation percentage caused the City's required contribution to increase by $327,511, or 1.17% of projected payroll.

16. The City is solely responsible for the assumption as to what percentage the surtax revenue will grow and Segal relies on the City for this assumption. This rate was set at 4.25% by the City for the projection period October 1, 2017 through January 1, 2061, and will be recalculated by the City every year and adopted by the City Council. Segal will ask the City each year to provide actual surtax revenue for the preceding fiscal year and an assumption as to future growth. The difference in actual and projected surtax revenue each year will be amortized as a gain or loss over 30 years. If surtax revenue grows more slowly or more quickly than expected, contribution requirements will increase or decrease accordingly.
17. The present value of the projected surtax revenue was determined and used in determination of the City's required contribution as follows:
    a. Actual 2017 surtax revenue was projected to increase by 4.25% each year thereafter through 2060.
    b. A share of 5.60% of the projected revenue for October 1, 2031 through December 31, 2060 was allocated to CORP.
    c. The revenue allocated to CORP was discounted at the valuation discount rate of 7.20% to October 1, 2017.
    d. The present value of projected surtax revenue as of October 1, 2017 allocated to CORP is $69,167,729.
    e. The present value amount of $69,167,729 was then amortized over a 30-year period (Section 3, Exhibit G).
    f. After the amortized value amount was adjusted for the timing of contributions and projected to October 1, 2018, this amount was used as an offset to the Actuarially Determined Employer Contribution to determine the City's required contribution for fiscal 2019.
18. The present value of projected surtax revenue does not decrease the UAAL. The amortized value of the projected surtax revenue is used as an offset to the ADEC.
19. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of September 30, 2018, will be provided separately.
20. GASB accounting does not permit any recognition of the allocated surtax revenue in determining the Net Pension Liability or Pension Expense. It is Segal's understanding that the City has discussed this issue with their external auditors and does not include any recognition of allocated surtax revenue in its audited financial statements.
21. This actuarial report as of October 1, 2017 is based on financial and demographic data as of that date. Changes subsequent to that date are not reflected and will affect future actuarial costs of the plan.
22. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions.
23. The financial information received states all results rounded to the nearest thousand. The results in this valuation are shown to the nearest dollar. Therefore, occasionally rounded numbers are combined with unrounded ones.

Summary of Key Valuation Results

		2018	2017	2016
Contributions for fiscal year beginning October 1:	• Actuarially determined employer contributions	$19,141,501	$18,643,233	$19,155,820
	• Actuarially determined employer contributions as a percent of payroll	68.63%	69.26%	67.73%
	• Actual employer contributions		--	19,162,000
	• City's required contribution*	14,497,788	13,973,105	N/A
	• As a percentage of projected payroll	51.98%	51.91%	N/A
Actuarial accrued liability for plan year beginning October 1:	• Retired participants and beneficiaries		$267,453,150	$248,567,082
	• Inactive vested participants		417,773	473,417
	• Active participants		109,509,159	105,194,174
	• Total		377,380,082	354,234,673
	• Normal cost including administrative expenses for plan year beginning October 1		8,236,141	7,495,160
Assets for plan year beginning October 1:	• Market value of assets (MVA)		$197,383,000	$167,387,000
	• Actuarial value of assets (AVA)		191,740,583	175,333,405
	• Actuarial value of assets as a percentage of market value of assets		97.14%	104.75%
Funded status for plan year beginning October 1:	• Unfunded actuarial accrued liability on market value of assets		$179,997,082	$186,847,673
	• Funded percentage on MVA basis		52.30%	47.25%
	• Unfunded actuarial accrued liability on actuarial value of assets		$185,639,499	$178,901,268
	• Funded percentage on AVA basis		50.81%	49.50%
Key assumptions:	• Net investment return		7.20%	7.40%
	• Inflation rate		2.75%	2.75%
	• Payroll growth for amortization purposes		1.25%	1.25%
Demographic data for plan year beginning October 1	• Number of retired participants and beneficiaries		368	355
	• Number of inactive vested participants		4	4
	• Number of active participants		638	610
	• Covered payroll		$27,548,015	$26,585,054
	• Average payroll		43,179	43,582
	• Projected payroll for next fiscal year		27,892,365	26,917,367

*Pursuant to State Law Chapter 2016-146 and City of Jacksonville Ordinance 2017-257-E and 2017-258-E.

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal Consulting ("Segal") relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the Retirement System Administrative Office. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the City's Finance Department. The Plan uses an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the Retirement Board. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Actuarial results in this report are not rounded, but that does not imply precision.
- If the Retirement Board is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Retirement Board should look to their other advisors for expertise in these areas.

As Segal Consulting has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

Participant Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, inactive vested participants, retired participants and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3, Exhibits A, B,* and *C*.

PARTICIPANT POPULATION: 2008 – 2017

Year Ended September 30	Active Participants	Inactive Vested Participants*	Retired Participants and Beneficiaries**	Total Non-Actives	Ratio of Non-Actives to Actives
2008	553	1	87	88	0.16
2009	545	1	136	137	0.25
2010	688	1	164	165	0.24
2011	675	1	199	200	0.30
2012	629	1	241	242	0.38
2013	631	1	274	275	0.44
2014	616	1	306	307	0.50
2015	651	1	328	329	0.51
2016	610	4	355	359	0.59
2017	638	4	368	372	0.58

*Excludes terminated participants due a refund of employee contributions
** Includes DROP participants

Active Participants

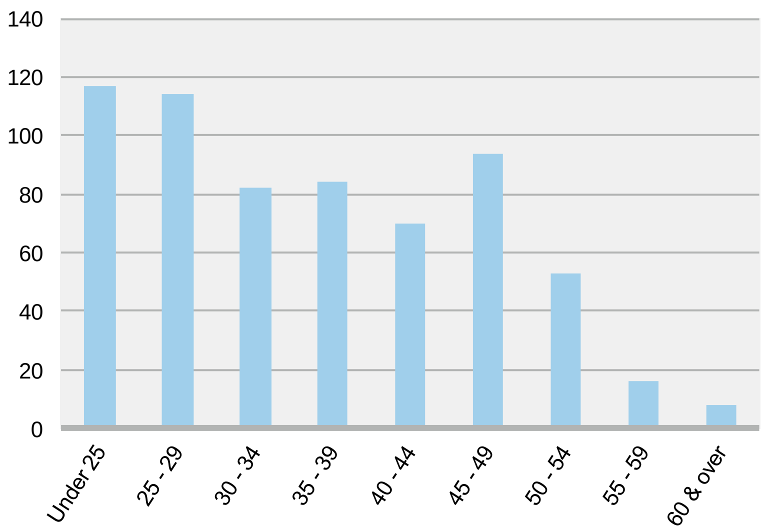
Plan costs are affected by the age, years of service and payroll of active participants. In this year’s valuation, there were 638 active participants with an average age of 36.3, average years of service of 8.0 years and average payroll of $43,179. The 610 active participants in the prior valuation had an average age of 37.1, average service of 8.3 years and average payroll of $43,582.

Inactive Participants

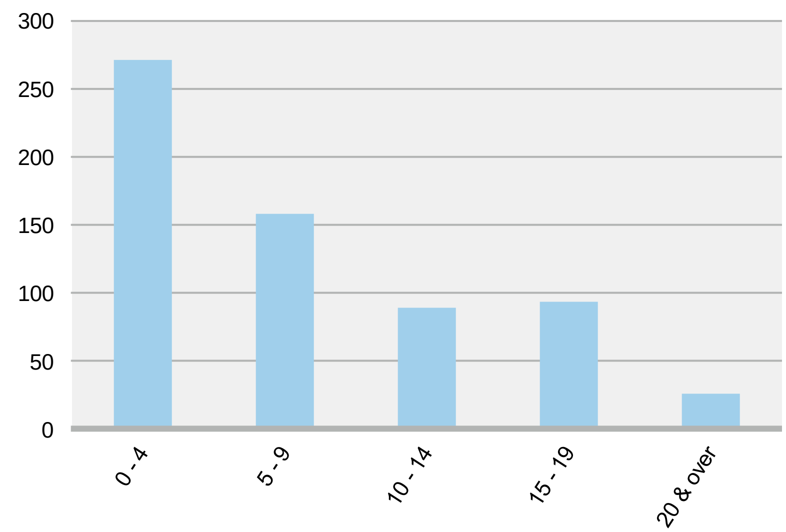
In this year’s valuation, there were four participants with a vested right to a deferred or immediate vested benefit.

Distribution of Active Participants as of September 30, 2017

ACTIVES BY AGE



ACTIVES BY YEARS OF SERVICE



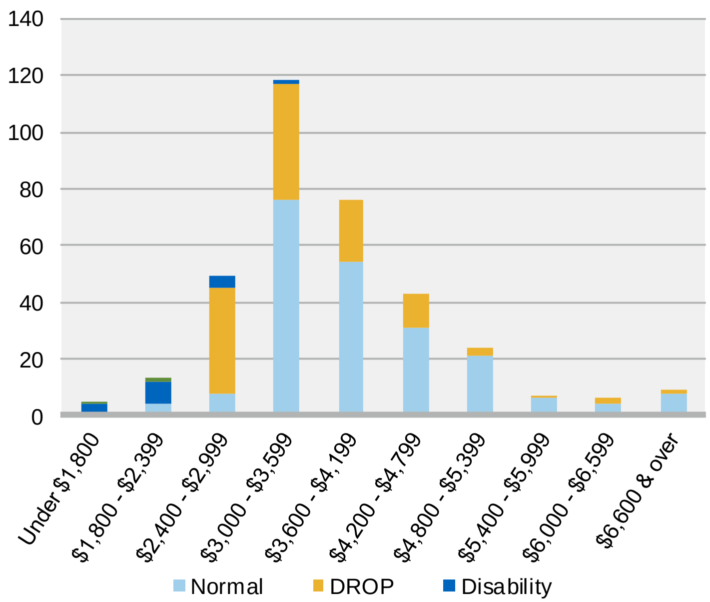
Retired Participants and Beneficiaries

As of September 30, 2017, 350 retired participants and 18 beneficiaries were receiving, or reserving for future receipt in the case of DROP retirees, total monthly benefits of $1,370,397. For comparison, in the previous valuation, there were 338 retired participants and 17 beneficiaries receiving monthly benefits of $1,297,376.

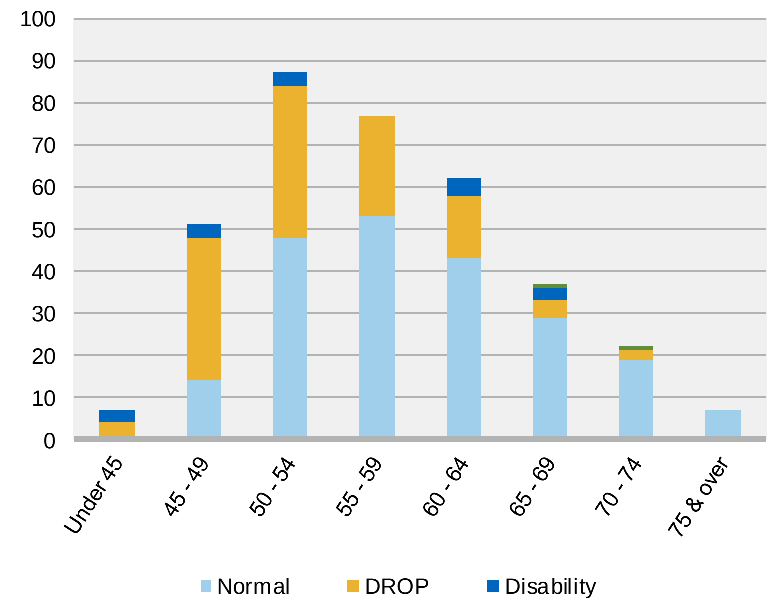
As of September 30, 2017, the average monthly benefit for retired participants is $3,724, compared to $3,655 in the previous valuation. The average age for retired participants is 57.5 in the current valuation, compared with 57.1 in the prior valuation.

Distribution of Pensioners as of September 30, 2017

PENSIONERS BY TYPE AND MONTHLY AMOUNT



PENSIONERS BY TYPE AND AGE



Historical Plan Population

The chart below demonstrates the progression of the active population over the last eight years. The chart also shows the growth among the retired population over the same time period.

PARTICIPANT DATA STATISTICS: 2010 – 2017

	Active Participants			Retired Participants and Beneficiaries*		
Year Ended September 30	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2010	688	38.3	8.6	164	54.8	3,354
2011	675	38.1	8.6	199	54.7	3,398
2012	629	38.3	8.8	241	55.4	3,359
2013	631	37.6	8.4	274	55.7	3,422
2014	616	37.4	8.3	306	56.0	3,532
2015	651	37.0	8.1	328	56.6	3,562
2016	610	37.1	8.3	355	57.1	3,655
2017	638	36.3	8.0	368	57.5	3,724

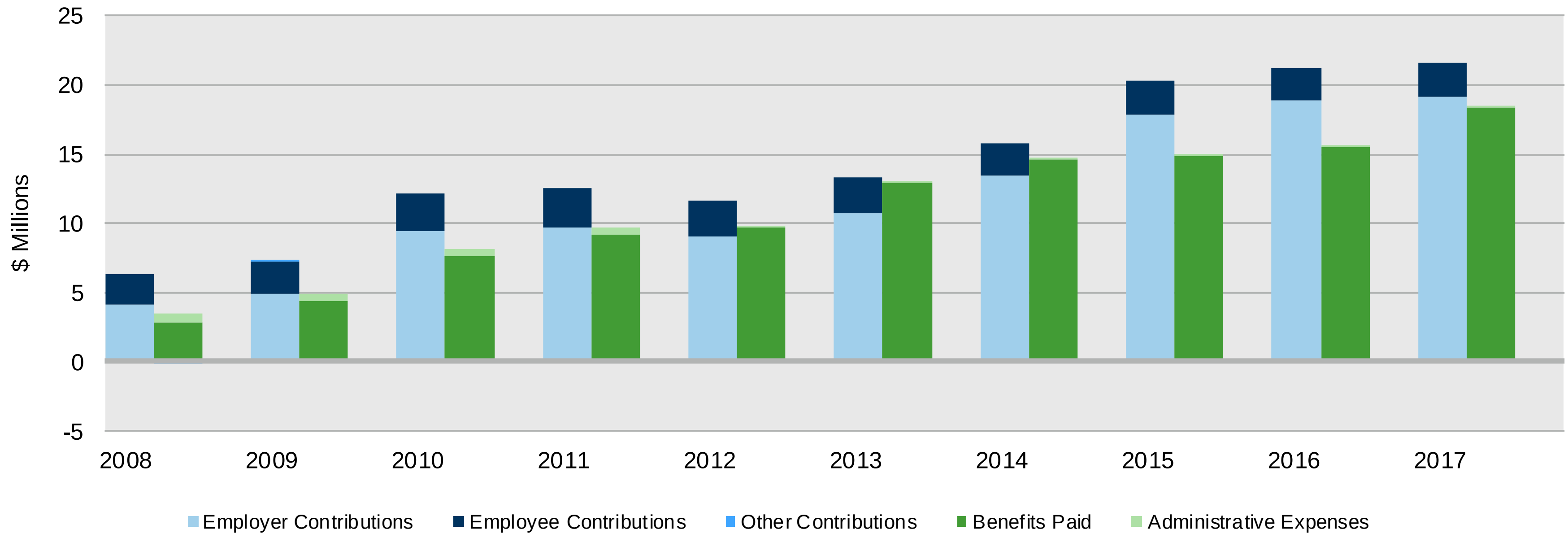
*Includes DROP participants not yet in pay status.

Financial Information

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and investment earnings (less investment fees) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Additional financial information, including a summary of transactions for the valuation year, is presented in *Section 3*, *Exhibits D*, *E* and *F*.

COMPARISON OF CONTRIBUTIONS MADE WITH BENEFITS AND EXPENSES PAID FOR YEARS ENDED SEPTEMBER 30, 2008 – 2017



It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

DETERMINATION OF ACTUARIAL VALUE OF ASSETS FOR YEAR ENDED SEPTEMBER 30, 2017

		Original Amount *	Percent Deferred	Unrecognized Amount**	
1.	Market value of assets, September 30, 2017				$197,383,000
2.	Calculation of unrecognized return				
(a)	Year ended September 30, 2017	$14,240,149	80%	$11,392,119	
(b)	Year ended September 30, 2016	70,675	60	42,405	
(c)	Year ended September 30, 2015	-15,203,738	40	-6,081,496	
(d)	Year ended September 30, 2014	5,183,479	20	289,389	
(e)	Year ended September 30, 2013	9,681,685	0	0	
(f)	Total unrecognized return				5,642,417
3.	Preliminary actuarial value: **(1) - (2f)**				$191,740,583
4.	Adjustment to be within 20% corridor				0
5.	Final actuarial value of assets as of September 30, 2017: **(3) + (4)**				191,740,583
6.	Actuarial value as a percentage of market value: **(5) ÷ (1)**				97.1%
7.	Amount deferred for future recognition: **(1) - (5)**				$5,642,417

*Total return minus expected return on a market value basis

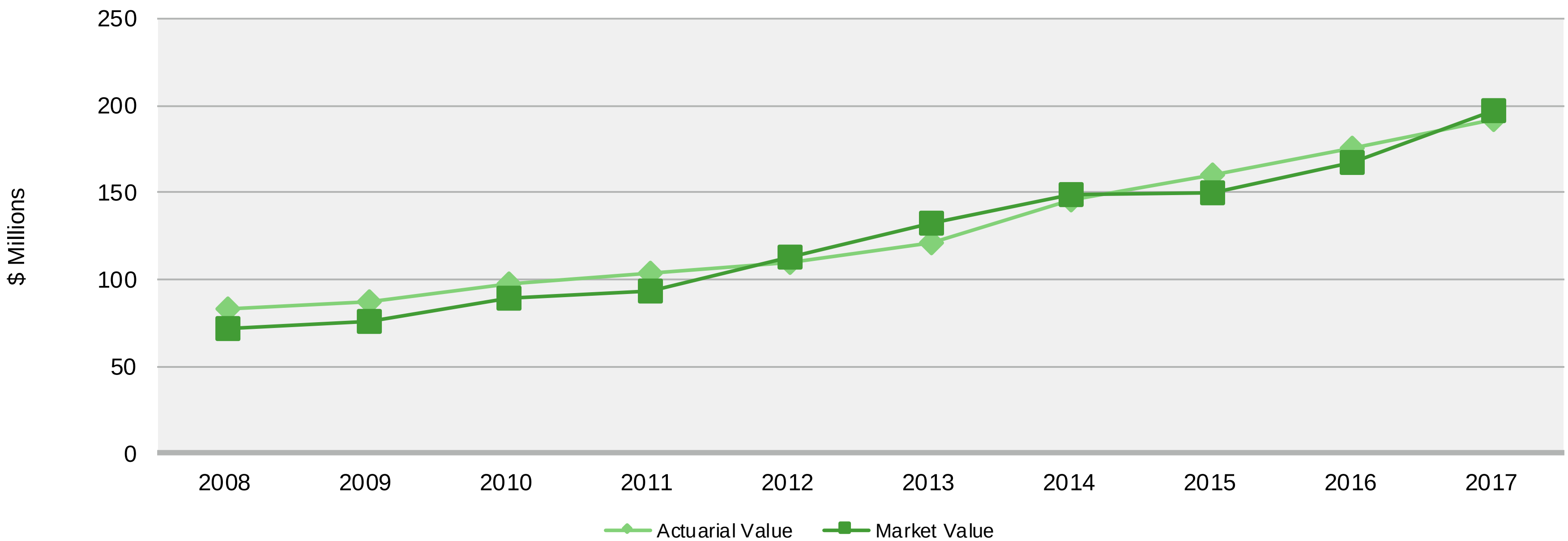
**Recognition at 20% per year over five years; effective October 1, 2014, the Plan accelerated the recognition of prior asset gain/loss basis by reflecting 72% of the outstanding asset gains/losses immediately.

***Deferred return as of September 30, 2017 recognized in each of the next four years:

(a) Amount recognized on September 30, 2018	$110,806
(b) Amount recognized on September 30, 2019	-178,583
(c) Amount recognized on September 30, 2020	2,862,165
(d) Amount recognized on September 30, 2021	2,848,029

Both the actuarial value and market value of assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

ACTUARIAL VALUE OF ASSETS VS. MARKET VALUE OF ASSETS AS OF SEPTEMBER 30, 2008 – 2017



Actuarial Experience

To calculate any actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), any contribution requirement will decrease from the previous year. On the other hand, any contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total gain is $2,042,013, which includes $63,293 from investment gains and $1,978,720 in gains from all other sources. The net experience variation from individual sources other than investments was 0.5% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

ACTUARIAL EXPERIENCE FOR YEAR ENDED SEPTEMBER 30, 2017

1	Net gain from investments	$63,293
2	Net gain from administrative expenses	3,039
3	Net gain from other experience	1,975,681
4	Net experience gain loss: **1 + 2 + 3**	$2,042,013

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the market value of assets was 15.83% for the year ended September 30, 2017.

The assumed rate of return on the actuarial value of assets was 7.40% for the year ended September 30, 2017. The actual rate of return on an actuarial basis for the 2017 plan year was 7.44%. Since the actual return for the year was greater than the assumed return, the Plan experienced an actuarial gain during the year ended September 30, 2017 with regard to its investments.

INVESTMENT EXPERIENCE

		Year Ended September 30, 2017		Year Ended September 30, 2016	
		Market Value	Actuarial Value	Market Value	Actuarial Value
1	Net investment income	$26,747,000	$13,158,178	$11,548,000	$9,803,158
2	Average value of assets	169,011,500	176,957,905	153,031,000	162,722,247
3	Rate of return: 1 ÷ 2	15.83%	7.44%	7.55%	6.02%
4	Assumed rate of return	7.40%	7.40%	7.50%	7.50%
5	Expected investment income: 2 x 4	12,506,851	13,094,885	11,477,325	12,204,169
6	Actuarial gain/(loss): 1 – 5	$14,240,149	$63,293	$70,675	-$2,401,011

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the actual market value investment return for the last ten years, including averages over select time periods.

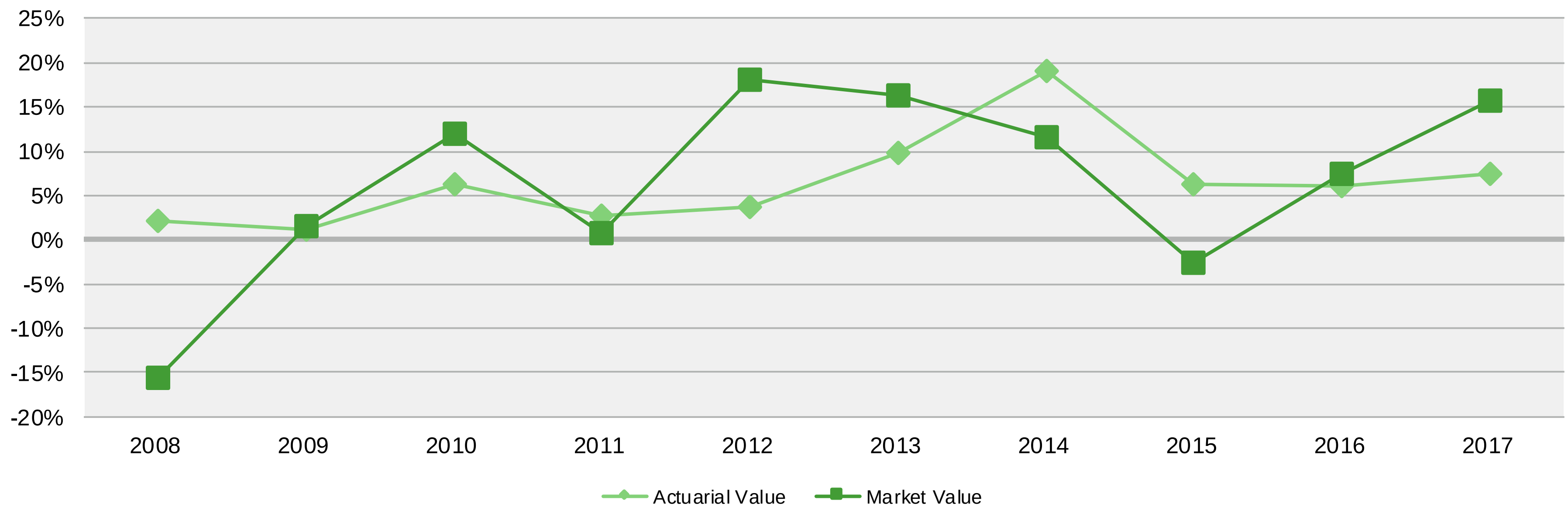
INVESTMENT RETURN – ACTUARIAL VALUE VS. MARKET VALUE: 2008 - 2017

	Actuarial Value Investment Return		Market Value Investment Return	
Year Ended September 30	Amount	Percent	Amount	Percent
2008		2.14%		-15.61%
2009		1.23		1.49
2010	$5,675,853	6.33	$9,391,000	12.03
2011	2,620,301	2.65	717,000	0.79
2012	3,890,663	3.73	17,166,000	18.14
2013	10,789,123	9.82	18,466,000	16.29
2014	23,230,602	19.12	15,468,000	11.66
2015	9,286,603	6.28	-3,849,000	-2.54
2016	9,803,158	6.02	11,548,000	7.55
2017	13,158,178	7.44	26,747,000	15.83
	$78,454,481		$95,654,000	
Most recent five-year average return		9.22%		9.50%
Most recent eight-year average return		7.75%		9.73%

Note: Each year's yield is weighted by the average asset value in that year.

Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

MARKET AND ACTUARIAL RATES OF RETURN FOR YEARS ENDED SEPTEMBER 30, 2008 - 2017



Administrative Expenses

Administrative expenses for the year ended September 30, 2017 totaled $75,000 compared to the assumption of $75,000. This resulted in a gain of $3,039 for the year, due to timing. Because the assumption is that expenses will equal the prior year's actual expenses the assumption remains $75,000 for the current year.

Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected), and
- salary increases (greater or smaller than projected).

The net gain from this other experience for the year ended September 30, 2017 amounted to $1,975,681, which is 0.5% of the actuarial accrued liability.

Changes in the Actuarial Accrued Liability

The actuarial accrued liability as of October 1, 2017 is $377,380,082, an increase of $23,145,409, or 6.5%, from the actuarial accrued liability as of the prior valuation date. The liability is expected to grow each year with normal cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed in the previous subsection).

Actuarial Assumptions

- The only assumption change reflected in this report is a decrease in the discount rate from 7.40% to 7.20%.
- This change increased the actuarial accrued liability by 2.68% and increased the normal cost by 4.99%.
- Details on actuarial assumptions and methods are in *Section 4, Exhibit I*.

Plan Provisions

- Effective October 1, 2017, the employee contribution rate increased from 8% to 10%.
- This change decreased the actuarial accrued liability by 0.08% and increased the normal cost by 0.85%.
- A summary of plan provisions is in *Section 4, Exhibit II*.

Development of Unfunded Actuarial Accrued Liability

DEVELOPMENT FOR YEAR ENDED SEPTEMBER 30, 2017

1	Unfunded actuarial accrued liability at beginning of year		$178,901,268
2	Employer normal cost at beginning of year		5,368,356
3	Employer contributions		19,162,000
4	Interest		
	• For whole year on 1 + 2	$13,635,952	
	• For half year on 3	-641,535	
	Total interest		12,994,417
5	Expected unfunded actuarial accrued liability		$178,102,041
6	Changes due to:		
	• (Gain)/loss	-2,042,013	
	• Assumptions	9,863,395	
	• Plan provisions	-283,924	
	Total changes		$7,537,458
7	Unfunded actuarial accrued liability at end of year		$185,639,499

Actuarially Determined Contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability. As of October 1, 2017, the actuarially determined contribution is $19,141,501, or 68.63% of payroll.

The contribution requirement as of October 1, 2017 are based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

ACTUARIALLY DETERMINED CONTRIBUTION FOR YEAR BEGINNING OCTOBER 1

		2017		2016	
		Amount	% of Projected Payroll	Amount	% of Projected Payroll
1.	Total normal cost	$8,161,141	29.26%	$7,420,160	27.57%
2.	Administrative expenses	75,000	0.27%	75,000	0.28%
3.	Expected employee contributions	-2,754,802	-9.88%	-2,126,804	-7.90%
4.	Employer normal cost: (1) + (2) - (3)	5,481,340	19.65%	5,368,356	19.94%
5.	Actuarial accrued liability	377,380,082		354,234,673	
6.	Actuarial value of assets	191,740,583		175,333,405	
7.	Unfunded actuarial accrued liability: (5) - (6)	185,639,499		178,901,268	
8.	Payment on unfunded actuarial accrued liability	12,728,760	45.64%	12,350,015	45.88%
9.	Total actuarially determined employer contribution: (4) + (8)*	19,141,501	68.63%	18,643,233	69.26%
10.	Amortized value of discounted value of projected surtax revenue*	-4,643,713	-16.65%	-4,670,128	-17.35%
11.	City's required contribution: (9) + (10)*	$14,497,788	51.98%	$13,973,105	51.91%
12.	Projected payroll	$27,892,365		$26,917,367	

*Adjusted for timing and projected to the next fiscal year; contributions are assumed to be paid at the end of every month.

Reconciliation of Actuarially Determined Contribution

The chart below details the changes in the actuarially determined contribution from the prior valuation to the current year's valuation.

RECONCILIATION OF ACTUARIALLY DETERMINED CONTRIBUTION FROM OCTOBER 1, 2017 TO OCTOBER 1, 2018

	Amount	% of Payroll
Actuarially Determined Contribution as of October 1, 2017	$18,643,233	69.26%
• Effect change in discount rate	850,509	3.16%
• Effect of expected change in amortization payment due to payroll growth	162,433	0.60%
• Effect of increase in employee contribution rate	-531,352	-1.97%
• Effect of contribution deferral to budget year	-56,221	-0.21%
• Effect of investment gain	-4,597	-0.02%
• Effect of other gains and losses on accrued liability	-143,726	-0.53%
• Net effect of other changes, including composition and number of participants	221,222	0.82%
Total change	$498,268	1.85%
Total change in percentage due to change in projected payroll		-2.48%
Actuarially Determined Contribution as of October 1, 2018	$19,141,501	68.63%

History of Employer Contributions

A history of the most recent years of contributions is shown below.

HISTORY OF EMPLOYER CONTRIBUTIONS: 2010 – 2019

	Actual Employer Contribution			Actuarially Determined Employer Contribution (ADEC)**		City's Required Contribution		
Fiscal Year Ended September 30	Amount	Percentage of Actual Payroll*	Percent Contributed	Amount	Percentage of Projected Payroll	Amount	Percentage of Payroll*	Percent Contributed
2010	$9,491,000	29.36%	104.33%	$9,096,850	31.78%	N/A	N/A	N/A
2011	9,711,000	30.51%	109.30%	8,884,794	31.78%	N/A	N/A	N/A
2012	9,066,000	31.32%	76.44%	11,860,912	35.45%	N/A	N/A	N/A
2013	10,742,000	38.54%	83.37%	12,884,770	39.11%	N/A	N/A	N/A
2014	13,522,000	49.40%	90.84%	14,884,963	49.93%	N/A	N/A	N/A
2015	17,832,000	63.48%	101.21%	17,618,896	62.81%	N/A	N/A	N/A
2016	18,864,000	70.96%	100.00%	18,863,935	68.64%	N/A	N/A	N/A
2017	19,162,000	69.56%	100.03%	19,155,820	67.73%	N/A	N/A	N/A
2018	- -	- -	- -	18,643,233	69.26%	$13,973,105	51.91%	- -
2019	- -	- -	- -	19,141,501	68.63%	14,497,788	51.98%	- -

*Estimated from covered payroll at year end.

**Prior to 2015, this amount was the Annual Required Contribution (ARC)

GFOA Solvency Test

The Actuarial Accrued Liability represents the present value of benefits earned, calculated using the plan's actuarial cost method. The Actuarial Value of Assets reflects the financial resources available to liquidate the liability. The portion of the liability covered by assets reflects the extent to which accumulated plan assets are sufficient to pay future benefits, and is shown for liabilities associated with employee contributions, pensioner liabilities, and other liabilities. The Government Finance Officers Association (GFOA) recommends that the funding policy aim to achieve a funded ratio of 100 percent.

GFOA SOLVENCY TEST AS OF SEPTEMBER 30

	2017	2016
Actuarial accrued liability (AAL)		
• Active member contributions	$16,206,078	$15,946,800
• Retirees and beneficiaries	267,453,150	248,567,082
• Active and inactive members (employer-financed)	93,720,854	89,720,791
Total	$377,380,082	$354,234,673
Actuarial value of assets	$191,740,583	$175,333,405
Cumulative portion of AAL covered		
• Active member contributions	100.00%	100.00%
• Retirees and beneficiaries	65.63%	64.12%
• Active and inactive members (employer-financed)	0.00%	0.00%

EXHIBIT A – TABLE OF PLAN COVERAGE

Category	Year Ended September 30 2017	Year Ended September 30 2016	Change From Prior Year
Active participants in valuation:			
• Number	638	610	4.6%
• Average age	36.3	37.1	-0.8
• Average years of service	8.0	8.3	-0.3
• Total payroll	$27,548,015	$26,585,054	3.6%
• Average payroll	43,179	43,582	-0.9%
• Employee contribution balances	16,206,078	15,946,800	1.6%
• Total active vested participants	366	401	-8.7%
Inactive vested participants	4	4	0.0%
Retired participants:			
• Number in pay status	242	218	-1.4%
• Average age	59.5	58.9	0.6
• Average monthly benefit	$4,045	$3,975	1.8%
DROP participants not yet in pay status:			
• Number	92	105	-12.4%
• Average age	52.1	52.9	-0.8%
• Average monthly benefit	$3,456	$3,488	-0.1%
Disabled participants:			
• Number in pay status	16	15	6.7%
• Average age	54.3	53.6	0.7
• Average monthly benefit	$2,214	$2,166	2.2%
Beneficiaries:			
• Number in pay status	18	17	5.9%
• Average age	62.6	65.1	-2.5
• Average monthly benefit	$2,117	$1,885	12.3%

EXHIBIT B – PARTICIPANTS IN ACTIVE SERVICE AS OF SEPTEMBER 30, 2017
BY AGE, YEARS OF SERVICE, AND AVERAGE PAYROLL

		Years of Service					
Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29
Under 25	117	117	- -	- -	- -	- -	- -
	$32,183	$32,183	- -	- -	- -	- -	- -
25 - 29	114	90	24	- -	- -	- -	- -
	35,630	34,060	$41,516	- -	- -	- -	- -
30 - 34	82	30	36	16	- -	- -	- -
	41,608	34,618	43,458	$50,551	- -	- -	- -
35 - 39	84	14	24	28	18	- -	- -
	46,094	34,369	43,354	47,455	$56,751	- -	- -
40 - 44	70	4	20	15	25	6	- -
	51,718	31,950	45,581	51,460	57,303	$62,724	- -
45 - 49	94	11	32	11	26	13	1
	52,361	35,732	46,162	50,768	57,409	66,743	$132,977
50 - 54	53	3	13	12	20	4	1
	51,915	33,752	44,610	48,014	54,323	72,517	117,617
55 - 59	16	1	4	6	4	1	- -
	50,042	34,812	44,535	49,688	57,267	60,528	- -
60 - 64	7	2	5	- -	- -	- -	- -
	42,432	35,742	45,108	- -	- -	- -	- -
65 - 69	1	- -	- -	1	- -	- -	- -
	45,600	- -	- -	45,600	- -	- -	- -
Total	638	272	158	89	93	24	2
	$43,179	$33,379	$44,138	$49,301	$56,583	$66,442	$125,297

EXHIBIT C – RECONCILIATION OF PARTICIPANT DATA

	Active Participants	Inactive Vested Participants	Disableds	DROP Participants	Retired Participants	Beneficiaries	Total
Number as of October 1, 2016	**610**	**4**	**15**	**105**	**218**	**17**	**969**
• New participants	111	N/A	N/A	N/A	N/A	N/A	111
• Terminations – with vested rights	-1	1	0	0	0	0	0
• Terminations – without vested rights	-33	N/A	N/A	N/A	N/A	N/A	-33
• Retirements	0	0	N/A	-27	27	N/A	0
• New disabilities	0	0	0	N/A	N/A	N/A	0
• New DROP participants	-14	N/A	N/A	14	N/A	N/A	0
• Deceased	0	0	0	0	-3	-1	-4
• New beneficiaries	N/A	N/A	N/A	N/A	N/A	2	2
• Lump sum cash-outs	-49	-1	0	0	0	0	-50
• Rehire	3	0	N/A	0	0	N/A	3
• Certain period expired	N/A	N/A	0	0	0	0	0
• Data adjustments	0	0	1	0	0	0	1
• Net transfers (to)/from General	11	0	0	0	0	0	11
Number as of October 1, 2017	**638**	**4**	**16**	**92**	**242**	**18**	**1,010**

EXHIBIT D – SUMMARY STATEMENT OF INCOME AND EXPENSES ON A MARKET VALUE BASIS

		Year Ended September 30, 2017		Year Ended September 30, 2016
Net assets at market value at the beginning of the year		$167,387,000		$150,223,000
Contribution income:				
• Employer contributions	$19,162,000		$18,864,000	
• Employee contributions	2,500,000		2,410,000	
• Less administrative expenses	-75,000		-75,000	
Net contribution income		*$21,587,000*		*$21,199,000*
Investment income:				
• Interest, dividends and other income	$1,466,000		$3,502,000	
• Asset appreciation	26,204,000		8,451,000	
• Less investment fees	-923,000		-405,000	
Net investment income		*$26,747,000*		*$11,548,000*
Total income available for benefits		**$48,334,000**		**$32,747,000**
Less benefit payments:				
• Benefit payments	-$12,157,000		-$9,875,000	
• DROP credits	-3,934,000		-4,832,000	
• Refunds	-5,281,000		-7,611,000	
• DROP withdrawals	4,710,000		6,976,000	
• DROP interest	-1,676,000		-241,000	
Net benefit payments		*-$18,338,000*		*-$15,583,000*
Change in reserve for future benefits		**$29,996,000**		**$17,164,000**
Net assets at market value at the end of the year		**$197,383,000**		**$167,387,000**

EXHIBIT E – SUMMARY STATEMENT OF PLAN ASSETS

		September 30, 2017		September 30, 2016
Cash equivalents		-$1,748,000		-$1,736,000
Total accounts receivable		$793,000		$704,000
Investments:				
• Equity in pooled investments*	$214,465,000		$183,408,000	
Total investments at market value		$214,465,000		$183,408,000
Total assets		$213,510,000		$182,376,000
Total accounts payable		-16,127,000		-14,989,000
Net assets at market value		**$197,383,000**		**$167,387,000**
Net assets at actuarial value		**$191,740,583**		**$175,333,405**

**The plan's assets are pooled with other City of Jacksonville Retirement Plans.*

EXHIBIT F – DEVELOPMENT OF THE FUND THROUGH SEPTEMBER 30, 2017

Year Ended September 30	Employer Contributions	Employee Contributions	Other Contributions	Net Investment Return*	Admin. Expenses	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2010	$9,491,000	$2,632,000	$485,000	$9,391,000	$560,000	$7,651,000	$89,622,000	$97,463,955	108.8%
2011	9,711,000	2,807,000	309,000	717,000	560,000	9,197,000	93,409,000	103,154,256	110.4%
2012	9,066,000	2,621,000	472,000	17,166,000	55,000	9,675,000	113,004,000	109,473,919	96.9%
2013	10,742,000	2,525,000	392,000	18,466,000	50,000	12,925,000	132,154,000	120,947,042	91.5%
2014	13,522,000	2,253,000	0	15,468,000	65,000	14,611,000	148,721,000	145,276,644	97.7%
2015	17,832,000	2,466,000	0	-3,849,000	73,000	14,874,000	150,223,000	159,914,247	106.5%
2016	18,864,000	2,410,000	0	11,548,000	75,000	15,583,000	167,387,000	175,333,405	104.7%
2017	19,162,000	2,500,000	0	26,747,000	75,000	18,338,000	197,383,000	191,740,583	97.1%

* On a market basis, net of investment fees

EXHIBIT G – TABLE OF AMORTIZATION BASES

Type*	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Fresh start	10/01/2016	30	$178,901,26	$12,270,788	29	$178,876,046
Experience gain	10/01/2017	30	-2,816,018	-190,680	30	-2,816,018
Plan amendment	10/01/2017	30	-283,924	-19,225	30	-283,924
Change in assumptions	10/01/2017	30	9,863,395	667,877	30	9,863,395
Total				**$12,728,760**		**$185,639,499**

TABLE OF SURTAX AMORTIZATION BASES

Discounted surtax revenue applied	10/01/2017	30	-$64,295,005	-$4,409,976	29	-$64,285,940
Surtax offset gain	10/01/2017	30	-1,534,336	-103,894	30	-1,534,336
Surtax offset allocation assumption change	10/01/2017	30	4,705,811	318,643	30	4,705,811
Surtax offset discount rate assumption change	10/01/2017	30	-3,286,369	-222,529	30	-3,286,369
Total				**-$4,417,756**		**-64,400,834**

* Level percentage of payroll; per Part VII, Chapter 112.64(5)(b) of Florida Statutes, outstanding balances were amortized using a 1.25% payroll growth rate for the October 1, 2017 valuation.

EXHIBIT H – DEFINITION OF PENSION TERMS

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners and Beneficiaries:	The single-sum value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
Actuarially Equivalent:	Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: Investment return - the rate of investment yield that the Fund will earn over the long-term future;

	Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates – the probability of disability retirement at a given age; Withdrawal rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; Salary increase rates - the rates of salary increase due to inflation and productivity growth.
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.
GASB 67 and GASB 68:	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Investment Return:	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL):	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Plan Fiduciary Net Position:	Market value of assets.
Total Pension Liability (TPL):	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

EXHIBIT I – SECTION 415

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $215,000 for 2017. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as form of benefits chosen and after tax contributions.

Benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

EXHIBIT J – SUPPLEMENTARY STATE OF FLORIDA INFORMATION
SUMMARY OF SALARY CHANGES

Year Ended September 30	Total Salary	Percent Change in Total Salary	Percent Change in Salary of Employees Remaining Active	Expected Percent Change in Salary of Employees Remaining Active
2007	$27,083,000	-2.23%	3.99%	5.59%
2008	26,334,000	-2.77%	3.58%	5.58%
2009	27,661,000	5.04%	3.93%	5.18%
2010*	27,869,052	0.75%	N/A	N/A
2010	32,329,400	16.88%	2.45%	5.28%
2011	31,832,037	-1.54%	3.09%	5.80%
2012	28,944,158	-9.07%	0.78%	6.15%
2013	27,871,010	-3.71%	3.03%	1.72%
2014	27,373,702	-1.78%	3.89%	1.70%
2015	28,091,083	2.62%	3.08%	1.66%
2016	26,585,054	-5.36%	2.63%	4.26%
2017	27,548,015	3.62%	4.03%	8.21%

Note: The average total payroll growth for the most recent ten years was 0.17% per year. Additional analysis of bargained pay increase applicable for the next two years was used to support a payroll increase assumption of 1.25%.

Salary history prior to October 1, 2010 was taken from the City's Comprehensive Annual Financial reports.

*Prior to the inclusion of new participants with greater than one year of employment.

EXHIBIT K – SUPPLEMENTARY STATE OF FLORIDA INFORMATION
RECENT HISTORY OF RECOMMENDED AND ACTUAL CONTRIBUTIONS

Fiscal Year Ended September 30	Valuation Date September 30	Contribution Rate as Percent of Valuation Payroll	Valuation Payroll	Recommended Contribution	Actual Contribution
2011	2008*	31.78%	$27,957,188	$8,884,794	$9,711,000
2012	2010	35.45%	33,460,929	11,860,912	9,066,000
2013	2011	39.11%	32,946,158	12,884,770	10,742,000
2014	2012	49.93%	29,812,483	14,884,963	13,522,000
2015	2013	62.81%	28,049,384	17,618,896	17,832,000
2016	2014	68.64%	27,480,459	18,863,935	18,864,000
2017	2015	67.73%	28,282,102	19,155,820	19,162,000
2018	2016	69.26%	26,917,306	18,643,233	--
2019	2017	68.63%	27,892,365	19,141,501	--

All amounts prior to the 2010 valuation date were prepared by the prior actuary.

*An actuarial valuation was not performed for the plan year beginning October 1, 2009. The recommended contribution is based on the 2008 valuation's contribution rate.

EXHIBIT L – SUPPLEMENTARY STATE OF FLORIDA INFORMATION
COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	Year Ended September 30, 2017			
	New Plan New Assumptions	New Plan Old Assumptions	Old Plan Old Assumptions	Year Ended September 30, 2016
Participant data				
• Active members	638	638	638	610
• Total annual payroll	$27,548,015	$27,548,015	$27,548,015	$26,585,054
• Retired members and beneficiaries	276	276	276	250
• Total annualized benefit	$12,629,026	$12,629,026	$12,629,026	$11,713,281
• Terminated vested members	4	4	4	4
• Total annualized benefit	$67,680	$67,680	$67,680	$68,436
• DROP participants	92	92	92	105
• Total annualized benefit	$3,815,746	$3,815,746	$3,815,746	$4,395,226
Actuarial value of assets	$191,740,583	$191,740,583	$191,740,583	$175,333,405
Present value of all future expected benefit payments:				
• Active members:				
» Retirement benefits	$159,951,241	$152,063,921	$152,061,395	$150,811,090
» Vesting benefits	2,730,782	2,696,370	2,395,672	2,355,617
» Disability benefits	3,545,491	3,413,989	3,411,485	3,550,766
» Death benefits	1,743,975	1,673,138	1,672,853	1,745,078
» Return of contributions	16,206,078	16,206,078	16,206,078	15,946,800
» Total	$184,177,567	$176,053,496	$175,747,483	$174,409,351
• Terminated vested members	417,773	401,506	401,506	473,417
• Retired members and beneficiaries	200,022,256	195,614,566	195,614,566	174,002,520
• DROP participants	67,430,894	65,716,001	65,716,001	74,564,562
Total	$452,048,490	$437,785,569	$437,479,556	$423,449,850

EXHIBIT M – SUPPLEMENTARY STATE OF FLORIDA INFORMATION
COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS
(CONTINUED)

	Year Ended September 30, 2017			
	New Plan New Assumptions	New Plan Old Assumptions	Old Plan Old Assumptions	Year Ended September 30, 2016
Unfunded actuarial accrued liability	$185,639,499	$175,776,104	$176,060,028	$178,901,268
Actuarial present value of accrued benefits				
Vested accrued benefits				
Active members	$81,311,617	$78,442,273	$78,442,273	$74,586,156
Inactive members	417,773	401,506	401,506	473,417
Pensioners and beneficiaries	200,022,256	195,614,566	195,614,566	174,002,520
DROP participants	67,430,894	65,716,001	65,716,001	74,564,562
Nonvested active members	1,373,735	1,240,236	1,239,879	1,002,110
Total	$350,556,275	$341,414,582	$341,414,225	$324,628,765
Pension cost				
Normal cost, including administrative expenses	$8,236,141	$7,848,013	$7,782,445	$7,495,160
Expected employee contributions	-2,754,802	-2,754,802	-2,203,841	-2,126,804
Level % of payroll payment to amortize unfunded actuarial accrued liability	12,728,760	12,290,393	12,309,993	12,390,015
Amortized value of discounted value of allocated surtax revenue	-4,417,756	-4,599,549	-4,599,849	-4,438,450
Total minimum annual cost payable monthly at valuation date	14,318,803	13,622,569	13,809,771	13,800,598
Total employer cost projected to budget year	14,497,788	13,792,852	13,982,393	13,973,105
Projected payroll	27,892,365	27,892,365	27,892,365	26,917,367
As % of projected payroll	51.98%	49.45%	50.13%	51.91%
Present value of active members' future salaries at attained age	$252,014,362	$249,134,628	$249,134,628	$247,984,129
Present value of expected future employee contributions	25,088,896	24,800,922	19,840,738	24,286,712

EXHIBIT N – SUPPLEMENTARY STATE OF FLORIDA INFORMATION
ACTUARIAL PRESENT VALUE OF ACCUMULATED PLAN BENEFITS

Factors	Change in Actuarial Present Value of Accumulated Plan Benefits	
		$324,628,765
Benefits accumulated, net experience gain or loss, changes in data	$11,779,437	
Benefits paid	-18,338,000	
Interest	23,344,023	
Plan changes	357	
Changes in assumptions	9,141,693	
Net increase	$25,927,510	
As % of payroll	94.12%	
Actuarial present value of accumulated benefits as of October 1, 2017		$350,556,275

EXHIBIT O – SUPPLEMENTARY STATE OF FLORIDA INFORMATION
RECONCILIATION OF DROP ACCOUNTS

Attained Age	Total Actives*	Eligible for Normal**	Number Retiring	Number Entering DROP
Under 40	352	- -	- -	- -
40	11	- -	- -	- -
41	15	- -	- -	- -
42	14	3	- -	2
43	22	3	- -	1
44	20	3	- -	- -
45	22	4	- -	2
46	26	4	- -	2
47	25	7	- -	2
48	18	5	- -	2
49	11	2	- -	- -
50	13	1	- -	- -
51	13	- -	- -	- -
52	10	2	- -	2
53	7	1	- -	- -
54	6	- -	- -	- -
55	8	1	- -	- -
56	2	- -	- -	- -
57	3	- -	- -	- -
58	3	- -	- -	- -
59	1	1	- -	1
60	3	- -	- -	- -
61	1	- -	- -	- -
62	2	- -	- -	- -
63	1	- -	- -	- -
64	1	- -	- -	- -
65	- -	- -	- -	- -
Total	610	37	0	14

*Number of active participants from prior valuation

**Number of active participants either eligible for retire as of October 1, 2016 or who became eligible during the plan year ended October 1, 2017.

Section 4: Actuarial Valuation Basis

EXHIBIT I – ACTUARIAL ASSUMPTIONS AND ACTUARIAL COST METHOD

Rationale for Assumptions

The information and analysis used in selecting each demographic assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended September 30, 2012. Experience data is reviewed in conjunction with each annual valuation, and an updates to mortality and the discount rate have been made since the last experience study. Based on professional judgment, no additional assumption changes are warranted at this time.

Net Investment Return:

7.20%

The net investment return assumption was chosen by the Retirement System's Board of Trustees, with input from the actuary. This assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation.

Salary Increases (including inflation):

Service	Rate (%)
0-4	6.0
5-9	5.0
10-14	4.0
15+	3.0

The inflation component of the salary scale has been adjusted from 2.75% to 6.50% for 2017-2018 and 7.00% for 2019, with subsequent increases resuming at the assumed inflation rate of 2.75%.

Inflation Rate:

2.75%

Payroll Growth:

1.25% used for amortization of unfunded liability amounts, based on the requirement in the Florida Statutes that the assumption for this purpose may not exceed the average annual growth for the preceding ten years. Negotiated pay level increases were taken into consideration in setting a payroll growth that is expected to be achieved and maintained on a ten-year average basis. The Fund's long-term payroll growth assumption is equal to the inflation assumption of 2.75%.

Value of Applicable Tax Revenue:

Actual revenue of $86,148,000 for fiscal 2017 is used as the basis of the City's revenue projection. This amount is prior to application of the allocation percentage.

Tax Revenue Growth Rate:

4.25%. This assumption is determined by the City. Segal has not reviewed the information used to set this assumption, but Segal previously reviewed the sensitivity of this assumption when it was initially set.

Projected Tax Revenue Allocation:	5.60%. This percentage is determined by the City.	
Administrative Expenses:	Previous year's actual expenses; $75,000 for October 1, 2017.	
Mortality Rates:	*Pre-retirement:*	Male Non-Disabled (Special Risk): RP2000, 10% Combined Healthy White Collar / 90% Combined Healthy Blue Collar, set forward 2.5 years, projected generationally with Scale BBM
		Female Non-Disabled: RP2000, 100% Combined Healthy White Collar, set forward 2.5 years, projected generationally with Scale BBF
	Healthy annuitants:	Male Non-Disabled (Special Risk): RP2000, 10% Annuitant White Collar / 90% Annuitant Blue Collar, set forward 2.5 years, projected generationally with Scale BBM
		Female Non-Disabled: RP2000, 100% Annuitant White Collar, set forward 2.5 years, projected generationally with Scale BBF
	Disabled annuitants:	RP-2000 Disabled Retiree Mortality Table, set back four years for males and set forward two years for females
		The FRS Special Risk Tables, set forward 2.5 years reasonably reflects the healthy annuitant mortality experience of the Corrections Officers Retirement Plan as of the measurement date. The RP-2000 Disabled Retiree Mortality Table, set back four years for males and set forward two years for females reasonably reflect the disabled annuitant mortality experience as of the measurement date. The mortality improvement assumptions are mandated under state law.

Termination Rates before Retirement:

Age	Rate (%)			
	Mortality		Disability	
	Male	Female	Male	Female
20	0.04	0.02	0.04	0.02
25	0.04	0.02	0.04	0.03
30	0.09	0.04	0.06	0.05
35	0.12	0.05	0.08	0.08
40	0.15	0.08	0.12	0.11
45	0.20	0.13	0.18	0.17
50	0.31	0.20	0.31	0.27
55	0.58	0.35	0.49	0.43
60	1.12	0.64	0.82	0.56
65	2.00	1.16	0.00	0.00

* Mortality rates shown for base table

**100% of disabilities are assumed to be non-service incurred.

Service	Withdrawal**
0 - 1	7.00
1 - 2	7.00
2 - 3	5.00
3 - 4	5.00
4 - 5	5.00
5 - 6	5.00
6 - 7	4.00
7 - 8	4.00
8 - 9	4.00
9 - 10	4.00
10+	1.00

**Rate set to 1.00% after age 45. All withdrawal rates are set to 0% after eligibility for retirement.

Retirement Rates:	100% retirement assumed at age 65 with 5 years of service; for ages less than 65, retirement rate assumptions are based on service as follows:

Service	Rate (%)*
Under 20	0%
20	50
21 - 23	30
24	40
25 - 29	50
30 & Over	100

**Above rates are adjusted by a factor of 75% for ages under 45.*

Refund of Contributions:	95% of participants that are vested and terminate are assumed to take a refund of their employee contributions in lieu of their accrued benefit deferred to age 65.
Retirement Age for Inactive Vested Participants:	65
Unknown Data for Participants:	Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.
Weighted Average Retirement Age:	Age 62, determined as follows: The weighted average retirement age for each participant is calculated as the sum of the product of each potential current or future retirement age times the probability of surviving from current age to that age and then retiring at that age, assuming no other decrements. The overall weighted retirement age is the average of the individual retirement ages based on all the active participants included in the October 1, 2017 actuarial valuation.
Family Composition:	50% of participants are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their spouses.
Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual and the expected market return, and is recognized over a five - year period, further adjusted, if necessary, to be within 20% of the market value.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age at the time the participant commenced employment. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by compensation, with Normal Cost determined as if the current benefit accrual rate had always been in effect. Normal Cost is not included for participants who are assumed to retire with 100% certainty in the upcoming plan year based on the retirement assumptions.

Justification for Change in Actuarial Assumptions:	The following assumption changes were reflected in this valuation: ➤ Discount rate was lowered from 7.40% to 7.20% ➤ Surtax allocation percentage was lowered by the City from 6.00% to 5.60%

EXHIBIT II – SUMMARY OF PLAN PROVISIONS

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year:	October 1 through September 30	
Plan Status:	Closed as of September 30, 2017	
Normal Retirement:	*Age Requirement*	Age 65 with five years of Credited Service or any age with 20 years of Credited Service.
	Regular Benefit Amount	3.0% of Final Monthly Compensation times years of Credited Service for the first 20 years plus 2.0% of Final Monthly Compensation times years of Credited Service for years in excess of 20. However, the benefit may not exceed 80% of Final Monthly Compensation.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$61.62 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Early Retirement:	None	
Service-Incurred Disability	*Age Requirement*	None
	Service Requirement	None
	Regular Benefit Amount	50% of the average salary earned in the last three years immediately preceding disability retirement.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$61.62 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Non-service Incurred Disability:	*Age Requirement*	None
	Service Requirement	5 years of Credited Service
	Regular Benefit Amount	25% percent of the average salary earned in the last three years immediately preceding disability retirement. For each year of service in excess of 5 years, the benefit shall be increased 2.5%, to a maximum of 50%.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.

	Minimum Benefit Amount	$61.62 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Vesting:	*Age Requirement*	None
	Service Requirement	5 years of Credited Service
	Regular Benefit Amount	Accrued Normal Retirement Benefit payable at age 65.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month. Payable at Age 65.
	Minimum Benefit Amount	$61.62 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Spouse's Pre-Retirement Death Benefit:	*Age Requirement*	None
	Service Requirement	None
	Regular Benefit Amount	If the Member is eligible for retirement, the surviving spouse is entitled to 75% of the member's accrued retirement benefit. If the Member is not eligible for retirement, the surviving spouse is entitled to 75% of the pension the Member would have received if the Member had worked to eligibility for Normal Retirement at current salary, using a 2% annual accrual rate.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Member's Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	75% of $61.62 per whole year of Member's Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Spouse's Post-Retirement Death Benefit:	*Regular Benefit Amount*	Surviving spouse is entitled to 75% of the Member's regular benefit.
	Supplemental Benefit Amount	Surviving spouse is entitled to 100% of the Member's supplemental benefit.
	Minimum Benefit Amount	75% of the Member's Minimum Benefit Amount at retirement.
Member:	All City Corrections Officers hired prior to October 1, 2107.	
Member Contributions:	10% of Earnable Compensation, additional 2% of Earnable Compensation during DROP participation.	
Credited Service:	The number of full years and months worked from date of participation to date of termination or retirement, plus any prior service purchased.	
Final Monthly Compensation:	Average monthly rate of Earnable Compensation during the highest 36 consecutive months (78 pay periods) out of the last ten years of employment.	
Earnable Compensation:	Base pay for regular hours worked as an employee, plus service raises and excluding bonuses, adjusted compensation, overtime or any extra compensation over and above regularly budgeted salaries.	

Cost of Living Adjustment:	On the December 1st after the initial benefit commencement date, and on each December 1st thereafter, the regular benefit is increased by 3%.
DROP:	Members with 20 or more years of service may elect to defer receipt of their retirement benefits while continuing employment with the City for up to 5 years. Upon the effective date of participating in the DROP, a member's years of service and Final Monthly Compensation become frozen for purposes of determining pension benefits. Additional service beyond the date of DROP participation no longer accrues any additional benefits under the Retirement System. Benefits that would have been payable are accumulated at interest to date of termination and paid or rolled over in a single sum, and payments are made directly to the Member thereafter based on the accrued retirement benefit at the DROP start date. COLA increases start at termination of employment rather than at the start of the DROP.
Changes in Plan Provisions:	The following plan changes have been reflected in this valuation: ➤ The employee contribution rate increased from 8% to 10% of pay effective October 1, 2017.

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EXHIBIT 1

General Information – "Financial Statements", Note Disclosures and Required Supplementary Information for a Single Employer Pension Plan

Plan membership: At September 30, 2017, pension plan membership consisted of the following:

Inactive employees or beneficiaries currently receiving benefits	368
Inactive employees entitled to but not yet receiving benefits	4
Active employees	638
Total	1,010

Benefits provided: Please see Section 4, Exhibit II, of the October 1, 2017 actuarial valuation for a summary of plan provisions.

Contributions: Each year, the City contributes the actuarially determined contribution consistent with the funding policy, as a percentage of pay. The actuarially determined contribution is equal to the normal cost of the Plan plus a payment on the unfunded actuarial accrued liability. The members contribute 10% of earnable compensation, plus 2% of earnable compensation during DROP participation.

EXHIBIT 2

Net Pension Liability

The components of the net pension liability of the Jacksonville Corrections Officers Retirement Plan at September 30, 2017 were as follows:

Total pension liability	$395,237,321
Plan fiduciary net position	213,023,000
Net pension liability	$182,214,321
Plan fiduciary net position as a percentage of the total pension liability	53.90%

Actuarial assumptions. The total pension liability was determined based on an actuarial valuation as of September 30, 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.75%*
Salary increases	3.00% - 6.00%, of which 2.75% is the Plan's long-term payroll inflation assumption. The inflation component of the salary increase assumption was adjusted to reflect bargained increases over the next two years.
Investment rate of return	7.20%, net of pension plan investment expenses, including inflation
Pre-retirement mortality rates	10% RP2000 Combined Healthy White Collar and 90% RP2000 Combined Healthy Blue Collar, set forward 2.5 years, projected generationally with Scale BB for males; RP2000 Combined Healthy White Collar, set forward 2.5 years, projected generationally with Scale BB for females.
Healthy annuitant mortality rates	10% RP2000 White Collar Annuitant and 90% RP2000 Blue Collar Annuitant, set forward 2.5 years, projected generationally with Scale BB for males; RP2000 White Collar Annuitant, set forward 2.5 years, projected generationally with Scale BB for females.

* *The Plan's payroll inflation assumption is 2.75%. However, based on Part VII, Chapter 112.64(5)(a) of Florida Statutes, an assumption of 1.25% was used for amortization purposes in the October 1, 2017 valuation.*

Disabled annuitant mortality rates	RP-2000 Disabled Retiree Mortality Table, set back four years for males and set forward two years for females The FRS Special Risk Tables, set forward 2.5 years, reasonably reflect the healthy annuitant mortality experience of the Corrections Officers Retirement Plan as of the measurement date. The RP-2000 Disabled Retiree Mortality Table, set back four years for males and set forward two years for females reasonably reflect the disabled annuitant mortality experience as of the measurement date. The mortality improvement assumptions are mandated under state law.

With the exception of the mortality assumption, the demographic assumptions used in the October 1, 2017 valuation were based on the results of an experience study for the period October 1, 2007 to September 30, 2012. The base tables and projection scale used in the mortality assumptions are mandated by law and have been adjusted based on an interim study of the Plan's mortality experience through September 30, 2016.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of September 30, 2017 are summarized in the following table. The long-term expected real rates of return are based on 20-year projections of capital market assumptions provided by Segal Marco Advisors.

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Domestic equity	35%	6.40%
International equity	20%	7.40%
Fixed income	19%	1.75%
Real estate	25%	5.10%
Cash	1%	1.10%
Total	100%	

**The expected real rate of return is net of inflation.*

Discount rate: The discount rate used to measure the total pension liability is 7.20%. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at their applicable contribution rates and that City contributions will be made at rates equal to the actuarially determined contribution rates. Based on these assumptions, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on the Plan's investments was applied to all periods of projected benefit payments to determine the total pension liability. Cash flow projections were run for a 120-year period.

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the Jacksonville Corrections Officers Retirement Plan, calculated using the discount rate of 7.20%, as well as what the Plan's net pension liability would be if it were calculated using a discount rate that is one percentage-point lower (6.20%) or one percentage-point higher (8.20%) than the current rate:

	1% Decrease (6.20%)	Current Discount (7.20%)	1% Increase (8.20%)
Jacksonville Corrections Officers Retirement Plan's net pension liability	$239,159,640	$182,214,321	$136,437,106

EXHIBIT 3

Schedules of Changes in Jacksonville CORP Net Pension Liability – Last Two Fiscal Years

	2017	2016
Total pension liability		
Service cost	$7,329,735	$7,090,819
Interest	27,283,975	25,390,625
Change of benefit term	73,780	0
Differences between expected and actual experience	-2,054,491	-1,418,089
Changes of assumptions	9,950,689	16,320,426
Benefit payments, including refunds of employee contributions	-17,438,000	-17,486,000
Net change in total pension liability	$25,145,688	$29,897,781
Total pension liability – beginning	370,091,633	340,193,852
Total pension liability – ending (a)	$395,237,321	$370,091,633
Plan fiduciary net position		
Contributions – employer	$19,162,000	$18,864,000
Contributions – employee	2,500,000	2,410,000
Net investment income	26,747,000	11,548,000
Benefit payments, including refunds of employee contributions	-17,438,000	-17,486,000
Administrative expense	-75,000	-75,000
Net change in plan fiduciary net position	$30,896,000	$15,261,000
Plan fiduciary net position – beginning	182,127,000	166,866,000
Plan fiduciary net position – ending (b)	213,023,000	182,127,000
Net pension liability – ending (a) – (b)	$182,214,321	$187,964,633
Plan fiduciary net position as a percentage of the total pension liability	53.90%	49.21%
Covered employee payroll	$27,548,015	$26,585,054
Net pension liability as percentage of covered employee payroll	661.44%	707.03%

Notes to Schedule:

Benefit changes: The employee contribution rate increased from 8% to 10% of pay effective October 1, 2017. For accounting purposes, this change is reflected on September 30, 2017.

The Plan was closed to new entrants as of October 1, 2017. This closure had no immediate impact on the total pension liability.

Change of Assumptions: As of September 30, 2016, the mortality assumption was updated pursuant to Florida Statute Section 112.63(f), the assumed investment return was lowered from 7.50% to 7.40% and the inflation component of the salary scale was adjusted for the following three years to reflect bargained increases with employee unions.

As of September 30, 2017, the assumed investment return was lowered from 7.40% to 7.20%.

EXHIBIT 4

Schedule of Jacksonville CORP's Contributions – Last Ten Fiscal Years

Year Ended September 30	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll[1]	Contributions as a Percentage of Covered Employee Payroll	Percentage of Payroll Actually Contributed Throughout the Year[2]
2008	$4,329,000	$4,350,000	($21,000)	$26,334,000	16.52%	13.86%
2009	5,268,000	5,247,000	21,000	27,661,000	18.97%	17.16%
2010	9,096,850	9,491,000	(394,150)	32,329,400	29.36%	31.78%
2011	8,884,794	9,711,000	(826,206)	31,832,037	30.51%	31.78%
2012	11,860,912	9,066,000	2,794,912	28,944,158	31.32%	35.45%
2013	12,884,770	10,742,000	2,142,770	27,871,010	38.54%	39.11%
2014	14,884,963	13,522,000	1,362,963	27,373,702	49.40%	49.93%
2015	17,618,896	17,832,000	(213,104)	28,091,083	63.48%	62.81%
2016	18,863,935	18,864,000	(65)	26,585,054	70.96%	68.64%
2017	19,155,820	19,162,000	(6,180)	27,548,015	69.56%	67.73%

[1] Pensionable payroll as of the valuation measurement date.

[2] The City contributes the percentage of payroll represented by the actuarially determined contribution in the corresponding actuarial valuation. Actual dollar contributions may be more or less than the actuarially determined contributions due to actual payroll being different from projected payroll.

Notes to Schedule:

Valuation date:

The actuarially determined contribution (ADC) for a given fiscal year is determined based on an actuarial valuation as of the beginning of the prior fiscal year. The actuarially determined contribution for the fiscal year ending September 30, 2017 was determined based on the October 1, 2015 actuarial valuation.

Methods and used assumptions to determine contribution rates for the year ended September 30, 2017:

Actuarial cost method	Entry Age
Amortization method	Level percent of payroll, using 0.68% annual increases*
Remaining amortization period	All new bases are amortized over 30 years Effective period for combined bases as of October 1, 2015 was 23 years.
Asset valuation method	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.
Investment rate of return	7.50%, including inflation, net of pension plan investment expense
Inflation rate	2.75%*
Projected salary increases	3.00% - 6.00%, of which 2.75% is the Plan's long-term payroll inflation assumption. The inflation component of the salary increase assumption was adjusted to reflect bargained increases over the next three years.
Cost-of-living adjustments	Plan provisions contain a 3.00% COLA
Retirement rates	100% retirement assumed at age 65 with 20 years of service; for ages less than 65, retirement rate assumptions are based on service as follows:

Service	Rate (%)*
Under 20	0%
20	50
21-23	30
24	40
25-29	50
30 & Over	100

**Above rates are adjusted by a factor of 75% for ages under 45.*

**The Fund's payroll inflation assumption is 2.75%. However, based on Part VII, Chapter 112.64(5)(a) of Florida Statutes, an assumption of 0.68% was used for amortization purposes in the October 1, 2015 valuation.*

Mortality:	
Pre-retirement	RP-2014 Blue Collar Employee Mortality Table, set forward four years for males and three years for females, projected generationally with Scale MP-2015
Healthy annuitants	RP-2014 Blue Collar Healthy Annuitant Mortality Table, set forward four years for males and three years for females, projected generationally with Scale MP-2015
Disabled annuitants	RP-2014 Disabled Retiree Mortality Table, set forward four years, projected generationally with Scale MP-2015
Other information:	See Exhibit 3 for the history of changes to plan provisions and assumptions, if any.

EXHIBIT 5

Development of Pension Expense

	Fiscal Year Ending September 30, 2018
Service cost	$7,329,735
Interest on the total pension liability	27,283,975
Projected earnings on plan investments	-13,630,911
Employee contributions	-2,500,000
Administrative expense	75,000
Current year recognition of:	
• Changes of assumptions	1,421,527
• Difference between expected and actual experience	-293,497
• Difference between projected and actual earnings on pension plan investments	-2,623,217
• Change of benefit terms	73,780
• Deferred outflows established in prior years	8,462,175
• Deferred inflows established in prior years	-1,186,165
Total pension expense	$24,412,402

Note: In accordance with Paragraph 71 of GASB Statement 68, the difference between projected and actual earnings on investments is recognized over a closed five-year period. The difference between expected and actual total pension liability experience and the changes in assumptions are recognized over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pensions through the pension plan (active employees and inactive employees), determined as of the beginning of the measurement period. For the fiscal year ending September 30, 2018, this period is seven years (rounded).

Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions
(GASB 68 Only; information drafted for inclusion in a September 30, 2018 CAFR)

For the year ended September 30, 2018 the City's recognized pension expense is $24,412,402. At September 30, 2018, the City reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$3,526,710	$2,773,914
Changes of assumptions	24,800,142	710,288
Net difference between projected and actual earnings on pension plan investments	- -	4,081,277
Total	$28,326,852	$7,565,479

Contributions of $X were reported as deferred outflows of resources related to pensions resulting from City of Jacksonville contributions subsequent to the September 30, 2017 measurement date and will be recognized as a reduction of the net pension liability in the year ended September 30, 2018. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ended	Recognition of Deferred Outflows/(Inflows)
September 30, 2019	$5,780,820
September 30, 2020	6,586,829
September 30, 2021	3,309,884
September 30, 2022	698,879
September 30, 2023	3,256,933
September 30, 2024	1,128,028
Thereafter	0

Projected recognition of deferred outflows/(inflows)

	Year Established	Prior Year's Balances Plus Newly Created Balances	Amount Recognized During FYE September 30, 2018	Outstanding Balance at September 30, 2018	Deferred Outflows/(Inflows) Recognized in Future Years 2019	2020	2021	2022	2023	2024
Fiscal Year Outflows										
Assumptions	2015	$6,151,380	$1,537,845	$4,613,535	$1,537,845	$1,537,845	$1,537,845	- -	- -	- -
Experience	2015	3,407,688	851,922	2,555,766	851,922	851,922	851,922	- -	- -	- -
Experience	2016	1,213,680	242,736	970,944	242,736	242,736	242,736	$242,736	- -	- -
Investment	2016	9,803,835	3,276,945	6,553,890	3,276,945	3,276,945	- -	- -	- -	- -
Investment	2017	884,952	221,238	663,714	221,238	221,238	221,238	- -	- -	- -
Assumptions	2017	13,988,934	2,331,489	11,657,445	2,331,489	2,331,489	2,331,489	2,331,489	$2,331,489	- -
Assumptions	2018	9,950,689	1,421,527	8,529,162	1,421,527	1,421,527	1,421,527	1,421,527	1,421,527	$1,421,527
Total Outflows			**$9,883,702**	**$35,544,456**	**$9,883,702**	**$9,883,702**	**$6,606,757**	**$3,995,752**	**$3,753,016**	**$1,421,527**
Fiscal Year Inflows										
Investment	2015	($1,612,018)	($806,009)	($806,009)	($806,009)	- -	- -	- -	- -	- -
Assumptions	2016	(887,860)	(177,572)	(710,288)	(177,572)	($177,572)	($177,572)	($177,572)	- -	- -
Experience	2017	(1,215,504)	(202,584)	(1,012,920)	(202,584)	(202,584)	(202,584)	(202,584)	($202,584)	- -
Experience	2018	(2,054,491)	(293,497)	(1,760,994)	(293,499)	(293,499)	(293,499)	(293,499)	(293,499)	($293,499)
Investment	2018	(13,116,089)	(2,623,217)	(10,492,872)	(2,623,218)	(2,623,218)	(2,623,218)	(2,623,218)	- -	- -
Total Inflows			**($4,102,879)**	**($14,783,083)**	**($4,102,882)**	**($3,296,873)**	**($3,296,873)**	**($3,296,873)**	**($496,083)**	**($293,499)**
Total			**$5,780,823**	**$20,761,373**	**$5,780,820**	**$6,586,829**	**$3,309,884**	**$698,879**	**$3,256,933**	**$1,128,028**

Note: In accordance with Paragraph 71 of GASB Statement 68, the difference between projected and actual earnings on investments is recognized over a closed five-year period. The difference between expected and actual total pension liability experience (noted as "Demographic" in the chart above) is recognized over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pensions through the pension plan (active employees and inactive employees), determined as of the beginning of the measurement period. For 2018, the period is seven years (rounded).