City of Jacksonville General Employees Retirement Plan

Actuarial Valuation and Review as of October 1, 2017

Segal Consulting

This report has been prepared at the request of the Board of Trustees to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Trustees and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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April 20, 2018

Board of Trustees
City of Jacksonville General Employees 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 General Employees 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 and to provide information for required disclosures under Governmental Accounting Standards Board (GASB) Statements No. 67 and 68. 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 $94,700,000, 100.18% of the actuarially determined employer contribution for fiscal 2017. In the prior fiscal year, actual contributions were $84,898,000, 95.33% of the prior year actuarially determined 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 64.36%, compared to the prior year funded ratio of 64.64%. 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 66.58%, compared to 63.14% 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 General Employees Retirement Plan (GERP) 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 GERP payroll, including General Employee 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 "City's required contribution" refers to the cumulative required contribution for all contributing employers.
7. The actuarially determined employer contribution for fiscal 2019 is $95,290,428, an increase of $1,546,781 from the amount being contributed in fiscal 2018. The contribution as a percentage of projected payroll decreased from 36.81% of projected payroll to 36.41% of projected payroll.
8. The City's required contribution (the amount which will be contributed) for fiscal 2019 is $69,247,524, a decrease of $918,697 from the amount being contributed in fiscal 2018. The contribution as a percentage of projected payroll decreased from 27.55% of projected payroll to 26.46% of projected payroll.
9. The unfunded actuarial accrued liability is $1,081,313,441, which is an increase of $56,816,359 since the prior valuation.
10. The actuarial gain from investment and other experience was $3,173,969, or 0.11% of actuarial accrued liability.
11. The actuarial gain from investment experience was $19,679,634, or 0.65% of actuarial accrued liability.
12. The net experience loss from sources other than investment experience was 16,295,665, or 0.54% of the actuarial accrued liability.
13. The rate of return on the market value of assets was 14.86% for the October 1, 2016 to September 30, 2017 plan year. The return on the actuarial value of assets was 8.46% 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%.
14. 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 $1,869,849 and the actuarial accrued liability increased by $64,164,450. The total impact was an increase in the actuarially determined contribution of $5,046,289, or 1.93% of projected payroll, and an increase in the City's required contribution of $4,158,441, or 1.59% of projected payroll.
15. The following plan change is included for the first time in this valuation:

    - The employee contribution rate applicable to this Plan increased from 7.70% to 9.70%.

    As a result of this plan change, the employer normal cost decreased by $4,338,654 and the actuarial accrued liability decreased by $3,528,667. The total impact was a decrease in the actuarially determined employer contribution of $4,917,021, or 1.88% of projected payroll, and a decrease in the City's required contribution of $4,757,048, or 1.82% of projected payroll.
16. The City changed the surtax allocation percentage from the prior valuation to the current valuation. In the 2016 valuation, GERP's allocation percentage was 31.00%; in the 2017 valuation, the allocation percentage has been increased to 31.90%. This change was directed by the City based on its updated calculation of the General Employees Retirement Plan's share of the City's unfunded liabilities. The change in the surtax allocation percentage caused the City's required contribution to decrease by $821,289, or 0.31% of projected payroll.

17. 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.
18. 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 31.90% of the projected revenue for October 1, 2031 through December 31, 2060 was allocated to GERP.
    c. The revenue allocated to GERP 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 GERP is $394,009,029.
    e. The present value amount of $394,009,209 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.
19. 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.
20. 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.
21. 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.
22. 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.
23. 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.
24. 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	$95,290,428	$93,743,647	$94,526,754
	• Actuarially determined employer contributions as a percent of payroll	36.41%	36.81%	36.79%
	• Actual employer contributions	--	--	94,700,000
	• City's required contribution*	$69,247,524	$70,166,221	N/A
	• City's required contribution as a percent of payroll	26.46%	27.55%	N/A
Actuarial accrued liability for plan year beginning October 1:	• Retired participants and beneficiaries		$2,075,478,777	$1,967,961,491
	• Inactive vested participants		24,376,413	25,434,609
	• Active participants		933,791,108	903,891,072
	• Total		3,033,646,298	2,897,287,172
	• Total normal cost including administrative expenses for plan year beginning October 1		43,165,881	39,255,809
Assets for plan year beginning October 1:	• Market value of assets (MVA)		$2,019,668,000	$1,829,242,000
	• Actuarial value of assets (AVA)		1,952,332,857	1,872,790,100
	• Actuarial value of assets as a percentage of market value of assets		96.67%	102.38%
Funded status for plan year beginning October 1:	• Unfunded actuarial accrued liability on market value of assets		$1,013,978,298	$1,068,045,172
	• Funded percentage on MVA basis		66.58%	63.14%
	• Unfunded actuarial accrued liability on actuarial value of assets		$1,081,313,441	$1,024,497,072
	• Funded percentage on AVA basis		64.36%	64.64%
Key assumptions:	• Net investment return		7.20%	7.40%
	• Inflation rate		2.75%	2.75%
	• Payroll growth for amortization purposes		1.50%	1.50%
Demographic data for plan year beginning October 1	• Number of retired participants and beneficiaries		5,105	5,065
	• Number of inactive vested participants		195	217
	• Number of active participants		4,644	4,678
	• Covered payroll		$257,850,484	$250,894,295
	• Average payroll		55,523	53,633
	• Projected payroll for next fiscal year		261,718,241	254,657,709

*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 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	5,151	78	4,456	4,534	0.88
2009	5,113	82	4,465	4,547	0.89
2010	6,280	97	4,504	4,601	0.73
2011	6,109	90	4,603	4,693	0.77
2012	5,485	81	4,783	4,864	0.89
2013	5,139	78	4,896	4,974	0.97
2014	5,026	76	4,907	4,983	0.99
2015	4,817	65	4,976	5,041	1.05
2016	4,678	217	5,065	5,282	1.13
2017	4,644	195	5,105	5,300	1.14

*Excludes terminated participants due a refund of employee contributions

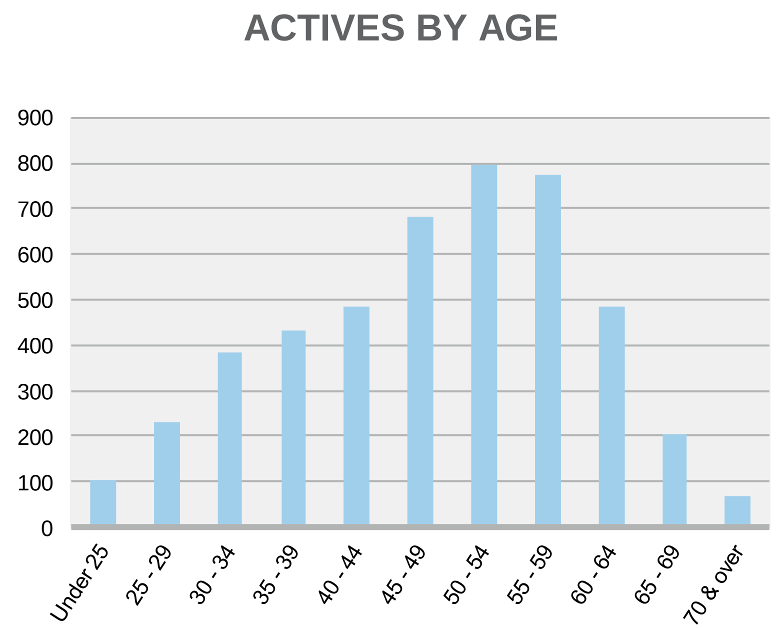
Active Participants

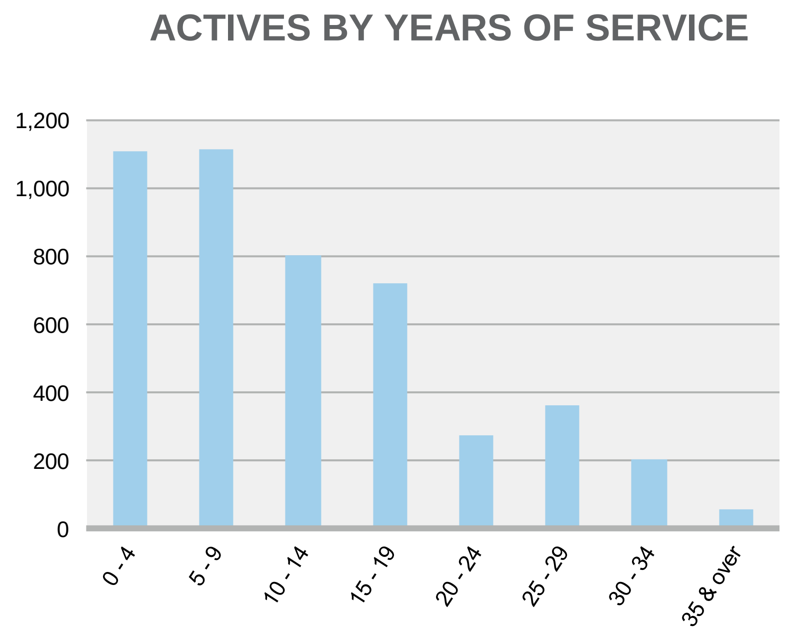
Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 4,644 active participants with an average age of 48.6, average years of service of 12.5 years and average payroll of $55,523. The 4,678 active participants in the prior valuation had an average age of 48.5, average service of 12.5 years and average payroll of $53,633.

Inactive Participants

In this year's valuation, there were 195 participants with a vested right to a deferred or immediate vested benefit.

Distribution of Active Participants as of September 30, 2017



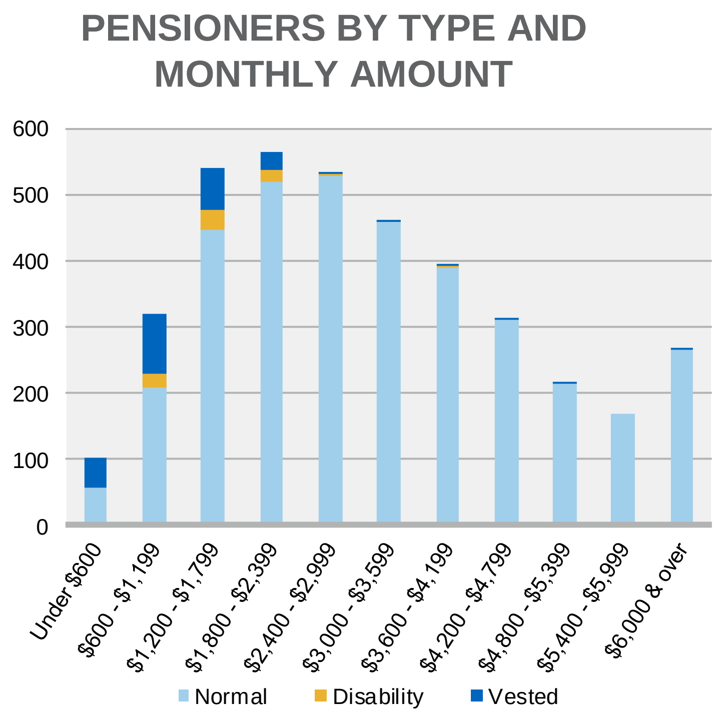


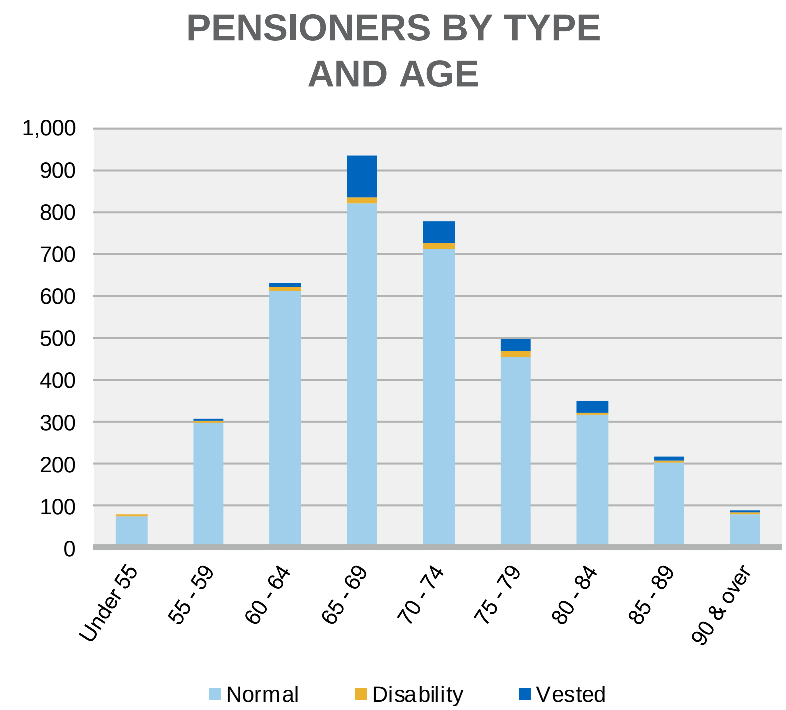
Retired Participants and Beneficiaries

As of September 30, 2017, 3,882 retired participants and 1,223 beneficiaries were receiving total monthly benefits of $14,521,511. For comparison, in the previous valuation, there were 3,855 retired participants and 1,210 beneficiaries receiving monthly benefits of $13,960,312.

As of September 30, 2017, the average monthly benefit for retired participants is $2,845, compared to $2,756 in the previous valuation. The average age for retired participants is 71.7 in the current valuation, compared with 71.4 in the prior valuation.

Distribution of Pensioners as of September 30, 2017





Historical Plan Population

The chart below demonstrates the progression of the active population over the last eight years. The chart also shows the retired population continuing to increase each year over the same time period.

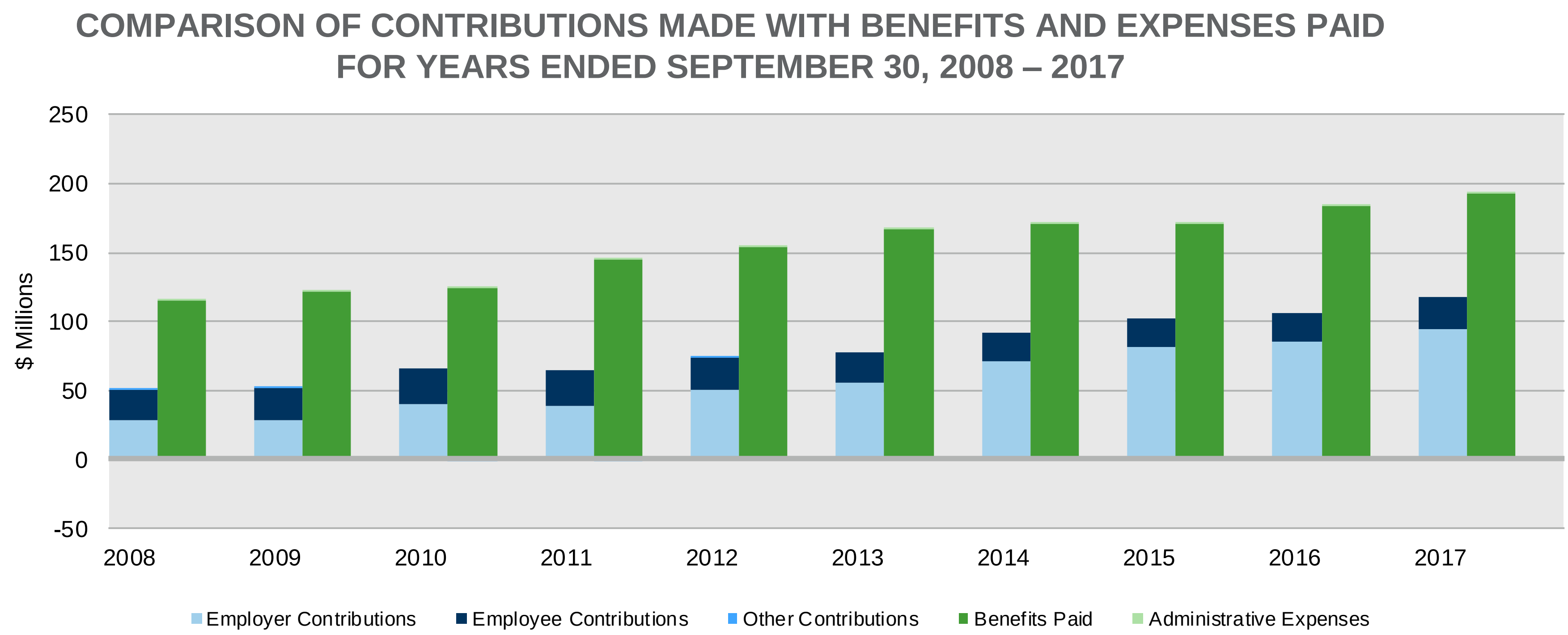
PARTICIPANT DATA STATISTICS: 2010 – 2017

	Active Participants			Retired Participants and Beneficiaries		
Year Ended September 30	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2010	6,280	47.0	10.5	4,504	70.4	2,240
2011	6,109	47.4	10.8	4,603	70.6	2,335
2012	5,485	47.7	11.2	4,783	70.5	2,441
2013	5,139	48.1	11.6	4,896	70.7	2,528
2014	5,026	48.3	11.8	4,907	70.9	2,606
2015	4,817	48.5	12.1	4,976	71.2	2,675
2016	4,678	48.5	12.5	5,065	71.4	2,756
2017	4,644	48.6	12.5	5,105	71.7	2,845

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*.



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				$2,019,668,000
2.	Calculation of unrecognized return				
(a)	Year ended September 30, 2017	$133,575,436	80%	$106,860,349	
(b)	Year ended September 30, 2016	39,489,525	60	23,693,715	
(c)	Year ended September 30, 2015	-175,540,475	40	-70,216,190	
(d)	Year ended September 30, 2014	63,631,545	20	6,997,269	
(e)	Year ended September 30, 2013	147,228,359	0	0	
(f)	Total unrecognized return				67,335,143
3.	Preliminary actuarial value: **(1) - (2f)**				$1,952,332,857
4.	Adjustment to be within 20% corridor				0
5.	Final actuarial value of assets as of September 30, 2017: **(3) + (4)**				1,952,332,857
6.	Actuarial value as a percentage of market value: **(5) ÷ (1)**				96.7%
7.	Amount deferred for future recognition: **(1) - (5)**				$67,335,143

*Total return minus expected return on a market value basis

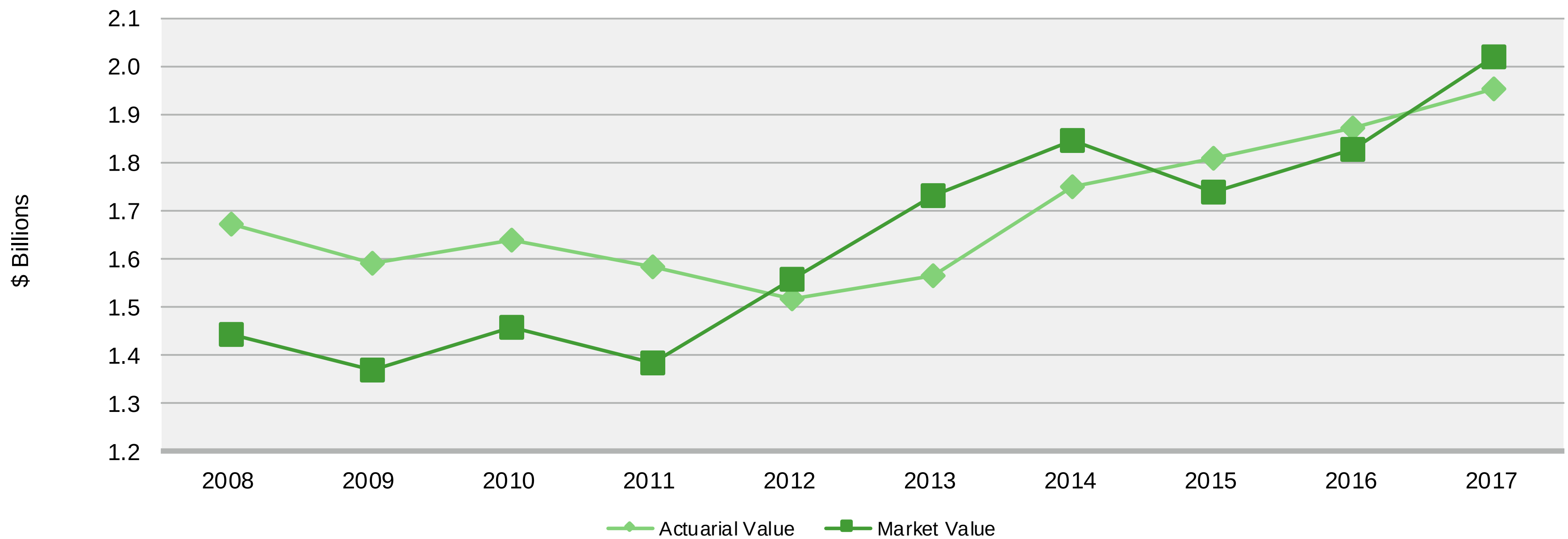
**Recognition at 20% per year over five years; effective October 1, 2014, the Plan accelerated the recognition of prior year asset gain/loss bases by reflecting 45% of the outstanding asset gain/loss immediately.

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

(a) Amount recognized on September 30, 2018	$6,502,166
(b) Amount recognized on September 30, 2019	-495,103
(c) Amount recognized on September 30, 2020	34,612,992
(d) Amount recognized on September 30, 2021	26,715,088

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 $3,173,969, which includes $19,469,634 from investment gains and $16,295,665 in losses 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	$19,469,634
2	Net gain from administrative expenses	5,040
3	Net loss from other experience	-16,300,705
4	Net experience gain: 1 + 2 + 3	$3,173,969

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 14.86% 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 8.46%. 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	$266,138,000	$155,254,757	$167,067,000	$139,333,989
2	Average value of assets	1,791,386,000	1,834,934,100	1,701,033,000	1,772,314,111
3	Rate of return: 1 ÷ 2	14.86%	8.46%	9.82%	7.86%
4	Assumed rate of return	7.40%	7.40%	7.50%	7.50%
5	Expected investment income: 2 x 4	132,562,564	135,785,123	127,577,475	132,923,558
6	Actuarial gain/(loss): 1 – 5	$133,575,436	$19,469,634	$39,489,525	$6,410,431

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.

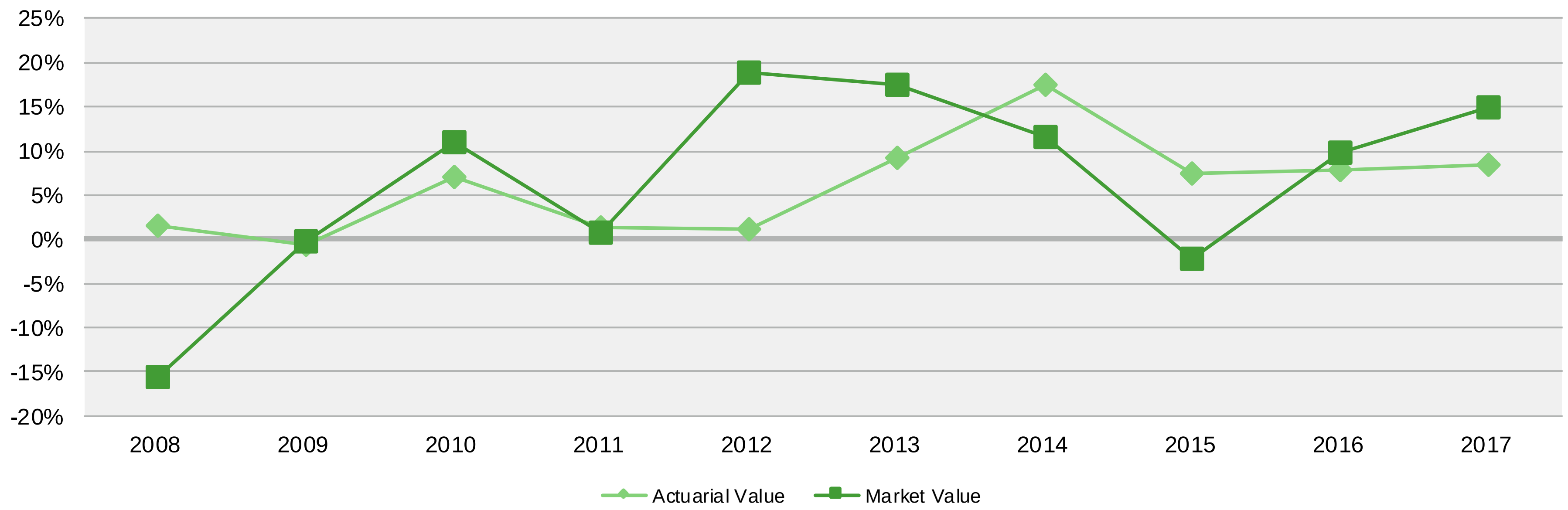
INVESTMENT RETURN – ACTUARIAL VALUE VS. MARKET VALUE: 2008 - 2017

	Actuarial Value Investment Return		Market Value Investment Return	
Year Ended September 30	Amount	Percent	Amount	Percent
2008		1.59%		-15.65%
2009		-0.70		-0.31
2010	$110,280,623	7.07	$148,054,000	11.07
2011	22,313,906	1.39	9,313,000	0.66
2012	16,512,253	1.07	254,394,000	18.92
2013	136,580,384	9.27	264,541,000	17.48
2014	266,591,200	17.48	194,864,000	11.51
2015	128,075,601	7.46	-39,506,000	-2.18
2016	139,333,989	7.86	167,067,000	9.82
2017	155,254,757	8.46	266,138,000	14.86
	$974,942,713		$1,264,865,000	
Most recent five-year average return		9.92%		10.02%
Most recent eight-year average return		7.48%		10.03%

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 $787,000 compared to the assumption of $762,000. This resulted in a gain of $5,040 for the year, due to timing.

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 loss from this other experience for the year ended September 30, 2017 amounted to $16,300,705, 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 $3,033,646,298, an increase of $136,359,126, or 4.7%, 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 2.16% and increased the normal cost by 4.62%.
- Details on actuarial assumptions and methods are in *Section 4, Exhibit I*.

Plan Provisions

- Effective October 1, 2017, the employee contribution rate applicable to this plan increased from 7.7% to 9.7%
- These changes decreased the actuarial accrued liability by 0.12% and increased the normal cost by 2.06%.
- 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		$1,024,497,072
2	Normal cost at beginning of year		19,936,948
3	Employer contributions		-94,700,000
4	Interest		
	• For whole year on 1 + 2	$77,288,118	
	• For half year on 3	-3,170,511	
	Total interest		74,117,606
5	Expected unfunded actuarial accrued liability		$1,023,851,627
6	Changes due to:		
	• (Gain)/loss	-3,173,969	
	• Assumptions	64,164,450	
	• Plan provisions	-3,528,667	
	Total changes		$57,461,814
7	Unfunded actuarial accrued liability at end of year		$1,081,313,441

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 $95,290,428, or 36.41% 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	$42,378,881	16.19%	$38,493,809	15.12%
2.	Administrative expenses	787,000	0.30%	762,000	0.30%
3.	Expected employee contributions	-25,011,497	-9.56%	-19,318,861	-7.59%
4.	Employer normal cost: (1) + (2) - (3)	18,154,384	6.93%	19,936,948	7.83%
5.	Actuarial accrued liability	3,033,646,298		2,897,287,172	
6.	Actuarial value of assets	1,952,332,857		1,872,790,100	
7.	Unfunded actuarial accrued liability: (5) - (6)	1,081,313,441		1,024,497,072	
8.	Payment on unfunded actuarial accrued liability	72,276,044	27.62%	68,936,780	27.07%
9.	Total actuarially determined employer contribution (4) + (8)*	95,290,428	36.41%	93,743,647	36.81%
10.	Amortized value of discounted value of projected surtax revenue*	-26,042,904	-9.95%	-23,577,426	-9.26%
11.	City’s required contribution: (9) + (10)*	$69,247,524	26.46%	$70,166,221	27.55%
12.	Projected payroll	$261,718,241		$254,657,709	

*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	$93,743,647	36.81%
• Effect of plan amendment	-4,917,021	-1.93%
• Effect of expected change in amortization payment due to payroll growth	1,090,714	0.43%
• Effect of change in discount rate	5,046,289	1.98%
• Effect of investment gain	-1,381,868	-0.54%
• Effect of contribution deferral to budget year	-171,770	-0.07%
• Effect of other gains and losses on accrued liability	1,156,594	0.45%
• Net effect of other changes, including composition and number of participants	723,843	0.28%
Total change	$1,546,781	0.61%
Total change in percentage due to compensation change		-1.00%
Actuarially Determined Contribution as of October 1, 2018	$95,290,428	36.41%

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	$40,551,000	12.57%	105.02%	$38,611,842	10.43%	N/A	N/A	N/A
2011	39,378,000	12.54%	100.65%	39,123,971	13.50%	N/A	N/A	N/A
2012	49,899,000	17.63%	86.78%	57,497,706	13.50%	N/A	N/A	N/A
2013	55,386,000	20.87%	83.09%	66,659,915	17.22%	N/A	N/A	N/A
2014	71,000,000	27.06%	87.28%	81,351,295	20.51%	N/A	N/A	N/A
2015	81,751,000	32.18%	94.98%	86,069,361	27.91%	N/A	N/A	N/A
2016	84,898,000	33.84%	95.33%	89,058,931	31.60%	N/A	N/A	N/A
2017	94,700,000	36.73%	100.18%	94,526,754	33.20%	N/A	N/A	N/A
2018	- -	- -	- -	93,743,428	36.81%	$70,166,221	27.55%	- -
2019	- -	- -	- -	- -	- -	69,297,524	26.46%	- -

*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	$182,131,911	$179,368,608
• Retirees and beneficiaries	2,075,478,777	1,967,961,491
• Active and inactive members (employer-financed)	776,035,610	749,957,073
Total	$3,033,646,298	$2,897,287,172
Actuarial value of assets	$1,952,332,857	$1,872,790,100
Cumulative portion of AAL covered		
• Active member contributions	100.00%	100.00%
• Retirees and beneficiaries	85.29%	86.05%
• Active and inactive members (employer-financed)	0.00%	0.00%

Section 3: Supplemental Information

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	4,644	4,678	-0.7%
• Average age	48.6	48.5	0.1
• Average years of service	12.5	12.5	0.0
• Total payroll	$257,850,484	$250,894,295	2.8%
• Average payroll	55,523	53,633	3.5%
• Employee contribution balances	182,131,911	179,368,608	1.5%
• Total active vested participants	3,534	3,687	-4.1%
Inactive vested participants	195	217	-10.1%
Retired participants:			
• Number in pay status	3,807	3,773	0.9%
• Average age	70.4	70.2	0.2
• Average monthly benefit	$3,185	$3,095	2.9%
Disabled participants:			
• Number in pay status	75	82	-8.5%
• Average age	69.7	69.3	0.4
• Average monthly benefit	$1,561	$1,510	3.4%
Beneficiaries:			
• Number in pay status	1,223	1,210	1.1%
• Average age	76.0	75.6	0.4
• Average monthly benefit	$1,862	$1,784	4.4%

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	30 - 34	35 - 39	40 & over
Under 25	103	103	- -	- -	- -	- -	- -	- -	- -	- -
	$31,078	$31,078	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	231	175	52	4	- -	- -	- -	- -	- -	- -
	44,368	40,594	$55,864	$60,040	- -	- -	- -	- -	- -	- -
30 - 34	386	191	125	67	3	- -	- -	- -	- -	- -
	49,589	43,312	56,207	55,482	$41,840	- -	- -	- -	- -	- -
35 - 39	433	132	147	120	34	- -	- -	- -	- -	- -
	55,476	47,375	55,557	63,842	57,049	- -	- -	- -	- -	- -
40 - 44	484	113	140	112	96	22	1	- -	- -	- -
	57,019	46,845	54,491	64,555	63,004	$60,442	$66,500	- -	- -	- -
45 - 49	681	139	150	131	148	51	55	7	- -	- -
	58,618	49,358	53,848	64,581	62,167	64,569	64,638	$67,412	- -	- -
50 - 54	798	113	171	133	131	76	106	64	4	- -
	59,354	53,121	48,415	60,714	58,638	68,594	71,314	66,154	$79,950	- -
55 - 59	773	94	150	106	164	58	102	77	22	- -
	57,844	53,836	46,868	54,696	57,703	62,824	62,871	74,052	72,872	- -
60 - 64	483	33	112	82	95	39	64	39	16	3
	54,888	49,536	44,515	53,244	63,314	54,808	58,701	59,452	67,807	$70,601
65 - 69	202	12	52	32	40	19	27	13	2	5
	56,835	77,116	38,837	53,852	61,265	57,327	69,798	62,513	66,300	88,562
70 & over	70	5	17	13	12	7	8	4	1	3
	52,183	83,969	37,496	56,122	52,268	61,286	40,202	49,214	49,956	80,427
Total	4,644	1,110	1,116	800	723	272	363	204	45	11
	$55,523	$45,972	$50,856	$60,000	$60,238	$62,998	$64,894	$67,333	$70,899	$81,445

EXHIBIT C – RECONCILIATION OF PARTICIPANT DATA

	Active Participants	Inactive Vested Participants	Disableds	Retired Participants	Beneficiaries	Total
Number as of October 1, 2016	**4,678**	**217**	**82**	**3,773**	**1,210**	**9,960**
• New participants	313	N/A	N/A	N/A	N/A	313
• Terminations – with vested rights	-23	23	0	0	0	0
• Terminations – without vested rights	-153	N/A	N/A	N/A	N/A	-153
• Retirements	-154	-14	N/A	168	N/A	0
• New disabilities	-3	0	0	N/A	N/A	-3
• Return to work	2	0	0	-2	N/A	0
• Deceased	-13	-29	-7	-135	-58	-242
• New Beneficiaries	0	0	0	0	71	71
• Lump sum cash-outs	-27	0	0	0	0	-27
• Rehire	12	-2	N/A	0	N/A	10
• Certain period expired	N/A	N/A	0	0	0	0
• Data adjustments	-1	0	0	3	0	2
• Net transfers (to)/from DC Plan or Corrections	13	0	0	0	0	13
Number as of October 1, 2017	**4,644**	**195**	**75**	**3,807**	**1,223**	**9,944**

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		$1,829,242,000		$1,739,891,000
Contribution income:				
• Employer contributions	$94,700,000		$84,898,000	
• Employee contributions	23,037,000		21,840,000	
• Less administrative expenses	-787,000		-762,000	
Net contribution income		*$116,950,000*		*$105,976,000*
Investment income:				
• Interest, dividends and other income	$19,084,000		$22,581,000	
• Asset appreciation	256,159,000		153,539,000	
• Less investment fees	-9,105,000		-9,053,000	
Net investment income		*$266,138,000*		*$167,067,000*
Total income available for benefits		**$383,088,000**		**$273,043,000**
Less benefit payments:				
• Benefit payments	-$173,197,000		-$163,671,000	
• Refunds	-19,465,000		-20,021,000	
Net benefit payments		*-$192,662,000*		*-$183,692,000*
Change in reserve for future benefits		**$190,426,000**		**$89,351,000**
Net assets at market value at the end of the year		**$2,019,668,000**		**$1,829,242,000**

EXHIBIT E – SUMMARY STATEMENT OF PLAN ASSETS

		September 30, 2017		September 30, 2016
Cash equivalents		$4,480,000		$11,937,000
Total accounts receivable		$4,815,000		$3,805,000
Investments:				
• Equities	$1,319,476,000		$1,120,459,000	
• Fixed income	425,372,000		363,434,000	
• Real estate	338,655,000		389,759,000	
• Other assets	149,356,000		129,194,000	
• Equity in pooled investments*	-214,465,000		-185,680,000	
Total investments at market value		$2,018,394,000		$1,817,166,000
Total assets		$2,027,689,000		$1,832,908,000
Total accounts payable		-8,021,000		-3,666,000
Net assets at market value		**$2,019,668,000**		**$1,829,242,000**
Net assets at actuarial value		**$1,952,332,857**		**$1,872,790,100**

**Reflects an allocation of the plan's invested assets to the City of Jacksonville Corrections Officers Retirement Plan*

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	$40,551,000	$25,196,000	-$2,000	$148,054,000	$775,000	$124,656,000	$1,456,079,000	$1,640,892,767	112.7%
2011	39,378,000	25,051,000	-6,000	9,313,000	701,000	144,899,000	1,384,227,000	1,582,041,673	114.3%
2012	49,899,000	24,098,000	1,040,000	254,394,000	705,000	154,308,000	1,558,645,000	1,518,577,926	97.4%
2013	55,386,000	21,878,000	0	264,541,000	671,000	166,460,000	1,733,319,000	1,565,291,310	90.3%
2014	71,000,000	20,961,000	0	194,864,000	828,000	171,127,000	1,848,189,000	1,751,888,510	94.8%
2015	81,751,000	20,893,000	0	-39,506,000	762,000	170,674,000	1,739,891,000	1,811,172,111	104.1%
2016	84,898,000	21,840,000	0	167,067,000	762,000	183,692,000	1,829,242,000	1,872,790,100	102.4%
2017	94,700,000	23,037,000	0	266,138,000	787,000	192,662,000	2,019,668,000	1,952,332,857	96.7%

* 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	$1,024,497,072	$68,644,280	29	$1,026,271,754
Experience gain	10/01/2017	30	-5,594,096	-369,110	30	-5,594,096
Plan change	10/01/2017	30	-3,528,667	-232,829	30	-3,528,667
Change in assumptions	10/01/2017	30	64,164,450	4,233,703	30	64,164,450
Total				**$72,276,044**		**$1,081,313,441**

TABLE OF SURTAX AMORTIZATION BASES

Discounted Surtax revenue applied	10/01/2016	30	-$322,190,859	$22,257,753	29	-$332,766,296
Surtax offset gain	10/01/2017	30	-7,927,401	-523,066	30	-7,927,401
Surtax offset allocation assumption change	10/01/2017	30	-10,588,075	-698,623	30	-10,588,075
Surtax offset discount rate assumption change	10/01/2017	30	-18,720,570	-1,235,222	30	-18,720,570
Total				**-$24,714,664**		**-$370,002,342**

* Level percentage of payroll; per Part VII, Chapter 112.64(5)(b) of Florida Statutes, outstanding balances were amortized using a 1.50% 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;

	<u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates; <u>Retirement rates</u> - the rate or probability of retirement at a given age or service; <u>Disability rates</u> – the probability of disability retirement at a given age; <u>Withdrawal rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; <u>Salary increase rates</u> - 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 age at retirement, 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	$248,887,000	4.97%	6.03%	5.71%
2008	262,345,000	5.41%	5.08%	5.72%
2009	276,257,000	5.30%	3.16%	5.42%
2010*	275,173,962	-0.39%	0.61%	5.36%
2010	322,530,502	17.21%	N/A	N/A
2011	314,054,361	-2.63%	0.94%	5.62%
2012	283,020,575	-9.88%	2.31%	5.83%
2013	265,404,735	-6.22%	1.60%	2.84%
2014	262,368,813	-1.14%	0.04%	2.84%
2015	254,034,479	-3.18%	3.85%	2.48%
2016	250,894,295	-1.24%	2.76%	4.27%
2017	257,850,484	2.77%	4.64%	5.30%

Note: The average total payroll growth for the most recent ten years was 0.35% per year. Additional analysis of bargained pay increase applicable for the next two years was used to support a payroll increase assumption of 1.50%.

Salary history prior to October 1, 2016 was taken from the City's Comprehensive Annual Financial Report

*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*	13.50%	$289,807,191	$39,123,971	$39,378,000
2012	2010	17.22%	333,819,070	57,497,706	49,899,000
2013	2011	20.51%	325,046,264	66,659,915	55,386,000
2014	2012	27.91%	291,511,192	81,351,295	71,000,000
2015	2013	31.60%	272,358,339	86,069,361	81,751,000
2016	2014	33.20%	268,245,874	89,058,931	84,898,000
2017	2015	36.79%	256,930,472	94,526,764	94,700,000
2018	2016	36.81%	254,657,709	93,743,647	- -
2019	2017	36.41%	261,718,241	95,290,428	- -

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	4,644	4,644	4,644	4,678
• Total annual payroll	$257,850,484	$257,850,484	$257,850,484	$250,894,295
• Retired members and beneficiaries	5,105	5,105	5,105	5,065
• Total annualized benefit	$174,258,132	$174,258,132	$174,258,132	$167,523,741
• Terminated vested members	195	195	195	217
• Total annualized benefit	$3,595,668	$3,595,668	$3,595,668	$3,882,093
Actuarial value of assets	$1,952,332,857	$1,952,332,857	$1,952,332,857	$1,872,790,100
Present value of all future expected benefit payments:				
• Active members:				
» Retirement benefits	$1,040,860,445	$996,049,759	$995,461,898	$983,373,760
» Vesting benefits	25,101,055	24,774,635	22,354,465	22,203,038
» Disability benefits	- -	- -	- -	- -
» Death benefits	31,655,677	30,464,683	30,456,512	29,845,285
» Return of contributions	182,131,911	182,131,911	182,131,911	179,368,608
» Total	$1,279,749,088	$1,233,420,988	$1,230,404,786	$1,214,790,691
• Terminated vested members	24,376,413	23,598,165	23,598,165	25,434,609
• Retired members and beneficiaries	2,075,478,777	2,038,754,567	2,038,754,567	1,967,961,491
Total	$3,379,604,278	$3,285,773,720	$3,292,757,518	$3,208,186,791

EXHIBIT M – 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
Unfunded actuarial accrued liability	$1,081,313,441	$1,017,148,991	$1,020,677,658	$1,024,497,072
Actuarial present value of accrued benefits				
Vested accrued benefits				
Active members	$709,668,688	$688,493,594	$688,493,594	$689,449,681
Inactive members	24,376,413	23,598,165	23,598,165	25,434,609
Pensioners and beneficiaries	2,075,478,777	2,038,754,567	2,038,754,567	1,967,961,491
Nonvested active members	9,172,794	8,974,863	8,958,148	7,572,055
Total	$2,818,696,672	$2,759,821,189	$2,759,804,474	$2,690,417,836
Pension cost				
Normal cost, including administrative expenses	$43,165,881	$41,296,032	$40,477,676	$39,255,809
Expected employee contributions	-25,011,497	-25,011,497	-19,854,487	-19,318,861
Level % of payroll payment to amortize unfunded actuarial accrued liability	72,276,044	68,042,341	69,594,413	68,936,780
Amortized value of discounted value of allocated surtax revenue	-24,714,664	-22,619,127	-23,221,306	-22,352,595
Total minimum annual cost payable monthly at valuation date	68,224,162	64,127,175	69,623,074	69,129,281
Total employer cost projected to budget year	69,247,524	65,089,083	70,667,420	70,166,221
Projected payroll	261,718,241	261,718,241	261,718,241	254,657,709
As % of projected payroll	26.46%	24.87%	27.00%	27.55%
Present value of active members' future salaries at attained age	$2,067,156,255	$2,042,489,265	$2,042,489,265	$1,996,127,908
Present value of expected future employee contributions	$200,514,157	$198,121,459	$157,271,673	$188,608,521

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

Factors	Change in Actuarial Present Value of Accumulated Plan Benefits	
		$2,690,417,836
Benefits accumulated, net experience gain or loss, changes in data	$70,086,212	
Benefits paid	-192,662,000	
Interest	191,962,426	
Changes in assumptions	58,875,483	
Plan changes	16,715	
Net increase	$128,278,836	
As % of payroll	49.75%	
Actuarial present value of accumulated benefits as of October 1, 2017		$2,818,696,672

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. The 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 provided by Segal Marco Advisors, 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 for COJ employees has been adjusted from 2.75% to 5.00% for 2017, 4.50% for 2018-2019, with subsequent increases resuming at the assumed inflation rate of 2.75%.

The inflation component of the salary scale for JEA employees has been adjusted from 2.75% to 3.00% for 2017-2018, with subsequent increases resuming at the assumed inflation rate of 2.75%.

The inflation component of the salary scale for JHA employees has been adjusted from 2.75% to 2.00% for 2017, with subsequent increases resuming at the assumed inflation rate of 2.75%.

Inflation Rate:

2.75%

Payroll Growth:	1.50% 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%.		
Interest in BackDROP Account:	4.00%		
Mortality Rates:		*Healthy pre-retirement:*	50% RP2000 Combined Healthy White Collar and 50% 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 post-retirement:	50% RP2000 White Collar Annuitant and 50% 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.
		Disabled:	RP-2000 Disabled Retiree Mortality Table, setback four years for males and set forward two years for females
			The FRS Non-Special Risk Tables, set forward 2.5 years reasonably reflect the healthy annuitant mortality experience of the General Employees 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	0.01	0.01
25	0.04	0.02	0.02	0.01
30	0.07	0.04	0.02	0.02
35	0.10	0.05	0.03	0.03
40	0.13	0.08	0.04	0.04
45	0.19	0.13	0.06	0.06
50	0.29	0.20	0.11	0.10
55	0.52	0.35	0.17	0.15
60	0.97	0.64	0.29	0.20
65	1.77	1.16	0.00	0.00

* Mortality rates shown for base table.

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

Service	Withdrawal**			
	COJ Male Withdrawal***	COJ Female Withdrawal***	JEA Male Withdrawal	JEA Female Withdrawal
0-1	12.00	15.00	6.50	7.00
1-2	10.00	9.00	5.00	5.00
2-3	8.00	9.00	3.50	5.00
3-4	7.00	9.00	3.50	5.00
4-5	7.00	7.00	3.50	5.00
5-6	7.00	7.00	3.50	4.00
6-7	6.00	7.00	3.00	4.00
7-8	6.00	7.00	2.50	3.50
8-9	5.00	5.00	2.50	3.50
9-10	4.00	5.00	2.50	3.50
10+	1.50	2.00	1.50	2.00

***All withdrawal rates are set to 0% after eligibility for retirement.*

****COJ withdrawal rates above are increased by 5.00% for ages under 30.*

Retirement Rates:	(see tables below)

COJ	
Age	**Rate (%)***
Under 50	2.50
50-52	5.00
53-54	10.00
55-59	15.00
60-64	20.00
65-69	30.00
70 & Over	100.00

**Above rates are increased by 20% for the year in which a participant attains 30 years of service (if age < 55) and by 15 % for the year in which a participant attains 32 years of service. The rate is set to 50% for years of service 37 through 39 and to 100% after 40 years of service, regardless of age*

JEA	
Service	**Rate (%)**
20	10
21-29	8
30	15
31	10
32-34	20
35	25
36	15
37-39	50
40 & Over	100

***The rate is set to 100% for ages 65-69 with less than 20 years of service and age 70 or older, regardless of service*

BackDROP Election:	90% of eligible participants are assumed to elect a BackDROP at retirement
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
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.
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.
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:	31.9%. This percentage is determined by the City.
Administrative Expenses:	Previous year's actual expenses; $787,000 for October 1, 2017.
Family Composition:	65% of males and 50% of females 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 increased by the City from 31.00% to 31.90%

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 October 1, 2017	
Service Retirement:	*Age Requirement*	Age 65 with five years of Credited Service, age 55 with 20 years of Credited Service or any age with 30 years of Credited Service.
	Regular Benefit Amount	2.5% of Final Monthly Compensation times years of Credited Service, not more than 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:	*Age Requirement*	Age 50 with 20 years of Credited Service
	Regular Benefit Amount	Accrued Service Retirement Regular Benefit Amount reduced by 0.5 percent for each month the benefit commencement precedes age 55.
	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.
	Age Requirement	Any age with 25 years of Credited Service
	Regular Benefit Amount	2.0% of Final Monthly Compensation times years of Credited Service
	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 Service Retirement Regular 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 [(applicable only if elected by employee)]:	*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 regular 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 a Service Retirement at current salary with the benefit based on a 2% 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.
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 $61.62 per whole year of Member's Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Member:	All full-time JEA, JHA, NFTPO, and City General Employees hired prior to October 1, 2107.	
Member Contributions:	9.7% of Earnable Compensation . These percentages are net of the 0.3% contribution rate for the Disability Program.	
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 April 1st nearest the fifth anniversary of the initial benefit commencement date, and on each April 1st thereafter, the regular benefit is increased by 3%.
BackDROP:	Members with 30 or more years of service may elect to have their retirement benefits calculated as if the member had retired up to 5 years earlier on or after October 1, 2005. Benefits that would have been payable are accumulated with interest to date of termination and paid or rolled over in a single sum, and payments are made directly to the Member thereafter. The 5-year wait to receive COLA increases starts at termination of employment rather than at the start of BackDROP.
Partial Lump-sum Option (PLOP):	Members who are eligible for retirement may elect to receive a lump-sum benefit of up to 15% of the benefit value and a reduced life annuity actuarially equivalent to the benefit that would otherwise be payable.
Changes in Plan Provisions:	The following plan change has been reflected for the first time in this valuation: ➤ The employee contribution rate applicable to this plan increased from 7.7% to 9.7% effective October 1, 2017.

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