City of Jacksonville Corrections Officers Retirement Plan

Actuarial Valuation and Review as of October 1, 2020

Segal

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April 30, 2021

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

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of October 1, 2020. The census information on which our calculations were based was prepared by the Plan and the financial information was provided by the City's Finance Department. That assistance is gratefully acknowledged. The actuarial valuation report was accepted by the Board of Trustees for approval at the April 22, 2021 Board meeting. Section 5 (GASB Information) has since been added to the report, with no other changes

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.

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

Sincerely,
Segal

Jeffrey S. Williams, FCA, ASA, MAAA, EA
Vice President and Actuary
Enrolled Actuary No. 20-07009

Section 1: Actuarial Valuation Summary

Purpose and basis

This report was prepared by Segal to present a valuation of the Plan as of October 1, 2020. 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, 2020, provided by the Retirement System Administrative Office;
- The assets of the Plan as of September 30, 2020, 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.

Valuation highlights

1. 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 City's minimum required contribution calculated in the October 1, 2020 actuarial valuation is for the plan year beginning October 1, 2021.
3. The City's minimum required contribution (the amount which will be contributed) for fiscal 2022 is $17,592,399, an increase of $2,547,869 from the City's minimum required contribution for fiscal 2021.
4. Actual contributions made during the fiscal year ending September 30, 2020 were $15,058,000, 100.10% of the City's minimum required contribution for fiscal 2020. In the prior fiscal year, actual contributions were $14,498,000, 100.00% of the prior year's minimum required contribution.
5. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 50.02%, compared to the prior year funded ratio of 50.75%. 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 48.67%, compared to 50.61% 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.
6. 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 **Florida Chapter 112 Determined Employer Contribution** 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 26 years after reflecting an amortization period reset as of October 1, 2016. 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 minimum contribution**, which is the Chapter 112 contribution 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 January 1, 2031. Under this policy, assuming that all assumptions are met in aggregate, the UAAL is expected to be

reduced to zero by December 31, 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.

7. The unfunded actuarial accrued liability (UAAL) is $234,316,802, which is an increase of $20,474,732 since the prior valuation.
8. The actuarial loss from investment and other experience is $9,608,685, or 2.08% of actuarial accrued liability.
   - The actuarial gain from investment experience was $447,401, or 0.10% of actuarial accrued liability.
   - The net experience loss from sources other than investment experience was $10,056,086, or 2.18% of the actuarial accrued liability. The primary cause of this loss was salary increases greater than expected.
9. The rate of return on the market value of assets was 4.49% for the October 1, 2019 to September 30, 2020 plan year. The return on the actuarial value of assets was 7.10% 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 6.90%.
10. The following change in actuarial assumptions is first reflected with this valuation:
    - The discount rate was lowered from 6.90% to 6.80%.

    As a result of this assumption change, the total normal cost increased by $198,027 and the actuarial accrued liability increased by $6,108,635. The present value of surtax revenue allocated to CORP increased by $2,063,845 as a result of the discount rate change. The net impact was an increase in the City's minimum required contribution of $384,584.
11. The City changed the surtax allocation percentage from the prior valuation to the current valuation. In the 2019 valuation, CORP's allocation percentage was 6.17%; in the 2020 valuation, the allocation percentage has been decreased to 5.97%. 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 minimum required contribution to increase by $225,001.
12. 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 January 1, 2020 through December 31, 2060, 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 over the period by which each year's gain or loss is being amortized. If surtax revenue grows more slowly or more quickly than expected, contribution requirements will increase or decrease accordingly.

13. The present value of the projected surtax revenue was determined and used in determination of the City's required contribution as follows:
    a. Actual 2020 surtax revenue was projected to increase by 4.25% each year thereafter through 2060.
    b. A share of 5.97% of the projected revenue for January 1, 2031 through December 31, 2060 was allocated to CORP.
    c. The revenue allocated to CORP was discounted at the valuation discount rate of 6.80% to October 1, 2020.
    d. The original allocated present value amount of $64,295,005 was amortized over a 30-year initial period (Section 3, Exhibit F), with subsequent charges amortized over new periods. The present value of projected surtax revenue as of October 1, 2020 allocated to CORP is $95,190,837.
    e. After the amortized value amount was adjusted for the timing of contributions and projected to October 1, 2021, this amount was used as an offset to the Florida Chapter 112 Determined Employer Contribution to determine the City's minimum required contribution for fiscal 2021.
14. 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 Chapter 112 contribution.
15. 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, 2020, is included with this report.
16. 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.
17. This actuarial report as of October 1, 2020 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.
18. 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. We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Plan's future financial condition, but have included a brief discussion of some risks that may affect the Plan in Section 2. A more detailed assessment would provide the Board with a better understanding of the inherent risks. This could be important because relatively small changes in investment performance can produce large swings in the unfunded liabilities, retired participants account for most of the Plan's liabilities, leaving limited options for reducing costs in the event of adverse experience, and the Board has not had a detailed risk assessment in several years.

19. It is important to note that this actuarial valuation is based on plan assets as of September 30, 2020. Due to the COVID-19 pandemic, market conditions have changed significantly since the onset of the public health emergency. The plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the plan year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after September 30, 2020. While it is impossible to determine how the pandemic will affect market conditions and other demographic experience of the plan in future valuations, Segal is available to prepare projections of potential outcomes upon request.
20. 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

		2021	2020	2019
Contributions for fiscal year beginning October 1:	• Florida Chapter 112 determined employer contribution	$22,851,586	$20,812,130	$20,111,161
	• Less amortized value of discounted value of projected surtax revenue	-5,259,187	-5,767,600	-5,068,538
	• City's required minimum contribution*	$17,592,399	$15,044,530	$15,042,623
	• Actual employer contributions	- -	- -	15,058,000
Actuarial accrued liability:	• Retired participants and beneficiaries		$313,289,430	$289,920,395
	• Inactive vested participants		12,195,841	4,426,283
	• Active participants		143,345,746	139,830,166
	• Total actuarial accrued liability		468,831,017	434,176,844
	• Normal cost including administrative expenses		8,259,028	7,833,038
Assets:	• Market value of assets (MVA)		$228,172,000	$219,754,000
	• Actuarial value of assets (AVA)		234,514,215	220,334,774
	• Actuarial value of assets as a percentage of market value of assets		102.78%	100.26%
Funded status:	• Unfunded actuarial accrued liability on market value of assets		$240,659,017	$214,422,844
	• Funded percentage on MVA basis		48.67%	50.61%
	• Unfunded actuarial accrued liability on actuarial value of assets		$234,316,802	$213,842,070
	• Funded percentage on AVA basis		50.02%	50.75%
Key assumptions:	• Net investment return		6.80%	6.90%
	• Inflation rate		2.50%	2.50%
	• Payroll growth for amortization purposes		1.25%	1.25%
Demographic data:	• Number of retired participants and beneficiaries		407	385
	• Number of inactive vested participants		17	9
	• Number of active participants		471	532
	• Covered payroll		$28,268,208	$28,726,006
	• Average payroll		60,017	53,996
	• Projected payroll for next fiscal year		$28,621,561	$29,085,081

*Pursuant to State Law Chapter 2016-146 and City of Jacksonville Ordinances 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 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 Jacksonville Retirement System 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.

Section 1: Actuarial Valuation Summary

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 Board of Trustees. 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 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 Board should look to their other advisors for expertise in these areas.

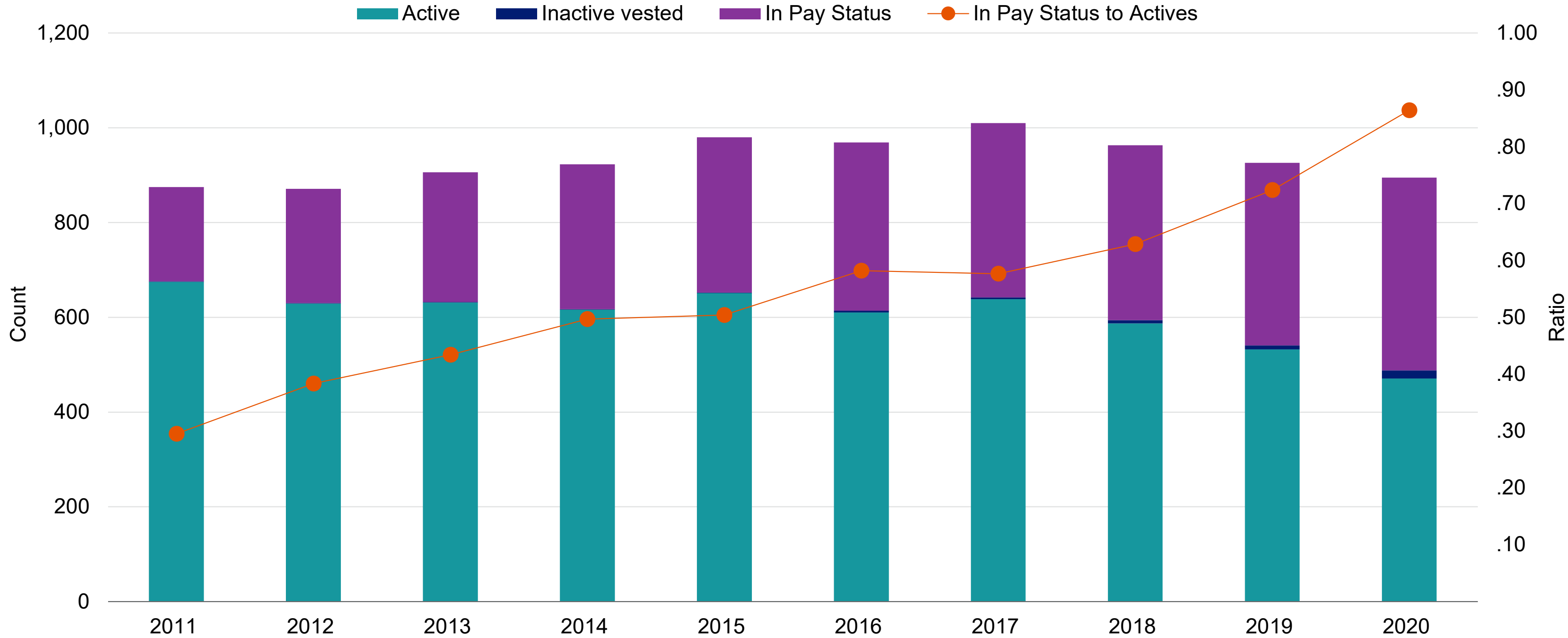
As Segal has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

Participant data

This section presents a summary of significant statistical data on these participant groups. Since the Plan is closed to new entrants, the ratio of in-pay to active participants will continue to increase.

Participant Population: 2011 – 2020



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
In Pay Status[1]	199	241	274	306	328	355	368	369	385	407
Inactive Vested[2]	1	1	1	1	1	4	4	7	9	17
Active	675	629	631	616	651	610	638	587	532	471
In Pay to Active	0.29	0.38	0.43	0.50	0.50	0.58	0.58	0.63	0.72	0.86

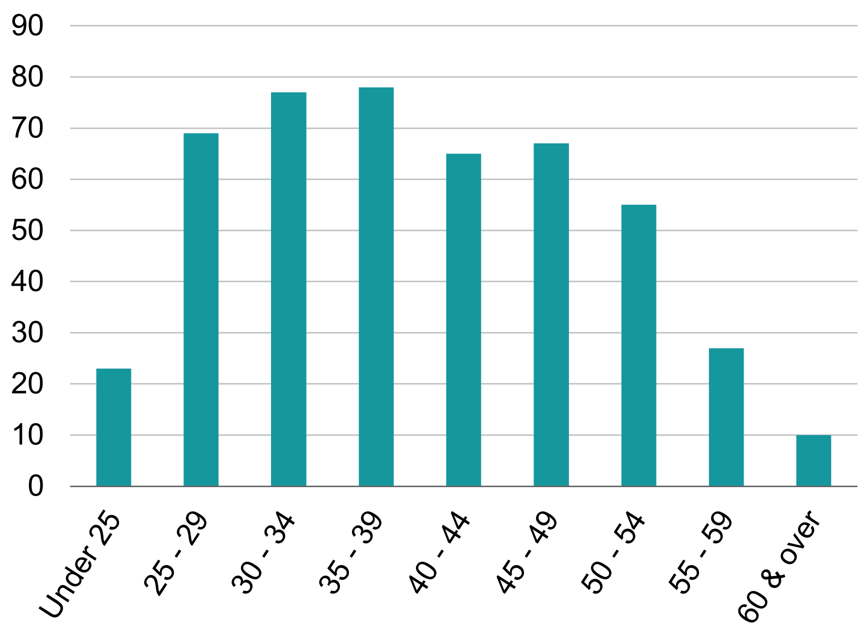
[1] Includes DROP participants
[2] Excludes terminated participants due a refund of employee contributions

Active participants

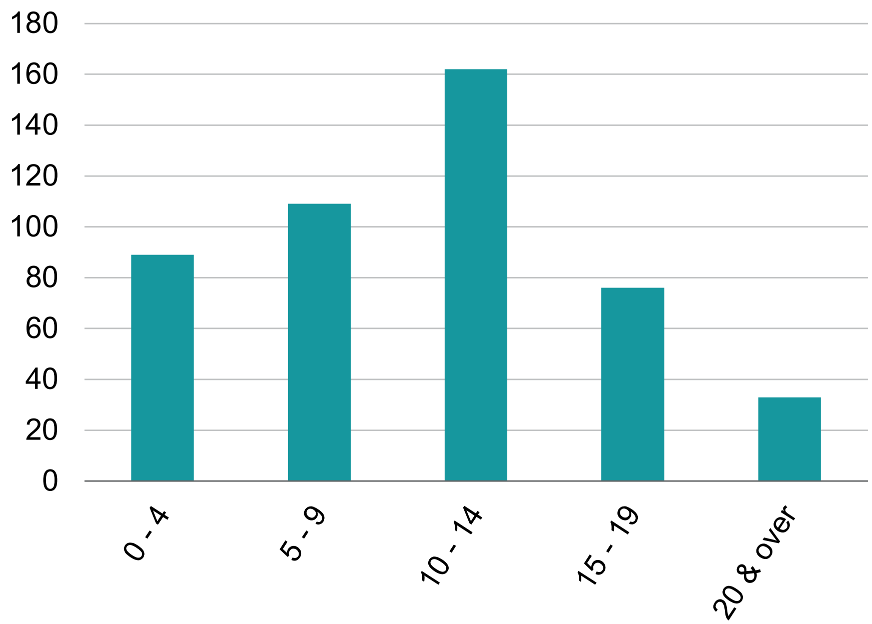
As of September 30,	2020	2019	Change
Active participants	471	532	-11.5%
Average age	40.0	39.2	0.8
Average years of service	10.9	10.2	0.7
Average compensation	60,017	53,996	11.2%

Distribution of Active Participants as of September 30, 2020

Actives by Age



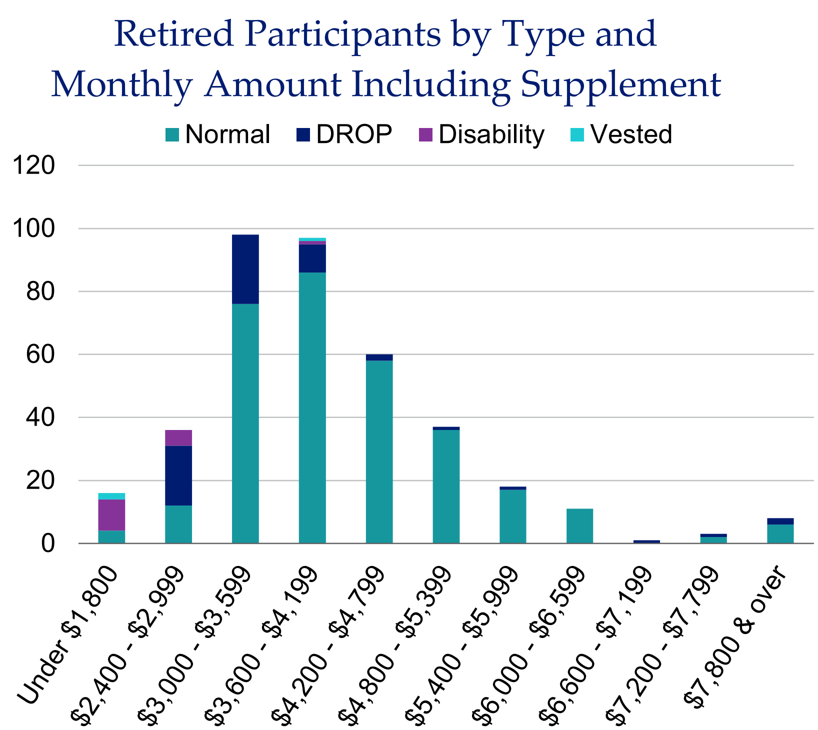
Actives by Years of Service

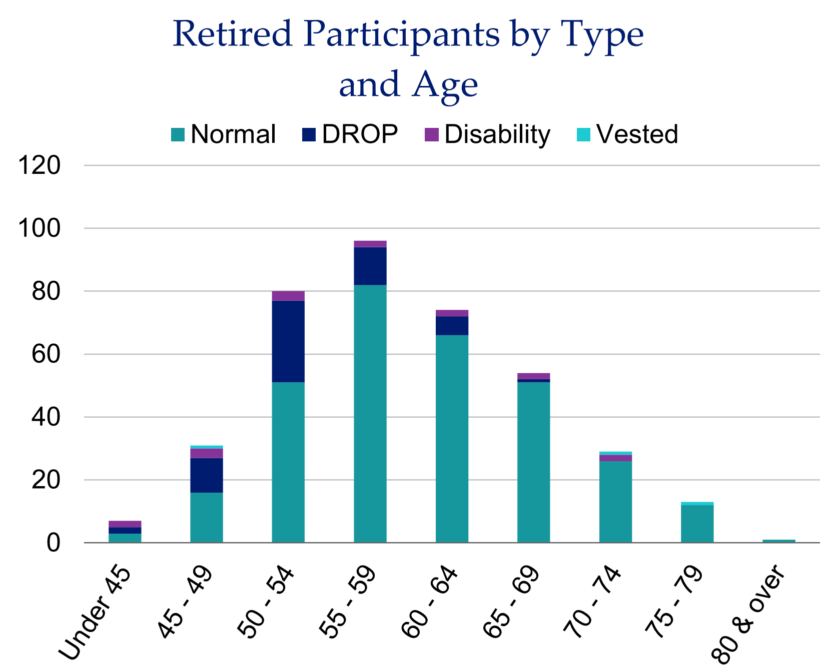


Retired participants and beneficiaries

As of September 30,	2020	2019	Change
Retirees	385	366	5.2%
Beneficiaries	22	19	15.8%
Average age	59.3	58.2	1.1
Average regular benefit amount	$3,881	$3,804	2.0%
Average supplement amount	110	109	0.9%
Total monthly amount	$1,624,248	$1,506,547	7.8%

Distribution of Retired Participants as of September 30, 2020



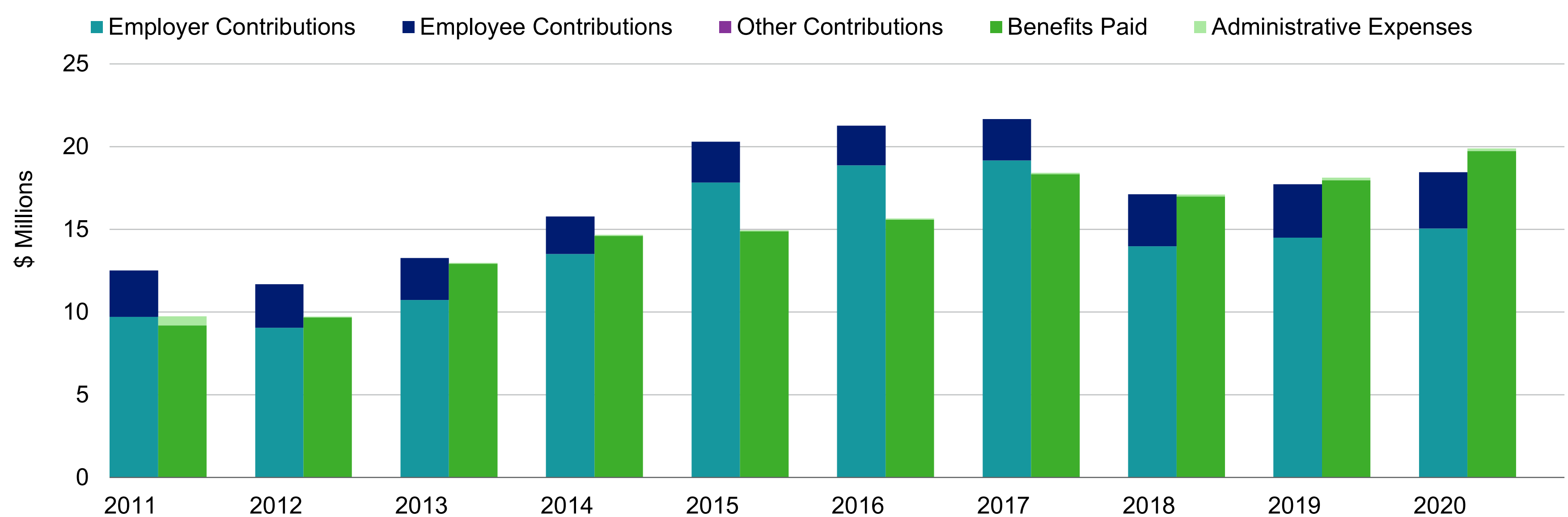


Financial information

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, 2011 – 2020



Section 2: Actuarial Valuation Results

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, 2020

1	Market value of assets, September 30, 2020					$228,172,000
2	Calculation of unrecognized return		**Original Amount**[1]	**Percent Deferred**[2]	**Unrecognized Amount**[3]	
	(a)	Year ended September 30, 2020	-$5,273,967	80%	-$4,219,174	
	(b)	Year ended September 30, 2019	-11,656,375	60%	-6,993,825	
	(c)	Year ended September 30, 2018	5,056,884	40%	2,022,754	
	(d)	Year ended September 30, 2017	14,240,149	20%	2,848,030	
	(e)	Year ended September 30, 2016	70,675	0%	0	
	(f)	Total unrecognized return				-$6,342,215
3	Preliminary actuarial value: **(1) - (2f)**					234,514,215
4	Adjustment to be within 30% corridor					0
5	Final actuarial value of assets as of September 30, 2020: **(3) + (4)**					234,514,215
6	Actuarial value as a percentage of market value: **(5) ÷ (1)**					102.8%
7	Amount deferred for future recognition: **(1) - (5)**					-$6,342,215

[1] Total return minus expected return on a market value basis
[2] Percent deferred applies to the current valuation year
[3] Recognition at 20% per year over five years

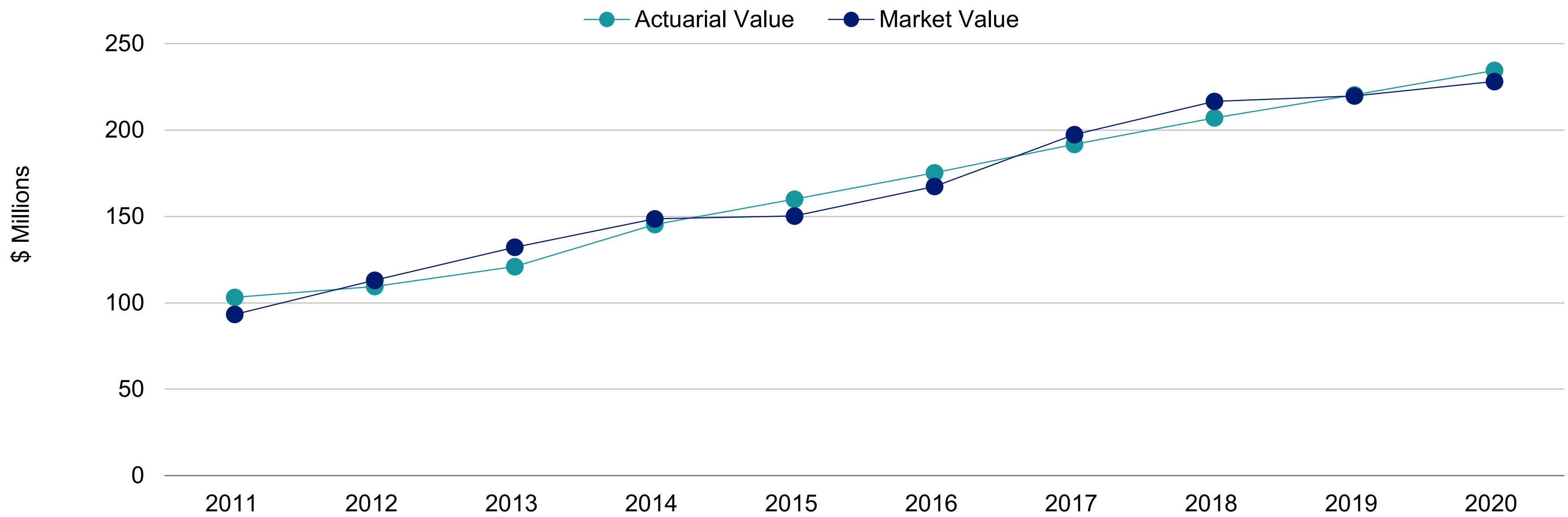
Deferred return as of September 30, 2020 recognized in each of the next four years:

(a) Amount recognized on September 30, 2021	$473,339
(b) Amount recognized on September 30, 2022	-2,374,692
(c) Amount recognized on September 30, 2023	-3,386,069
(d) Amount recognized on September 30, 2024	-1,054,794

Section 2: Actuarial Valuation Results

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



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actuarial Value[1]	$103.15	$109.47	$120.95	$145.28	$159.91	$175.33	$191.74	$207.09	$220.33	$234.51
Market Value[1]	93.41	113.00	132.15	148.72	150.22	167.39	197.38	216.67	219.75	228.17

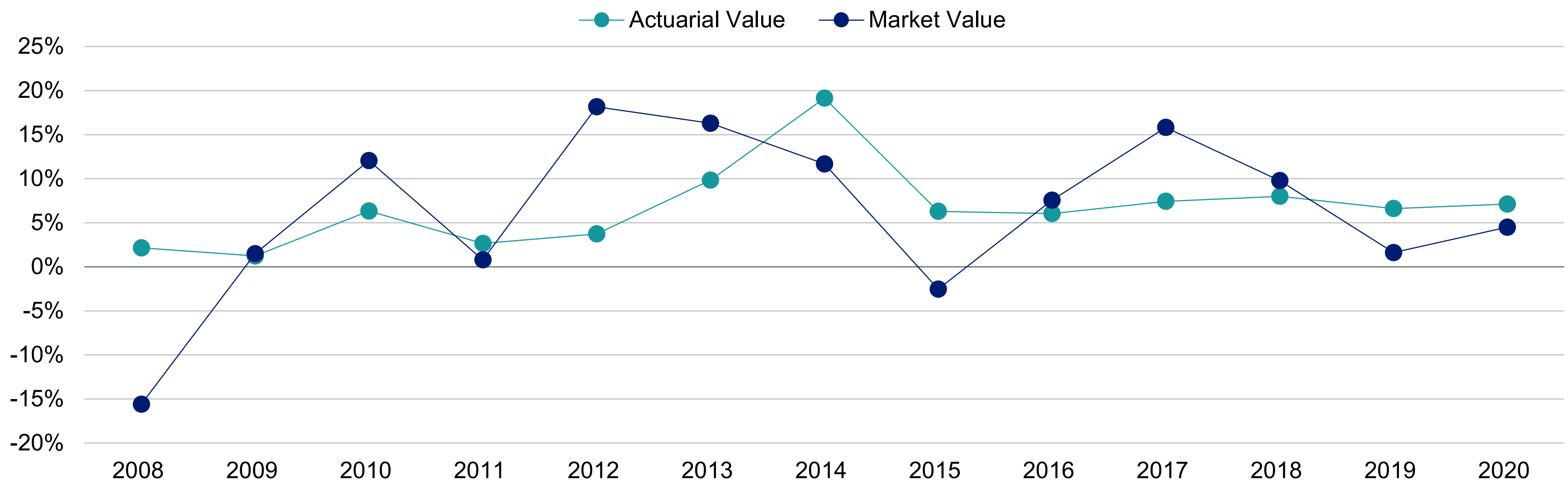
[1] In $ millions

Section 2: Actuarial Valuation Results

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 13 years, including averages over select time periods.

As described earlier in this section, the actuarial asset valuation method 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 – 2020



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actuarial Value of Assets	2.14%	1.23%	6.33%	2.65%	3.73%	9.82%	19.12%	6.28%	6.02%	7.44%	8.00%	6.60%	7.10%
Market Value of Assets	-15.61%	1.49%	12.03%	0.79%	18.14%	16.29%	11.66%	-2.54%	7.55%	15.83%	9.76%	1.62%	4.49%
Assumed rate	8.40%	8.40%	8.40%	8.25%	8.25%	7.75%	7.75%	7.50%	7.50%	7.50%	7.20%	7.20%	6.90%

Average Rates of Return	Actuarial Value	Market Value
Most recent five-year average return:	7.05%	7.42%
Most recent ten-year average return:	7.62%	7.73%

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.

Actuarial Experience for Year Ended September 30, 2020

1	Net gain from investments[1]	$447,401
2	Net gain from administrative expenses	11,122
3	Net loss from other experience	-10,067,207
4	Net experience loss: **1 + 2 + 3**	-$9,608,685

[1] Details on next page

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 4.49% for the year ended September 30, 2020.

For valuation purposes, the assumed rate of return on the actuarial value of assets was 6.90% for the year ending September 30, 2020. The actual rate of return on an actuarial basis for the 2020 plan year was 7.10%. 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, 2020 with regard to its investments.

Investment Experience

		Year Ended September 30, 2020	
		Market Value	**Actuarial Value**
1	Net investment income	$9,840,000	$15,601,441
2	Average value of assets	219,043,000	219,623,774
3	Rate of return: **1 ÷ 2**	4.49%	7.10%
4	Assumed rate of return	6.90%	6.90%
5	Expected investment income: **2 x 4**	15,113,967	15,154,040
6	Actuarial gain/(loss): **1 - 5**	-$5,273,967	$447,401

Non-investment experience

Administrative expenses

- Administrative expenses for the year ended September 30, 2020 totaled $153,000, as compared to the assumption of $158,000. This resulted in a gain of $11,122 for the year, after accounting for 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, 2020 amounted to $10,067,207, which is 2.2% of the actuarial accrued liability. The primary cause of this loss was salary increases greater than expected.

Actuarial assumptions

The assumption changes reflected in this report are:

- The discount rate was lowered from 6.90% to 6.80%.
- This change increased the actuarial accrued liability by 1.32% and increased the total normal cost by 2.50%.

Details on actuarial assumptions and methods are in Section 4, Exhibit I.

Plan provisions

There were no changes in plan provisions since the prior valuation.

A summary of plan provisions is in Section 4, Exhibit II.

Development of Unfunded Actuarial Accrued Liability for Year Ended September 30, 2020

1	Unfunded actuarial accrued liability at beginning of year		$213,842,070
2	Employer normal cost at beginning of year		5,173,791
3	Employer contributions		-15,058,000
4	Interest on 1, 2 & 3		14,641,621
5	Expected unfunded actuarial accrued liability		$218,599,482
6	Changes due to:		
	• (Gain)/loss	$9,608,685	
	• Assumptions	6,108,635	
	Total changes		$15,717,320
7	Unfunded actuarial accrued liability at end of year		$234,316,802

Florida Chapter 112 Determined Employer Contribution and City's Minimum Required Contribution

The chart below shows the calculations of the Florida Chapter 112 determined employer contribution and the City's minimum required contribution pursuant to State Law Chapter 2016-146 and City of Jacksonville Ordinances 2017-257-E and 2017-258-E.

The contribution requirements as of October 1, 2020 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.

Florida Chapter 112 Determined Contribution and City's Minimum Required Contribution for Year Beginning October 1

		2020		2019	
		Amount	% of Projected Payroll	Amount	% of Projected Payroll
1.	Total normal cost	$8,106,028	28.32%	$7,675,038	26.39%
2.	Administrative expenses	153,000	0.53%	158,000	0.54%
3.	Expected employee contributions	-2,637,520	-9.22%	-2,659,247	-9.14%
4.	Employer normal cost: (1) + (2) + (3)	$5,621,508	19.64%	$5,173,791	17.79%
5.	Actuarial accrued liability	$468,831,017		$434,176,844	
6.	Actuarial value of assets	234,514,215		220,334,774	
7.	Unfunded actuarial accrued liability: (5) - (6)	$234,316,802		$213,842,070	
8.	Payment on unfunded actuarial accrued liability	$16,161,758	56.47%	$14,655,411	50.39%
9.	Florida Chapter 112 determined employer contribution: (4) + (8)[1]	22,851,586	79.84%	20,812,130	71.56%
10.	Amortized value of discounted value of projected surtax revenue[1, 2]	5,259,187	18.37%	5,767,600	19.83%
11.	City's minimum required contribution: (9) - (10)[2]	$17,592,399	61.47%	$15,044,530	51.73%
12.	Projected payroll	$28,621,561		$29,085,081	

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

[2] Pursuant to State Law Chapter 2016-146 and City of Jacksonville Ordinances 2017-257-E and 2017-258-E

Reconciliation of actuarially determined contribution

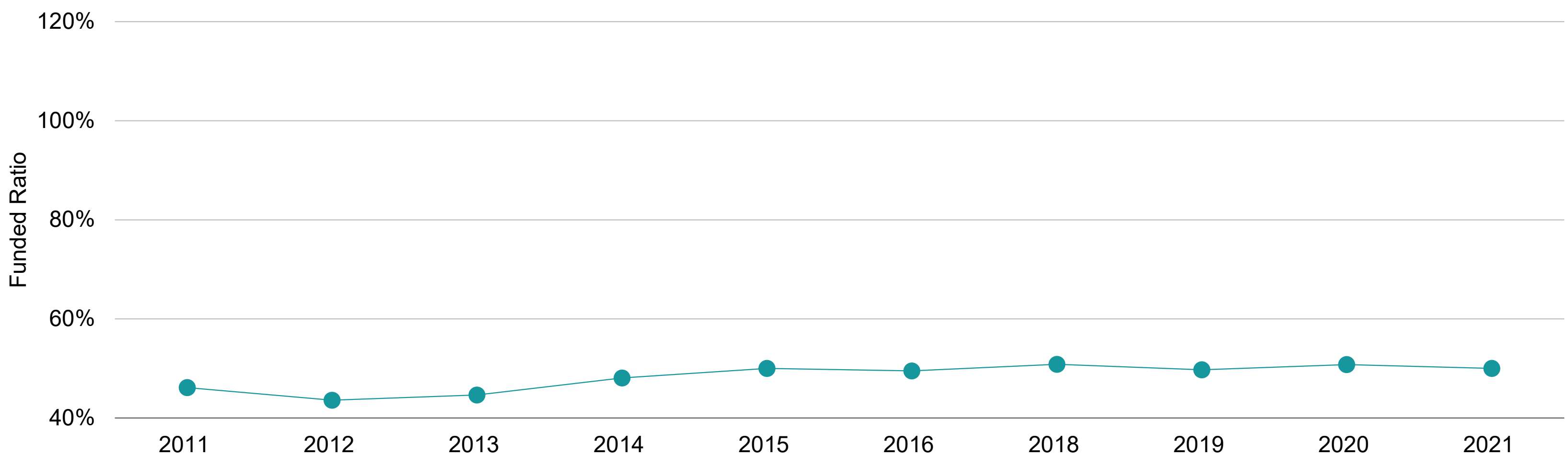
The chart below details the changes in the actuarially determined contribution from the prior valuation to the current year's valuation.

Reconciliation of City's Minimum Required Contribution from October 1, 2020 to October 1, 2021

	Amount
City's Minimum Required Contribution as of October 1, 2020	$15,044,530
• Effect of expected change in amortization payment due to payroll growth	120,178
• Effect of change in administrative expense assumption	-5,248
• Effect of contribution deferral to budget year and balancing amortization bases for surtax credit	408,841
• Effect of investment gain	-32,266
• Effect of other gains and losses on accrued liability	725,239
• Effect of loss on updated surtax projection	454,224
• Effect of updated surtax allocation	225,001
• Effect of change in actuarial assumptions	384,584
• Net effect of other changes, including composition and number of participants	267,316
Total change	$2,547,869
City's Minimum Required Contribution as of October 1, 2021	$17,592,399

Schedule of funding progress through September 30, 2020

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
10/01/2011	$103,154,256	$223,575,233	$120,420,977	46.14%	$31,832,037	378.30%
10/01/2012	109,473,919	251,035,516	141,561,597	43.61%	28,944,158	489.09%
10/01/2013	120,947,042	271,073,724	150,126,682	44.62%	27,871,010	538.65%
10/01/2014	145,276,644	302,122,370	156,845,726	48.09%	27,373,702	572.98%
10/01/2015	159,914,247	319,655,728	159,741,481	50.03%	28,091,083	568.66%
10/01/2016	175,333,405	354,234,673	178,901,268	49.50%	26,585,054	672.94%
10/01/2017	191,740,583	377,380,082	185,639,499	50.81%	27,548,015	673.88%
10/01/2018	207,089,881	416,673,228	209,583,347	49.70%	28,164,021	744.15%
10/01/2019	220,334,774	434,176,844	213,842,070	50.75%	28,726,006	744.42%
10/01/2020	234,514,215	468,831,017	234,316,802	50.02%	28,268,208	828.91%



History of employer contributions

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

History of Employer Contributions: 2013 – 2022

Fiscal Year Ended September 30	City's Minimum Required	Actual Employer Contribution	Percent Contributed
2013	$12,884,770	$10,742,000	83.37%
2014	14,884,963	13,522,000	90.84%
2015	17,618,896	17,832,000	101.21%
2016	18,863,935	18,864,000	100.00%
2017	19,155,820	19,162,000	100.03%
2018	13,973,105	13,973,000	100.00%
2019	14,497,788	14,498,000	100.00%
2020	15,042,623	15,058,000	100.10%
2021	15,044,530	- -	- -
2022	17,592,399	- -	- -

Risk

Since the actuarial valuation results are dependent on a given set of assumptions and data as of a specific date, there is a risk that emerging results may differ significantly as actual experience differs from the assumptions.

This report does not contain a detailed analysis of the potential range of future measurements, but does include a brief discussion of some risks that may affect the Plan. Upon request, a more detailed assessment of the risks can be provided to enable a better understanding of the risks specific to your Plan. This assessment may include scenario testing, sensitivity testing, stress testing and stochastic modeling.

- **Investment Risk** (the risk that returns will be different than expected)

  The market value rate of return over the last ten years has ranged from a low of 2.54% to a high of 18.14%.

- **Longevity Risk** (the risk that mortality experience will be different than expected)

  The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution. It is not yet known what long-term impact the COVID-19 pandemic may have on the Plan's mortality experience.

- **Contribution Risk** (the risk that actual contributions will be different from actuarially determined contribution)

  The Plan's funding policy requires payment of the City's minimum required contribution, which is the Florida Chapter 112 determined contribution reduced for anticipated funding from allocated surtax income. This policy produces a risk that this reduction in immediate funding might be either too large of too small, depending on whether the surtax income gross as quickly as expected.

  If the City paid the Florida Chapter 112 determined contribution, the effective amortization period would be 26 years, meaning that the current contribution level, with amortization payments growing 1.25%, would be adequate to be expected to reduce the unfunded liability to zero over 26 years. Under the City's current policy of paying the City's required contribution, over the immediate term, the unfunded liability has an expected growth rate of 1.7% and increases at this level can be expected to continue until the surtax income becomes payable to the Plan's trust. If plan experience is less favorable than anticipated, the unfunded liability will grow faster than 1.7% per year. By comparison, the surtax revenue is assumed to grow 4.25% per year.

  If the surtax revenue for fiscal 2020 had been 1% lower, the City's required contribution would increase by $67,987 or 0.24% of projected payroll. For comparison purposes, the allocated surtax revenue is 41.7% of the market value of assets and 20.3% of the actuarial accrued liability.

- **Demographic Risk** (the risk that participant experience will be different than assumed)

  Examples of this risk include:

  – Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply.

  – More or less active participant turnover than assumed.

- **Actual Experience** Over the Last Ten years and Implications for the Future

  – Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years: The non-investment gain/loss for a year has ranged from a loss of $15,203,738 to a gain of $14,240,149. Over the past ten years, the Plan's market value performance has, on average, exceeded the expected annual return.

  – The funded percentage on the actuarial value of assets has ranged from a low of 43.6% to a high of 50.8% since 2009.

- **Maturity Measures**

  As pension plans mature, the cash need to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities.

  Currently the Plan has a pay status to active participant ratio of 0.86. For the prior year benefits and expenses paid were $1,422,000 more than contributions received. As the Plan matures, more cash will be needed from the investment portfolio to meet benefit payments. Since the Plan is closed to new entrants, the amount of employee contributions is expected to continue to decline each year as the number of active participants decrease.

GFOA funded liability by type

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

	2020	2019
Actuarial accrued liability (AAL)		
• Active member contributions	$19,159,438	$19,136,185
• Retirees and beneficiaries	313,289,430	289,920,395
• Active and inactive members (employer-financed)	136,382,149	125,120,264
Total	$468,831,017	$434,176,844
Actuarial value of assets	$234,514,215	$220,334,774
Cumulative portion of AAL covered		
• Active member contributions	100.00%	100.00%
• Retirees and beneficiaries	68.74%	69.40%
• Active and inactive members (employer-financed)	0.00%	0.00%

Actuarial balance sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, first the amount and timing of all future payments that will be made by the Plan for current participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the "liability" of the Plan.

Second, this liability is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

Actuarial Balance Sheet

	Year Ended	
	September 30, 2020	**September 30, 2019**
Liabilities		
• Present value of benefits for retired participants and beneficiaries	$313,289,430	$289,920,395
• Present value of benefits for inactive vested participants	12,195,841	4,426,283
• Present value of benefits for active participants	204,012,968	197,893,834
Total liabilities	**$529,498,239**	**$492,240,512**
Assets		
• Total valuation value of assets	$234,514,215	$220,334,774
• Present value of future contributions by members	19,795,330	20,130,094
• Present value of future employer contributions for:		
• Entry age cost	40,871,892	37,933,574
• Unfunded actuarial accrued liability	234,316,802	213,842,070
Total of current and future assets	**$529,498,239**	**$492,240,512**

Section 3: Supplemental Information

Exhibit A: Table of Plan Demographics

Category	2020	2019	Change From Prior Year
	Year Ended September 30		
Active participants in valuation:			
• Number	471	532	-11.5%
• Average age	40.0	39.2	0.8
• Average years of service	10.9	10.2	0.7
• Covered payroll	$28,268,208	$28,726,006	-1.6%
• Average payroll	60,017	53,996	11.2%
• Employee contribution balances	19,159,438	19,136,185	0.1%
• Total active vested participants	382	376	1.6%
Inactive vested participants	17	9	88.9%
Retired participants:			
• Number in pay status	311	253	22.9%
• Average age	60.4	60.8	-0.4
• Average monthly benefit	$4,089	$4,252	-3.8%
Disabled participants:			
• Number in pay status	16	15	6.7%
• Average age	55.3	55.5	-0.2
• Average monthly benefit	$2,275	$2,331	-2.4%
Beneficiaries:			
• Number in pay status	22	19	15.8%
• Average age	63.6	64.1	-0.5
• Average monthly benefit	$2,816	$2,503	12.5%
DROP participants not yet in pay status			
• Number	58	98	-40.8%
• Average age	53.0	53.3	-0.3
• Average monthly benefit	$3,614	$3,555	1.7%

Exhibit B: Participants in Active Service as of September 30, 2020 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	23	23	- -	- -	- -	- -	- -
	$46,563	$46,563	$0	$0	$0	$0	$0
25 - 29	69	38	31	- -	- -	- -	- -
	49,075	47,405	51,123	- -	- -	- -	- -
30 - 34	77	12	39	26	- -	- -	- -
	54,115	47,409	52,708	59,321	- -	- -	- -
35 - 39	78	6	13	41	18	- -	- -
	62,765	48,544	53,901	64,128	70,805	- -	- -
40 - 44	65	5	9	27	17	7	- -
	64,957	51,002	51,428	60,537	72,582	90,854	- -
45 - 49	67	1	6	25	19	12	4
	69,445	46,464	52,004	63,948	69,886	78,157	107,481
50 - 54	55	2	6	24	13	8	2
	64,947	47,598	51,082	62,424	71,963	74,264	71,298
55 - 59	27	1	3	14	7	2	- -
	62,672	46,464	52,416	62,592	68,811	65,238	- -
60 - 64	8	- -	1	5	2	- -	- -
	63,620	- -	54,108	61,373	73,992	- -	- -
65 - 69	2	1	1	- -	- -	- -	- -
	50,112	48,732	51,492	- -	- -	- -	- -
Total	471	89	109	162	76	29	6
	$60,017	$47,465	$52,159	$62,260	$71,071	$79,257	$95,420

Exhibit C: Reconciliation of Participant Data

	Active Participants	Inactive Vested Participants	DROP Participants	Disableds	Retired Participants	Beneficiaries	Total
Number as of October 1, 2019	**532**	**9**	**98**	**15**	**253**	**19**	**926**
• New participants	0	N/A	0	N/A	N/A	N/A	0
• Terminations – with vested rights	-13	13	0	0	0	0	0
• Terminations – without vested rights	-19	N/A	0	N/A	N/A	N/A	-19
• Retirements	-7	0	-20	N/A	27	N/A	0
• New DROP Participants	-11	-5	16	0	0	0	0
• New disabilities	-1	0	0	1	N/A	N/A	0
• Return to work	0	0	0	0	0	N/A	0
• Deceased	0	0	0	0	-5	0	-5
• New beneficiaries	0	0	0	0	0	4	4
• Lump sum cash-outs	0	0	0	0	0	0	0
• Rehire	0	0	0	N/A	0	N/A	0
• Certain period expired	N/A	N/A	0	0	0	-1	-1
• Data adjustments	0	0	-36	0	36	0	0
• Net transfers (to)/from General and DC	-10	0	0	0	0	0	-10
Number as of October 1, 2020	**471**	**17**	**58**	**16**	**311**	**22**	**895**

Exhibit D: Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended September 30, 2020		Year Ended September 30, 2019	
Net assets at market value at the beginning of the year		$219,754,000		$216,667,000
Contribution income:				
• Employer contributions	$15,058,000		$14,498,000	
• Employee contributions	3,401,000		3,225,000	
• Less administrative expenses	-153,000		-158,000	
Net contribution income		*$18,306,000*		*$17,565,000*
Other income		$0		$0
Investment income:				
• Interest, dividends, and other income	$3,833,000		$5,667,000	
• Realized and unrealized appreciation	6,556,000[1]		-1,075,000	
• Less investment fees	-549,000		-1,096,000	
Net investment income		*$9,840,000*		*$3,496,000*
Total income available for benefits		**$28,146,000**		**$21,061,000**
Less benefit payments:				
• Benefit payments	-$16,350,000		-$14,931,000	
• DROP credits	-2,590,000		-2,643,000	
• Refunds	-3,974,000		-3,575,000	
• DROP withdrawals	3,461,000		3,374,000	
• DROP interest/adjustment	-275,000		-199,000	
Net benefit payments		*-$19,728,000*		*-$17,974,000*
Change in market value of assets		**$8,418,000**		**$3,087,000**
Net assets at market value at the end of the year		**$228,172,000**		**$219,754,000**

[1] The appreciation consists of $6,487,000 in unrealized gains and losses and $69,000 in realized gains and losses.

Exhibit E: Development of the Fund through September 30, 2020

Year Ended September 30	Employer Contributions	Employee Contributions	Other Contributions	Net Investment Return[1]	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
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%
2018	13,973,000	3,151,000	0	19,269,000	128,000	16,981,000	216,667,000	207,089,881	95.6%
2019	14,498,000	3,225,000	0	3,496,000	158,000	17,974,000	219,754,000	220,334,774	100.3%
2020	15,058,000	3,401,000	0	9,840,000	153,000	19,728,000	228,172,000	234,514,215	102.8%

[1] On a market basis, net of investment fees

Exhibit F: Table of Amortization Bases

Florida Chapter 112 Recommended Contribution Amortization Bases

Type	Date Established	Initial Period	Initial Amount	Annual Payment[1]	Years Remaining	Outstanding Balance
Fresh start	10/01/2016	30	$178,901,268	$12,277,235	26	$177,261,284
Experience gain	10/01/2017	30	-2,816,018	-190,593	27	-2,799,410
Assumptions change	10/01/2017	30	-283,924	-19,216	27	-282,249
Plan change	10/01/2017	30	9,863,395	667,571	27	9,805,220
Experience loss	10/01/2018	29	5,111,441	346,154	27	5,084,283
Assumptions change	10/01/2018	29	19,111,594	1,294,265	27	19,010,048
Experience loss	10/01/2019	28	12,171,775	825,952	27	12,131,514
Assumptions change	10/01/2019	28	-7,304,312	-495,656	27	-7,280,151
Experience loss	10/01/2020	27	15,277,628	1,040,150	27	15,277,628
Assumptions change	10/01/2020	27	6,108,635	415,896	27	6,108,635
Total				**$16,161,758**		**$234,316,802**

[1] 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 October 1, 2020 valuation.

City's Minimum Recommended Contribution Surtax Amortization Bases

Type	Date Established	Initial Period	Initial Amount	Annual Payment[1]	Years Remaining	Outstanding Balance
Discounted surtax revenue applied	10/01/2016	30	-$64,295,005	-$4,412,294	26	-$63,705,614
Surtax offset gain	10/01/2017	30	-1,534,336	-103,846	27	-1,525,284
Allocation assumption change	10/01/2017	30	4,705,811	318,497	27	4,678,056
Discount rate change	10/01/2017	30	-3,286,369	-222,427	27	-3,266,985
Surtax offset gain	10/01/2018	29	-1,420,046	-96,168	27	-1,412,501
Allocation change	10/01/2018	29	-1,349,426	-91,385	27	-1,342,257
Discount rate change	10/01/2018	29	-3,713,867	-251,509	27	-3,694,134
Surtax offset gain	10/01/2019	28	-348,544	-23,651	27	-347,391
Allocation change	10/01/2019	28	-7,142,670	-484,687	27	-7,119,044
Discount rate change	10/01/2019	28	-2,159,598	-146,546	27	-2,152,455
Surtax offset loss	10/01/2020	27	6,298,215	428,803	27	6,298,215
Allocation change	10/01/2020	27	3,119,832	212,408	27	3,119,832
Discount rate change	10/01/2020	27	-2,063,845	-140,513	27	-2,063,845
Total				**-$5,013,318**		**-$72,533,406**

[1] 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 October 1, 2020 valuation.

Exhibit G: 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 Retirees and Beneficiaries:	Actuarial Present Value of lifetime benefits to existing retirees 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. 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 actuarial liabilities that are larger than projected.
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 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 Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund of member contributions 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, as well as Actuariallv Determined Contributions.
Actuarial Value of Assets (AVA):	The value of the Plan'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 Actuariallv Determined Contribution.
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 Plan.
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 Unfunded Actuarial Accrued Liability. 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 Unfunded Actuarial Accrued Liability. 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 intended to pay off the Unfunded Actuarial Accrued Liability.
Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Plan is calculated, including: Investment return - the rate of investment yield that the Plan will earn over the long-term future; Mortality rates - the rate or probability of death at a given age for employees and retirees; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates - the rate or probability of disability retirement at a given age;

	Withdrawal rates - the rate or probability 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, real wage growth and merit and promotion increases.
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 20 years, it is 19 years at the end of one year, 18 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 based on the member's compensation, age 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 Plan 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 based on recommendations from the Actuary.
Funded Ratio:	The ratio of the actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes also 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 Plan 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:	The portion of the Actuarial Present Value of Future Benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of the Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of member 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 each future year in determining the Amortization Period.
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 or an Overfunded Actuarial Accrued Liability.
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 Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Exhibit H: 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 $230,000 for 2020. 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 I: 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
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%
2018	28,164,021	2.24%	10.21%	8.31%
2019	28,726,006	2.00%	12.46%	8.34%
2020	28,268,208	-1.59%	12.06%	3.98%

Note: The Plan was closed to new entrants as of October 1, 2017.

The average total payroll growth for the most recent ten years was 0.14% per year. Additional analysis of bargained pay increase applicable for the next year and pay of DC plan participants 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 J: Supplementary State of Florida Information
Recent History of Recommended and Actual Contributions

Fiscal Year Ended September 30	Valuation Date October 1	Contribution Rate as Percent of Valuation Payroll	Valuation Payroll	Florida Chapter 112 Recommended Contribution	City's Minimum Required Contribution	Actual Contribution
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	$13,973,105	13,973,000
2019	2017	68.63%	27,892,365	19,141,501	14,497,788	14,498,000
2020	2018	70.53%	28,516,071	20,111,161	15,042,623	15,058,000
2021	2019	71.56%	29,085,081	20,812,130	15,044,530	- -
2022	2020	79.84%	28,621,561	22,851,586	17,592,399	- -

The Plan was closed to new entrants as of October 1, 2017; as a result, valuation payroll is expected to continue declining

Exhibit K: Supplementary State of Florida Information
Comparative Summary of Principal Valuation Results

	Year Ended September 30, 2020		
	New Assumptions	Old Assumptions	Year Ended September 30, 2019
Participant data			
• Active members	471	471	532
• Total annual payroll	$28,268,208	$28,268,208	$28,726,006
• Retired members and beneficiaries	349	349	287
• Total annualized benefit	$16,896,738	$16,896,738	$13,898,136
• Terminated vested members	17	17	9
• Total annualized benefit	$695,328	$695,328	$286,056
• DROP participants	58	58	98
• Total annualized benefit	$2,594,481	$2,594,481	$4,180,428
Actuarial value of assets	$234,514,215	$234,514,215	$220,334,774
Present value of all future expected benefit payments:			
• Active members:			
• Retirement benefits	$177,041,071	$172,929,280	$170,928,866
• Vesting benefits	2,531,158	2,517,799	2,739,041
• Disability benefits	3,976,479	3,902,151	3,816,850
• Death benefits	1,304,822	1,279,635	1,272,892
• Return of contributions	19,159,438	19,159,438	19,136,185
• Total	$204,012,968	$199,788,302	$197,893,834
• Terminated vested members	12,195,841	12,034,618	4,426,283
• Retired members and beneficiaries	264,851,184	261,985,064	214,269,144
• DROP participants	48,438,246	47,815,783	75,651,250
Total	$529,498,239	$521,623,767	$492,240,511

Exhibit K: Supplementary State of Florida Information
Comparative Summary of Principal Valuation Results (Cont'd)

	Year Ended September 30, 2020		
	New Assumptions	Old Assumptions	Year Ended September 30, 2019
Unfunded actuarial accrued liability	$234,316,802	$228,208,167	$213,842,070
Actuarial present value of accrued benefits			
Vested accrued benefits			
Active members	$101,274,690	$99,468,779	$100,403,017
Inactive members	12,195,841	12,034,618	4,426,283
Pensioners and beneficiaries	264,851,184	261,985,064	214,269,144
DROP participants	48,438,246	47,815,783	75,651,250
Nonvested active members	828,822	780,529	1,157,779
Total	$427,588,783	$422,084,773	$395,907,473
Pension cost			
Normal cost, including administrative expenses	$8,259,028	$8,061,001	$7,833,038
Expected employee contributions	-2,637,520	-2,637,520	-2,659,247
Level % of payroll payment to amortize unfunded actuarial accrued liability	16,161,758	15,888,380	14,655,411
Discounted and amortized value of allocated surtax revenue	-5,013,318	-5,131,121	-5,495,204
Total minimum annual cost payable monthly at valuation date	$17,375,208	$16,773,150	$14,858,795
Total employer cost projected to budget year	**17,592,399**	**16,982,815**	**15,044,530**
Projected Payroll	28,621,561	28,621,561	29,085,081
As % of payroll	61.47%	59.34%	51.73%
Present value of active members' future salaries at attained age	$197,953,298	$197,032,562	$201,300,936
Present value of expected future employee contributions	19,795,330	19,703,256	20,130,094

Exhibit L: Supplementary State of Florida Information
Actuarial Present Value of Accumulated Plan Benefits

Factors	Change in Actuarial Present Value of Accumulated Plan Benefits	
		$395,907,473
Benefits accumulated, net experience gain or loss, changes in data	$19,268,300	
Benefits paid	-19,728,000	
Interest	26,637,000	
Changes in assumptions	5,504,010	
Plan changes	0	
Net increase	$31,681,310	
As % of projected payroll	110.69%	
Actuarial present value of accumulated benefits as of October 1, 2020		$427,588,783

Exhibit M: Supplementary State of Florida Information
Reconciliation of DROP Accounts

Nearest Age	Total Actives*	Eligible for Normal**	Number Retiring	Number Entering DROP
Under 40	284	0	0	0
40	15	2	0	0
41	14	1	0	0
42	10	1	0	0
43	13	3	1	0
44	10	3	1	0
45	10	3	0	0
46	19	6	1	0
47	15	5	0	1
48	17	3	0	0
49	22	5	0	4
50	21	8	0	1
51	14	5	1	1
52	10	3	1	0
53	9	4	0	1
54	11	1	0	0
55	6	1	0	0
56	6	3	0	1
57	6	0	0	1
58	6	1	0	0
59	2	0	0	0
60	2	0	0	0
61	3	1	0	1
62	0	0	0	0
63	3	0	0	0
64	1	0	1	0
65 & over	3	0	1	0
Total	532	59	7	11

*Number of active participants from prior valuation
**Number of active participants either eligible for retire as of October 1, 2019 or who became eligible during the plan year ended September 30,, 2020.

Exhibit N: Actuarial Projections through Fiscal 2062

Plan Year Beginning	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio	Fiscal Year Ending	Surtax Contribution	% of Total Contribution	Required City Contribution	% of Total Contribution	Total Contribution
					2020	$0	0.0%	$15,044,530	100.0%	$15,044,530
2020	$468,831,017	$234,514,215	$234,316,802	50.02%	2021	0	0.0%	17,592,399	100.0%	17,592,399
2021	486,934,376	246,188,190	240,746,186	50.56%	2022	0	0.0%	17,461,633	100.0%	17,461,633
2022	504,577,721	257,268,279	247,309,442	50.99%	2023	0	0.0%	17,611,180	100.0%	17,611,180
2023	521,830,844	266,704,758	255,126,086	51.11%	2024	0	0.0%	17,714,340	100.0%	17,714,340
2024	538,130,159	277,762,614	260,367,545	51.62%	2025	0	0.0%	17,757,971	100.0%	17,757,971
2025	553,920,612	289,328,401	264,592,211	52.23%	2026	0	0.0%	17,778,756	100.0%	17,778,756
2026	569,376,625	300,428,758	268,947,867	52.76%	2027	0	0.0%	17,714,534	100.0%	17,714,534
2027	584,110,375	310,805,056	273,305,319	53.21%	2028	0	0.0%	17,667,857	100.0%	17,667,857
2028	598,111,093	320,291,701	277,819,392	53.55%	2029	0	0.0%	17,682,226	100.0%	17,682,226
2029	611,539,394	328,975,523	282,563,871	53.79%	2030	6,634,484	27.3%	17,630,067	72.7%	24,264,551
2030	624,092,186	343,593,905	280,498,281	55.05%	2031	9,221,933	35.0%	17,092,752	65.0%	26,314,685
2031	633,675,610	358,963,767	274,711,843	56.65%	2032	9,613,865	36.3%	16,850,006	63.7%	26,463,871
2032	641,276,568	372,868,903	268,407,665	58.14%	2033	10,022,455	37.5%	16,734,534	62.5%	26,756,989
2033	647,350,785	386,079,089	261,271,696	59.64%	2034	10,448,409	38.6%	16,639,624	61.4%	27,088,033
2034	651,906,737	398,843,596	253,063,141	61.18%	2035	10,892,466	39.7%	16,543,267	60.3%	27,435,733
2035	654,872,314	411,217,921	243,654,393	62.79%	2036	11,355,396	41.0%	16,367,064	59.0%	27,722,460
2036	655,843,449	423,019,693	232,823,756	64.50%	2037	11,838,001	42.1%	16,260,240	57.9%	28,098,241
2037	655,003,869	434,324,904	220,678,965	66.31%	2038	12,341,116	43.6%	15,984,192	56.4%	28,325,308
2038	651,567,528	444,822,134	206,745,394	68.27%	2039	12,865,613	44.7%	15,935,973	55.3%	28,801,586
2039	646,341,626	454,861,519	191,480,107	70.37%	2040	13,412,402	45.6%	15,982,494	54.4%	29,394,896
2040	639,674,680	465,113,805	174,560,875	72.71%	2041	13,982,429	46.5%	16,089,897	53.5%	30,072,326
2041	631,801,675	476,006,242	155,795,433	75.34%	2042	14,576,682	47.3%	16,232,897	52.7%	30,809,579
2042	622,869,986	487,878,856	134,991,130	78.33%	2043	15,196,191	48.1%	16,403,101	51.9%	31,599,292
2043	613,006,132	501,038,919	111,967,213	81.73%	2044	15,842,029	48.8%	16,594,351	51.2%	32,436,380
2044	602,312,850	515,779,794	86,533,056	85.63%	2045	16,515,315	49.6%	16,795,733	50.4%	33,311,048
2045	590,869,322	532,392,459	58,476,863	90.10%	2046	17,217,216	50.3%	17,006,118	49.7%	34,223,334
2046	578,748,664	551,162,449	27,586,215	95.23%	2047	17,948,948	75.5%	5,826,225	24.5%	23,775,173
2047	566,017,021	572,387,000	(6,369,979)	101.13%	2048	0	0.0%	312,631	100.0%	312,631
2048	552,729,060	565,237,245	(12,508,185)	102.26%	2049	0	0.0%	320,446	100.0%	320,446
2049	538,943,827	552,298,578	(13,354,751)	102.48%	2050	0	0.0%	328,458	100.0%	328,458
2050	524,723,333	538,982,116	(14,258,783)	102.72%	2051	0	0.0%	336,669	100.0%	336,669
2051	510,133,593	525,357,780	(15,224,187)	102.98%	2052	0	0.0%	345,086	100.0%	345,086
2052	495,241,669	511,496,802	(16,255,133)	103.28%	2053	0	0.0%	353,713	100.0%	353,713
2053	480,115,723	497,471,800	(17,356,077)	103.61%	2054	0	0.0%	362,556	100.0%	362,556
2054	464,821,197	483,352,973	(18,531,776)	103.99%	2055	0	0.0%	371,619	100.0%	371,619
2055	449,427,341	469,214,650	(19,787,309)	104.40%	2056	0	0.0%	380,910	100.0%	380,910
2056	433,999,263	455,127,366	(21,128,103)	104.87%	2057	0	0.0%	390,433	100.0%	390,433
2057	418,600,660	441,160,611	(22,559,951)	105.39%	2058	0	0.0%	400,194	100.0%	400,194
2058	403,292,887	427,381,930	(24,089,043)	105.97%	2059	0	0.0%	410,199	100.0%	410,199
2059	388,135,637	413,857,626	(25,721,989)	106.63%	2060	0	0.0%	420,454	100.0%	420,454
2060	373,183,608	400,649,456	(27,465,848)	107.36%	2061	0	0.0%	430,966	100.0%	430,966
Total:						$229,924,950	33.0%	$466,600,034	67.0%	$696,524,984
Total Present Value at 6.80%:						$64,388,286	24.1%	$202,559,905	75.9%	266,948,191

Assumptions

Investment Return Assumption	6.80% per year
Actuarial Value of Assets	5-year smoothed market value
Payroll Growth Assumption	1.25% per year
Pension Liability Surtax Proceeds	5.97%, projected to increase 4.25% annually
Administrative Expenses	Projected to increase 2.5% annually

Projections are not a guarantee of future results. They are intended to serve as estimates of future financial outcomes that are based on assumptions about future experience and the information available at the time the modeling is undertaken and completed. Projected results will change if demographic or economic assumptions, or plan provisions, change in the future, or if the contributing employers make contributions other than expected.

Section 4: Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions, Actuarial Cost Method and Models

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, 2017.
Net Investment Return:	6.80%. 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):	(see table below)

Salary Increases (including inflation):

Service	Rate (%)
0	7.50
1	6.50
2	6.00
3	5.50
4	5.25
5	5.00
6	4.50
7 - 10	4.00
11 - 14	3.75
15+	2.80

Inflation Rate:	2.50%
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 and pay of DC Plan participants 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 2.50%.

Section 4: Actuarial Valuation Basis

Mortality Rates:

Healthy pre-retirement: FRS pre-retirement mortality tables for special risk personnel, set forward 2 years, projected generationally from 2010 with Scale MP2018

Healthy post-retirement: FRS healthy post-retirement mortality tables for special risk personnel, set forward 2 years, projected generationally from 2010 with Scale MP2018

Disabled: FRS disabled mortality tables for personnel other than special risk, with no set forward, projected generationally from 2010 with Scale MP2018

The FRS tables for special risk personnel, set forward 2 years, reasonably reflect the healthy annuitant mortality experience of the General Employees Retirement Plan as of the measurement date. The FRS disabled mortality tables for special risk personnel reasonably reflect the disabled annuitant mortality experience as of the measurement date.

Annuitant Mortality Rates:

	Rate (%)[1]			
	Healthy		Disabled	
Age	Male	Female	Male	Female
55	1.04	0.55	2.53	1.91
60	1.16	0.61	3.08	2.27
65	1.45	0.88	3.93	2.83
70	2.34	1.51	5.08	3.79
75	3.90	2.62	6.98	5.46
80	6.63	4.65	10.12	8.31
85	11.21	8.64	14.68	12.60
90	18.13	15.47	21.29	17.72

[1] Mortality rates shown for base table.

Section 4: Actuarial Valuation Basis

Termination Rates before Retirement:

	Rate (%)			
	Mortality[1]		Disability[2]	
Age	**Male**	**Female**	**Male**	**Female**
20	0.05	0.04	0.03	0.03
25	0.06	0.05	0.04	0.04
30	0.07	0.05	0.05	0.05
35	0.08	0.06	0.08	0.08
40	0.10	0.08	0.12	0.12
45	0.14	0.11	0.18	0.18
50	0.21	0.17	0.30	0.30
55	0.32	0.25	0.47	0.47
60	0.50	0.40	0.75	0.75
65	0.87	0.69	0.00	0.00

[1]Mortality rates shown for base table

[2]100% of disabilities are assumed to be non-service incurred.

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 – 24	40
25 – 27	50
28 & Over	100

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 Rates 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.

Section 4: Actuarial Valuation Basis

Value of Applicable Tax Revenue:	Actual revenue of $93,742,144 for fiscal 2020 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:	5.97%. This percentage is determined by the City; last year's percentage was 6.17%.
Administrative Expenses:	Previous year's actual expenses; $153,000 for October 1, 2020.
Family Composition:	60% 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 based on each member's benefit accrual rate and are allocated by compensation. 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 and Methods:	Following ongoing board review of discount rate options: ➤ The discount rate was lowered from 6.90% to 6.80%.

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	$69.31 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	$69.31 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	\$69.31 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	\$69.31 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 \$69.31 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, 2017.	
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:	There have been no changes in plan provisions since the last valuation.

Section 5: GASB Information

General information about the pension plan

Plan Description

Plan membership. At September 30, 2020, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	407
Vested terminated members entitled to but not yet receiving benefits	17
Active members	471
Total	895

Net pension liability

Reporting Date for Employer under GASB 68	September 30, 2021	September 30, 2020
Measurement Date	**September 30, 2020**	**September 30, 2019**
Components of the Net Pension Liability		
Total Pension Liability	$480,506,017	$446,446,844
Plan Fiduciary Net Position	239,847,000	232,024,000
Net Pension Liability	240,659,017	214,422,844
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	49.92%	51.97%

The Net Pension Liability (NPL) for the plan was measured as of September 30, 2020 and 2019. Plan Fiduciary Net Position (plan assets) was valued as of the measurement dates and the Total Pension Liability (TPL) was determined from actuarial valuations as of September 30, 2020 and 2019, respectively.

Actuarial assumptions. The TPL as of September 30, 2020 and 2019, that were measured by actuarial valuations as of September 30, 2020 and 2019, respectively, used the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.50%
Salary increases	2.80% - 7.50%, of which 2.50% is the Plan's long-term payroll inflation assumption
Investment rate of return	6.80%, net of pension plan investment expense, including inflation (previously 6.90%)
Other assumptions	See the October 1, 2020 actuarial valuation for a complete description of all actuarial assumptions. These assumptions were developed in the analysis of actuarial experience study for the period October 1, 2012 through September 30, 2017.

Determination of discount rate and investment rates of return

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns 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, adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation (approved by the Board) and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	30.0%	6.65%
International equity	20.0%	7.40%
Fixed income	20.0%	0.50%
Real estate	15.0%	3.75%
Private equity	7.5%	10.65%
Alternatives	7.5%	2.55%
Total	100.0%	

Discount rate. The discount rates used to measure the Total Pension Liability (TPL) were 6.80% and 6.90% as of September 30, 2020 and September 30, 2019, respectively. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Plan Fiduciary Net Position (FNP) was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both September 30, 2020 and September 30, 2019.

Discount rate sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability (NPL) of the Plan as of September 30, 2020, calculated using the discount rate of 6.80%, as well as what the Plan's Short Name’s NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (5.80%) or 1-percentage-point higher (7.80%) than the current rate.

	1% Decrease (5.80%)	Current Discount Rate (6.80%)	1% Increase (7.80%)
Net Pension Liability	**$309,686,127**	**$240,659,017**	**$184,974,682**

Schedule of changes in Net Pension Liability – Last two fiscal years

Reporting Date for Employer under GASB 68	September 30, 2021	September 30, 2020
Measurement Date	**September 30, 2020**	**September 30, 2019**
Total Pension Liability		
Service cost	$7,675,038	$7,359,444
Interest	30,633,266	29,930,717
Change of benefit terms	0	0
Differences between expected and actual experience	9,965,234	5,491,767
Changes of assumptions	6,108,635	-7,304,312
Benefit payments, including refunds of member contributions	-20,323,000	-18,506,000
Net change in Total Pension Liability	$34,059,173	$16,971,616
Total Pension Liability – beginning	446,446,844	429,475,228
Total Pension Liability – ending	$480,506,017	$446,446,844
Plan Fiduciary Net Position		
Contributions – employer	$15,058,000	$14,498,000
Contributions – employee	3,401,000	3,225,000
Net investment income	9,840,000	3,496,000
Benefit payments, including refunds of member contributions	-20,323,000	-18,506,000
Administrative expense	-153,000	-158,000
Other	0	0
Net change in Plan Fiduciary Net Position	$7,823,000	$2,555,000
Plan Fiduciary Net Position – beginning	232,024,000	229,469,000
Plan Fiduciary Net Position – ending	$239,847,000	$232,024,000
Net Pension Liability – ending	$240,659,017	$214,422,844
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	49.92%	51.97%
Covered payroll[1]	$28,268,208	$28,726,006
Plan Net Pension Liability as percentage of covered payroll	851.34%	746.44%

Notes to Schedule:

[1] Pensionable payroll as of the measurement date

Benefit changes:	*No benefit changes have been reflected in the past two fiscal years.*
Assumption changes:	*As of September 30, 2019 the assumed investment return was lowered from 7.00% to 6.90%.*
	As of September 30, 2019 the mortality assumptions were changed from being based on the FRS mortality tables used in the July 1, 2018 FRS actuarial valuation for the special risk personnel to the FRS mortality tables used in the July 1, 2019 FRS actuarial valuation for special risk personnel. The set forward used to adjust for the plan's experience was changed for healthy pre- and post-retirement lives was changed from 2.5 years to 2.0 years with the adoption of the new base table. The mortality improvement scale was changed from scale BB to scale MP2018 in conjunction with this change.
	As of September 30, 2020 the assumed investment return was lowered from 6.90% to 6.80%.

Deferred outflows of resources and deferred inflows of resources

Reporting Date for Employer under GASB 68	**September 30, 2021**	**September 30, 2020**
Measurement Date	**September 30, 2020**	**September 30, 2019**
Deferred Outflows of Resources		
Changes of assumptions or other inputs	$14,173,807	$14,697,540
Net difference between projected and actual earnings on pension plan investments	8,163,987	2,582,136
Difference between expected and actual experience in the Total Pension Liability	20,032,287	17,093,878
Total Deferred Outflows of Resources	$42,370,081	$34,373,554
Deferred Inflows of Resources		
Changes of assumptions or other inputs	$4,560,158	$6,198,592
Net difference between projected and actual earnings on pension plan investments	0	0
Difference between expected and actual experience in the Total Pension Liability	1,285,665	1,781,748
Total Deferred Inflows of Resources	$5,845,823	$7,980,340
Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:		
Reporting Date for Employer under GASB 68 Year Ended September 30:		
2021	N/A	$7,608,108
2022	$9,431,891	4,997,103
2023	11,989,945	7,555,157
2024	10,667,634	6,232,846
2025	4,434,788	0
2026	0	0
Thereafter	0	0

Schedule of recognition of change in total Net Pension Liability

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience on Total Pension Liability

Reporting Date for Employer under GASB 68 Year Ended September 30	Differences between Expected and Actual Experience	Recognition Period (Years)	2020	2021	2022	2023	2024	2025	2026	Thereafter
2015	$5,963,454	7	$851,922	$851,922	$0	$0	$0	$0	$0	$0
2016	1,699,155	7	242,736	242,736	242,736	0	0	0	0	0
2017	-1,418,089	7	-202,584	-202,584	-202,584	-202,584	0	0	0	0
2018	-2,054,491	7	-293,499	-293,499	-293,499	-293,499	-293,499	0	0	0
2019	17,044,608	6	2,840,768	2,840,768	2,840,768	2,840,768	2,840,768	0	0	0
2020	5,491,767	5	1,098,355	1,098,353	1,098,353	1,098,353	1,098,353	0	0	0
2021	9,965,234	5	N/A	1,993,046	1,993,047	1,993,047	1,993,047	1,993,047	0	0
Net increase (decrease) in pension expense			N/A	$6,530,742	$5,678,821	$5,436,085	$5,638,669	$1,993,047	$0	$0

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes

Reporting Date for Employer under GASB 68 Year Ended September 30	Assumption Changes	Recognition Period (Years)	2020	2021	2022	2023	2024	2025	2026	Thereafter
2015	$10,764,915	7	$1,537,845	$1,537,845	$0	$0	$0	$0	$0	$0
2016	-1,243,005	7	-177,572	-177,572	-177,572	0	0	0	0	0
2017	16,320,426	7	2,331,489	2,331,489	2,331,489	2,331,489	0	0	0	0
2018	9,950,689	7	1,421,527	1,421,527	1,421,527	1,421,527	1,421,527	0	0	0
2019	718,682	6	119,780	119,780	119,780	119,780	119,780	0	0	0
2020	-7,304,312	5	-1,460,864	-1,460,862	-1,460,862	-1,460,862	-1,460,862	0	0	0
2021	6,108,635	5	N/A	1,221,727	1,221,727	1,221,727	1,221,727	1,221,727	0	0
Net increase (decrease) in pension expense			N/A	$4,993,934	$3,456,089	$3,633,661	$1,302,172	$1,221,727	$0	$0

The average of the expected remaining service lives of all employees that are provided with pensions through the Plan's (active and inactive employees) determined as of September 30, 2020 is five years.

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Projected and Actual Earnings on Pension Plan Investments

Reporting Date for Employer under GASB 68 Year Ended September 30	Differences between Projected and Actual Earnings	Recognition Period (Years)	2020	2021	2022	2023	2024	2025	2026	Thereafter
2016	$16,384,725	5	$3,276,945	$0	$0	$0	$0	$0	$0	$0
2017	1,106,188	5	221,238	221,238	0	0	0	0	0	0
2018	-13,116,089	5	-2,623,218	-2,623,218	-2,623,218	0	0	0	0	0
2019	-4,032,972	5	-806,594	-806,594	-806,594	-806,594	0	0	0	0
2020	12,533,895	5	2,506,779	2,506,779	2,506,779	2,506,779	2,506,779	0	0	0
2021	6,100,070	5	N/A	1,220,014	1,220,014	1,220,014	1,220,014	1,220,014	0	0
Net increase (decrease) in pension expense			N/A	$518,219	$296,981	$2,920,199	$3,726,793	$1,220,014	$0	$0

Total Increase (Decrease) in Pension Expense

Reporting Date for Employer under GASB 68 Year Ended Septmeber 30	Total Increase (Decrease) in Pension Expense	2020	2021	2022	2023	2024	2025	2026	Thereafter
2015	$12,698,323	$2,389,767	$2,389,767	$0	$0	$0	$0	$0	$0
2016	16,840,875	3,342,109	65,164	65,164	0	0	0	0	0
2017	16,008,525	2,350,143	2,350,143	2,128,905	2,128,905	0	0	0	0
2018	-5,219,891	-1,495,190	-1,495,190	-1,495,190	1,128,028	1,128,028	0	0	0
2019	13,730,318	2,153,954	2,153,954	2,153,954	2,153,954	2,960,548	0	0	0
2020	10,721,350	2,144,270	2,144,270	2,144,270	2,144,270	2,144,270	0	0	0
2021	22,173,939	N/A	4,434,787	4,434,788	4,434,788	4,434,788	4,434,788	0	0
Net increase (decrease) in pension expense		N/A	$12,042,895	$9,431,891	$11,989,945	$10,667,634	$4,434,788	$0	$0

Pension expense

Reporting Date for Employer under GASB 68	September 30, 2021	September 30, 2020
Measurement Date	**September 30, 2020**	**September 30, 2019**
Components of Pension Expense		
Service cost	$7,675,038	$7,359,444
Interest on the Total Pension Liability	30,633,266	29,930,717
Current-period benefit changes	- -	- -
Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	1,993,046	1,098,355
Expensed portion of current-period changes of assumptions or other inputs	1,221,727	-1,460,864
Member contributions	-3,401,000	-3,225,000
Projected earnings on plan investments	-15,940,070	-16,029,895
Expensed portion of current-period differences between actual and projected earnings on plan investments	1,220,014	2,506,779
Administrative expense	153,000	158,000
Other	- -	- -
Recognition of beginning of year deferred outflows of resources as pension expense	13,172,437	12,844,250
Recognition of beginning of year deferred inflows of resources as pension expense	-5,564,329	-4,103,467
Pension Expense	**$31,163,129**	**$29,078,319**

Schedule of reconciliation of Net Pension Liability

Reporting Date for Employer under GASB 68	September 30, 2021	September 30, 2020
Measurement Date	**September 30, 2020**	**September 30, 2019**
Beginning Net Pension Liability	$214,422,844	$200,006,228
Pension expense	31,163,129	29,078,319
Employer contributions	-15,058,000	-14,498,000
New net deferred inflows/outflows	17,739,152	8,577,080
Recognition of prior deferred inflows/outflows	-7,608,108	-8,740,783
Ending Net Pension Liability	$240,659,017	$214,422,844

Schedule of contributions – Last ten fiscal years

Year Ended September 30	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll[1]	Contributions as a Percentage of Covered Payroll[2]
2011	$8,884,794	$9,711,000	-$826,206	$31,832,037	30.51%
2012	11,860,912	9,066,000	2,794,912	28,944,158	31.32%
2013	12,884,770	10,742,000	2,142,770	27,871,010	38.54%
2014	14,884,963	13,522,000	1,362,963	27,373,702	49.40%
2015	17,618,896	17,832,000	-213,104	28,091,083	63.48%
2016	18,863,935	18,864,000	-65	26,585,054	70.96%
2017	19,155,820	19,162,000	-6,180	27,548,015	69.56%
2018	18,643,233	13,973,000	4,670,233	28,164,021	49.61%
2019	19,141,501	14,498,000	4,643,501	28,726,006	50.47%
2020	20,111,161	15,058,000	5,053,161	28,268,208	53.27%

See accompanying notes to this schedule on next page.

[1] Pensionable payroll as of the measurement date.

[2] The City contributed the percentage of payroll represented by the actuarially determined contribution in the corresponding actuarial valuation for years ending on or before September 30, 2016. Actual dollar contributions may be more or less than the actuarially determined contributions due to actual payroll being different from projected payroll. Effective with the September 30, 2017 fiscal year, the City implemented a policy to ensure that the calculated dollar amount of the actuarially determined contribution was met.

Effective with the September 30, 2018 fiscal year, the City began contributing based on an adjusted state minimum required contribution that reflects an adjustment for an offset for amortization of the discounted value of projected surtax revenue allocated to the plan beginning in 2030.

Section 5: GASB Information

Notes to Schedule:

Methods and assumptions used to establish "actuarially determined contribution" rates:

Valuation date	Actuarially determined contribution rates are calculated as of October 1, two years prior to the end of the fiscal year in which contributions are reported
Actuarial cost method	Entry Age Actuarial Cost Method
Amortization method	Level percent of payroll, using 1.25% annual increases[1]
Remaining amortization period	As of October 1, 2018 the effective amortization period is 28 years.
Asset valuation method	The market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between actual and expected returns on a market value basis and is recognized over a five-year period. The deferred return is further adjusted, if necessary, so that the actuarial value of assets will stay within 20% of the market value of assets.
Actuarial assumptions:	
Investment rate of return	7.00%, net of pension plan investment expense, including inflation.
Inflation rate	2.50%
Projected salary increases	2.80% - 7.50%, of which 2.50% is the Plan's long-term payroll inflation assumption.
Cost of living adjustments	Plan provisions contain a 3.00% COLA
Other assumptions	Same as those used in the October 1, 2018 funding actuarial valuation.

[1] The Fund's payroll inflation assumption was 2.50% as of October 1, 2018. Per Part VII, Chapter 112.64(5)(a) of Florida Statutes, the payroll growth assumption used for amortization of the unfunded liability is not allowed to exceed the average annual payroll growth for the proceeding ten years. However, pursuant to Chapter 112.64(5)(b), and after adjusting this analysis to account for bargained pay level increases and inclusion of DC plan participants in the total payroll, the assumption was set at 1.25%