

The logo for nyhart, featuring the word "nyhart" in a white, lowercase, sans-serif font centered within a black rectangular box. This box is part of a larger graphic element consisting of a thick black vertical bar on the left and a thin red vertical bar to its right, both extending from the top to the bottom of the page.

City of Miami
Fire Fighters' and Police Officers' Retirement Trust

October 1, 2016
Actuarial Valuation Report

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At the request of the plan sponsor, this report summarizes the City of Miami Fire Fighters' and Police Officers' Retirement Trust as of October 1, 2016. The purpose of this report is to communicate the following results of the valuation:

- Determine Funded Status; and
- Determine Recommended Contribution for the fiscal year October 1, 2017 through September 30, 2018.

This report has been prepared in accordance with the applicable Federal and State laws. Consequently, it may not be appropriate for other purposes. Please contact Nyhart prior to disclosing this report to any other party or relying on its content for any purpose other than that explained above. Failure to do so may result in misrepresentation or misinterpretation of this report.

The results in this report were prepared using information provided to us by other parties. The census information has been provided to us by the plan administrator. Asset information has been provided to us by the plan administrator. We have reviewed the provided data for reasonableness when compared to prior information provided, but have not audited the data. Where relevant data may be missing, we have made assumptions we believe to be reasonable. We are not aware of any significant issues with and have relied on the data provided. Any errors in the data provided may result in a different result than those provided in this report. A summary of the data used in the valuation is included in this report.

The actuarial assumptions and methods were chosen by the Board. In our opinion, all actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period);
and
- changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement. This report has been prepared in accordance with generally accepted actuarial principles and practice.


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.

With respect to reporting standards for defined benefit retirement plans or systems contained in Section 112.664(1), F.S., the actuarial disclosures required under this section were 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, meet the requirements of Section 112.664 (1), Florida Statutes, and Rule 60T-1.0035, Florida Administrative Code.

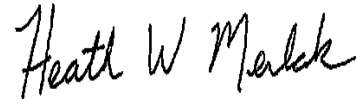
Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report. To the extent that this report or any attachment concerns tax matters, it is not intended to be used and cannot be used by a taxpayer for the purpose of avoiding penalties that may be imposed by law.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States and are available for any questions.

Nyhart



David D. Harris, ASA, EA, MAAA
Enrolled Actuary No. 14-5609



Heath W. Merlak, FSA, EA, MAAA
Enrolled Actuary No. 14-5967

May 4, 2017
Date

Copies of this Report are to be furnished to the Division of Retirement within 60 days of receipt from the actuary at the following addresses:

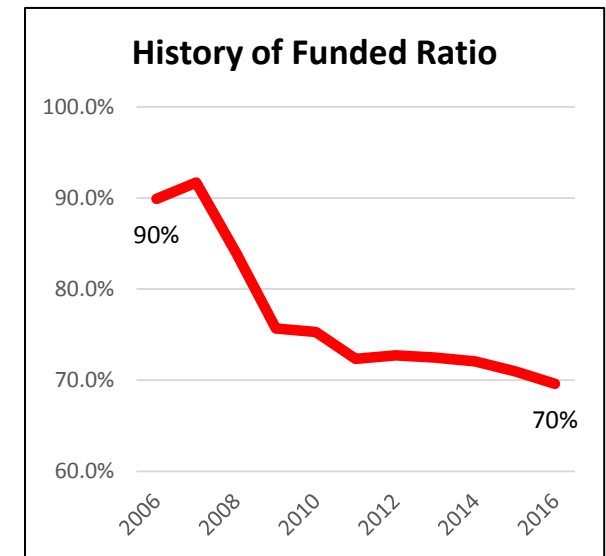
Ms. Sarah Carr
Benefits Administrator
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Division of Retirement
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Mr. Keith Brinkman
Bureau Chief, Bureau of Local Retirement Systems
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Division of Retirement
Department of Management Services
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Summary Results

The actuarial valuation's primary purpose is to produce a scorecard measure displaying the funding progress of the plan toward the ultimate goal of paying benefits at retirement. The accrued liability is based on an entry age level percentage of pay.

	October 1, 2015	October 1, 2016
Funded Status Measures		
Accrued Liability	\$1,616,131,503	\$1,654,140,143
Actuarial Value of Assets	<u>1,147,334,950</u>	<u>1,150,653,520</u>
Unfunded Accrued Liability	\$468,796,553	\$503,486,623
Funded Percentage (AVA)	71.0%	69.6%
Funded percentage (MVA)	67.5%	67.1%
Cost Measures		
Recommended Contribution For Next Fiscal Year	\$47,102,220	\$50,591,604
Recommended Contribution (as a percentage of payroll)	44.3%	38.0%
Asset Performance		
Market Value of Assets (MVA)	\$1,090,944,360	\$1,109,146,744
Actuarial Value of Assets (AVA)	\$1,147,334,950	\$1,150,653,520
Actuarial Value/Market Value	105.2%	103.7%
Participant Information		
Active Members	1,650	1,869
Terminated Vested Members	15	15
Retirees, Beneficiaries, and Disabled Members	1,952	2,014
DROP Participants	<u>278</u>	<u>191</u>
Total	3,895	4,089
Expected Payroll	\$106,278,378	\$133,083,231
Total Payroll	\$133,966,173	\$153,785,532



Changes Since Prior Valuation and Key Notes

The benefit for police officers who had not reached rule of 64 by 9/30/2010 increased to a 3.5% from 3.0% accrual for service over 15 years. Normal Retirement eligibility for police members who were not eligible for Rule of 64 on 9/30/2010 is changed to age 49 and 10 years of service along with Rule of 70 attainment.

The mortality assumption was changed to match the Florida Retirement System's special-risk mortality assumption used to develop the 7/1/2015 Florida Retirement System Actuarial Valuation.

The administrative expense has increased to \$2,086,709 from the prior year.

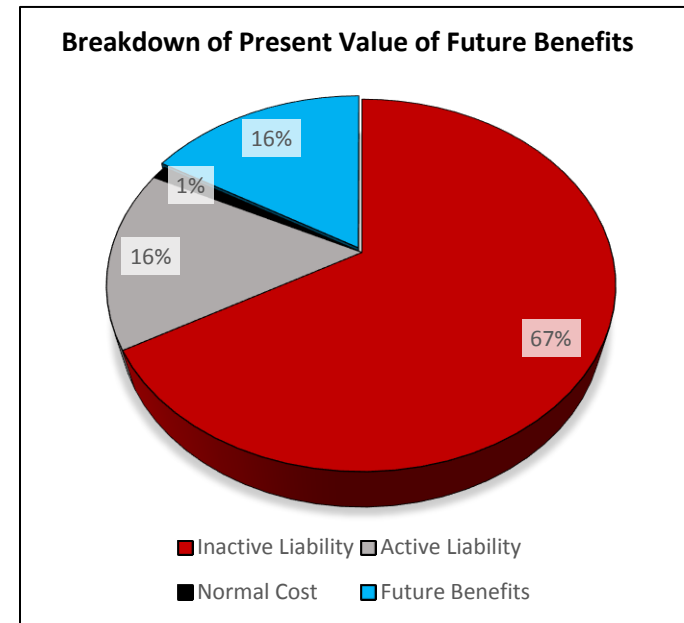
Present Value of Future Benefits

The Present Value of Future Benefits represents the current future benefits payable to the participant.

October 1, 2016

Present Value of Future Benefits

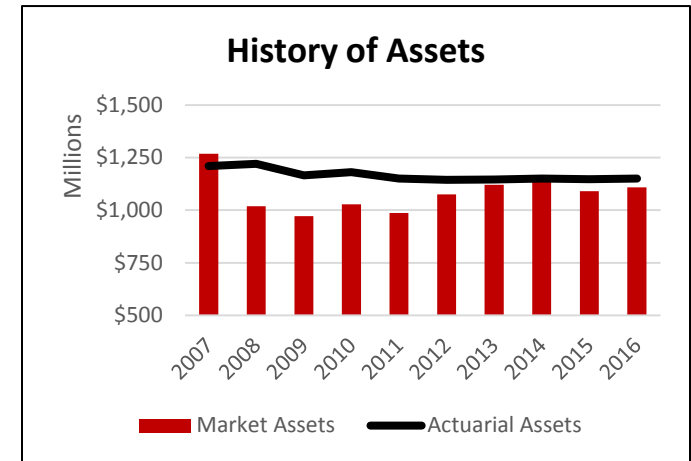
Active members	
Retirement	\$531,124,441
Disability	70,880,719
Death	24,275,385
Termination	31,513,031
Refund of contributions	3,616,362
Total active	\$661,409,938
Inactive members	
Retired members	\$1,120,930,085
DROP members	156,155,292
Beneficiaries	32,336,943
Disabled members	28,355,157
Terminated vested members	2,905,971
Total inactive	\$1,340,683,448
Total	\$2,002,093,386
 Present value of future payrolls	 \$2,016,178,212



Asset Information

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

	October 1, 2016
Market Value Reconciliation	
Market value of assets, beginning of prior year	\$1,090,949,934
Employer contributions (incl. discounted accrued items)	42,747,818
Member contributions	12,082,805
Investment income, net expenses	90,869,162
Benefit payments and refunds	(125,313,793)
Administrative expenses	(2,029,168)
Other expenses	(160,014)
Market value of asset, beginning of current year	\$1,109,146,744
Return on Market Value	8.4%
Actuarial value of assets	
Value at beginning of current year	\$1,150,653,520



Asset Information (continued)

Plan Assets are used to develop funded percentages and contribution requirements.

	October 1, 2016
1. Expected actuarial value of assets	
(a) Actuarial value of assets – beginning of prior year	\$1,147,334,950
(b) City Contributions	42,747,818
(c) Member Contributions	12,082,805
(d) Benefits payments and refunds	125,313,793
(e) Expected return	84,178,434
(f) Expected actuarial value of assets – beginning of current year	\$1,161,030,214
2. Market value of assets – beginning of current year	\$1,109,146,744
3. Present value of COLA transfers	
(a) Current year	\$0
(b) Next year	0
(c) Total	\$0
4. Market value net COLA transfer [(2)-(3)]	\$1,109,146,744
5. Amount subject to phase in [(4)-(1f)]	\$(51,883,470)
6. Phase in of asset gain loss [(5)x20%]	\$(10,376,694)
7. Preliminary actuarial value of assets – beginning of current year [(1f)+(6)]	\$1,150,653,520
8. 80% of Market value of assets	\$887,317,395
9. 120% of Market value of assets	\$1,330,976,093
10. Adjusted actuarial value of assets	\$1,150,653,520
11. Contribution surplus account balance	\$0
12. Final actuarial value of assets – beginning of current year [(10)-(11)]	\$1,150,653,520
13. Return on actuarial value of assets	6.51%

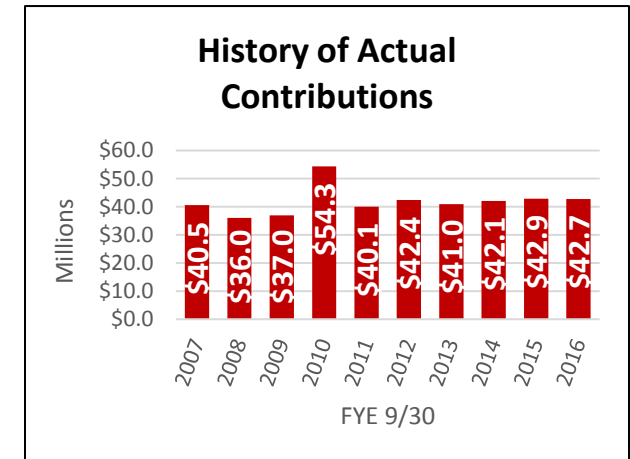
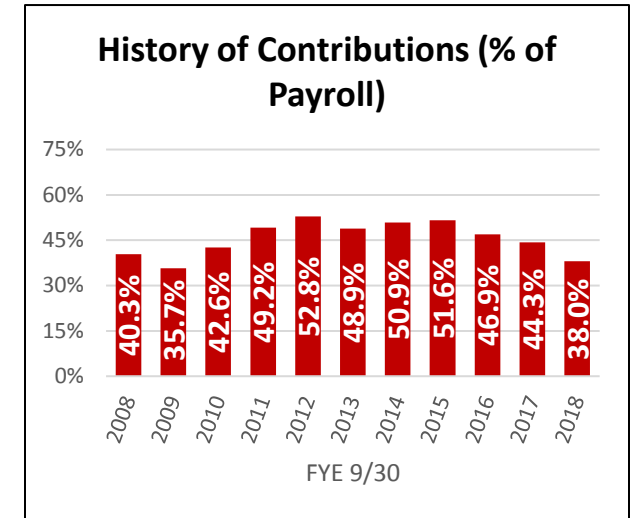
Reconciliation of Gain/Loss

	October 1, 2016
Liability (gain)/loss	
Present value of future benefits	\$1,899,835,287
Present value of employee contributions	(128,995,783)
Expected employee contribution	8,692,737
Benefit payments	(125,313,793)
Interest	127,475,334
Expected liability	\$1,781,693,782
Plan changes	\$17,831,166
Assumption change	\$18,359,483
Expected after changes	\$1,817,884,431
Actual liability	\$1,832,548,453
Liability (gain)/loss	\$14,664,022
Asset (gain)/loss	
Actuarial value of assets, beginning of prior year	\$1,147,334,950
Contributions	54,830,623
Benefit payments and expenses	(125,313,793)
Expected Investment return	84,178,434
Expected actuarial value of assets, beginning of current year	\$1,161,030,214
Actual actuarial value of assets, beginning of current year	\$1,150,653,520
Asset (gain)/loss	\$10,376,694
Total (gain)/loss	\$25,040,716

Development of Recommended Contribution

The actuarial determined contribution is the annual amount necessary to fund the plan according to funding policies and/or applicable laws.

	October 1, 2016
1. Present value of future benefits	\$2,002,093,386
2. Actuarial value of assets	1,150,653,520
3. Present value of future member contributions	169,544,933
4. Present value of future normal Cost [(1)-(2)-(3)]	\$681,894,933
5. Present value of future payroll	\$2,016,178,212
6. Normal cost accrual rate [(4)/(5)]	33.82%
7. Administrative expenses	\$2,086,709
8. Expected payroll	\$133,083,231
9. Applicable interest	7.42%
10. Normal cost [(6)x(8)+(7)]	\$47,097,006
11. Interest to estimated payment date	\$3,494,598
12. Total recommended contribution as of end of year [(10)+(11)]	\$50,591,604
13. As a percentage of expected payroll	38.02%
14. As a percentage of total payroll	32.90%



Demographic Information

The foundation of a reliable actuarial report is the member information provided by the plan sponsor. Monitoring trends in demographic information is crucial for long-term pension planning.

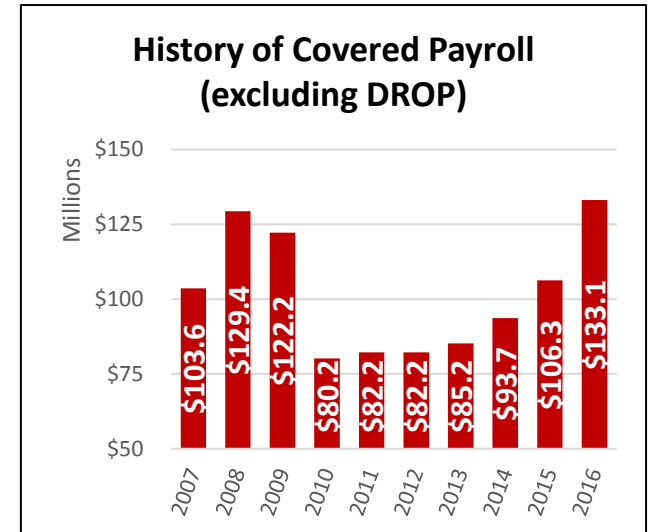
October 1, 2016

Member Counts

Active Members	1,869
Retired Members	1,607
Beneficiaries	264
Disabled Members	143
Terminated Vested Members	15
DROP Members	191
Total	4,089

Active Participant Demographics

Average Age	35.75
Average Service	8.73
Average Compensation	\$71,206
Covered Payroll	\$133,083,231
Total Payroll	\$153,785,532



Demographic Information (continued)

October 1, 2016

Retired Member Statistics

Average Age	64.96
Average Monthly Benefit	\$5,437

Beneficiary Statistics

Average Age	76.24
Average Monthly Benefit	\$1,142

Disabled Member Statistics

Average Age	71.22
Average Monthly Benefit	\$1,873

Terminated Member Statistics

Average Age	42.60
Average Monthly Benefit	\$2,240

DROP Member Statistics

Average Age	52.27
Average Monthly Benefit	\$5,647
Payroll	\$20,702,301

Participant Reconciliation

	Active	Terminated Vested	Disabled	Retired	Beneficiaries	Totals
Prior Year	1,650	15	147	1,824	259	3,895
Active						
To Terminated Vested						0
To Retired	(5)			5		0
To Refund	(40)					(40)
To Death	(2)					(2)
Terminated Vested						
To Retired						0
Disabled						
To Death			(4)			(4)
Retired						
To Death				(31)		(31)
Survivor						
To Death					(19)	(19)
Additions	266				24	290
Current Year	1,869	15	143	1,798	264	4,089

Active Participant Schedule

Active participant information grouped based on age and service.

Age Group	Years of Service										Total	Average Pay
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up		
Under 25	86	81	1								168	\$49,458
25 to 29	100	249	30	2							381	55,265
30 to 34	46	152	157	74	1						430	66,269
35 to 39	10	40	86	104	53						293	77,595
40 to 44	4	16	42	68	106	45	3				284	84,129
45 to 49	2	4	26	36	85	49	14				216	90,214
50 to 54		3	11	12	24	16	13	2			81	92,689
55 to 59				2	1	3	3	1			11	106,175
60 to 64				1	1	1	2				5	86,539
65 to 69											0	0
70 & up											0	0
Total	248	545	354	299	271	114	35	3	0	0	1,869	\$71,206

Plan Status

January 1, 1940, as restated effective May 23, 1985, and amended through the valuation date.

Eligibility for Participation

Police officers and fire fighters.

Accrual of Benefits

The accrued benefit is determined as follows:

For Police Officers who have reached Rule of 64 by 9/30/2010:

3% of Average Final Compensation for the first 15 years of Creditable Service plus 3.5% of Average Final Compensation after 15 years. Maximum of 100% of Average Final Compensation.

For all other Police Officers:

3% of Average Final Compensation for the first 15 years of Creditable Service plus 3.5% of Average Final Compensation after 15 years. Maximum of 100% of Average Final Compensation and the final benefit may not exceed the larger of the 9/30/2010 accrued benefit and \$100,000.

For Firefighters who have reached Rule of 64 by 9/30/2009 or Rule of 68 by 9/30/2010:

3% of Average Final Compensation for the first 15 years of Creditable Service plus 3.5% of Average Final Compensation after 15 years. Maximum of 100% of Average Final Compensation.

For all other Fire Fighters:

3% of Average Final Compensation for the first 15 years of Creditable Service plus 3.5% of Average Final Compensation after 15 years. Maximum of 100% of Average Final Compensation and the final benefit may not exceed the larger of the 9/30/2010 accrued benefit and \$100,000.

Benefits

Normal Retirement

Eligibility	Age plus Creditable Service equal to 64 (Rule of 64) on 9/30/2010 for police officers active 9/30/2010 and firefighters active 9/30/2009. Age plus Creditable Service equal to 68 (Rule of 68) on 9/30/2010 for fire fighters active 9/30/2010 and not eligible for Rule of 64 at 9/30/2009. Age plus Creditable Service equal to 70 (Rule of 70) with attainment of age 50 for Firefighters and age 49 for Police Officers and 10 years of Creditable Service for all members hired on or after 10/1/2010 and police officers and fire fighters who were not eligible for the Rule of 64 or the Rule of 68 on the specified dates above.
Benefit	Unreduced Accrued Benefit payable immediately.

Early Retirement

Eligibility	Completion of 20 years of Creditable Service.
Benefit	Accrued Benefit adjusted with actuarial equivalence for early commencement.

Late Retirement

Eligibility	Participation continues after normal retirement date.
Benefit	Accrued Benefit

Ordinary Death before Retirement

Eligibility	Participant with 3 years of Creditable Service who dies off duty.
Benefit	Between 3 and 10 years of Creditable Service: Lump sum benefit equal to 50% of Compensation received in year preceding death. After 10 years of Creditable Service and before eligibility for Early Service or Rule of 64 Retirement: Accrued benefit, deferred to earlier of police officer member's 49th and firefighter member's 50th birthday or Rule of 64 eligibility, payable for 10 years. Beneficiary does not have to survive deferred period or 10 years' certain period. If eligible for Service, Early Service, or Rule of 64 retirement, considered to have retired on the date of death. Surviving spouse would receive 40% of the member's monthly retirement allowance.

Accidental Death before Retirement

Eligibility	Member who dies during performance of duties.
Benefit	Pension of 50% of Average Final Compensation to spouse until death or remarriage. If there is no spouse, or if spouse dies or remarries before youngest child is 18, payable to child until attainment of age 18. If no spouse or no children under 18, benefit is payable to dependent parents. After 10 years of Creditable Service - Beneficiary receives benefit otherwise payable to member at early or normal retirement for a period of 10 years.

Termination Benefit

Eligibility	Fully vested after completion of 10 years of Creditable Service.
Benefit	Accrued Benefit payable at the member's Early or Normal Retirement Date. If the member terminates prior to 10 years of Creditable Service a refund of accumulated contributions with interest will be issued.

Ordinary Disability Benefit

Eligibility	Completion of 10 years of Creditable Service.
Benefit	90% of benefit rate times Average Final Compensation times Creditable Service, with a minimum benefit of 30% of Average Final Compensation. The normal form is a 10 year certain and life normal form.

Accidental Disability Benefit

Eligibility	Immediately upon permanent disability
Benefit	66 2/3% of Average Final Compensation, or 66 2/3% of Final Compensation, whichever is greater. The normal form is a 40% joint & survivor annuity, with a minimum of 10 years' certain and life.

Compensation

Earnable Compensation

An employee's base salary, including pick-up contributions, for all straight time hours worked, plus assignment pay and payments received for vacation and sick leave taken, jury duty, and death-in-family leave taken. Earnable compensation shall not include overtime pay; payments for accrued sick leave, accrued vacation leave, or accrued compensatory leave; holiday pay; premium pay for holidays worked; the value of any employment benefits or non-monetary entitlements; or any other form of remuneration.

Average Final Compensation

For members who retire or terminate employment with ten or more years of creditable service prior to 10/1/2010: the annual earnable compensation of a member during either the last one year or the highest year of membership service, whichever is greater.

For members who retire on or after 10/1/2010: the Average Final Compensation shall mean the average of the highest 5 years of service, to be phased in effective 9/30/2010 over the next 4 years as follows:

For members who retire between 10/1/2010 and 9/30/2011: the average of the highest 2 years of membership service

For members who retire between 10/1/2011 and 9/30/2012: the average of the highest 3 years of membership service

For members who retire between 10/1/2012 and 9/30/2013: the average of the highest 4 years of membership service

For members who retire on or after 10/1/2013: the average of the highest 5 years of membership service.

Provided, in no event shall the Average Final Compensation of any member who was employed as a police officer or fire fighter on 9/30/2010 and retires on or after 10/1/2010, be less than the highest year of membership service prior to 9/30/2010.

Creditable Service

For Vesting and Benefit Accrual

Service credited under Retirement System; military service (maximum of four years) during wartime for which Member makes contributions; maternity leave (maximum of 180 days for each leave) for which Member makes contributions; up to 5 years, without member contributions, if member was an employee before period of military service.

Accumulated leave balances may be transferred into system immediately prior to retirement to purchase up to 3 whole years of additional Creditable Service, on an actuarially equivalent basis.

457 balances of Firefighters may be transferred into System at retirement to purchase up to 3 whole years of additional Creditable Service for multiplier purposes.

Member Contributions

Police Officers:	7% (10% if hired on or after 10/1/2012)
Fire Fighters:	10%

DROP

Eligibility	Election must be made within 10 years after eligibility for normal retirement. Members eligible for forward DROP as of 1/1/2013 or vested as of 1/1/2010 remain eligible for forward DROP.
Benefit	Effective 1/1/2013 members may elect the BackDROP option (maximum of 7 years). Members receive a monthly benefit based on an earlier retirement date and a lump sum of past payments compounded at 3%/year.

COLA

Eligibility	Participant or Beneficiary
Benefit	Amount varies annually with the adjustment on January 1

Payment Forms

Normal Form

For Police Officers who have reached Rule of 64 by 9/30/2010 or Fire Fighters who reached Rule of 64 by 9/30/2009: Joint and 40% Contingent Survivor with a minimum 10 years Certain and Life

For Fire Fighters who have reached Rule of 68 by 9/30/2010: Joint and 40% Contingent Survivor with a minimum of 10 years Certain and Life

For all others:

Benefits based on service prior to 10/1/2010: Joint and 40% Contingent Survivor with minimum of 10 years Certain and Life

Benefits based on service after 9/30/2010: 10 years Certain and Life

Optional Forms

Option 1 – Cash refund annuity based on Present Value at retirement

Option 2 – Joint and 100% Contingent Annuity

Option 3 – Joint and 50% Contingent Annuity

Option 4 – Joint and Contingent Annuity approved by the Board

Option 5 – Determined by Board due to incapacity of member

Option 6 – Withdrawal of member contributions with interest and benefit that is ½ of normal level

Plan Provision Not Included

The COLA benefits and liabilities are not included in this report; these benefits are reported in a separate COLA report dated December 7, 2016. We are not aware of any other provisions not included in this report.

Adjustments Made for Subsequent Events

We are not aware of any event following the measurement date and prior to the date of this report that would materially impact the results.

Pension Stabilization Fund

Beginning October 1, 2008, any time the city's contributions to normal cost fall below 37% of valuation payroll, the difference will be deposited into the Pension Stabilization Fund to be used in subsequent years when the city's required contributions exceed 37%. No payment to this trust is required if the funded level of this trust exceeds 10% of the actuarial value of assets of the retirement system.

Changes Since Prior Report

The benefit for police officers who had not reached rule of 64 by 9/30/2010 increased to a 3.5% from a 3% accrual for service over 15 years. Normal retirement eligibility for police members who were not eligible for Rule of 64 on 9/30/2010 is changed to age 49 and 10 years of service along with Rule of 70 attainment.

Cost Method (CO)

Aggregate Cost Method

Asset Valuation Method (CO)

20% Write-Up Method: Expected actuarial value of assets, adjusted by 20% of the difference between expected actuarial value and actual market value (net of pending transfers to the COLA Fund).

The result cannot be greater than 120% of market value or less than 80% of market value (net of pending COLA transfers).

Interest Rates (CO)

7.42% net of investment expenses

Annual Pay Increases (FE)

3.25% inflation and 1.5% for promotions and other increases plus salary merit scale below.

<u>Service</u>	<u>Police</u>	<u>Fire</u>
0-6	5.0%	5.0%
7	2.5%	5.0%
8-9	5.0%	5.0%
10-14	1.0%	0.0%
15-16	1.25%	2.5%
17-21	1.0%	1.0%
22+	0.0%	0.0%

There is no additional increase at retirement.

Expense and/or Contingency Loading (FE)

\$2,086,709

Mortality Rates (CO)

Healthy
 Disabled

Florida Retirement System special risk mortality projected with scale BB generationally
 Florida Retirement System disabled mortality projected with scale BB generationally

100% of the assumed deaths are expected to be ordinary deaths

Retirement Rates (FE)

If eligible for Retirement, the following decrements apply, based on service.

<u>Years of Service</u>	<u>Police %</u>	<u>Fire %</u>
<20	0	0
20	10	10
21-24	3	3
25-29	40	5
30-34	50	25
35	100	25
36		25
37		100

All Members are assumed to elect a 5-year BackDROP when they reach five years following first retirement eligibility.

Disability Rates (FE)

100% of the disabilities are expected to be accidental with the following probabilities. No recovery is assumed.

<u>Age</u>	<u>Rates</u>
35	0.285%
40	0.390%
45	0.800%
50	1.210%

Withdrawal Rates (FE)

Based on Years of Creditable Service using the rates below

<u>Age</u>	<u><5</u>	<u>5+</u>
30	2.40%	1.92%
35	2.40%	1.92%
40	1.80%	1.44%
45	1.20%	0.96%
50	0.00%	0.00%

Marital Status and Ages

100% of Members are assumed to be married. Female spouses assumed to be 3 years younger than male spouses.

Compensated Absence Balance Transfers

No liabilities or costs are included for the provision to transfer compensated absence balances into FIPO to purchase additional creditable service, based on our understanding that assets will be transferred immediately prior to retirement to cover 100% of the liability for the additional service.

Withdrawal of Employee Contributions

It is assumed that employees do not withdraw their contribution balances upon employment termination or retirement.

COLA

COLA benefits are assumed to increase as indicated in the COLA table; these are documented in a separate COLA report. No increase to the table is assumed to occur.

Changes Since Prior Report

The administrative expense increased to \$2,086,709.

The mortality assumption was updated to match the Florida Retirement System mortality assumption used in the July 1, 2015 FRS Actuarial Valuation.

FE indicates an assumption representing an estimate of future experience.

MO indicates an assumption representing an observation of estimates inherent to market data.

CO indicates an assumption representing a combination of an estimate of future experience and observations of market data.

The actuarial report also shows the necessary items required for plan reporting and the any state requirements.

- ✓ Market Value Reconciliation
- ✓ Membership and Benefits Cost-Of-Living Adjustment Account Summary
- ✓ Investment Results
- ✓ Florida State Requirements
 - Comparative Summary of Principal Valuation Results
 - Separation for Police & Fire
 - Comparison of payroll growth, salary increases and investment returns
 - Requirements under Florida Statute 112.664 and F.A.C. 60T-1.0035

Market Value Reconciliation

The amount of assets backing the pension promise is the most significant driver of volatility and future costs within a pension plan. The investment performance of the assets directly offsets the ultimate cost.

	September 30, 2016		
	<u>Membership and Benefits Accounts</u>	<u>COLA I Account</u>	<u>COLA II Account</u>
1. Market value – beginning of prior year	\$1,090,949,934	\$58,704,997	\$322,735,565
2. Book value – beginning of prior year	\$1,005,082,463	\$54,083,337	\$297,327,609
3. Income			
(a) City contributions	\$42,747,818	\$0	\$5,924,797
(b) Member contributions	12,082,805	0	0
(c) Other contributions	0	0	0
(d) Interest and dividends	20,454,896	926,564	4,982,081
(e) Net realized gains (losses)	24,626,040	1,132,923	5,998,492
(f) Securities lending income	508,249	23,016	123,887
(g) Rental and other income	256,145	11,800	62,666
(h) Income transfer	0	0	0
(i) Total	\$100,675,953	\$2,094,303	\$17,091,923
4. Disbursements			
(a) Benefit payments and refunds	\$125,313,793	\$148,647	\$24,195,678
(b) Custodial and investment expenses	4,452,336	201,308	1,084,778
(c) Administrative expense	2,029,168	0	0
(d) Other expense	0	0	0
(e) Securities lending fees	126,960	5,749	30,947
(f) Building depreciation	33,054	1,556	8,115
(g) Total	\$131,955,311	\$357,260	\$25,319,518
5. Book value – beginning of current year [(2)+(3i)-(4g)]	\$973,803,105	\$55,820,380	\$289,100,014
6. Net change in unrealized gains (losses)	\$49,476,168	\$3,136,513	\$14,772,495
7. Unrealized gains (losses)	\$135,343,639	\$7,758,173	\$40,180,451
8. Market value – beginning of current year [(1)+(3i)-(4g)+6]	\$1,109,146,744	\$63,578,553	\$329,280,465
9. Current year allocation to COLA II (discounted)	\$0	N/A	\$0
10. Net market value – beginning of current year	\$1,109,146,744	\$63,578,553	\$329,280,465

Membership and Benefits Cost-Of-Living Adjustment Account Summary

September 30, 2016

	<u>Market</u>	<u>Book</u>
1. Investments		
(a) Bill, bonds, notes	\$462,528,174	\$449,808,326
(b) Domestic stocks	366,888,111	280,932,014
(c) International stocks	196,875,984	167,884,174
(d) Private equity	138,484,218	128,438,057
(e) Money market fund and time deposit	12,658,011	13,007,125
(f) Mutual fund	259,649,195	213,731,734
(g) Real estate	1,829,010	1,829,010
(h) Securities lending adjustment	0	0
(i) Total investment	\$1,438,912,703	\$1,255,630,440
2. Cash	\$61,257,643	\$61,257,643
3. Receivables		
(a) City contributions	\$0	\$0
(b) Member contributions	5,768	5,768
(c) Accounts receivable	0	0
(d) Accrued interest and dividend	3,299,182	3,299,182
(e) Securities sold	12,299,282	12,299,282
(f) Total receivables	\$15,604,232	\$15,604,232
4. Payables:		
(a) Budget advance	\$0	\$0
(b) Accrual expense	255,594	255,594
(c) Transfer	0	0
(d) Tax withheld	1,773	1,773
(e) Accounts payable	7,276,547	7,276,547
(f) Securities purchased	6,234,902	6,234,902
(g) Total payables	\$13,768,816	\$13,768,816
5. Total [(1i)+(2)+(3f)-(4g)]	\$1,502,005,762	\$1,318,723,499
6. COLA I account	\$63,578,553	\$55,820,380
7. COLA II account	\$329,280,465	\$289,100,014
8. Current year COLA II transfer	\$0	\$0
9. Membership & benefits account [(5)-(6)-(7)-(8)]	\$1,109,146,744	\$973,803,105

Investment Results - Membership and Benefits Accounts

September 30, 2016

	<u>Dollar Return</u>	<u>Market Return</u>	<u>Book Return</u>
Interest	\$11,205,501	1.0%	1.2%
Dividends	9,249,395	0.9%	1.0%
Rental and other income, less depreciation	223,091	0.0%	0.0%
Realized gains	24,626,040	2.3%	2.5%
Securities lending (net)	381,289	0.0%	0.0%
Increase in unrealized gains	49,476,168	4.6%	N/A
Custodial and investment expenses	<u>(4,452,336)</u>	<u>(0.4)%</u>	<u>(0.5)%</u>
Total return on investment	\$90,709,148	8.4%	4.2%

Investment Results – COLA I and II Accounts

September 30, 2016

COLA I Account

	<u>Dollar Return</u>	<u>Market Return</u>	<u>Book Return</u>
Interest	\$507,040	0.9%	0.9%
Dividends	419,524	0.7%	0.8%
Rental and other income, less depreciation	10,244	0.0%	0.0%
Realized gains	1,132,923	1.9%	2.1%
Securities lending (net)	17,267	0.0%	0.0%
Increase in unrealized gains	3,136,513	5.3%	N/A
Custodial and investment expenses	<u>(201,308)</u>	<u>(0.3)%</u>	<u>(0.4)%</u>
Total return on investment	\$5,022,203	8.5%	3.4%

COLA II Account

	<u>Dollar Return</u>	<u>Market Return</u>	<u>Book Return</u>
Interest	\$2,728,508	0.9%	0.9%
Dividends	2,253,573	0.7%	0.8%
Rental and other income, less depreciation	54,551	0.0%	0.0%
Realized gains	5,998,492	1.9%	2.1%
Securities lending (net)	92,940	0.0%	0.0%
Increase in unrealized gains	14,772,495	4.7%	N/A
Custodial and investment expenses	<u>(1,084,778)</u>	<u>(0.3)%</u>	<u>(0.4)%</u>
Total return on investment	\$24,815,781	7.9%	3.4%

Information to Comply with Florida 60T-1.003(4)(i)

Comparative Summary of Principal Valuation Results

	10/1/016 7.42% (assumption & plan changes)	10/1/016 7.42% (plan changes)	10/1/2016 7.42% (prior methods & assumptions)	10/1/2015 7.42%
Participant Data				
Active members	1,869	1,869	1,869	1,650
Total annual payroll	\$133,083,231	\$133,083,231	\$133,083,231	\$106,278,378
Members in DROP	191	278	191	278
DROP Payroll	20,702,301	20,702,301	20,702,301	27,687,795
Projected total payroll	\$153,785,532	\$153,785,532	\$153,785,532	\$133,966,173
Retired members and beneficiaries	1,871	1,871	1,871	1,805
Total annualized benefit	\$121,415,032	\$121,415,032	\$121,415,032	\$121,842,316
Disabled members receiving benefits	143	143	143	147
Total annualized benefit	\$3,214,574	\$3,214,574	\$3,214,574	\$3,271,325
Terminated vested members	15	15	15	15
Total annualized benefit	\$403,236	\$403,236	\$403,236	\$403,236
Assets				
Actuarial value of assets	\$1,150,653,520	\$1,150,653,520	\$1,150,653,520	\$1,147,334,950
Market value of assets	\$1,109,146,744	\$1,109,146,744	\$1,109,146,744	\$1,090,944,360

Information to Comply with Florida 60T-1.003(4)(i)

Comparative Summary of Principal Valuation Results (continued)

	10/1/016 7.42% (assumption & plan changes)	10/1/016 7.42% (plan changes)	10/1/2016 7.42% (prior methods & assumptions)	10/1/2015 7.42%
Liabilities, present value of all future expected benefit payments				
Active members				
Retirement benefits	\$531,124,441	\$543,536,290	\$525,352,834	\$455,877,149
Vesting benefits	31,513,031	32,272,321	32,289,917	26,849,525
Disability benefits	70,880,719	69,805,182	71,183,875	56,071,742
Death benefits	24,275,385	9,296,380	9,433,988	8,046,397
Return of contribution	3,616,362	3,626,751	3,629,791	2,462,886
Total	<u>\$661,409,938</u>	<u>\$658,536,924</u>	<u>\$641,890,405</u>	<u>\$549,307,699</u>
Terminated vested members	\$2,905,971	\$2,918,944	\$2,918,944	\$2,715,494
Retired members and beneficiaries	\$1,309,422,320	\$1,298,669,350	\$1,298,669,350	\$1,319,774,303
Disabled members	\$28,355,157	\$27,132,912	\$27,132,912	\$28,037,791
Total	\$2,002,093,386	\$1,987,258,130	\$1,970,611,611	\$1,899,835,287
Liabilities due and unpaid	\$0	\$0	\$0	\$0
Actuarial accrued liability	N/A	N/A	N/A	N/A
Unfunded actuarial accrued liability	N/A	N/A	N/A	N/A

Information to Comply with Florida 60T-1.003(4)(i)

Comparative Summary of Principal Valuation Results (continued)

	10/1/016 7.42% (assumption & plan changes)	10/1/016 7.42% (plan changes)	10/1/2016 7.42% (prior methods & assumptions)	10/1/2015 7.42%
Actuarial present value of accrued benefits				
Statement of actuarial present value of all accrued benefits				
Vested accrued benefits				
Inactive members and beneficiaries	\$1,340,683,448	\$1,328,721,206	\$1,328,721,206	\$1,350,527,588
Active members	274,796,357	271,660,453	266,087,636	241,943,732
Total value of all vested accrued benefits	<u>\$1,615,479,805</u>	<u>\$1,600,381,659</u>	<u>\$1,594,808,842</u>	<u>\$1,592,471,320</u>
Non-vested accrued benefits	18,027,036	19,186,617	16,855,380	17,066,732
Total actuarial present value of all accrued benefits	<u>\$1,633,506,841</u>	<u>\$1,619,568,276</u>	<u>\$1,611,664,222</u>	<u>\$1,609,538,052</u>
Statement of changes in total actuarial present value of all accrued benefits (ASC 960)				
Actuarial present value of accrued benefits, beginning of year	\$1,609,538,052	\$1,609,538,052	\$1,609,538,052	\$1,589,617,624
Increase (decrease) during year				
Benefits accumulated	\$12,578,198	\$12,578,198	\$12,578,198	\$30,941,588
Plan amendment	7,904,054	7,904,054	0	1,779,692
Changes in actuarial assumptions	13,938,565	0	0	0
Interest	114,861,765	114,861,765	114,861,765	113,353,058
Benefits paid	(125,313,793)	(125,313,793)	(125,313,793)	(126,153,910)
Other changes	0	0	0	0
Net increase (decrease)	<u>\$23,968,789</u>	<u>\$10,030,224</u>	<u>\$2,126,170</u>	<u>\$19,920,428</u>
Actuarial present value of accrued benefits, end of year	<u>\$1,633,506,841</u>	<u>\$1,619,568,276</u>	<u>\$1,611,664,222</u>	<u>\$1,609,538,052</u>

Information to Comply with Florida 60T-1.003(4)(i)

Comparative Summary of Principal Valuation Results (continued)

	10/1/016 7.42% (assumption & plan changes)	10/1/016 7.42% (plan changes)	10/1/2016 7.42% (prior methods & assumptions)	10/1/2015 7.42%
Pension cost				
Normal Cost	\$62,475,043	\$60,270,032	\$58,697,406	\$56,329,666
Member contributions	\$11,883,439	\$11,883,439	\$11,883,439	\$9,227,446
Expected plan sponsor contribution	\$50,591,604	\$48,386,593	\$46,813,967	\$47,102,220
As % of payroll	38.02%	36.36%	35.18%	44.32%
As % of total payroll	32.90%	31.46%	30.44%	35.16%
Member Contributions as % of payroll	8.93%	8.93%	8.93%	8.68%
Past contributions	9/30/2016			9/30/2015
Required plan sponsor contribution	\$42,747,818			\$42,919,757
Required member contribution	\$12,082,805			\$9,317,231
Actual contributions made by:				
Plan's sponsor	\$42,747,818			\$42,919,757
Members	\$12,082,805			\$9,317,231
Other	\$0			\$0
Net actuarial gain (loss) (if applicable)	N/A	N/A	N/A	N/A
Other disclosures (where applicable)				
Present value of active member				
Future salaries at attained age	\$2,016,178,212	\$2,054,307,299	\$2,069,587,840	\$1,585,673,300
Future contributions at attained age	\$169,544,933	\$173,069,161	\$174,253,808	\$128,995,783

Information to Comply with Florida 60T-1.003(4)(i)

	Police	Fire	Total
	\$0	\$0	\$0
Unfunded actuarial accrued liability			
Liabilities, present value of all future expected benefit payments			
Active members			
Retirement benefits	\$317,686,662	\$213,437,779	\$531,124,441
Vesting benefits	16,943,000	14,570,031	31,513,031
Disability benefits	11,748,139	12,527,246	24,275,385
Death benefits	39,528,139	31,352,580	70,880,719
Return of contribution	2,106,804	1,509,558	3,616,362
Total	\$388,012,744	\$273,397,194	\$661,409,938
Terminated vested members	\$2,511,840	\$394,131	\$2,905,971
Retired members and beneficiaries	\$719,495,473	\$589,926,847	\$1,309,422,320
Disabled members	\$24,718,662	\$3,636,495	\$28,355,157
Total	\$1,134,738,719	\$867,354,667	\$2,002,093,386
Entry age reserve			
Active	\$179,348,997	\$134,107,698	\$313,456,695
Inactive	\$746,725,975	\$593,957,473	1,340,683,448
Total	\$926,074,972	\$728,065,171	\$1,654,140,143
Actuarial asset value ¹	\$644,196,582	\$506,456,938	\$1,150,653,520

¹Allocated based on Entry Age Reserve

Information to Comply with Florida 60T-1.003(4)(i)

Hypothetical City Contribution Requirement for 2015/2016 Fiscal Year

	Police	Fire	Total
Normal cost			
Total present value of future benefits	\$1,134,738,719	\$867,354,667	\$2,002,093,386
Present value of future member contributions	(\$80,288,895)	(\$89,256,038)	(\$169,544,933)
Actuarial asset value	(\$644,196,582)	(\$506,456,938)	(\$1,150,653,520)
Unfunded actuarial accrued liability	\$0	\$0	\$0
Present value of future normal costs	\$410,253,242	\$271,641,691	\$681,894,933
Present value of future payrolls	\$1,043,239,107	\$972,939,105	\$2,016,178,212
Administrative expense ¹	\$1,168,250	\$918,459	\$2,086,709
Current payroll	\$71,235,597	\$61,847,634	\$133,083,231
Interest rate	7.42%	7.42%	7.42%
Current normal cost at end of year	\$31,346,887	\$19,535,545	\$50,591,604
As a percentage of payroll	43.95%	31.59%	38.02%
Hypothetical Total			\$50,882,432

¹Allocated based on Entry Age Reserve

Information to Comply with Florida 60T-1.003(4) (i)

Historical Salary Increases and Asset Performance

<u>Year Ending</u>	<u>Payroll Growth</u>	<u>Salary Growth</u>	<u>Expected Salary Growth</u>	<u>Asset Return (Market)</u>	<u>Asset Return (Actuarial)</u>	<u>Asset Return (Expected)</u>
9/30/2016	25.22%	10.46%	7.85%	8.42%	6.51%	7.42%
9/30/2015	13.42%	12.60%	7.79%	2.80%	6.18%	7.42%
9/30/2014	10.00%	1.38%	7.72%	8.60%	7.18%	7.50%
9/30/2013	3.70%	3.64%	7.77%	11.20%	6.95%	7.50%
9/30/2012	0.10%	(0.75%)	7.92%	17.40%	5.98%	7.50%
9/30/2011	2.50%	7.14%	7.48%	3.60%	3.98%	7.50%
9/30/2010	(34.40%)	(9.33%) ¹	7.51%	9.80%	4.48%	7.75%
9/30/2009	(5.50%)	6.35%	7.26%	(0.30%)	(1.31%)	7.75%
9/30/2008	24.80%	18.20%	7.17%	(14.30%)	3.65%	7.75%
9/30/2007	14.70%	18.19% ¹	5.81%	14.20%	8.27%	7.75%
Averages						
3-year				6.57%	6.62%	
5-year				9.58%	6.56%	
10-year	5.45%			5.78%	5.15%	
20-year				7.56%	7.02%	

¹Including impact of change in valuation pay definition

Information to Comply with Florida Statute 112.664 and Florida Administrative Code 60T-1.0035¹

October 1, 2016

	Valuation 7.42%	- 200 bp ² 5.42%	Funding Rate ² 7.42%	+ 200 bp ² 9.42%
Total pension liability				
Service Cost	\$19,679,702	\$19,679,702	\$19,679,702	\$19,679,702
Interest	131,123,890	131,123,890	131,123,890	131,123,890
Benefit changes	11,004,231	11,004,231	11,004,231	11,004,231
Difference between expected and actual experience	(2,290,194)	(2,290,194)	(2,290,194)	(2,290,194)
Changes in assumptions	16,156,199	395,698,629	16,156,199	(255,212,073)
Benefit payments	(141,504,824)	(141,504,824)	(141,504,824)	(141,504,824)
Contribution refunds	(354,321)	(354,321)	(354,321)	(354,321)
Net change in pension liability	\$33,814,683	\$413,357,113	\$33,814,683	(\$237,553,589)
Total pension liability, beginning of year	\$1,818,418,199	\$1,818,418,199	\$1,818,418,199	\$1,818,418,199
Total pension liability, end of year	\$1,852,232,882	\$2,231,775,312	\$1,852,232,882	\$1,580,864,610
Plan fiduciary net position				
Contributions - Employer	\$42,747,818	\$42,747,818	\$42,747,818	\$42,747,818
Contributions - State	12,082,805	12,082,805	12,082,805	12,082,805
Contributions - Member	0	0	0	0
Net investment income	102,731,865	102,731,865	102,731,865	102,731,865
Benefit payments	(141,504,824)	(141,504,824)	(141,504,824)	(141,504,824)
Contribution refunds	(354,321)	(354,321)	(354,321)	(354,321)
Administrative expense	(2,029,168)	(2,029,168)	(2,029,168)	(2,029,168)
Other	334,252	334,252	334,252	334,252
Net change in plan fiduciary net position	\$14,008,427	\$14,008,427	\$14,008,427	\$14,008,427
Plan fiduciary net position, beginning of year	\$1,293,231,055	\$1,293,231,055	\$1,293,231,055	\$1,293,231,055
Plan fiduciary net position, end of year	\$1,307,239,482	\$1,307,239,482	\$1,307,239,482	\$1,307,239,482
Net pension liability/(asset)	\$544,993,400	\$924,535,830	\$544,993,400	\$273,625,128
Funded ratio	70.58%	58.57%	70.58%	82.69%
Years that Assets support expected benefit payments	13	11	13	15
Estimated city contribution				
Annual dollar value	\$50,591,604	\$77,962,261	\$50,591,604	\$26,856,829
Percentage of payroll	38.02%	58.58%	38.02%	20.18%

¹Includes DROP assets and liabilities

²Based on valuation assumption with the following changes
-interest rate (as noted)

Information to Comply with Florida Statute 112.664 and Florida Administrative Code 60T-1.0035¹

October 1, 2016

Sustainment of Expected Benefit Payments

Mortality FRS Special Risk Generational with Scale BB
 Interest 5.42%

<u>Year</u>	<u>Market Value of Assets</u>	<u>Investment Return</u>	<u>Benefit Payments</u>
1	\$1,307,239,482	\$62,189,537	\$323,936,371 ¹
2	1,045,492,648	53,317,829	125,189,575
3	973,620,902	49,433,306	124,781,035
4	898,273,173	45,340,920	125,100,355
5	818,513,738	40,981,385	126,467,976
6	733,027,147	36,281,254	128,964,275
7	640,344,126	31,201,219	131,081,357
8	540,463,988	25,672,424	135,392,525
9	430,743,887	19,650,986	138,182,415
10	312,212,458	13,182,067	139,847,042
11	185,547,483	6,277,968	141,300,065
12	50,525,386		142,602,449

¹Benefit payments include the DROP balance at 9/30/2016

Information to Comply with Florida Statute 112.664 and Florida Administrative Code 60T-1.0035¹

October 1, 2016

Sustainment of Expected Benefit Payments

Mortality FRS Special Risk Generational with Scale BB
Interest 7.42%

<u>Year</u>	<u>Market Value of Assets</u>	<u>Investment Return</u>	<u>Benefit Payments</u>
1	\$1,307,239,482	\$85,194,159	\$323,936,371 ¹
2	1,068,497,270	74,721,065	125,189,575
3	1,018,028,760	70,991,187	124,781,035
4	964,238,912	66,988,346	125,100,355
5	906,126,903	62,626,604	126,467,976
6	842,285,531	57,798,618	128,964,275
7	771,119,874	52,440,988	131,081,357
8	692,479,505	46,448,790	135,392,525
9	603,535,770	39,747,512	138,182,415
10	505,100,867	32,382,989	139,847,042
11	397,636,814	24,356,214	141,300,065
12	280,692,963	15,631,526	142,602,449
13	153,722,040	6,089,486	145,917,776
14	13,893,750		150,775,489

¹Benefit payments include the DROP balance at 9/30/2016

Information to Comply with Florida Statute 112.664 and Florida Administrative Code 60T-1.0035¹

October 1, 2016

Sustainment of Expected Benefit Payments

Mortality FRS Special Risk Generational with Scale BB
 Interest 9.42%

<u>Year</u>	<u>Market Value of Assets</u>	<u>Investment Return</u>	<u>Benefit Payments</u>
1	\$1,307,239,482	\$108,227,879	\$323,936,371 ¹
2	1,091,530,990	97,058,472	125,189,575
3	1,063,399,887	94,427,332	124,781,035
4	1,033,046,184	91,553,311	125,100,355
5	999,499,140	88,330,214	126,467,976
6	961,361,378	84,622,707	128,964,275
7	917,019,810	80,348,260	131,081,357
8	866,286,713	75,370,716	135,392,525
9	806,264,904	69,588,215	138,182,415
10	737,670,704	63,050,001	139,847,042
11	660,873,663	55,748,823	141,300,065
12	575,322,421	47,629,934	142,602,449
13	480,349,906	38,530,885	145,917,776
14	372,963,015	28,191,390	150,775,489
15	250,378,916	16,420,430	155,630,763
16	111,168,583		158,986,340

¹Benefit payments include the DROP balance at 9/30/2016