CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

2017 ACTUARIAL VALUATION

FEBRUARY 2018

ACTUARIAL VALUATION AS OF OCTOBER 1, 2017
FOR THE PLAN YEAR BEGINNING OCTOBER 1, 2018
TO DETERMINE CONTRIBUTIONS TO BE PAID
IN THE FISCAL YEAR ENDING SEPTEMBER 30, 2019

Actuarial Concepts

Actuarial Concepts

Management Advisors

Benefits Specialists

February 28, 2018

George S. Brown
Chairman, EERP Board of Trustees
City of Boca Raton EERP
201 West Palmetto Park Road
Boca Raton, Florida 33432-3795

Dear Mr. Brown:

This report presents the results of the 2017 actuarial valuation of the City of Boca Raton Executive Employees' Retirement Plan. Actuarial Concepts was retained by the City to perform the actuarial valuation and prepare this report. This actuarial valuation was prepared and completed by us or under our direct supervision, and we acknowledge responsibility for the results. To the best of our knowledge, the results are complete and accurate and, in our 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 that require a material increase in plan costs or required contribution rates have been taken into account in the valuation.

The use of the valuation results for financial or administrative purposes, other than those outlined in the report, is not recommended without an advance review by Actuarial Concepts of the appropriateness of such application.

Members of our staff are available to discuss this report and related issues.

Very truly yours,

ACTUARIAL CONCEPTS

Michael Tierney

By: ______________________________
Michael J. Tierney
ASA, MAAA, FCA, EA #17-1337

cc: Linda C. Davidson

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SECTION 1

# KEY VALUATION RESULTS SUMMARY

The 2017 valuation of the City of Boca Raton Executive Employees' Retirement Plan ("Plan") presents a statement of the estimated financial position of the Plan as of October 1, 2017. Information in the report provides bases for determining contribution requirements and current funded status.

## Key Results Synopsis

The major conclusions of the report are:

- The total City contribution for the 2017-2018 plan year is $1,921,235 ($1,850,134 if paid on October 1, 2017).

- The total City contribution for the 2018-2019 plan year is $2,029,667 if paid monthly. If paid as of October 1, 2018, the City contribution would be $1,954,554.

- The Plan incurred actuarial losses of approximately $726,000, due to a combination of new retiree liabilities more than assumed, data changes and new transfers from the General Plan. These losses were partially offset by gains due to a higher yield on assets (based on actuarial value and 5-year recognition of yields differing from assumed rate) than anticipated by the assumptions.

- The Plan is 82% funded on an accrued benefit liability basis per State required disclosures of Chapter 112.63 (using an interest rate of 7.75%).

- The Plan is 73% funded on a projected liability measurement basis (and using the valuation interest rate of 7.25%).

## Change since Last Valuation

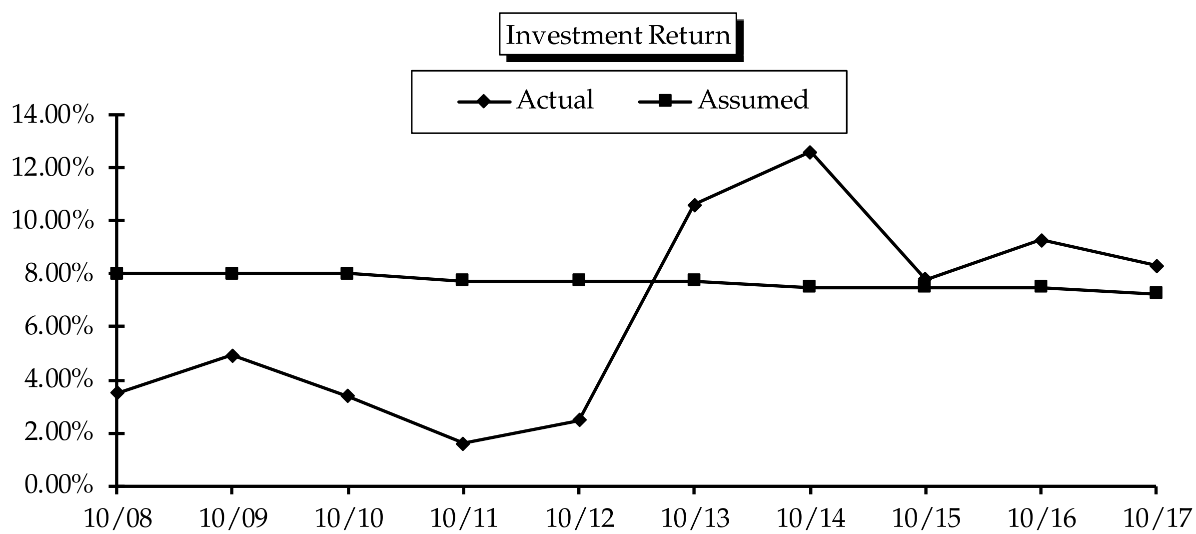
There have been no changes to the plan provisions or actuarial cost method since the last valuation. There have been changes to the actuarial assumptions:

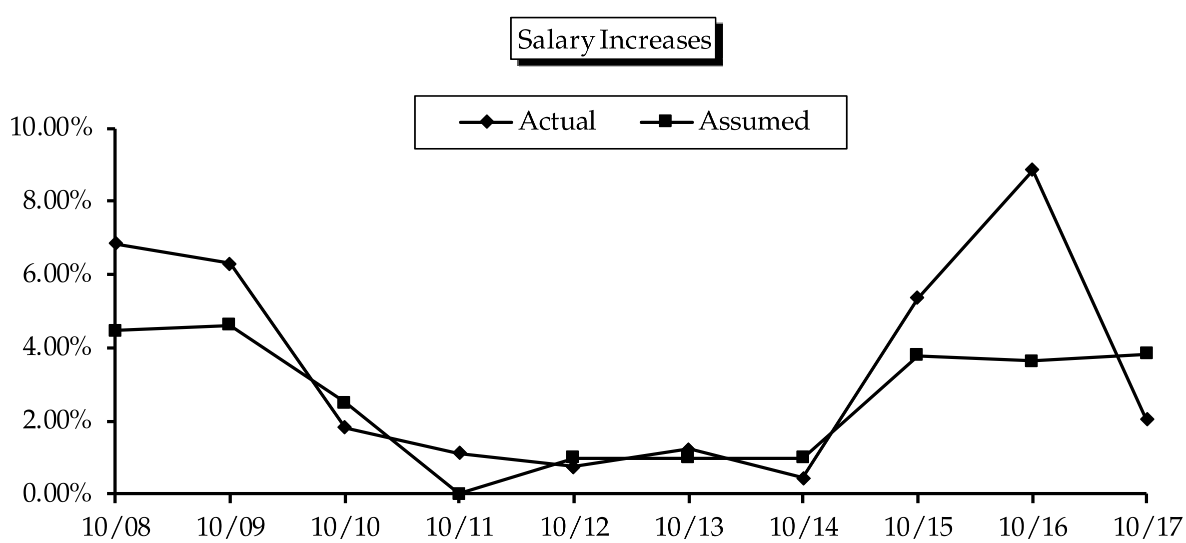
- The assumed annual increase rate in the 415 benefit limit has been decreased from 3% to 2.5%.
- The inflation rate has been lowered from 3% to 2.75%.
- The assumption regarding the treatment of the benefits during the DROP period has been changed. The benefits have been changed to be unlimited by the 415 limit during the DROP period (and remain limited by the 415 limit, as adjusted by DROP balances, after the DROP period is over).

A summary of current Plan provisions is included in Appendix A. Actuarial assumptions and cost method are summarized in Appendix B, along with explanations of other valuation procedures. Appendix C contains asset information. Appendix D contains census data information

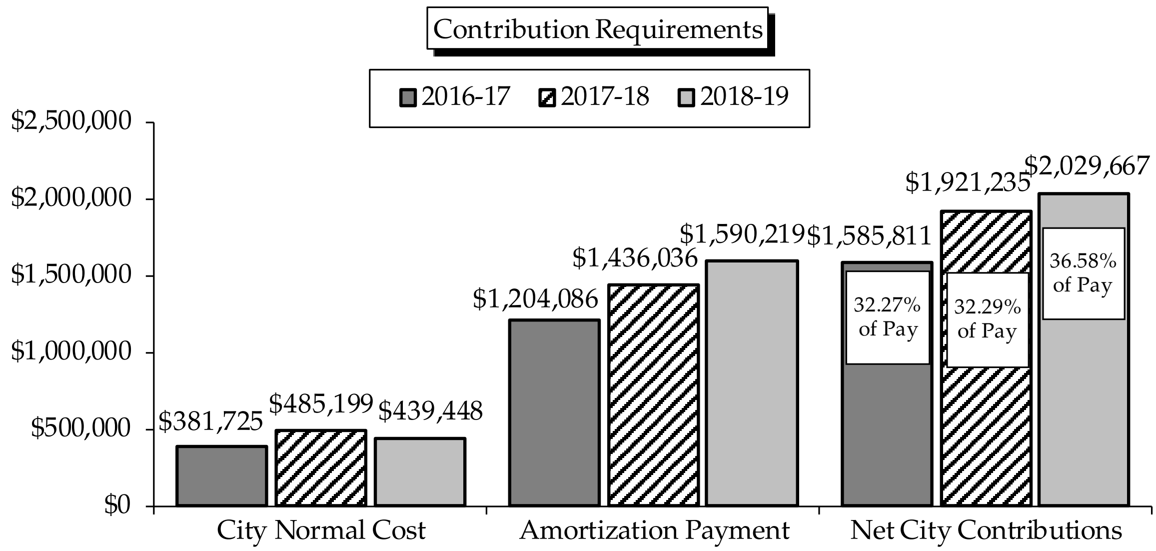
**Plan Experience**

For the 12 months ended September 30, 2017, the actual experience under the Plan, in aggregate, was less favorable than expected, resulting in a net actuarial loss of approximately $726,000. This loss was mainly attributable to a combination of new retirees more than assumed, data changes and new transfers from the General Plan. These losses were partially offset by gains due to a higher yield on assets than anticipated by the assumptions, with a yield based on actuarial value of assets of 8.30% versus the assumed rate of 7.25%.



## City Contribution Requirements

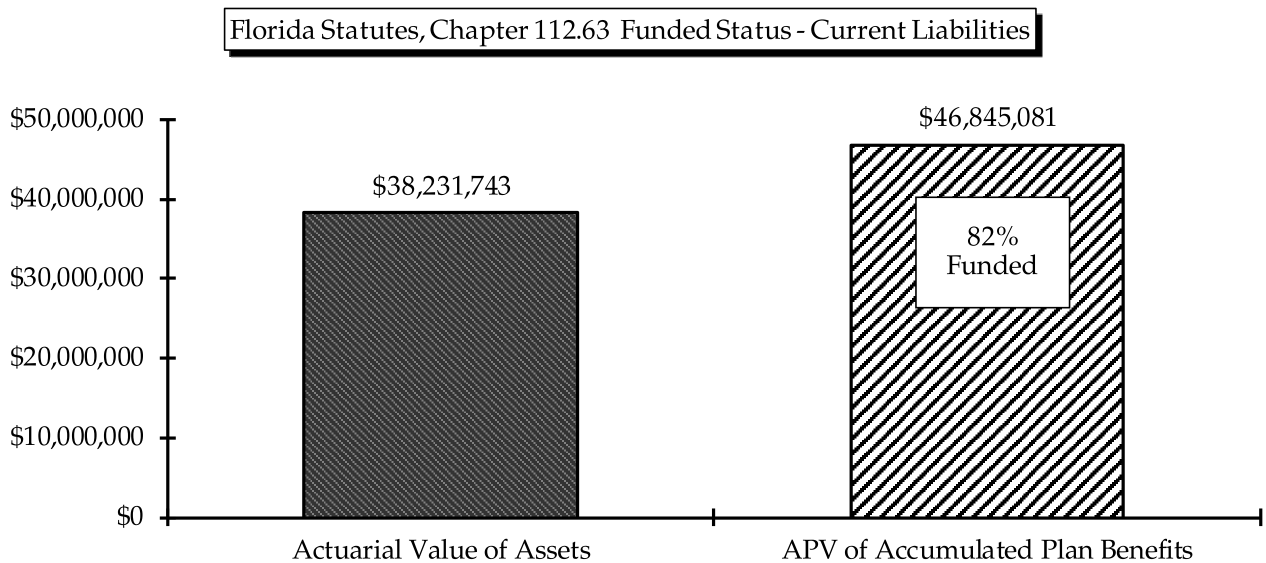



| Annual Requirements* | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|
| Normal Cost | $ 922,334 | $ 1,139,644 | $ 1,049,837 |
| Expected Member Contributions | 540,609 | 654,445 | 610,389 |
| City Normal Cost | $ 381,725 | $ 485,199 | $ 439,448 |
| Amortization Payment | 1,204,086 | 1,436,036 | 1,590,219 |
| Net City Normal Cost/Recommended Contribution | $ 1,585,811 | $ 1,921,235 | $ 2,029,667 |
| Recommended City Contribution if Paid | | | |
| at Beginning of Year | 1,525,220 | 1,850,134 | 1,954,554 |

* Assumed payable in 12 equal installments beginning October 31 of the year following the valuation date. Member contributions reduce the normal cost.

Contribution requirements have increased in dollar amount and as a percentage of payroll since the last valuation.

## Florida Statutes, Chapter 112.63 Funded Status – Current Liabilities

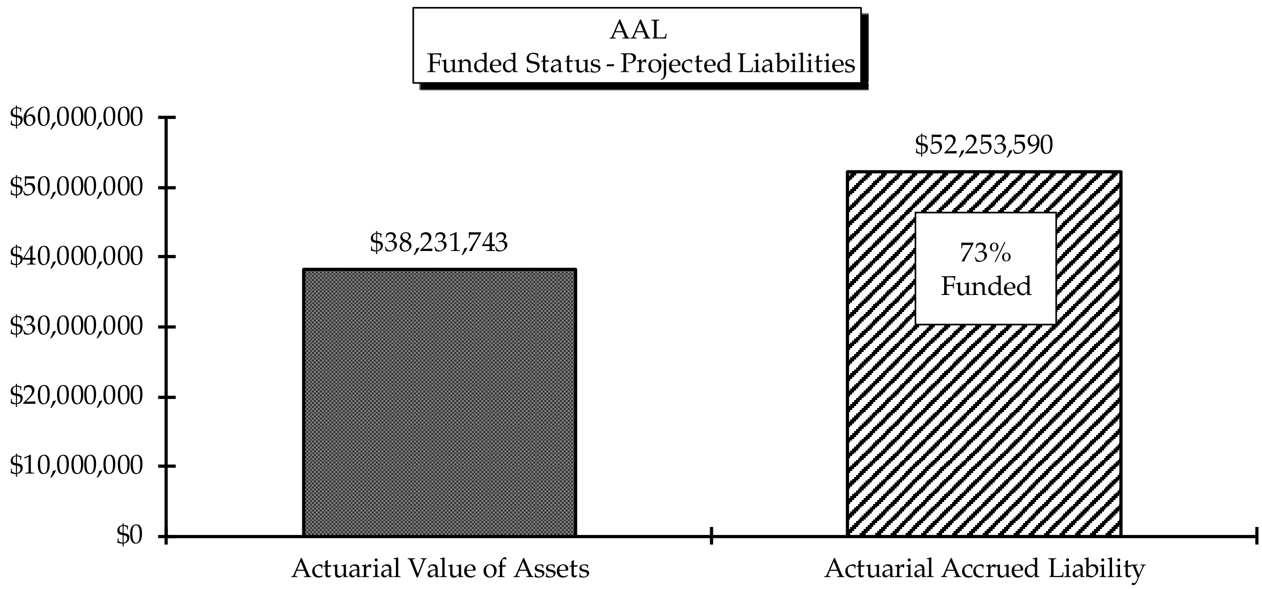



A comparison of current actuarial value of assets of the fund with the current actuarial present value (APV) of benefits accrued based on credited service and salary to date is now a required disclosure under Florida Statutes, Chapter 112.63. This measurement is often used as a surrogate for the liability if the Plan were to stop future benefit accruals. It is called "current liability" since it is based only on current earned benefits, even though the actual payment of those benefits extends many years into the future. The accumulated benefit liability APVs were developed using the statute required assumed rate of future investment return of 7.75%.

The current liability is normally expected to be more than 100% funded for an ongoing plan since the plan will ultimately be liable for a greater accrued benefit (the credited-projected benefit).

The Plan's current funded status is 82%.

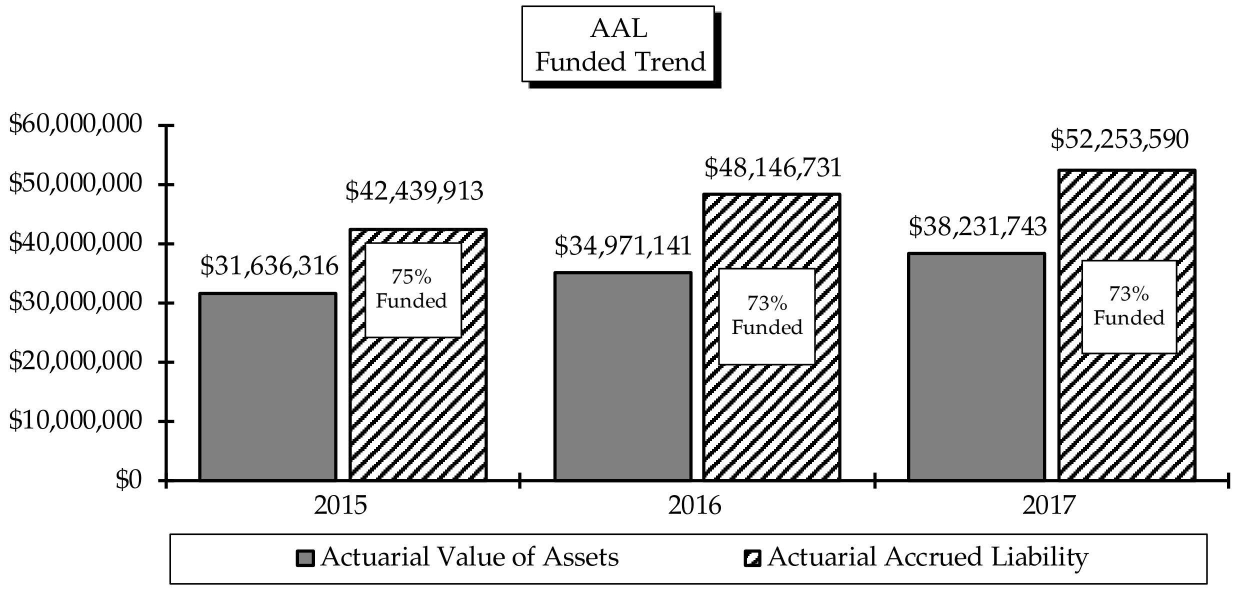
**AAL Funded Status - Projected Liabilities**




A comparison of assets with the APV of benefits accrued based on credited service to date, but projected salary at retirement (referred to as credited-projected benefits), is often used to judge the progress to date of funding the "ultimate" liability associated with service earned to date. The credited-projected benefit liability is not normally expected to be 100% funded, but a maturing plan's funded ratio should increase over time. The AAL APVs were developed using an assumed rate of interest discount of 7.25%.

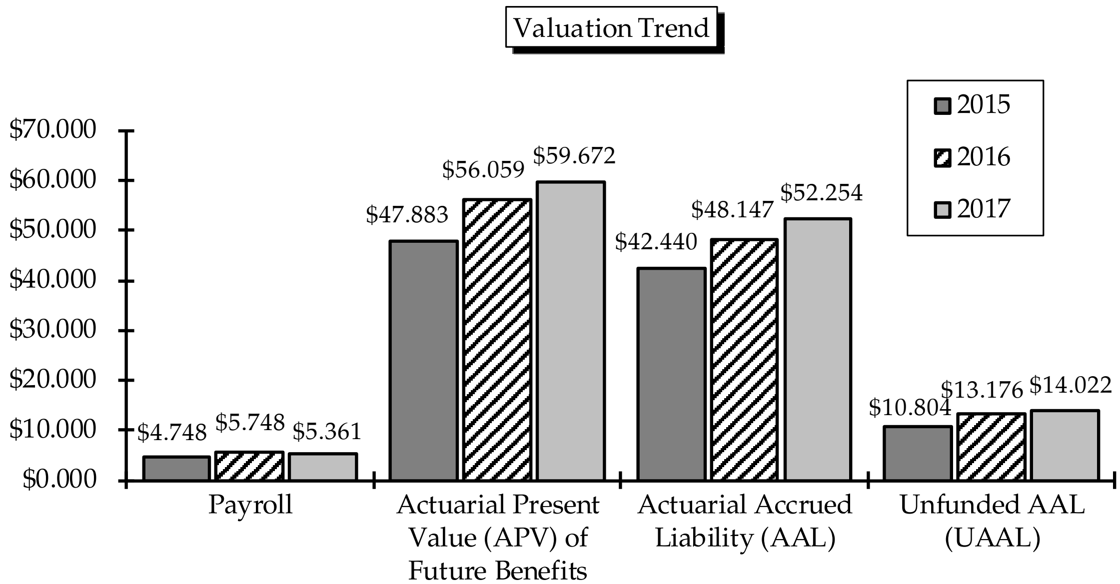
The Plan's AAL projected funded status is 73%.

**AAL Funded Trend**



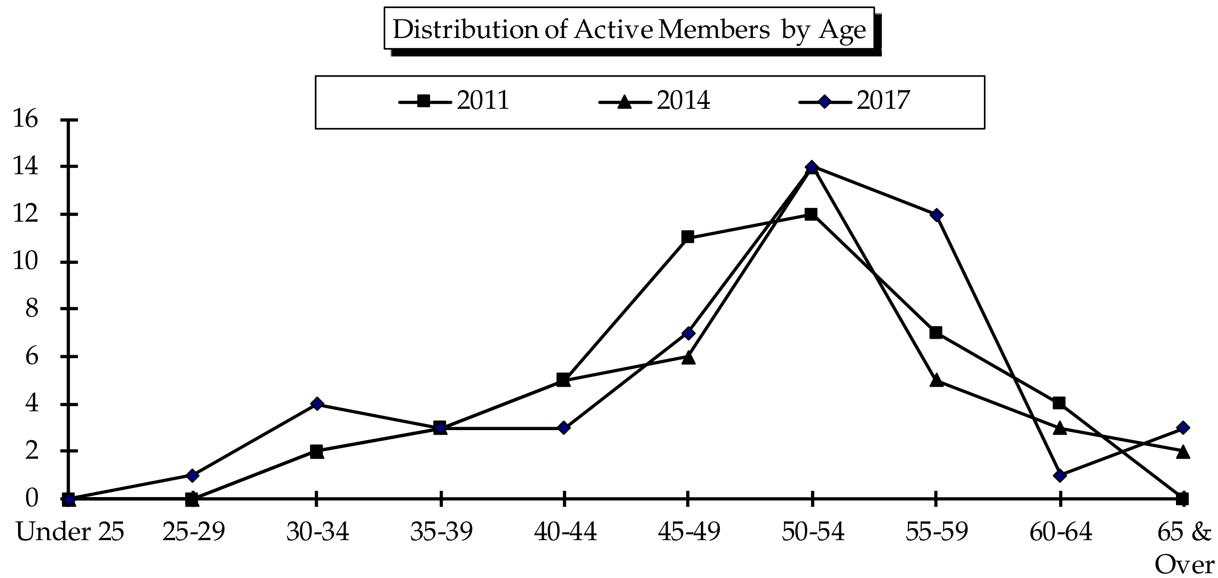

The AAL funded trend has remained stable since last year due mostly to the gains in assets balancing the actuarial losses and change in methodology.

## Valuation Trend




Plan liabilities have increased about as expected, given the changes to the two assumptions (and experience losses). The UAAL increased since last year for the same reasons. In addition, liabilities will grow automatically due to the nature of the present value calculations, since discounts are removed as ongoing members progress closer to retirement.

**Participation Trend**




**True Costs**

It should be noted that the true costs of a retirement plan cannot be determined until its future unfolds. No one can precisely predict the interest earnings on fund assets, member termination rates, future salary levels, mortality experience, etc. Estimates based on experience with similar groups, along with the judgment of the actuary and the Plan sponsor, can provide a reasonable approximation of this true cost. As actual experience emerges under the Plan, it will be necessary to study the continued appropriateness of the techniques and assumptions used and to adjust the contribution rate as necessary.

# SECTION 2
# ACTUARIAL VALUATION DEVELOPMENT

## Date and Basis of Valuation

Estimated liabilities for the benefits provided by City of Boca Raton Executive Employees' Retirement Plan and the contributions required to fund these liabilities have been determined as of October 1, 2017, based upon:

1. the provisions of the Plan, as applicable October 1, 2017, as summarized in Appendix A;
2. the actuarial assumptions and actuarial cost method, as summarized in Appendix B;
3. the statement of trust fund assets as of October 1, 2017, provided by the City, as summarized in Appendix C; and
4. the member data as of October 1, 2017, provided by the City, as summarized in Appendix D.

The trust fund asset information has been reconciled by the City. The member data has been supplied by the City and provided as representative of the current participating group. While the asset and member information was reviewed for overall reasonableness, Actuarial Concepts has relied on the City for this information and does not assume responsibility for either its accuracy or completeness.

**Member Reconciliation**

| | | Members | | | | | |
|---|---|---|---|---|---|---|---|
| | | Actives | Retirees and Beneficiaries | DROP Retirees | Disabled Retirees | Vested Terminateds | Pending Refunds |
| Members at | 10/01/16 | 49 | 21 | 6 | - | 9 | 2 |
| Increase (Decrease) Due to: | | | | | | | |
| Retirements | | (1) | 2 | (1) | - | - | - |
| DROP Retirement | | (2) | - | 2 | - | - | - |
| Nonvested Terminations | | (2) | - | - | - | - | 2 |
| Vested Terminations | | (1) | - | - | - | 1 | - |
| New Entrants | | 4 | - | - | - | - | - |
| Deaths | | (1) | - | - | - | - | 1 |
| Rehires | | - | - | - | - | - | - |
| Disableds | | - | - | - | - | - | - |
| From LP Status | | - | - | - | - | - | - |
| Lump-Sum Payment | | - | - | - | - | - | (2) |
| Transfers | | 2 | - | - | - | - | - |
| Members at | 10/01/17 | 48 | 23 | 7 | - | 10 | 3 |

## Valuation Financial Values

| | | | |
|---|---|---|---|
| 1. Participation | | | |
| (a) Number of Active Members | | | 48 |
| (b) Number of Inactive Members (includes DROP Members) | | | 43 |
| (c) Annualized Valuation Payroll for Contributing Members for Next 12 Months* | | | $ 5,361,342 |
| (d) Total Valuation Payroll (including any Members over Normal Retirement Age)* | | | 5,361,342 |
| 2. Actuarial Present Value (APV) of Future Benefits as of | | 10/01/17 | |
| (a) Active Members | | | |
| (1) Retirement | | | 28,056,699 |
| (2) Withdrawal | | | 351,275 |
| (3) Disability | | | 639,547 |
| (4) Death | | | 259,922 |
| (5) Refund of Contributions | | | 10,318 |
| (6) Total | | | $ 29,317,761 |
| (b) Retirees and Beneficiaries | | | 28,436,043 |
| (c) Disabled Retirees | | | - |
| (d) Vested Terminated and Pending Refunds | | | 1,918,432 |
| (e) Total APV Future Benefits | | | $ 59,672,236 |
| 3. APV Apportionment of line 2(e)** | | | |
| (a) APV of Total Future Normal Costs | | | 7,418,646 |
| (b) Actuarial Accrued Liability [(2e)-(3a)] | | | 52,253,590 |
| (c) Actuarial Value of Assets | | | 38,231,743 |
| (d) Unfunded AAL (UAAL) [(3b)-(3c)] | | | $ 14,021,847 |
| 4. Breakdown of UAAL on line 3(d) | | | |
| (a) UAAL [3(d)] | | | 14,021,847 |
| (b) Change in UAAL Due to Assumption and Methods Changes | | | 453,501 |
| (c) UAAL Before Change [(4a)-(4b)] | | | $ 13,568,346 |
| (d) Expected UAAL | | | 12,842,378 |
| (e) Actuarial (Gain) Loss [(4c)-(4d)] | | | $ 725,968 |
| 5. Contribution Requirements Due End of Month*** | October-18 | Equiv. Annual Amount | % of Payroll |
| (a) Plan Normal Cost | | $ 1,049,837 | 18.92% |
| (b) Expense Normal Cost | | - | 0.00% |
| (c) Total Plan Normal Cost | | $ 1,049,837 | 18.92% |
| (d) Amortization of UAAL | | 1,590,219 | 28.66% |
| (e) Total Required Plan Contribution [(5c)+(5d)] | | $ 2,640,056 | 47.58% |
| (f) Estimated Member Contributions | | 610,389 | 11.00% |
| (g) Net City Contribution [(5e)-(5f)] | | 2,029,667 | 36.58% |
| (h) City Contribution if paid 10/1/17 | | 1,954,554 | 35.22% |

* Excludes DROP Members.

** Calculated in accordance with the Individual Entry Age Actuarial Cost Method.

*** Assumed payable in 12 equal installments at the end of each month beginning 10/31/18.
Includes payroll growth rate of 3.5%.

## Explanation of Financial Values

Actuarial Present Value of Future Benefits (line 2e)

The actuarial present value (APV) of future benefits is determined by first measuring the benefit amount that would be available for each member at various future dates (assuming future service credits earned and future salary increases awarded) under each of the events provided for by the Plan (retirement, disability, death, termination of employment). Then the future value of those benefit entitlements is determined by multiplying the various benefit amounts by the then current value of the annuities associated with those amounts. Finally, the APV of those future benefit values is determined by applying discounts to recognize the time value of money and probabilities of death, disability, termination of employment, etc.

APV of Total Future Normal Costs (line 3a)

The APV of future normal costs is that portion of the total APV of future benefits, as described above, that is assigned to future plan years by the Individual Entry Age Actuarial Cost Method (described in Appendix B).

Actuarial Accrued Liability (line 3b) and
Unfunded Actuarial Accrued Liability (line 3d)

The actuarial accrued liability (AAL) and the unfunded AAL (UAAL) (the AAL less the actuarial value of assets) are actuarial values generated under the Individual Entry Age Actuarial Cost Method, as described in Appendix B. These liability amounts are not the APV of benefits accrued to date by members but are actuarially determined amounts based on the accrual of Individual Entry Age normal cost amounts due prior to the valuation date. The liability for benefits accrued to date (the APV of accumulated benefits) is provided in Section 3.

Plan Normal Cost (line 4a)

The Plan normal cost for the 12-month period beginning on the valuation date has been determined by first calculating for each member an individual yearly normal cost (that changes in dollar amount as pay increases, but is constant as a percent of each individual's pay), then adding together to obtain the Plan normal cost amount as of the beginning of the year. This preliminary total is then adjusted for interest credits assuming contributions are made quarterly and an amount to allow for expected annual expenses.

Total Required Plan Contribution (line 4e) and
Net City Contribution (line 4g)

The total required contribution is the annual amount necessary to cover the normal cost and amortize the initial UAAL as of October 1, 2003, over a period of 30 years from October 1, 2003, over 30 years from date of inception for any changes to the Plan, assumptions or cost methodology, and over 15 years from date of inception for any actuarial gains or losses established after October 1, 2003. Each year's UAAL portion can be either positive or negative, with amortization credits occurring if negative. The City's net contribution is equal to the total required contribution less estimated member contributions.

## Current Market Value of Assets vs. Expected Retirement Benefits

| Year | Market Value of Assets with Expected Interest Less Retirement Benefits | Expected Retirement Benefits of Current and Emerging Retirees |
|---|---|---|
| 2017 | $ 39,750,202 | $ 2,563,127 |
| 2018 | 40,068,965 | 2,800,437 |
| 2019 | 40,173,528 | 3,043,843 |
| 2020 | 40,042,265 | 3,303,981 |
| 2021 | 39,641,349 | 3,581,721 |
| 2022 | 38,933,625 | 3,699,102 |
| 2023 | 38,057,211 | 3,883,597 |
| 2024 | 36,932,762 | 4,062,098 |
| 2025 | 35,548,289 | 4,320,204 |
| 2026 | 33,805,336 | 4,533,431 |
| 2027 | 31,722,792 | 4,814,748 |
| 2028 | 29,207,946 | 4,996,516 |
| 2029 | 26,329,007 | 5,273,303 |
| 2030 | 22,964,557 | 5,368,231 |
| 2031 | 19,261,256 | 5,453,992 |
| 2032 | 15,203,705 | 5,559,713 |
| 2033 | 10,746,261 | 5,669,110 |
| 2034 | 5,856,255 | 5,750,263 |
| 2035 | 530,570 | 5,810,910 |
| 2036 | - | 5,910,612 |
| 2037 | - | 5,923,016 |
| 2038 | - | 5,903,417 |
| 2039 | - | 5,864,691 |
| 2040 | - | 5,815,407 |
| 2041 | - | 5,752,683 |
| 2042 | - | 5,685,615 |
| 2043 | - | 5,606,026 |
| 2044 | - | 5,526,507 |
| 2045 | - | 5,398,970 |
| 2046 | - | 5,258,377 |

This State required exhibit is somewhat misleading, since future expected contributions are not included. The actuarial methodology is based on fully funding liabilities when they come due to ensure the Plan will not run out of money.

**Sensitivity Study – Estimated Valuation Financial Values at 5.25% Interest**

This State required exhibit presents a pro forma valuation that estimates the effect on projected liabilities and contribution requirements if the Plan were to earn a return over the long term at a lower rate than the current assumed rate. A two percentage point difference in assumed rate was valued in accordance with State reporting requirements. Although projected liabilities would increase by about 33%, the net City contribution would increase by about 66% because the increase had no prior funding, whereas the present value of benefits based on current assumptions are partially funded. For returns between the current valuation rate and the pro forma rate, one can interpolate an estimate of resultant contribution requirements. Note if long term returns are greater than the current valuation assumed rate, the expected contribution requirements would be less than the current valuation requirement.

## Sensitivity Study - Estimated Valuation Financial Values at 5.25% Interest

| | | | |
|---|---|---|---|
| **1. Participation** | | | |
| (a) Number of Active Members | | | 48 |
| (b) Number of Inactive Members (includes DROP Members) | | | 43 |
| (c) Annualized Valuation Payroll for Contributing Members for Next 12 Months* | | | $ 5,361,342 |
| (d) Total Valuation Payroll (including any Members over Normal Retirement Age)* | | | 5,361,342 |
| **2. Actuarial Present Value (APV) of Future Benefits as of 10/01/17** | | | |
| (a) Active Members | | | |
| (1) Retirement | | | 39,689,760 |
| (2) Withdrawal | | | 583,796 |
| (3) Disability | | | 947,297 |
| (4) Death | | | 349,411 |
| (5) Refund of Contributions | | | 12,140 |
| (6) Total | | | $ 41,582,404 |
| (b) Retirees and Beneficiaries | | | 34,998,177 |
| (c) Disabled Retirees | | | - |
| (d) Vested Terminated and Pending Refunds | | | 2,877,571 |
| (e) Total APV Future Benefits | | | $ 79,458,152 |
| **3. APV Apportionment of line 2(e)*** | | | |
| (a) APV of Total Future Normal Costs | | | 12,669,551 |
| (b) Actuarial Accrued Liability [(2e)-(3a)] | | | 66,788,601 |
| (c) Actuarial Value of Assets | | | 38,231,743 |
| (d) Unfunded AAL (UAAL) [(3b)-(3c)] | | | $ 28,556,858 |
| **4. Breakdown of UAAL on line 3(d)** | | | |
| (a) UAAL [3(d)] | | | 28,556,858 |
| (b) Change in UAAL Due to Assumption Changes | | | 14,988,512 |
| (c) UAAL Before Change [(4a)-(4b)] | | | $ 13,568,346 |
| (d) Expected UAAL | | | 12,842,378 |
| (e) Actuarial (Gain) Loss [(4c)-(4d)] | | | $ 725,968 |
| **5. Contribution Requirements Due End of Month**** | October-18 | Equiv. Annual Amount | % of Payroll |
| (a) Plan Normal Cost | $ | 1,720,791 | 31.01% |
| (b) Expense Normal Cost | | - | 0.00% |
| (c) Total Plan Normal Cost | $ | 1,720,791 | 31.01% |
| (d) Amortization of UAAL | | 2,149,094 | 38.73% |
| (e) Total Required Plan Contribution [(5c)+(5d)] | $ | 3,869,885 | 69.74% |
| (f) Estimated Member Contributions | | 610,389 | 11.00% |
| (g) Net City Contribution [(5e)-(5f)] | | 3,259,496 | 58.74% |
| (h) City Contribution if paid 10/1/17 | | 3,170,739 | 57.14% |

* Excludes DROP Members.

** Calculated in accordance with the Individual Entry Age Actuarial Cost Method.

*** Assumed payable in 12 equal installments at the end of each month beginning 10/31/18. Includes payroll growth rate of 3.5%.

## Derivation of Current UAAL

| Development of UAAL as of Valuation Date | | | |
|---|---|---|---|
| 1. Unfunded Actuarial Accrued Liability (UAAL) as of | | 10/01/16 | $ 13,175,590 |
| 2. Normal Cost - Year Ended | 9/30/17 | | 1,250,730 |
| 3. Interest Accrued on (1) and (2) | | | 1,049,021 |
| 4. Contributions - Year Ended | 9/30/17 | | 2,487,501 |
| 5. Interest Accrued on (4) | | | 145,462 |
| 6. Expected UAAL at | 10/01/17 | | 12,842,378 |
| 7. Changes Due to: | | | |
| (a) Actuarial Assumptions | | | 453,501 |
| (b) Actuarial (Gain)/Loss | | | 725,968 |
| (c) Total | | | $ 1,179,469 |
| 8. UAAL at Valuation Date | | | 14,021,847 |

## Derivation of Actuarial Accrued Liability

| | |
|---|---|
| **Actuarial Accrued Liability (AL) 10/16** | **$ 48,146,731** |
| Normal change in AL (removal of discount, addition of a year of normal cost) | 2,545,021 |
| System Change | - |
| Actuarial (Gain)/Loss | 1,108,337 |
| Change in Actuarial Assumptions | 453,501 |
| Change in Rate of Investment Return | - |
| Change in Funding Method | - |
| **Actuarial Accrued Liability (AL) 10/17** | **$ 52,253,590** |

# SECTION 3
# ANALYSIS OF VALUATION RESULTS

## Discussion of Valuation Results

If the participating group remained unchanged and all the actuarial assumptions were realized, the Plan's experience would be as anticipated, and there would be no actuarial gain or loss. If the experience were less favorable than anticipated, an actuarial loss would result; if more favorable, an actuarial gain would result.

For the 12 months ended September 30, 2017, the actual experience under the Plan, in aggregate, was less favorable than expected, resulting in a net actuarial loss of approximately $726,000. This loss was mainly attributable to a combination of new retirees more than assumed, data changes and new transfers from the General Plan. These losses were partially offset by gains due to a higher yield on assets than anticipated by the assumptions, with a yield based on actuarial value of assets of 8.30% versus the assumed rate of 7.25%.

Future valuations will monitor the Plan's experience to determine whether actuarial gains or losses have occurred since the previous valuation. Recognition of these actuarial gains or losses will be made through adjustments to the UAAL and amortized as provided in Appendix B.

It should be noted that the true costs of a retirement plan cannot be determined until its future unfolds. No one can precisely predict the interest earnings on retirement fund assets, mortality rates to be experienced, member termination rates, future salary levels, etc. Estimates based on experience with similar groups, along with the judgment of the actuary and the Plan sponsor, can provide a reasonable approximation of this true cost. As actual experience emerges under the Plan, it will be necessary to study the continued appropriateness of the techniques and assumptions employed and to adjust the contribution rate as necessary.

## Valuation Comparison Table

| 1. Member Data | 10/01/16 | 10/01/17 Before Changes | 10/01/17 After Changes |
|---|---|---|---|
| (a) Active Members | 49 | 48 | 48 |
| (b) Retirees, Beneficiaries and Disableds (includes DROP Members) | 27 | 30 | 30 |
| (c) Vested Terminated and Limited Members | 11 | 13 | 13 |
| (d) Annualized Valuation Payroll for Contributing Members for Next 12 Months* | $ 5,748,308 | $ 5,361,342 | $ 5,361,342 |
| (e) Actuarial Present Value (APV) of Future Valuation Payroll | 31,350,730 | 34,348,101 | 34,348,101 |
| (f) Total Annual Benefit Payments | 1,881,830 | 2,334,287 | 2,334,287 |
| **2. Assets** | | | |
| (a) Market Value | 34,115,484 | 39,750,202 | 39,750,202 |
| (b) Actuarial Value | 34,971,141 | 38,231,743 | 38,231,743 |
| **3. Liabilities** | | | |
| (a) APV of Future Benefits | | | |
| (1) Active Members | | | |
| --Retirement | 30,011,871 | 27,951,064 | 28,056,699 |
| --Withdrawal | 350,255 | 355,164 | 351,275 |
| --Disability | 691,316 | 638,823 | 639,547 |
| --Death | 287,566 | 253,840 | 259,922 |
| --Refund of Contributions | 9,721 | 10,895 | 10,318 |
| --Total | $ 31,350,729 | $ 29,209,786 | $ 29,317,761 |
| (2) DROP Retirees | Incl Below | Incl Below | Incl Below |
| (3) Retirees and Beneficiaries | 23,293,191 | 28,309,638 | 28,436,043 |
| (4) Vested Terminateds and Pending Refunds | 1,415,499 | 1,918,432 | 1,918,432 |
| (5) Total | $ 56,059,419 | $ 59,437,856 | $ 59,672,236 |
| (b) APV of Vested Accrued Benefits | 42,752,804 | 30,228,070 | 30,354,475 |
| (c) APV of All Accrued Benefits | 45,204,692 | 49,388,492 | 49,631,689 |
| (d) Actuarial Accrued Liability (AAL) | | | |
| (1) Retirement | 22,848,745 | 21,043,488 | 21,348,971 |
| (2) Withdrawal | 18,678 | 19,884 | 21,534 |
| (3) Disability | 380,099 | 346,533 | 359,034 |
| (4) Death | 188,916 | 160,097 | 167,560 |
| (5) Refund of Contributions | 1,603 | 2,017 | 2,016 |
| (6) Inactives | 24,708,690 | 30,228,070 | 30,354,475 |
| (7) Total | $ 48,146,731 | $ 51,800,089 | $ 52,253,590 |
| (e) Unfunded AAL (UAAL) | 13,175,590 | 13,568,346 | 14,021,847 |
| **4. Breakdown of Plan Normal Costs** | | | |
| (a) Retirement | 1,189,490 | 1,147,136 | 1,124,245 |
| (b) Withdrawal | 52,681 | 49,475 | 49,572 |
| (c) Disability | 57,385 | 52,657 | 51,799 |
| (d) Death | 17,841 | 16,590 | 16,306 |
| (e) Refund of Contributions | (177,753) | (192,167) | (192,085) |
| (f) Total | $ 1,139,644 | $ 1,073,691 | $ 1,049,837 |

## Valuation Comparison Table (continued)

| 5. Contribution Requirements* for Year Ended | 09/30/18 | 09/30/19 | 09/30/19 |
|---|---|---|---|
| (a) Plan Normal Cost** | $ 1,139,644 | $ 1,073,691 | $ 1,049,837 |
| (b) Amortization Payment | 1,436,036 | 1,562,781 | 1,590,219 |
| (c) Total Plan Requirements* | $ 2,575,680 | $ 2,636,472 | $ 2,640,056 |
| (d) Estimated Member Contributions | 654,445 | 610,389 | 610,389 |
| (e) Total City Requirements* | $ 1,921,235 | $ 2,026,083 | $ 2,029,667 |
| (f) Total City Requirement Adjusted to End of Year*** | 1,984,269 | 2,092,558 | 2,096,259 |
| **6. Past Contributions for Year Ended** | **9/30/17** | | |
| (a) (1) Contribution Required by City EOY Adjusted | $ 1,639,611 | | |
| (2) Contribution Required by Members EOY Adjusted | 558,950 | | |
| (b) (1) Actual City Contributions Paid | 1,525,219 | | |
| (2) Actual Member Contributions Paid | 639,876 | | |
| (c) (1) Actual City Contribution Interest Adjusted to End of Year | 1,635,798 | | |
| (2) Actual Member Contribution Interest Adjusted to End of Year | 662,666 | | |

* Annual amounts assumed payable in 12 equal installments at the end of each month.
Includes a payroll growth rate of 3.5%.

** Normal cost is determined based on the Individual Entry Age Actuarial Cost Method.

*** Includes interest adjustments at the valuation rate on amounts to end of year.

**Effect of Amortization Policy on Contribution Requirements**

It is intended that the initial UAAL be amortized over a period of 30 years from October 1, 2003. Actuarial (gains) or losses will be amortized over 15 years from inception. The amortization schedule is presented below:

| | Initial Amount | Date of First Charge | Years Remaining 10/01/17 | Amortization Payment 2018-2019 | Outstanding Balance at 10/01/17 |
|---|---|---|---|---|---|
| UAAL Bases: | | | | | |
| Initial | $ 2,240,543 | 10/01/04 | 16 | $ 74,593 | $ 797,404 |
| 2004 Loss | 408,970 | 10/01/05 | 2 | 63,483 | 116,045 |
| 2004 Increase | 1,291,030 | 10/01/05 | 17 | 122,162 | 1,475,386 |
| 2005 Loss | 159,792 | 10/01/06 | 3 | 23,965 | 64,569 |
| 2006 Loss | 126,096 | 10/01/07 | 4 | 18,272 | 64,506 |
| 2007 Gain | (102,389) | 10/01/08 | 5 | (14,335) | (62,173) |
| 2008 Loss | 1,617,418 | 10/01/09 | 6 | 218,790 | 1,119,270 |
| 2008 Increase | 440,783 | 10/01/09 | 21 | 36,346 | 509,034 |
| 2009 Loss | 2,201,117 | 10/01/10 | 7 | 287,679 | 1,687,841 |
| 2009 Decrease | (432,173) | 10/01/10 | 22 | (34,431) | (497,382) |
| 2010 Loss | 557,597 | 10/01/11 | 8 | 70,412 | 464,168 |
| 2010 Increase | 693,920 | 10/01/11 | 23 | 53,415 | 794,327 |
| 2011 Loss | 1,777,394 | 10/01/12 | 9 | 216,855 | 1,581,289 |
| 2011 Increase | 519,511 | 10/01/12 | 24 | 38,638 | 590,424 |
| 2012 Loss | 1,331,895 | 10/01/13 | 10 | 157,005 | 1,250,895 |
| 2012 Decrease | (328,136) | 10/01/13 | 25 | (23,579) | (369,651) |
| 2013 Gain | (154,216) | 10/01/14 | 11 | (17,564) | (151,385) |
| 2014 Gain | (957,633) | 10/01/15 | 12 | (105,381) | (974,540) |
| 2014 Increase | 1,055,238 | 10/01/15 | 27 | 70,786 | 1,162,855 |
| 2015 Gain | (73,175) | 10/01/16 | 13 | (7,780) | (76,671) |
| 2016 Gain | 1,220,332 | 10/01/17 | 14 | 125,361 | 1,308,806 |
| 2016 Increase | 1,853,018 | 10/01/17 | 29 | 116,036 | 1,987,362 |
| 2017 Loss | 725,968 | 10/01/18 | 15 | 72,054 | 725,968 |
| 2017 Decrease | 453,501 | 10/01/18 | 30 | 27,438 | 453,501 |
| Total | | | | $ 1,590,219 | $ 14,021,847 |

**UAAL Repayment Schedule**

| End of Year | UAAL Balance | Amortization Payments |
|---|---|---|
| 2017-2018 | $ 14,021,847 | $ 1,473,583 |
| 2018-2019 | 13,551,155 | 1,590,219 |
| 2019-2020 | 12,891,548 | 1,580,172 |
| 2020-2021 | 12,194,493 | 1,609,806 |
| 2021-2022 | 11,416,303 | 1,645,891 |
| 2022-2023 | 10,544,432 | 1,719,947 |
| 2023-2024 | 9,532,880 | 1,520,291 |
| 2024-2025 | 8,654,157 | 1,219,870 |
| 2025-2026 | 8,021,941 | 1,172,982 |
| 2026-2027 | 7,392,307 | 928,480 |
| 2027-2028 | 6,969,498 | 746,994 |
| 2028-2029 | 6,703,438 | 797,916 |
| 2029-2030 | 6,365,506 | 979,696 |
| 2030-2031 | 5,815,368 | 1,025,741 |
| 2031-2032 | 5,177,798 | 799,468 |
| 2032-2033 | 4,726,623 | 658,502 |
| 2033-2034 | 4,389,332 | 681,550 |
| 2034-2035 | 4,003,788 | 493,577 |
| 2035-2036 | 3,784,393 | 510,852 |
| 2036-2037 | 3,531,253 | 528,732 |
| 2037-2038 | 3,241,298 | 547,238 |
| 2038-2039 | 2,911,212 | 494,070 |
| 2039-2040 | 2,612,097 | 582,271 |
| 2040-2041 | 2,200,219 | 488,795 |
| 2041-2042 | 1,855,003 | 420,664 |
| 2042-2043 | 1,555,112 | 489,226 |
| 2043-2044 | 1,162,681 | 506,349 |
| 2044-2045 | 724,118 | 350,932 |
| 2045-2046 | 414,242 | 363,215 |
| 2046-2047 | 69,218 | - |
| 2047-2048 | - | - |

**Current Liabilities/Asset Comparison***

Accumulated Plan Benefits

| | 10/1/16 | 10/1/17 |
|---|---|---|
| 1. Actuarial Present Value (APV)** of Vested Accrued Benefits | | |
| (a) Vested Terminated Participants and Pending Refunds | $ 1,283,460 | $ 1,744,427 |
| (b) Retirees and Beneficiaries | 22,248,674 | 27,134,437 |
| (c) DROP Retirees | Incl in (b) | Incl in (b) |
| (d) Active Participants | 16,833,538 | 16,238,048 |
| (e) Total APV** of Vested Accrued Benefits | $ 40,365,672 | $ 45,116,912 |
| 2. APV** of Nonvested Accrued Benefits | 2,259,614 | 1,728,169 |
| 3. APV** of Accumulated Plan Benefits [(1)+(2)] | $ 42,625,286 | $ 46,845,081 |
| 4. Actuarial Value of Assets | 34,971,141 | 38,231,743 |
| 5. Excess (if any) of APV** of Accumulated Plan Benefits over the Actuarial Value of Assets [(3)-(4)] | 7,654,145 | 8,613,338 |
| 6. Percent Funded [(4)/(3)] | 82% | 82% |

Statement of Changes in Accumulated Plan Benefits*

| | |
|---|---|
| 1. APV** of Accumulated Plan Benefits at 10/1/16 | $ 42,625,286 |
| 2. Increase (Decrease) During the Year Attributable to: | |
| (a) Plan Amendment | - |
| (b) Change in Actuarial Assumptions | (2,543,411) |
| (c) System Changes | - |
| (d) Benefit Payments | (2,244,918) |
| (e) Change in Benefits and APV** Factors | 9,008,124 |
| 3. APV** of Accumulated Plan Benefits at 10/1/17 | $ 46,845,081 |

* Per Florida Statute 112.63 funded status.

** Based on 7.75% interest, RP-2000 Generational Mortality Table and other assumed decrements as described in Appendix B.

**Comparison of Actual and Assumed Salary Increases**

| Period Ended September 30 | Actual Rate of Increase | Assumed Rate of Increase |
|---|---|---|
| 2006 | 6.71% | 4.43% |
| 2007 | 5.62% | 4.34% |
| 2008 | 6.84% | 4.46% |
| 2009 | 6.29% | 4.63% |
| 2010 | 1.82% | 2.50% |
| 2011 | 1.12% | 0.00% |
| 2012 | 0.74% | 1.00% |
| 2013 | 1.23% | 1.00% |
| 2014 | 0.44% | 1.00% |
| 2015 | 5.36% | 3.78% |
| 2016 | 8.85% | 3.65% |
| 2017 | 2.03% | 3.82% |

**Comparison of Actual and Assumed Investment Returns**

| Period Ended September 30 | Actuarial Rate of Return | Market Rate of Return | Assumed Rate of Actuarial Return |
|---|---|---|---|
| 2006 | 7.08% | 7.65% | 8.00% |
| 2007 | 8.28% | 12.74% | 8.00% |
| 2008 | 3.49% | -15.18% | 8.00% |
| 2009 | 4.92% | 2.09% | 8.00% |
| 2010 | 3.38% | 9.64% | 8.00% |
| 2011 | 1.58% | 0.05% | 7.75% |
| 2012 | 2.48% | 19.36% | 7.75% |
| 2013 | 10.62% | 14.86% | 7.75% |
| 2014 | 12.61% | 10.12% | 7.50% |
| 2015 | 7.80% | 0.28% | 7.50% |
| 2016 | 9.28% | 9.07% | 7.50% |
| 2017 | 8.30% | 15.43% | 7.25% |

## Calculation of Actual Rate of Investment Return on Actuarial Value

| Plan Year Ended September 30, 2017 | | |
|---|---|---|
| R | = | $\dfrac{2I}{M1+M2-I}$ , where |
| I | = | the interest, dividends, plus appreciation or (depreciation) |
| M1 | = | beginning actuarial value |
| M2 | = | ending actuarial value |
| R | = | $\dfrac{2 \text{ X } \$2{,}917{,}776}{(\$34{,}971{,}141 + \$38{,}231{,}743 - \$2{,}917{,}776)}$ |
| R | = | $\dfrac{\$5{,}835{,}552}{\$70{,}285{,}108}$ |
| R | = | 8.30% |

## Calculation of Actual Rate of Investment Return on Market Value

| Plan Year Ended September 30, 2017 | | |
|---|---|---|
| R | = | $\dfrac{2I}{M1+M2-I}$ , where |
| I | = | the interest, dividends, plus appreciation or (depreciation) |
| M1 | = | beginning market value |
| M2 | = | ending market value |
| R | = | $\dfrac{2 \text{ X } \$5{,}291{,}892}{(\$34{,}115{,}484 + \$39{,}750{,}202 - \$5{,}291{,}892)}$ |
| R | = | $\dfrac{\$10{,}583{,}784}{\$68{,}573{,}794}$ |
| R | = | 15.43% |

## Additional Disclosures

There are no additional disclosures required under Rules 22D-1.003(4)(f) and (g) of the State of Florida, Department of Management Services, Division of Retirement.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

## SUMMARY OF PLAN PROVISIONS THAT AFFECT THE VALUATION

### Definitions

1. Ordinances: Original Ordinance #4745
Amendment #4805
Amendment #4839
Amendment #4925
Amendment #5021
Amendment #5152

2. Plan Year: October 1 through September 30.

3. Member: All eligible managers hired on or after December 1, 2003, and before November 1, 2007, must participate upon date of hire. All eligible managers hired after November 1, 2007 may elect to participate. Managers actively employed as of November 30, 2003, may elect to participate as of December 1, 2003. Managers are divided into four divisions:

   Division 1 – Positions classified as D-1, D-2 and D-3
   Division 2 – Positions designated as D-4 and higher D classifications
   Division 3 – Assistant City Manager, Senior Assistant City Attorney and all department heads (positions classified as DD)
   Division 4 – City Manager and City Attorney

4. Member Contributions: For all divisions, 11% of Compensation accumulated at 5% interest, compounded annually.

5. Vesting Service: The number of full and fractional years worked from the later of date of hire or Effective Date to date of termination or retirement, plus any past service purchased as provided below.

Vesting Service credit may be purchased for full-time employment with the City of Boca Raton prior to the Effective Date either by (1) payment to the Plan within 30 days of Effective Date of 70% of the full actuarial cost of such service credit, or (2) payment to the Plan before separation of employment or entry into DROP 100% of the full actuarial cost of such service credit. Service that is credited under the General or Police and Firefighters Plan may not be purchased unless the member transfers to this Plan.

Up to 5 additional years of Vesting Service credit may be purchased for periods of employment interrupted by military service by payment of the contributions that would have been required of the Member during such period of service, plus interest.

6. Benefit Service: Total of Vesting Service plus any past service purchased as provided below.

Five additional years of Benefit Service credit may be purchased for prior full-time employment with the federal government, including active duty in the armed forces, or any state, county or city government (excluding the City of Boca Raton), by payment of the full actuarial cost of such service credit. If such prior service is deemed ineligible for purposes of a higher benefit rate, may be purchased under the same terms and conditions that is equivalent to increased benefits that would be applicable if such prior service were eligible for purchase.

7. Compensation: Base wages excluding all extra forms of compensation such as longevity pay, payments for car allowance, dependent medical insurance and lump-sum payouts of accumulated leave, but including salary reductions or deferrals to any salary reduction, deferred compensation or

tax-sheltered annuity program related to such base wages.

8. Average Final Compensation: Divisions 1-3 – 1/60th of the average Compensation of the 130 best pay periods of the last 260 pay periods prior to termination.

Division 4 – 1/60th of the average Compensation of the 52 best pay periods of the last 260 pay periods prior to termination.

9. Accrued Benefit: A monthly annuity benefit equal to a percentage of Average Final Compensation times Benefit Service payable in accordance with the standard form of annuity, starting at the Normal Retirement Date as provided below:

Division 1 – 3.05%
Division 2 – 3.15%
Division 3 – 3.25%
Division 4 – 4.55% for the first 10 years and 3.35% thereafter.

For employees who become Members after September 30, 2010, the lowest benefit multiplier in the EERP shall be equal to the greatest multiplier provided to Option C of the General Employees Pension Plan (GEPP).

Division 1 – Same percentage as greatest multiplier provided to Option C of the GEPP plus six-tenths (0.6).
Division 2 – Division 1 percentage plus one-tenth (0.10).
Division 3 – Division 2 percentage plus one-tenth (0.10)
Division 4 – Division 3 percentage plus one-tenth (0.10)

A Member's annual benefit may not exceed the lesser of 90% (80% for those who became Members after September 30, 2010) of the Member's Average Final Compensation or the maximum adjusted benefit defined in IRC Section 415(b).

Standard Form of Annuity —
Division 1 – 25% joint-and-survivor
Division 2 – 50% joint-and-survivor
Division 3 – 75% joint-and-survivor
Division 4 – 100% joint-and-survivor

10. Normal Retirement:

Eligibility Date — The earliest of age 55 and completion of 10 years of Vesting Service and age 65 and completion of 6 years of Vesting Service. Special age-65 normal retirement eligibility to transition Members who join on Effective Date.

For employees who become Members after September 30, 2010, conditions for Normal Retirement are age 65 with at least 6 years of Vesting Service, or age 58 with at least 10 years of Vesting Service.

Benefit — Accrued Benefit payable as of the Normal Retirement Date in the standard form of annuity.

11. Early Retirement:

Members prior to October 1, 2010:

Eligibility Date — Age 50 and completion of 10 years of Vesting Service. Special involuntary termination conditions apply to Division 4 Members.

Benefit — Accrued Benefit as of the Early Retirement Date payable at Normal Retirement Date or payable at the Early Retirement Date and reduced for Division 1, 2 and 3 Members by 5/12% and for Division 4 Members 1/6% for each month by which commencement of benefit precedes age 55.

Members after September 30, 2010:

Eligibility Date — For employees who become Members after September 30, 2010, conditions for Early Retirement are age 53 with 10 years or more of Vesting Service.

Benefit — Same as other except "reduced for Division 1, 2 and 3 Members by 5/12% for each month by which Benefit Commencement Date precedes age 58; and for Division 4 Members by 1/6% for each month preceding age 58.

12. Disability Benefit:

Eligibility — Total and permanent disability; no service requirement.

Benefit — 60% of Average Final Compensation as of date of disability payable starting at age 65 as the standard form of benefit, with Average Final Compensation indexed at 2% per year from disability to age 65.

13. Death Benefit before Termination:

Members prior to October 1, 2010:

Eligibility — Death while actively employed.

Benefit —

Age 55 with 6 or More Years of Service — Accrued Benefit at time of Member's death payable to beneficiary for life as follows:

Division 1 –25% of Accrued Benefit
Division 2 –50% of Accrued Benefit
Division 3 –75% of Accrued Benefit
Division 4 –100% of Accrued Benefit

6 or More Years of Service but Under Age 55
Division 1 –25% of Accrued Benefit
Division 2 –50% of Accrued Benefit
Division 3 –75% of Accrued Benefit

<u>6 or More Years of Service but Under Age 50</u>
Division 4 –100% of Accrued Benefit

If the Member is actively employed but has less than 6 years of Vesting Service at date of death, the beneficiary shall receive a refund of Member Contributions with interest at 5%. Special eligibility conditions apply for Members who join the Plan on the Effective Date and die with less than 6 years of service.

Members after September 30, 2010:

The above is applicable except the references to age 55 shall be age 58, and to age 50 shall be age 53.

14. Death Benefit after Termination:

If the Member terminated employment and is not eligible to receive immediate retirement benefits at date of death, the beneficiary shall receive a refund of Member Contributions with interest at 5%.

If the Member terminated employment and is eligible to receive immediate retirement benefits but payments have not yet commenced at date of death, payments shall be made to the beneficiary as if the Member had elected to receive benefits commencing on the day before the date of death or a refund of Member Contributions with interest at 5%, if greater.

If the Member dies after payment of retirement benefits has commenced, death benefits will be subject to the terms of the optional benefit form elected.

Special involuntary termination conditions apply to Members who joined as of the Effective Date.

15. Termination Benefit: A terminating Member with less than 6 years of Vesting Service will receive a refund of Member Contributions with interest at 5%. A terminating Member with 6 or more years of Vesting Service but less than 10 will receive the Accrued Benefit as of the termination date payable at age 65; or with 10 or more years of Vesting Service and less than age 50, payable at age 55.

Special vesting conditions apply to Members who joined on the Effective Date who terminated with less than 6 years of service, and special normal retirement conditions apply during the first 3 years of the Plan to Members who joined on the Effective Date and are involuntarily terminated under certain conditions.

16. Standard (Unreduced) Form of Payment:

Division 1 – 25% joint-and-survivor annuity
Division 2 – 50% joint-and-survivor annuity
Division 3 – 75% joint-and-survivor annuity
Division 4 – 100% joint-and-survivor annuity

17. Optional Forms of Payment: Life annuity; 5-years-certain-and-life; 100%/75%/50%/25% joint-and-survivor annuity; actuarial equivalent to normal form.

18. Cost-of-Living Increase: Eligibility — Members who began participating on the Effective Date are eligible irrespective of when termination occurs; all other Members are eligible if they terminate after becoming eligible for immediate early or normal retirement benefits.

Benefit — 2%-per-year increase for Divisions 1, 2 and 3 and 3%-per-year increase for Division 4 in current monthly benefit commencing on October 1 following 5 years after retirement (pro rata for less than 12 months since the fifth anniversary of retirement).

| | |
|---|---|
| 19. Health Supplement: | <u>Eligibility</u> — Members who terminate with 10 or more years of Benefit Service and are eligible for immediate early or normal retirement benefits.<br><br><u>Benefit</u> — $10 per month times Benefit Service payable to retirees under standard form of annuity, reduced 5% per year if Member had less than 25 years of service and retirement is before age 55 or age 58, as applicable. Not subject to optional forms of annuity; cost-of-living adjustments apply in the same percentage at the same time as applicable to the regular Plan benefit.<br><br>Special eligibility conditions apply to Members who joined the Plan on the Effective Date and purchased Vesting Service for at least 50% of their prior service, and reduction is 5% for Divisions 1, 2 and 3 or 2% for Division 4 Members. |
| 20. DROP: | <u>Eligibility</u> — Age 55 (or age 58 for employees who become Members after September 30, 2010) with 10 or more years of Vesting Service for Divisions 1, 2 and 3, and age 50 (or age 53 for employees who become Members after September 30, 2010) with 10 or more years of Vesting Service for Division 4 Members.<br><br><u>Benefit</u> — Members may elect to retire from the Plan while still employed and accumulate monthly retirement payments in a separate account within the Plan for a period not to exceed 60 months. Separation from employment must occur within a 36-month period. DROP account is credited with fund earnings as elected by the Member. |

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

## ACTUARIAL ASSUMPTIONS AND ACTUARIAL COST METHOD SUMMARY

### Actuarial Assumptions

1. Investment Return: 7.25% per annum, compounded annually*; net of investment expense.

2. Salary Increase Rate:

| Years of Service | Rate* |
|---|---|
| 2 and Under | 6.0% |
| 3 - 4 | 5.0 |
| 5 - 6 | 4.0 |
| 7 and Over | 3.25 |

3. Healthy Mortality Rates: (pre-retirement and post-retirement)

   Female Non-Disabled – RP2000 Generational, 100% Annuitant White Collar, Scale BB

   Male Non-Disabled – RP2000 Generational, 50% Annuitant White Collar/50% Annuitant Blue Collar, Scale BB

4. Disabled Mortality Rates:

   Female Disabled – RP2000, 100% Disabled Female set forward 2 years, no projection scale

   Male Disabled – RP2000, 100% Disabled Male setback 4 years, no projection scale

5. Termination Rates:

Probability of Terminating Service (for reasons other than death, disability or retirement) Within One Year After Attaining Age and Service Shown

Males & Females

| | Years of Service | | | | |
|---|---|---|---|---|---|
| Age | 0 - 1 | 2 | 3 | 4 | 5+ |
| Under 25 | 15.0% | 10.0% | 8.0% | 7.0% | 7.0% |
| 30 | 15.0 | 10.0 | 8.0 | 7.0 | 5.5 |
| 35 | 15.0 | 10.0 | 8.0 | 7.0 | 4.3 |
| 40 | 15.0 | 10.0 | 8.0 | 7.0 | 3.0 |
| 45 | 15.0 | 10.0 | 8.0 | 7.0 | 2.3 |
| 50 and Over | 15.0 | 10.0 | 8.0 | 7.0 | 1.5 |

*Includes underlying long-term rate of inflation of 3% per annum.

6. Retirement Rates:

Probability of Retiring
Within One Year
After Attaining Age and Vesting Service Shown

| Age | Years of Service 0 - 9 | 10 - 19 | 20 |
|---|---|---|---|
| 50 - 54 | 0.0% | 2.5% | 10.0% |
| 55 - 61 | 0.0 | 10.0 | 25.0 |
| 62 - 64 | 0.0 | 25.0 | 50.0 |
| 65 - 69 | 0.0 | 50.0 | 50.0 |
| 70 & Over | 100.0 | 100.0 | 100.0 |

7. Disability Rates:

| Age | Probability of Disability Within One Year After Attaining Age Shown |
|---|---|
| 25 | 0.06% |
| 35 | 0.06 |
| 45 | 0.16 |
| 55 | 0.60 |
| 65 | 1.00 |

8. Marital Status and Spouse's Age: 85% of members assumed to be married; male spouses assumed three years older than female members, and female spouses assumed three years younger than male members.

9. Growth Rate of Future Membership Payroll: 3.5% per year.

10. Underlying Long-term Inflation Rate: 2.75% per year.

**Actuarial Value of Assets**

Determined by adjusting the expected value of assets as of any valuation date by a portion of the cumulative differences of the market value of assets and the expected actuarial value of assets starting prospectively from October 1, 2003. (As of October 1, 2003, expected value was set equal to market value.) Each difference is fully recognized over a period not to exceed five years. The expected actuarial value of assets as of any valuation date is determined by applying actual Plan contributions and disbursements and the assumed investment yield to the previous year's expected actuarial value of assets adjusted for any fully recognized cumulative differences. The adjustment is further modified, if necessary, by an amount sufficient to ensure that the actuarial value of assets is not less than 80% nor more than 120% of market value.

## Long-Term Expected Rate of Return

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimates of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These estimates are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation are summarized in the following table:

Development of Long Term Discount Rate

| | Inflation | Real Risk Free Return | Risk Premium | Total Expected Return | Policy Allocation | Policy Return |
|---|---|---|---|---|---|---|
| Domestic Equity | 2.75% | 2% | 4.5% | 9.3% | 60.0% | 5.55% |
| Foreign Equity | 2.75% | 2% | 5.5% | 10.3% | 10.0% | 1.03% |
| Domestic Bonds | 2.75% | 2% | 0.5% | 5.3% | 15.0% | 0.79% |
| Intnl Bonds | 2.75% | 2% | 1.5% | 6.3% | 15.0% | 0.94% |
| Treasuries | 2.75% | 2% | 0.0% | 4.8% | 0.0% | 0.00% |
| Real Estate | 2.75% | 2% | 2.5% | 7.3% | 0.0% | 0.00% |
| Cash | 2.75% | 0% | 0.0% | 2.8% | 0.0% | 0.00% |
| Total | | | | | 100.00% | 8.30% |

## Actuarial Cost Method

To determine the Plan's contribution requirements, the Individual Entry Age Actuarial Cost Method was used. Under this method, the cost of each member's projected retirement benefit is funded through a series of annual payments, determined as a level percentage of each year's earnings from age at hire to assumed exit age. This level percentage, known as normal cost, is thus computed as though the Plan had always been in effect. A yearly normal cost for each member is individually determined by multiplying each member's level percentage by the applicable yearly earnings, then adding together to obtain the normal cost amount for the Plan for that year. The accrued value of normal cost payments due prior to the valuation date is termed the actuarial accrued liability (AAL). This amount minus the actuarial value of assets is known as the unfunded actuarial accrued liability (UAAL). The annual cost of a plan has two components: normal cost and an amortization payment, which may vary between prescribed limits, toward the UAAL.

It is intended that the UAAL bases established due to increases or decreases in liabilities attributable to changes in plan provisions and/or actuarial assumptions be amortized over 30 years from inception through monthly contributions expressed as a level percentage of each month's payroll, incorporating an assumption that future payroll will grow at the rate of 3.5% per year. Increases or decreases in liabilities due to experience gains will be amortized over 15 years from inception.

The cost method uses the effective date of the Plan as the entry age for all members who joined as of the effective date. To the extent that past service is purchased, the increase in actuarial present values (APVs) is allocated entirely to the AAL and the entry age projected is unchanged. Future employee entry age will also be set at the date of Plan entry and will not change if past service is purchased. Members who transfer as active members from the general employees' plan will inherit the entry age associated with asset liability transfers to this Plan, if any.

## Miscellaneous Valuation Procedures

1. Projected retirement benefits were limited to IRC Section 415 benefit limits applicable to the current plan year (for 2017, $215,000), payable as a life annuity, beginning at or after age 62, reduced as applicable for earlier benefit commencement with assumed increases equal to the assumed long-term rate of inflation.

2. Projected earnings were limited to IRC Section 401(a)(17) compensation limits applicable to the current plan year (for 2017, $270,000) with assumed increases equal to the assumed long-term rate of inflation.

3. Annual covered payroll is the amount of total pensionable earnings paid during the prior fiscal year for employees who are currently active members in the Plan. Valuation payroll is payroll expected to be paid during the current fiscal year, determined using prior-year covered payroll and the salary increase assumption by individual member.

4. Member information is current as of October 1, 2017.

5. No liability was recognized in the valuation for nonvested employees who have terminated, whether or not a break in service has occurred as of the valuation date, since any potential liability for this group is not significant. Note that upon rehire, any applicable prior employment service credits will be fully recognized in the valuation.

6. The effect of member contributions on the funding of normal cost requirements has been recognized through subtracting the member contribution rate from the total Plan normal cost rate to determine the net City portion.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

**TRUST FUND BALANCE AS OF 10/1/17**

| | Market Value |
|---|---|
| Cash and Equivalents | $ 334,806 |
| Diversified Small Cap Portfolio | 5,482,445 |
| Diversified Value Portfolio | 3,850,267 |
| International Blend Portfolio | 4,394,326 |
| Broad Market High Quality Bond Portfolio | 4,645,430 |
| Core Plus Fixed Income | 7,240,176 |
| High Quality Growth Portfolio | 4,101,371 |
| Russell 1000 Index Portfolio | 11,801,905 |
| Reserve - DROP | (2,120,524) |
| Prepaid City Contribution | - |
| Receivable from General Plan | 20,000 |
| Total* | $ 39,750,202 |

Asset Percentage Weightings

| | |
|---|---|
| Cash | 0.80% |
| Equity | 70.80% |
| Bond | 28.40% |
| Real Estate | 0.00% |
| Alternative Investments | 0.00% |
| Total | 100.00% |

* Excludes DROP account balances.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

## ANALYSIS OF CHANGES IN MARKET VALUE OF ASSETS

| | | |
|---|---|---|
| Market Value of Assets as of 10/1/16 | | $ 34,115,484 |
| Add: | | |
| | City Contributions | 1,525,219 |
| | Member Contributions | 639,876 |
| | Rollover Contributions | 322,406 |
| | Prior Year Reserve - DROP | 1,745,783 |
| | Realized Gains\(Losses)* | - |
| | Unrealized Gains\(Losses)* | - |
| | Investment Earnings | 5,467,191 |
| | Net Appreciation (Depreciation) | 0 |
| | Total Additions | $ 9,700,475 |
| Deduct: | | |
| | Benefit Payments | 1,436,880 |
| | DROP Payments | 343,055 |
| | Refund of Contributions | 90,242 |
| | Reserve - DROP | 2,120,524 |
| | Administrative Expenses | 31,744 |
| | Investment Expenses | 43,312 |
| | Total Deductions | $ 4,065,757 |
| Market Value of Assets as of 10/1/17** | | 39,750,202 |

(includes $6,541,525 in accumulated member contributions)

* The FMTPF Fund is a Pooled Trust and the ability to distinguish this is not available.

** Excludes DROP account balances.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

## ANALYSIS OF CHANGES IN ACTUARIAL VALUE OF ASSETS

| | |
|---|---|
| Actuarial Value of Assets as of 10/1/16 | $ 34,971,141 |
| Add: | |
| City Contributions | 1,525,219 |
| Member Contributions | 639,876 |
| Rollover Contributions | 322,406 |
| Prior Year Reserve - DROP | 1,745,783 |
| Realized Gains\(Losses)* | - |
| Unrealized Gains\(Losses)* | - |
| Investment Earnings | 5,467,191 |
| Net Appreciation (Depreciation) | (2,374,116) |
| Total Additions | $ 7,326,359 |
| Deduct: | |
| Benefit Payments | 1,436,880 |
| DROP Payments | 343,055 |
| Refund of Contributions | 90,242 |
| Reserve - DROP | 2,120,524 |
| Administrative Expenses | 31,744 |
| Investment Expenses | 43,312 |
| Total Deductions | $ 4,065,757 |
| Actuarial Value of Assets as of 10/1/17** | 38,231,743 |

(includes $6,541,525 in accumulated member contributions)

* The FMTPF Fund is a Pooled Trust and the ability to distinguish this is not available.

** Excludes DROP account balances.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

**DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS AS OF 10/01/17**

| | | |
|---|---|---|
| 1. | Market Value of Assets as of 10/1/17* | $ 39,750,202 |
| 2. | Expected Value of Assets as of 10/1/17 | 37,500,310 |
| 3. | Current Year's Difference | 2,886,129 |
| 4. | 20% of Current Difference [(3)x0.2] | 577,226 |
| 5. | Previous Year's Cumulative Adjustments* | 154,207 |
| 6. | Preliminary Actuarial Value of Assets [(2)+(4)+(5)] | 38,231,743 |
| 7. | 80% of Market Value [(1)x0.8] | 31,800,162 |
| 8. | 120% of Market Value [(1)x1.2] | 47,700,242 |
| 9. | Actuarial Value of Assets within 20% of Market Value Corridor at 10/1/17 | 38,231,743 |

*Excludes DROP account balances.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

**DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS AS OF 10/01/17**

| **Expected Value** | 2017 |
|---|---|
| Previous Year's: | |
| 1. Expected Value | $ 31,565,847 |
| 2. Previous Years' Fully Recognized Difference | 3,142,865 |
| 3. Interest on (1) and (2) | 2,516,382 |
| 4. Contributions with Interest | 2,632,963 |
| 5. Benefit Payments with Interest | 2,324,872 |
| 6. Administrative Expenses with Interest | 32,875 |
| Current Year's: | |
| 7. Expected Value [(1)+(2)+(3)+(4)-(5)-(6)] | $ 37,500,310 |

**Cumulative Differences**

| | |
|---|---|
| 1. Market Value (MV) | 39,750,202 |
| 2. Expected Value (EV) | 37,500,310 |
| 3. Cumulative Difference [(1)-(2)] | $ 2,249,892 |
| 4. Original Differences by Year | |

| | Year | Initial Amount | Interest-Adjusted Amount |
|---|---|---|---|
| (a) | 2010 | 205,944 | |
| (b) | 2011 | -1,344,021 | |
| (c) | 2012 | 2,342,471 | |
| (d) | 2013 | 1,215,648 | $ 1,623,451 |
| (e) | 2014 | -84,708 | (104,988) |
| (f) | 2015 | -2,269,739 | (2,616,867) |
| (g) | 2016 | 430,924 | 462,167 |
| (h) | 2017 | 2,886,129 | 2,886,129 |

**Actuarial Value**

| | |
|---|---|
| 1. MV at 10/17 | 39,750,202 |
| 2. EV at 10/17 | 37,500,310 |
| 3. Current Year's Difference | 2,886,129 |
| 4. 20% of Current Difference [(3)x0.2] | 577,226 |
| 5. Previous Years' Cumulative Adjustments | 154,207 * |
| 6. Preliminary AV [(2)+(4)+(5)] | 38,231,743 |
| 7. 80% of MV [(1)x0.8] | 31,800,162 |
| 8. 120% of MV [(1)x1.2] | 47,700,242 |
| 9. AV within 20% MV Corridor at 10/17 | 38,231,743 |

* From "Cumulative Differences" [(0.4 x (4g)) + (0.6 x (4f)) + (0.8 x (4e)) + (1.0 x (4d))]

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

**RECONCILIATION OF PLAN MEMBERS 10/01/16 - 10/01/17**

| | Actives | Retirees, Beneficiaries | DROP Retirees | Disabled Retirees | Vested Terminateds | Pending Refunds |
|---|---|---|---|---|---|---|
| 10/01/16 Members | 49 | 21 | 6 | - | 9 | 2 |
| Increase (Decrease) Due to: | | | | | | |
| Retirements | (1) | 2 | (1) | - | - | - |
| DROP Retirement | (2) | - | 2 | - | - | - |
| Nonvested Terminations | (2) | - | - | - | - | 2 |
| Vested Terminations | (1) | - | - | - | 1 | - |
| New Entrants | 4 | - | - | - | - | - |
| Deaths | (1) | - | - | - | - | 1 |
| Rehires | - | - | - | - | - | - |
| Disableds | - | - | - | - | - | - |
| From Gen Plan | 2 | - | - | - | - | - |
| Lump-Sum Payment | - | - | - | - | - | (2) |
| Transfers | - | - | - | - | - | - |
| 10/01/17 Members | 48 | 23 | 7 | - | 10 | 3 |

| **ACTIVE MEMBERS 10/01/17** | Number |
|---|---|
| Vested Active | 30 |
| Non-Vested Active | 18 |
| Total | 48 |

**INACTIVE MEMBERS 10/01/17**

| | Number | Annual Benefit Amount |
|---|---|---|
| Retirees and Beneficiaries Currently Receiving Payments | 23 | $ 1,536,821 |
| DROP Retirees | 7 | 797,466 |
| Disableds Receiving Payments | - | - |
| Vested Terminated Members Entitled to Future Benefits | 10 | 366,214 |
| Pending Refunds | 3 | * |
| Total | 43 | $ 2,700,501 |

* Reserve equals $59956.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

**RECONCILIATION OF DROP ACCOUNT**

| | |
|---|---|
| Value as of 9/30/16 | $ 1,745,782.57 |
| Payments Credited to Account | 555,539.39 |
| Investment Earnings Credited* | 162,257.17 |
| Withdrawals | (343,054.90) |
| Value as of 9/30/17 | $ 2,120,524.23 |

*Includes interest adjustments.

CITY OF BOCA RATON
EXECUTIVE EMPLOYEES' RETIREMENT PLAN

**DISTRIBUTION OF ACTIVE PARTICIPANTS UNDER NORMAL RETIREMENT AGE BY ATTAINED AGE AND COMPLETED YEARS OF SERVICE AS OF 10/01/17**

| | Completed Years of Service | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Under 1 | | 1 to 4 | | 5 to 9 | | 10 to 14 | | 15 to 19 | | 20 to 24 | | 25 to 29 | | 30 to 34 | | Total | |
| Attained Age | # | Avg Comp | # | Avg Comp | # | Avg Comp | # | Avg Comp | # | Avg Comp | # | Avg Comp | # | Avg Comp | # | Avg Comp | # | Avg Comp |
| Under 25 | - | $ - | - | $ - | - | $ - | - | $ - | - | $ - | - | $ - | - | $ - | - | $ - | - | $ - |
| 25 to 29 | - | - | 1 | 78,326 | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 78,326 |
| 30 to 34 | 2 | 99,657 | 1 | 2,827 | 1 | 92,087 | - | - | - | - | - | - | - | - | - | - | 4 | 73,557 |
| 35 to 39 | - | - | - | - | 2 | 91,981 | 1 | 87,545 | - | - | - | - | - | - | - | - | 3 | 90,502 |
| 40 to 44 | - | - | 1 | 108,917 | 1 | 114,394 | - | - | 1 | 33,636 | - | - | - | - | - | - | 3 | 85,649 |
| 45 to 49 | 2 | 77,636 | 1 | 97,452 | 2 | 133,623 | - | - | - | - | 1 | 101,981 | 1 | 98,708 | - | - | 7 | 102,951 |
| 50 to 54 | - | - | 1 | 91,422 | 2 | 126,491 | 6 | 124,308 | 3 | 159,669 | 1 | 121,490 | 1 | 113,351 | - | - | 14 | 128,864 |
| 55 to 59 | - | - | 4 | 109,111 | 1 | 106,618 | 1 | 125,679 | 3 | 130,324 | 1 | 127,285 | 2 | 95,187 | - | - | 12 | 114,781 |
| 60 to 64 | - | - | - | - | - | - | 1 | 169,612 | - | - | - | - | - | - | - | - | 1 | 169,612 |
| 65 to 69 | - | - | - | - | - | - | 1 | 93,316 | 1 | 185,102 | 1 | 110,172 | - | - | - | - | 3 | 129,530 |
| 70 & up | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 4 | 88,646 | 9 | 90,599 | 9 | 113,032 | 10 | 122,200 | 8 | 136,090 | 4 | 115,232 | 4 | 100,608 | - | - | 48 | 111,695 |