BOARD OF PENSION TRUSTEES
FOR THE
CITY OF JACKSONVILLE RETIREMENT SYSTEM
Thursday, April 23, 2020 at 2 PM
Virtual Meeting Access Information Below
AGENDA

1. **CALL TO ORDER**

2. **PUBLIC COMMENT**

3. **MINUTES**

   a. Copy of February 27, 2020 Board of Trustees Minutes; RECOMMENDED ACTION: APPROVAL

4. **NEW BUSINESS**

   a. Copy of Consent Agenda for Recommended Benefits for General Employees dated February 29, 2020 and March 31, 2020 AND Corrections dated January 31, 2020 and February 29, 2020; RECOMMENDED ACTION: APPROVAL
   b. Disability Applications
      - M. Hil: RECOMMENDED ACTION: APPROVAL
      - B. Bai: RECOMMENDED ACTION: APPROVAL
   c. October 1, 2019 Actuarial Valuation Reports
      - General Employees
      - Corrections Officers

5. **INVESTMENT AND FINANCIAL MATTERS**

   a. Staff Update: Private Credit Consultant Search Update, Private Equity Update, Eagle LCV Review, Investment Due Diligence Activity
   b. February 2020/March 2020 Investment Performance Update
   c. COVID-19 and Economic Implications
   d. Real Estate Review

6. **OLD BUSINESS**

7. **ADMINISTRATIVE**

   a. Pension Office Activity
   b. Notarized Forms: Board approval requested to eliminate need for notarized forms

8. **INFORMATION**

   a. Next regular BOT meeting scheduled for Thursday, May 28, 2020, at 2 PM

9. **PRIVILEGE OF THE FLOOR**

BOARD OF PENSION TRUSTEES
FOR THE
CITY OF JACKSONVILLE RETIREMENT SYSTEM
Thursday, April 23, 2020 at 2 PM
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AGENDA

10. ADJOURNMENT

Join Zoom Meeting
https://zoom.us/j/93091705568?pwd=bDhFKzhwT0YvZkZhRXNpZW1SQkRlUT09

Meeting ID: 930 9170 5568
Password: 223387

One tap mobile
+13126266799,,93091705568#,,#,223387# US (Chicago)
+16465588656,,93091705568#,,#,223387# US (New York)

Dial by your location
+1 312 626 6799 US (Chicago)
+1 646 558 8656 US (New York)
+1 253 215 8782 US
+1 301 715 8592 US
+1 346 248 7799 US (Houston)
+1 669 900 9128 US (San Jose)
Meeting ID: 930 9170 5568
Password: 223387
Find your local number: https://zoom.us/u/aczh2XCyBp

BOARD OF PENSION TRUSTEES
FOR THE
CITY OF JACKSONVILLE RETIREMENT SYSTEM
February 27, 2020

MINUTES

City Hall - St. James Building, Conference Room 3C: 2:00 P.M.

Members Present
Jeffrey Bernardo, Chair
Julie Bessent
Ann Brackin
Joey Greive, Vice-Chair
Brian Hughes
David Kilcrease, Secretary
Diane Moser
Terry Wood

Members Not Present
Patrick Johnson

Staff Present
Randall Barnes, Treasurer
Brennan Merrell, Manager Debt and Investments
John Sawyer, OGC
Tom Stadelmaier, Pension Administrator
Jessi Xia, Treasury Intern

Others Present
Jordan Cipriani, RVK
Kevin Schmidt, RVK
Jeff Williams, Segal

1. CALL TO ORDER

Chair Bernardo called the meeting to order at about 2:03 PM

2. PUBLIC COMMENT

Chair Bernardo recognized Terry Wood for his service to the City and the Board. This will be Mr. Wood's last meeting before joining the PFPF Board.

3. MINUTES

Mr. Greive made a motion to approve the minutes. Ms. Moser seconded the motion. The Chair asked for any discussion and there was none. The Chair took a vote and the minutes passed unanimously.

4. NEW BUSINESS

Consent agendas

Mr. Greive moved to approve the consent agenda. Ms. Moser seconded the motion. The Chair asked for any discussion and there was a brief discussion about a large DB to DC transfer. The Chair took a vote and the consent agenda passed unanimously.

Preliminary 10/1/2019 Valuation Results

Mr. Williams from Segal covered the memo provided to the Board. He discussed the updated FRS mortality rates which the Board must adopt by 2021. The rates include an adjustment for the COJ retirement plan experience, which has a higher mortality rate than state public plans. The new mortality rate reduces plan liabilities compared to the current mortality table in place for 2018. Mr. Williams further discussed the updates to Plan assets, liabilities and the required contribution which was shown at different assumed rates-of-return. He mentioned public plans average assumed rate of return is 7.25%, so our plan is below our peers. He added that closed plans like the COJ will want to reduce their rate over time as the population matures. We are in the early stage after the plan closed with a significant number of active employees remaining. Mr. Williams discussed other liability changes were driven by salary increases.

Mr. Greive made a motion to adopt the new mortality rate. Mr. Kilcrease seconded the motion. The Chair asked for any discussion. Ms. Bessent clarified with Mr. Williams that the adopted changes would reflect the Jacksonville experience and he confirmed. The Chair took a vote and the motion passed unanimously.

Discussion turned to the assumed rate of return. Mr. Greive provided a historical perspective including how in recent years the Board has lowered the assumed rate from 8.4% down to 7% in gradual increments. He stated he supports the downward trend and he would be good with 6.9% or staying at 7%, recognizing the need to lower the rate over time. He stated there is an appeal to being below 7% as it puts us at the leading edge for public plans but that there is some risk associated with that change. Mr. Barnes added that the PFPF decided to stay at 7% and they are forming a committee to have a more defined strategy around making future changes to the rate based on certain factors.

Mr. Kilcrease asked how the rate affects the City Budget. Mr. Greive responded that lowering the rate and meeting the pension plan obligations is an important responsibility. He also added that the growth in Jacksonville will be positive for budget, however with that also comes an array of other important needs to the City and the policy makers. He was reluctant to have the additional needs taken up by a reduction in the assumed rate

that was too aggressive.

Chair Bernardo said moving downward is preferred and moving down more makes meeting the assumed returns closer to highly probable as opposed to just possible at the current level. He pointed to the long-bond rate being in the high 2's or around 3%. Chair Bernardo recommends the Board consider 6.5% or even lower since Board members have a fiduciary role to focus on the financial health of the Plan. Mr. Wood acknowledge that he feels a need to correctly balance the interests involved over time.

Mr. Greive made a motion to adopt 6.9% as the Plan's assumed rate of return for the 10/1/2019 valuation. Mr. Hughes seconded the motion. Ms. Bessent questioned why not 6.75% and made a motion to amend the motion. Chair Bernardo seconded the amendment and opened discussion. Mr. Greive stated he preferred larger changes when the rate was higher than average, but he favored more gradual changes considering our current rate is below the average public plan rate. Chair Bernardo made the case that the move to 6.75% with the change in mortality assumptions is both palatable and in the best interests of the Plan. He noted the contribution was not significantly higher than using the 2018 assumptions as a baseline and substantially lower than the contributions prior to pension reform. Mr. Greive noted that from a budget perspective, the real baseline is last year's number of about $71M. Mr. Greive expanded by staying at 7% or lowing to 6.9% represents a significant uptick in the contributions going to the Plan. He also noted that the policy makers have strongly supported the Plan's financial future through the monumental effort that was required to enact pension reform in order to secure the financial health of the Plan. The Chair took a vote on the amendment to use 6.75% and it failed 6-2 (dissent from Chair Bernardo and Ms. Bessent). He then took a vote on the original motion and it passed 7-1 (dissent from the Chair).

Mr. Williams said he is moving forward with the final valuation reports using the new mortality assumptions and the assumed rate of return at 6.9% with delivery planned for the March meeting.

5. INVESTMENT AND FINANCIAL MATTERS

Mr. Schmidt from RVK led a discussion of the 4Q 2019 results which were very strong in conjunction with the phase one China trade deal and a fed funds rate cut. He mentioned the volatile and downward 1Q in progress but noted the labor markets remain extremely strong. Highlights from 4Q include the ongoing need to build out diversifying assets, strong US and EM equity growth, and huge results from Pinnacle (although they are taking a hard hit in 1Q). This is all a reminder to stay focused on long-term performance and not read into short term performance.

Mr. Greive asked about William Blair and Mr. Schmidt noted value has significantly under-performed growth and William Blair has made some poor investment selection.

He said RVK was still a strong believer in William Blair and that they were playing their role of diversification of the Fund.

Chair Bernardo questioned Eagle as having too much growth for a value fund. RVK and Mr. Greive agreed. Mr. Hughes thanked the Chair for raising this point and supports a review to make sure our funds are true to their desired and stated approach. A recommendation was made to have staff examine the growth tilt and see if there is an opportunity for the Fund to move to a true value fund as growth tends to move in cycles and we don't want to be short on value.

Mr. Merrell covered the January flash which showed the Fund down just over 1% and noted February is very rough with news of the spread of the corona virus being a major factor. Mr. Schmidt added the performance is likely to get worse before it gets better and to expect lower earnings during the next two quarters. Ms. Cipriani agreed but also pointed out that China exposure to the US is not as heavy as often portrayed and that there is historical evidence that a rebound from this week's losses are likely.

Ms. Cipriani then reviewed the two pricing options for Adams Street (AS) Fund of One options. RVK and AS approve of both pricing options. RVK does recommend option one as it is slightly lower in fees. Mr. Barnes added that staff recommends option one for the lower fees, more diversification, easier option for extending services and faster deploy of capital. Mr. Kilcrease made a motion to go with option one. Mr. Greive seconded the motion. The Chair opened discussion. Mr. Greive asked about legal and other work with the two approaches. Mr. Merrell replied that after consultation with AS, staff concluded work effort was essentially the same either way. The Chair took a vote and the motion passed unanimously.

Mr. Merrell gave an update on the private credit consultant search. Staff has identified six providers to conduct second round phone interviews during March 9-11. Mr. Merrell asked the Board if staff can bring 2-4 finalists to bring to a special Board meeting on April 9th from 1-5. The Board agreed to the proposal.

6. OLD BUSINESS

None

7. ADMINISTRATIVE

Mr. Stadelmaier discussed the pension office review of outside death audit services. This has been an outstanding audit item and the pension office would like to move forward with this service. A firm (PBI) uses multiple sources (SSA, states, obituaries and private sources) and does a complete vetting of the data has been identified. The pension office is working with Treasury to ensure we follow the necessary procurement process before we finalize an agreement. The pension office recommends moving forward with an outside death service as an enhancement. It may allow us to change some of the existing verification processes in the future, making the death identification process more efficient

overall. Using a three-year agreement, the cost of the additional service is approximately $10,000/year. Mr. Greive made a motion to move forward with finalizing the service as discussed. Ms. Moser seconded the motion. The Chair took a vote and the motion passed unanimously.

8. INFORMATION

The next regular BOT meeting is scheduled for Thursday, March 26, 2020, at 2 PM.

9. PRIVILEGE OF THE FLOOR

Mr. Barnes introduced Jessi Xia as a Treasury intern from UNF and noted her excellent work with the team on investment matters. Mr. Hughes recognized Ms. Moser for expanding the intern program with UNF and they both expect more on that front across the City.

10. ADJOURNMENT

Chair Bernardo adjourned the meeting at about 3:42 PM.

GENERAL EMPLOYEES PENSION ADVISORY COMMITTEE
FOR THE
BOARD OF PENSION TRUSTEES

February 29, 2020

CONSENT AGENDA FOR RECOMMENDED BENEFITS

ALL CALCULATIONS AND DOLLAR AMOUNTS HAVE BEEN AUDITED IN ACCORDANCE WITH ACCEPTED PROCEDURES.

1. TIME SERVICE RETIREMENTS

Ronald Bayles, (JSO), effective February 1, 2020 in the amount of $2,939.18 at the rate of 71.67% (28 years, 8 months)

Brenda Charles, (P&D), effective January 11, 2020 in the amount of $3,021.48 at the rate of 75% (30 years), BACKDROP $182,566.77 (56 months)

Essie Cox, (P&R), effective February 1, 2020 in the amount of $566.44 at the rate of 25% (10 years), 15% PLOP $11,752.30

Michael Devaughn, (JEA), effective February 1, 2020 in the amount of $3,984.07 at the rate of 80% (32 years), BACKDROP 5 years $258,927.70

Margaret Flowe, (R&E), effective January 25, 2020 in the amount of $2,229.66 at the rate of 50% (20 years)

Carol Gardy, (Finance), effective February 1, 2020 in the amount of $448.40 at the rate of 12.5% (5 years) 15% PLOP $12,219.81

Suzanne Goss, (JEA), effective February 1, 2020 in the amount of $6,337.33 at the rate of 73.33% (29 years, 4 months)

Ralph Henderson, (Library), effective February 1, 2020 in the amount of $842.68 at the rate of 30% (12 years)

Patrick Leddy, (JEA), effective January 27, 2020 in the amount of $5,628.79 at the rate of 72.29% (28 years, 11 months), 10% PLOP $125,303.12

William Lentz, (JSO), effective January 18, 2020 in the amount of $1,327.92 at the rate of 50.63% (20 years, 3 months), 15% PLOP $43,778.84

Raynald Lunn, (R&E), effective January 10, 2020 in the amount of $2,369.13 at the rate of 65.21% (26 years, 1 month)

Janice Lyons (Medical Examiner), effective January 18, 2020 in the amount of $928.52 at the rate of 25% (10 years)

Cynthia Miller, (Procurement), effective February 1, 2020 in the amount of $3,407.38 at the rate of 80%, BACKDROP 9 months $31,181.58

Margaret Morford, (Library), effective February 1, 2020 in the amount of $1,813.02 at the rate of 38.13% (15 years, 3 months) 5% PLOP $13,399.42

Denise Thomas, (Library), effective February 1, 2020 in the amount of $686.60 at the rate of 25% (10 years), 15% PLOP $17,289.72

Daniel Turner, (Fleet), effective February 1, 2020 in the amount of $1,332.80 at the rate of 50.42% (20 years, 2 months)

Israel Vargas, (Fleet), effective January 18, 2020 in the amount of $1,665.29 at the rate of 53.54% (21 years, 5 months), 10% PLOP $29,862.83

2. VESTED RETIREMENTS

New Commencements

Valerie Baggett, effective January 12, 2020 in the amount of $573.88 plus $35 supplement monthly

David A Ross, effective February 2, 2020 in the amount of $2494.27 plus $105 supplement monthly

New Deferrals

Deirdre Hall, (JEA), effective September 13, 2044 in the amount of $2,539.94 at the rate of 42.92% (17 years, 2 months)

Fletcher Leonard, (R&E), effective February 7, 2028 in the amount of $847.89 at the rate of 30.63% (12 years, 3 months)

Franklin Seely, (JEA), effective May 26, 2048 in the amount of $1,460.96 at the rate of 21.88% (8 years, 9 months)

Alexander Stettner, (JSO), effective May 16, 2052 in the amount of $423.45 at the rate of 15% (6 years)

Aaron Wilkins, (Finance), effective April 16, 2046 in the amount of $783.35 at the rate of 20% (8 Years)

3. SURVIVOR BENEFITS

Diane Aimone (John Aimone), effective December 14, 2019 in the amount of $2,783.41

Karen Albury (William Albury), effective January 11, 2020 in the amount of $2,675.44

Hazel Barnes, (Donald Barnes), effective January 1, 2020 in the amount of $1,853.91

Dana Farris (Timothy Farris), effective January 11, 2020 in the amount of $1,813.05

Juanita Harris(Johnnie Harris), effective February 5, 2020 in the amount of $2,279.47

Carolyn Hightower, (Alfred Hightower), effective November 30, 2019 in the amount of $481.58

Laura Miller, (Richard Miller), effective January 21, 2020 in the base amount of $2,208.48

Simon Weaver, (Elizabeth Weaver), effective January 14, 2020 in the base amount of $4,621.80

George Woods (Carolyn Woods), effective August 10, 2019 in the amount of $887.98

4. RESTORATION OF SURVIVOR BENEFITS

None

5. CHILDREN/ORPHAN/GUARDIANSHIP BENEFITS

None

6. TIME SERVICE CONNECTIONS COMPLETED

Kirk Flemming, (PW), 19.86 months in the amount of $4,973.96

Margaret Flowe, (R&E), 120 months + 3.6 months FMLA in the amount of $60,383.70

Dewey Hoge, (JEA), 1.47 months in the amount of $912.29

Rhonda Joslyn, (P&R), 28.77 months in the amount of $8,080.24

Timothy Myers, (R&E), 15.2 months in the amount of $4,461.60

Carolyn Costa Shultz, (JEA), 12 days approved Leave in the amount of $186.80

Gwen Smith, (Employee Services), 87.23 months in the amount of $18,820.10

7. TIME SERVICE CONNECTIONS COMPLETED PURSUANT TO ORDINANCE 2000- 624-E (Independent Agency)

None

8. TIME SERVICE CONNECTIONS COMPLETED PURSUANT TO ORDINANCE 2003-573-E (Military)

None

9. REFUNDS

Jeffrey Boster (Finance & Admin), contributions in the amount of the $16,475.95

Rebecca Eckstein (Collection Admin), contributions in the amount of the $20,716.33

Gerald Hardeman (PW), contributions in the amount of the $14,436.97

Jacob Payne (OGC), contributions in the amount of the $39,357.93

10. DB TO DC TRANSFER

Michael O'Connell (Special Events) $88,144.18 (7 years, 6 months)

Roberta Lee (Social Services) $99,166.58 (13 years, 1 months)

Edward Norton (PW) $17,988.21 (5 years, 9 months)

Julia Prickett (Tax Collector) $115,131.84 (10 years, 0 months)

Silas Williams (PW) $127,913.41 (14 years, 0 months)

11. OTHER PAYMENTS AND TIME CONNECTIONS

None

12. RE-RETIREE

None

13. DISIBILITY

None

PAC Secretary Approval _____ Date _____

BOT Secretary Approval _____ Date _____

Notes and Comments regarding Approval:

GENERAL EMPLOYEES PENSION ADVISORY COMMITTEE
FOR THE
BOARD OF PENSION TRUSTEES

March 2020

CONSENT AGENDA FOR RECOMMENDED BENEFITS

ALL CALCULATIONS AND DOLLAR AMOUNTS HAVE BEEN AUDITED IN ACCORDANCE WITH ACCEPTED PROCEDURES.

1. TIME SERVICE RETIREMENTS

James Boykin, (P&R), effective February 29, 2020 in the amount of $1,317.06 at the rate of 41.46% (16 years, 7 months), 15% PLOP $22,205.41

Cranston Burney, (Library), effective February 29, 2020 in the amount of $1,999.20 at the rate of 75% (30 years), BACKDROP $130,066.01 (60 months)

Jack Davis, (JEA), effective February 14, 2020 in the amount of $3,203.19 at the rate of 47.29% (18 years, 11 months)

Ellen Fales, (P&D), effective February 29, 2020 in the amount of $3,666.50 at the rate of 68.33% (27 years, 4 months)

Joy Gutos, (JEA), effective February 29, 2020 in the amount of $3,616.89 at the rate of 50% (20 years)

Eileen Hill, (JEA), effective February 29, 2020 in the amount of $4,584.49 at the rate of 80% (32 years), BACKDROP $70,628.09 (15 months)

Ted Hobson, (JEA), effective February 29, 2020 in the amount of $11,492.40 at the rate of 80% (41 years, 1 month), BACKDROP $747,684.42 (60 months)

Angela Johnson, (Employee Services), effective February 29, 2020 in the amount of $2,573.41 at the rate of 77.5% (31 years), 10% PLOP $51,566.94

Rickey Nicholson, (P&R), effective February 29, 2020 in the amount of $1,199.52 at the rate of 50.63% (20 years, 3 months), 10% PLOP $20,539.46

Jimmie Osborne, (JEA),effective February 15, 2020 in the amount of $3,353.95 at the rate of 51.88% (20 years, 9 months)

William Pound, (JEA), effective February 29, 2020 in the amount of $3,408.21 at the rate of 46.46% (18 years, 7 months)

Anthony Shack, (Fleet), effective February 29, 2020 in the amount of $2,675.71 at the rate of 75.63% (30 years, 3 months), BACKDROP $174,079.11 (60 months)

Aquilla Stewart. (Library), effective February 29, 2020 in the amount of $793.02 at the rate of 36.25% (14 years, 6 months), 15% PLOP $14,852.65

Vincent Williams, (PW), effective February 29, 2020 in the amount of $3,015.11 at the rate of 75% (30 years), BACKDROP $196,160.14 (60 months)

Dennis Young, (JEA), effective February 4, 2020 in the amount of $6,729.06 at the rate of 80%, (32 years), BACKDROP $197,789.89 (28 months)

2. VESTED RETIREMENTS

New Commencements
Philip Siddons, effective February 10, 2020 in the amount of $975.74

New Deferrals
Ryan Meaux, (PA), effective May 9, 2034 in the amount of $2,267.13 at the rate of 42.5% (17 years)

Angela Pitney, (JSO), effective August 7, 2036 in the amount of $1,091.10 at the rate of 38.33% (15 years, 4 months)

3. SURVIVOR BENEFITS
Edna Harris (Willard W Harris Jr), effective February 4, 2020 in the amount of $2,268.07

Mary J Glover (Robert L Glover), effective February 7, 2020 in the amount of $4,465.80

Beverly Rizk, (Larry Rizk), effective February 17, 2020 in the amount of $2,226.88

Maria A Vaught (Billy J. Vaught), effective February 19, 2020 in the amount of $4,475.88

Louvenia C Williams (Malcolm C Williams), effective February 9, 2020 in the amount of $1158.43

4. RESTORATION OF SURVIVOR BENEFITS
None

5. CHILDREN/ORPHAN/GUARDIANSHIP BENEFITS
None

6. TIME SERVICE CONNECTIONS COMPLETED
Daman Featheringill, (JEA), 9.13 months in the amount of $7,717.60

Marcia Jackson (JFRD), 47.23 months in the amount of $14,254.96

Daniel Williams, (PW), 18.37 months in the amount of $2,995.20

7. **TIME SERVICE CONNECTIONS COMPLETED PURSUANT TO ORDINANCE 2000- 624-E (Independent Agency)**
   None

8. **TIME SERVICE CONNECTIONS COMPLETED PURSUANT TO ORDINANCE 2003-573-E (Military)**
   None

9. **REFUNDS**
   Kimberly Barron (JSO), contributions in the amount of $11,692.53

   Tyler J Caufield,(JSO), contributions in the amount of $9,916.65

   Mathew R Mummaw (JEA), contributions in the amount of $49,391.83

   Torey Vogel (Public Relations), contributions in the amount of $34,735.40

   Colby T Smith (JSO), contributions in the amount of $10,363.40

   Ryan Spitzer (JEA), contributions in the amount of $8,404.05

   Donte Williams (SolidWaste), contributions in the amount of $6,958.27

10. **DB TO DC TRANSFER**
    Tremel Carmichael (JEA), $16,828.09 (4 years 4 months)

11. **OTHER PAYMENTS AND TIME CONNECTIONS**
    None

12. **RE-RETIREE**
    None

13. **DISIBILITY**
    None

PAC Secretary Approval _____ Date _____

BOT Secretary Approval _____ Date _____

Notes and Comments regarding Approval:

CORRECTIONAL OFFICERS PENSION ADVISORY COMMITTEE

January 31, 2020

CONSENT AGENDA FOR RECOMMENDED BENEFITS

ALL CALCULATIONS AND DOLLAR AMOUNTS HAVE BEEN AUDITED IN ACCORDANCE WITH ACCEPTED PROCEDURES.

1. **TIME SERVICE RETIREMENTS**
   Avery Adams, effective December 28, 2019 in the base amount of $2,581.48 at the rate of 60% (20 years)

   Kenneth Curn, effective December 28, 2019 in the amount of $2,581.48 (20 years), DROP $199,883.00

2. **TIME SERVICE CONNECTIONS COMPLETED**
   None

3. **REFUNDS**
   Dylan Page, contributions in the amount of $11,906.75

4. **SURVIVOR BENEFITS APPLICATION**
   None

5. **VESTED BENEFIT**
   None

6. **TIME SERVICE CONNECTIONS COMPLETED PURSUANT TO ORDINANCE 2003-573-E (Military)**
   None

7. **OFFICERS ENTERING DROP**
   None

8. **Phase II Biweekly Distribution DROP Program**
   Dennis Degele, 619 pay periods in the biweekly amount of $353.47 totaling $218,799.86

9. **DROP Payments**
   Edwin R. Hernandez, in the amount of $50,000.00

   Leroy Grant Jr., in the amount of $29,000.00

Cecil Matthews, in the amount of $206,398.90

Arturo Perez, in the amount of $27,500.00

Thomas Richardson, in the amount of $154,347.74

Gaston Carlton, in the amount of $30,000.00

Kenneth Curn, in the amount of $140,000.00

_____ _____

COPAC Secretary Approval Date

_____ _____

BOT Secretary Approval Date

Notes and Comments regarding Approval:

CORRECTIONAL OFFICERS PENSION ADVISORY COMMITTEE

February 2020

CONSENT AGENDA FOR RECOMMENDED BENEFITS

ALL CALCULATIONS AND DOLLAR AMOUNTS HAVE BEEN AUDITED IN ACCORDANCE WITH ACCEPTED PROCEDURES.

1. **TIME SERVICE RETIREMENTS**
   Hubert Hensley, effective January 25, 2020 in the amount of $1,296.34 at the rate of 60.00% (20 years)

2. **TIME SERVICE CONNECTIONS COMPLETED**
   Patricia Rodriquez, 172.73 months in the amount of $78,808.60

   Mamie Roundtree, 21 days actuarial from Florida Department of Corrections in the amount of $741.00

3. **REFUNDS**
   Valentino Anthony, contributions in the amount of $10,342.71

   Jamal Lee, contributions in the amount of $12,181.19

   Ian Safar, contributions in the amount of $8,885.43

4. **SURVIVOR BENEFITS APPLICATION**
   None

5. **VESTED BENEFIT**
   None

6. **TIME SERVICE CONNECTIONS COMPLETED PURSUANT TO ORDINANCE 2003-573-E (Military)**
   None

7. **OFFICERS ENTERING DROP January 24, 2020**
   Jonathan Baldassarre
   Lashanda Frazier
   Michele Williams

8. **Phase II Biweekly Distribution DROP Program**

Hubert Hensley, $1,175.53 bi-weekly ($89,340.06 over 76 payments)

David Curn, $767.73 bi-weekly ($59,883.00 over 78 payments)

Gaston Carlton, $750.03 bi-weekly ($149,355.54 over 199 payments)

9. **DROP Other Payments**
   None

_____ _____
COPAC Secretary Approval Date

_____ _____
BOT Secretary Approval Date

Notes and Comments regarding Approval:

City of Jacksonville General Employees Retirement Plan

Actuarial Valuation and Review

As of October 1, 2019

Segal

2727 Paces Ferry Road SE, Building One, Suite 1400
Atlanta, GA 30339-4053
segalco.com
T 678.306.3100

March 24, 2020

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

Dear Board Members:

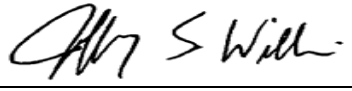
We are pleased to submit this Actuarial Valuation and Review as of October 1, 2019. The census information on which our calculations were based was prepared by the Plan and the financial information was provided by the The City's Finance Department. That assistance is gratefully acknowledged .

Statement by Enrolled Actuary: This actuarial valuation and/or cost determination was prepared and completed by me, or under my direct supervision, and I acknowledge responsibility for the results. To the best of my knowledge, the results are complete and accurate, and in my opinion, the techniques and assumptions used are reasonable and meet the requirements and intent of part VII, Chapter 112, Florida Statutes. There is no benefit or expense to be provided by the plan and/or paid from the plan's assets for which liabilities or current costs have not been established or otherwise taken into account in the valuation. All known events or trends which may require a material increase in plan costs or required contribution rates have been taken into account in the valuation.

The actuarial calculations were directed under the supervision of Jeffrey S. Williams. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in my opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.

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

Sincerely,
Segal



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

Table of Contents

Table of Contents

Actuarial Valuation Summary

Purpose and basis

This report was prepared by Segal to present a valuation of the Plan as of October 1, 2019. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to provide information for required disclosures under Governmental Accounting Standards Board (GASB) Statements No. 67 and 68. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of September 30, 2019, provided by the Retirement System Administrative Office;
- The assets of the Plan as of September 30, 2019, provided by the City's Finance Department;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. and
- The funding policy adopted by the Board, subject to the requirements of Part VII, Chapter 112, Florida Statutes.

Valuation highlights

1. Segal Consulting ("Segal") strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance.
2. The City's minimum required contribution calculated in the October 1, 2019 actuarial valuation is for the plan year beginning October 1, 2020.
3. Actual contributions made during the fiscal year ending September 30, 2019 were $70,338,000, 101.57% of the City's required minimum contribution for fiscal 2019.
4. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 61.11%, compared to the prior year funded ratio of 63.24%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio is 59.95%, compared to 65.23% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.
5. Actuarial Standard of Practice No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions, states that an actuary preparing calculations of actuarially determined contributions should assess the material implications of the funding policy. This report includes two distinct contribution amounts, each with different implications.
    a. The **Florida Chapter 112 Determined Employer Contribution** is an amount consistent with a funding policy which seeks to stabilize the unfunded actuarial accrued liability (UAAL) as a percentage of total General Employees Retirement Plan (GERP) payroll, including Defined Contribution participants, where UAAL is measured relative to assets currently available to make benefit payments. Under this policy, assuming that all assumptions are met in aggregate, the UAAL is expected to be reduced to zero over a period of 27 years after reflecting an amortization period reset as of October 1, 2016. Over the short term, this contribution policy would be expected to keep the UAAL roughly level over the next few years, primarily making payments on interest, and begin paying down the UAAL after that point.
    b. The **City's required minimum contribution**, which is the Chapter 112 contribution adjusted to comply with state law, reduced by amortization of discounted allocated surtax revenue, is an amount consistent with a funding policy which seeks to stabilize the contribution requirement as a percentage of total GERP payroll, including General Employee Defined Contribution Plan participants, relative to an anticipated increase in contribution income set to begin January 1, 2031. Under this policy, assuming that all assumptions are met in aggregate, the UAAL is expected to be reduced to zero by December 31, 2060, after all of the surtax revenue allocated to the plan is collected and contributed. Over the short term, this contribution policy is expected to lead to an increase in the UAAL, prior to the revenue stream commencing and paying it down.

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

6. The "City's minimum required contribution" refers to the cumulative minimum required contribution for all contributing employers.
7. The City's minimum required contribution (the amount which will be contributed) for fiscal 2021 is $76,832,977, an increase of $5,583,298 from the amount being contributed in fiscal 2020.
8. The unfunded actuarial accrued liability (UAAL) is $1,278,140,150, which is an increase of $103,004,940 since the prior valuation.
9. The actuarial gain from investment and other experience was $69,707,205, or 2.12% of actuarial accrued liability.
   - The actuarial loss from investment experience was $20,705,851, or 0.63% of actuarial accrued liability.
   - The net experience loss from sources other than investment experience was $49,001,354, or 1.49% of the actuarial accrued liability.
10. The rate of return on the market value of assets was 0.73% for the October 1, 2018 to September 30, 2019 plan year. The return on the actuarial value of assets was 5.94% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial loss when measured against the assumed rate of return of 7.00%.
11. The following changes in actuarial assumptions are first reflected with this valuation.
    - The discount rate was lowered from 7.00% to 6.90%.
    - The mortality assumptions were changed from being based on the FRS mortality tables used in the July 1, 2018 FRS actuarial valuation for the non-special risk personnel to the FRS mortality tables used in the July 1, 2019 FRS actuarial valuation for personnel other than special risk and K-12 instructional personnel. The set forward used to adjust for the plan's experience was changed for healthy pre- and post-retirement lives from 2.5 years to 2.0 years with the adoption of the new base table. The mortality improvement scale was changed from scale BB to scale MP2018 in conjunction with this change.

    As a result of these assumption changes, the total normal cost increased by $678,371 and the actuarial accrued liability increased by $4,913,569. The present value of surtax revenue allocated to GERP increased by $12,100,053 as a result of the discount rate change. The total impact was a decrease in the City's minimum required contribution of $390,986.
12. The City changed the surtax allocation percentage from the prior valuation to the current valuation. In the 2018 valuation, GERP's allocation percentage was 33.40%; in the 2019 valuation, the allocation percentage has been increased to 34.57%. This change was directed by the City based on its updated calculation of the General Employees Retirement Plan's share of the City's unfunded liabilities. The change in the surtax allocation percentage caused the City's minimum required contribution to decrease by $1,246,577.
13. The City is solely responsible for the assumption as to what percentage the surtax revenue will grow and Segal relies on the City for this assumption. This rate was set at 4.25% by the City for the projection period January 1, 2019 through December 31, 2060, and will be recalculated by the City every year and adopted by the City Council. Segal will ask the City each year to provide actual surtax revenue for the preceding fiscal year and an assumption as to future growth. The difference in actual and projected

surtax revenue each year will be amortized over the period by which each year's gain or loss is being amortized. If surtax revenue grows more slowly or more quickly than expected, contribution requirements will increase or decrease accordingly.

14. The present value of the projected surtax revenue was determined and used in determination of the City's required contribution as follows:
    a. Actual 2019 surtax revenue was projected to increase by 4.25% each year thereafter through 2060.
    b. A share of 34.57% of the projected revenue for January 1, 2031 through December 31, 2060 was allocated to GERP.
    c. The revenue allocated to GERP was discounted at the valuation discount rate of 6.90% to October 1, 2019.
    d. The original allocated present value amount of $332,190,859 was amortized over a 30-year initial period (Section 3, Exhibit F), with subsequent charges amortized over new periods. The present value of projected surtax revenue as of October 1, 2019 allocated to GERP is $537,466,213.
    e. After the amortized value amount was adjusted for the timing of contributions and projected to October 1, 2020, this amount was used as an offset to the Florida Chapter 112 Determined Employer Contribution to determine the City's minimum required contribution for fiscal 2020.
15. The present value of projected surtax revenue does not decrease the UAAL. The amortized value of the projected surtax revenue is used as an offset to the Chapter 112 contribution.
16. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of September 30, 2019 are also included in this report.
17. GASB accounting does not permit any recognition of the allocated surtax revenue in determining the Net Pension Liability or Pension Expense. It is Segal's understanding that the City has discussed this issue with their external auditors and does not include any recognition of allocated surtax revenue in its audited financial statements.
18. This actuarial report as of October 1, 2019 is based on financial and demographic data as of that date. Changes subsequent to that date are not reflected and will affect future actuarial costs of the plan.
19. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions.
20. The financial information received states all results rounded to the nearest thousand. The results in this valuation are shown to the nearest dollar. Therefore, occasionally rounded numbers are combined with unrounded ones

Summary of key valuation results

		2020	2019	2018
Contributions for fiscal year beginning October 1:	• Florida Chapter 112 determined employer contribution	$108,568,188	$100,620,425	$95,290,428
	• Less amortized value of discounted value of projected surtax revenue	-31,735,211	-29,370,746	-26,042,904
	• City's required minimum contribution*	$76,832,977	$71,249,679	$69,247,524
	• Actual employer contriubtions	- -	- -	70,338,000
Actuarial accrued liability	• Retired participants and beneficiaries		$2,235,258,792	$2,179,539,282
	• Inactive vested participants		28,631,348	25,251,691
	• Active participants		1,022,423,341	991,889,543
	• Total actuarial accrued liability		3,286,313,481	3,196,680,516
	• Total normal cost including administrative expenses		40,918,741	41,097,477
Assets	• Market value of assets (MVA)		$1,970,206,000	$2,085,056,000
	• Actuarial value of assets (AVA)		2,008,173,331	2,021,545,306
	• Actuarial value of assets as a percentage of market value of assets		101.93%	96.95%
Funded status	• Unfunded actuarial accrued liability on market value of assets		1,316,107,481	$1,111,624,516
	• Funded percentage on MVA basis		59.95%	65.23%
	• Unfunded actuarial accrued liability on actuarial value of assets		1,278,140,150	$1,175,135,210
	• Funded percentage on AVA basis		61.11%	63.24%
Key assumptions	• Net investment return		6.90%	7.00%
	• Inflation rate		2.50%	2.50%
	• Payroll growth for amortization purposes		1.50%	1.50%
Demographic data	• Number of retired participants and beneficiaries		5,215	5,176
	• Number of inactive vested participants		196	185
	• Number of active participants		3,937	4,234
	• Covered payroll		$249,982,877	$253,982,175
	• Average payroll		63,496	59,986
	• Projected payroll for next fiscal year		253,732,620	257,791,908

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

Important information about actuarial valuations

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

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

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

Section 1: Actuarial Valuation Summary

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

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

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

Actuarial Valuation Results

Participant data

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

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

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

Participant Population: 2010 – 2019

Year Ended September 30	Active Participants	Inactive Vested Participants[1]	Retired Participants and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives
2010	6,280	97	4,504	4,601	0.73
2011	6,109	90	4,603	4,693	0.77
2012	5,485	81	4,783	4,864	0.89
2013	5,139	78	4,896	4,974	0.97
2014	5,026	76	4,907	4,983	0.99
2015	4,817	65	4,976	5,041	1.05
2016	4,678	217	5,065	5,282	1.13
2017	4,644	195	5,105	5,300	1.14
2018	4,234	185	5,176	5,361	1.27
2019	3,937	196	5,215	5,411	1.37

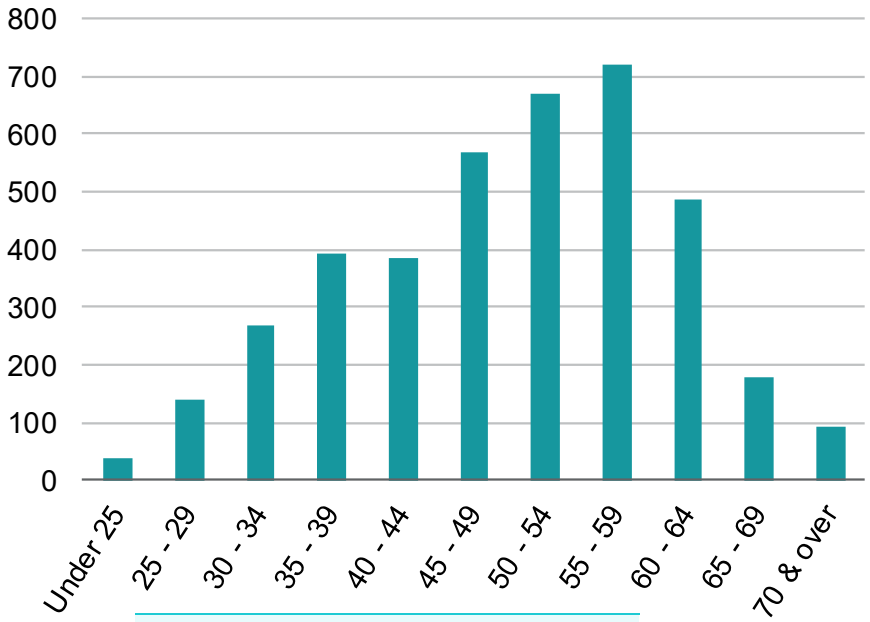
[1] Excludes terminated participants due a refund of employee contributions

Active participants

Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 3,937 active participants with an average age of 50.1, average years of service of 14.0 years and average payroll of $63,496. The 4,234 active participants in the prior valuation had an average age of 49.3, average service of 13.2 years and average payroll of $59,986.

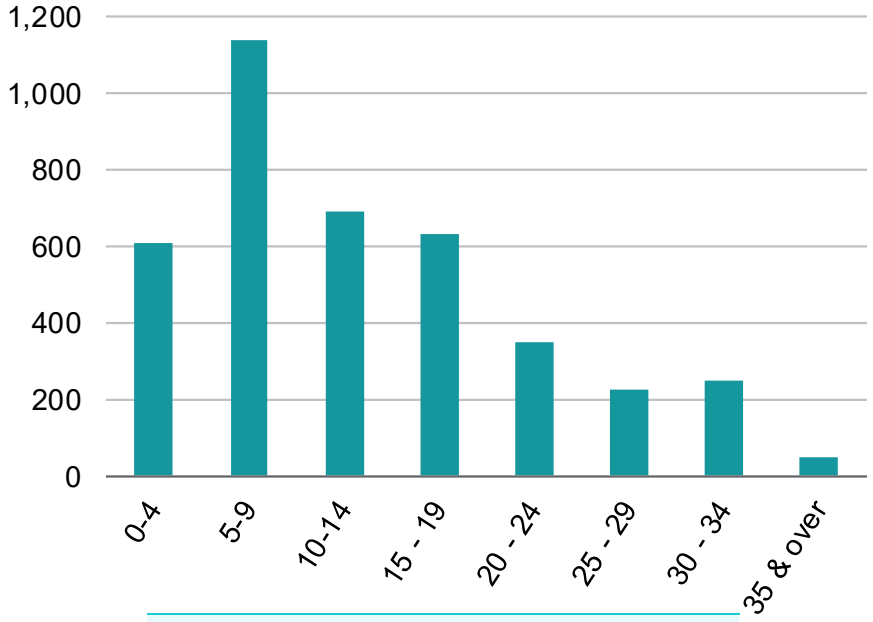
Distribution of Active Participants as of September 30, 2019

Actives by Age



Average age	50.1
Prior year average age	49.3
Difference	0.8

Actives by Years of Service



Average years of service	14.0
Prior year average years of service	13.2
Difference	0.8

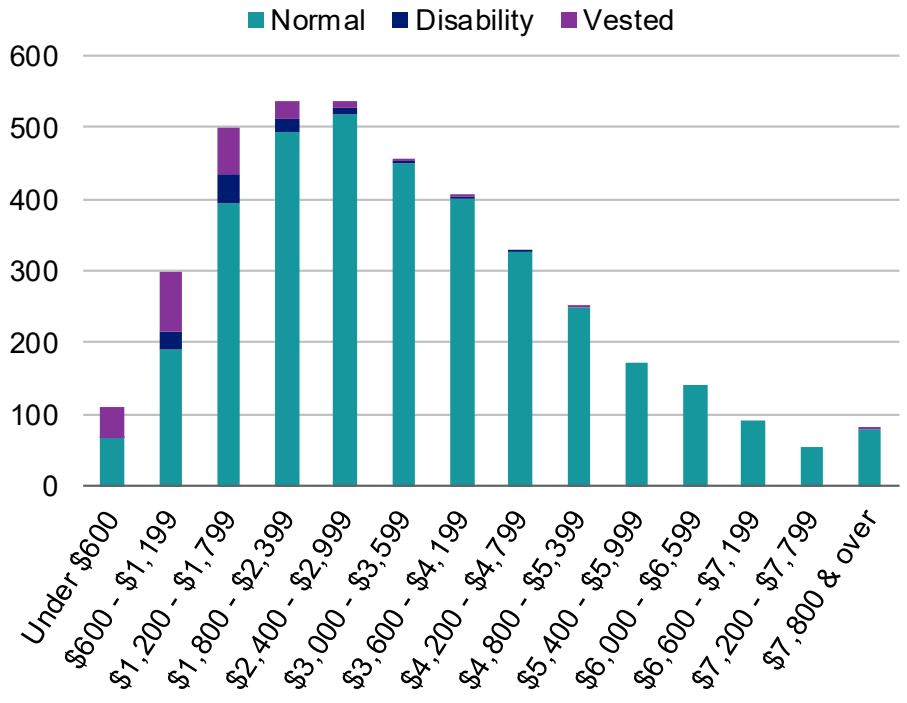
Retired participants and beneficiaries

As of September 30, 2019, 3,966 retired participants and 1,249 beneficiaries were receiving total monthly benefits of $15,686,733. For comparison, in the previous valuation, there were 3,958 retired participants and 1,218 beneficiaries receiving monthly benefits of $15,107,674.

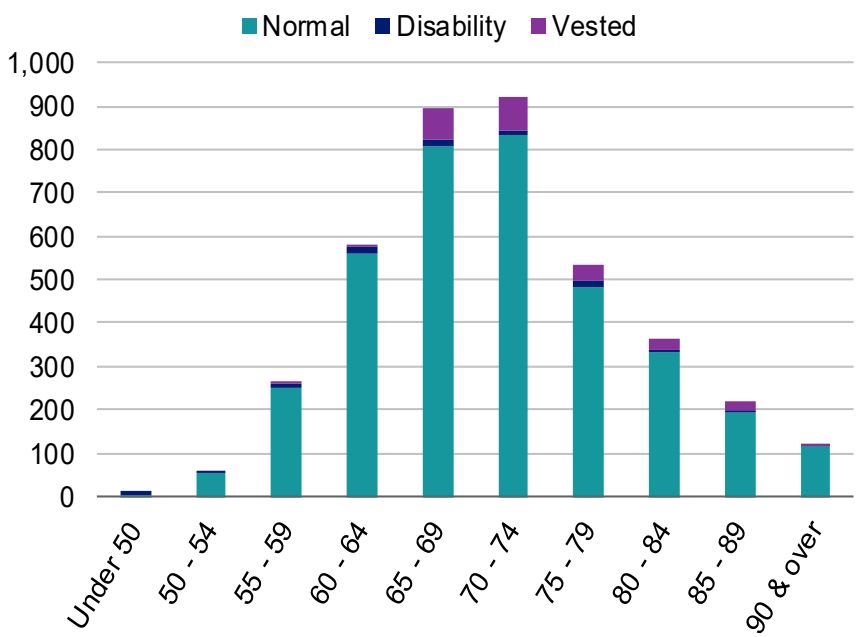
As of September 30, 2019, the average monthly benefit excluding supplement for retired participants is $2,892, compared to $2,919 in the previous valuation. The average age for retired participants is 72.4 in the current valuation, compared with 72.1 in the prior valuation.

Distribution of Pensioners as of September 30, 2019

Pensioners by Type and Monthly Amount Including Supplement



Pensioners by Type and Age



Historical plan population

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

Participant Data Statistics: 2010 – 2019

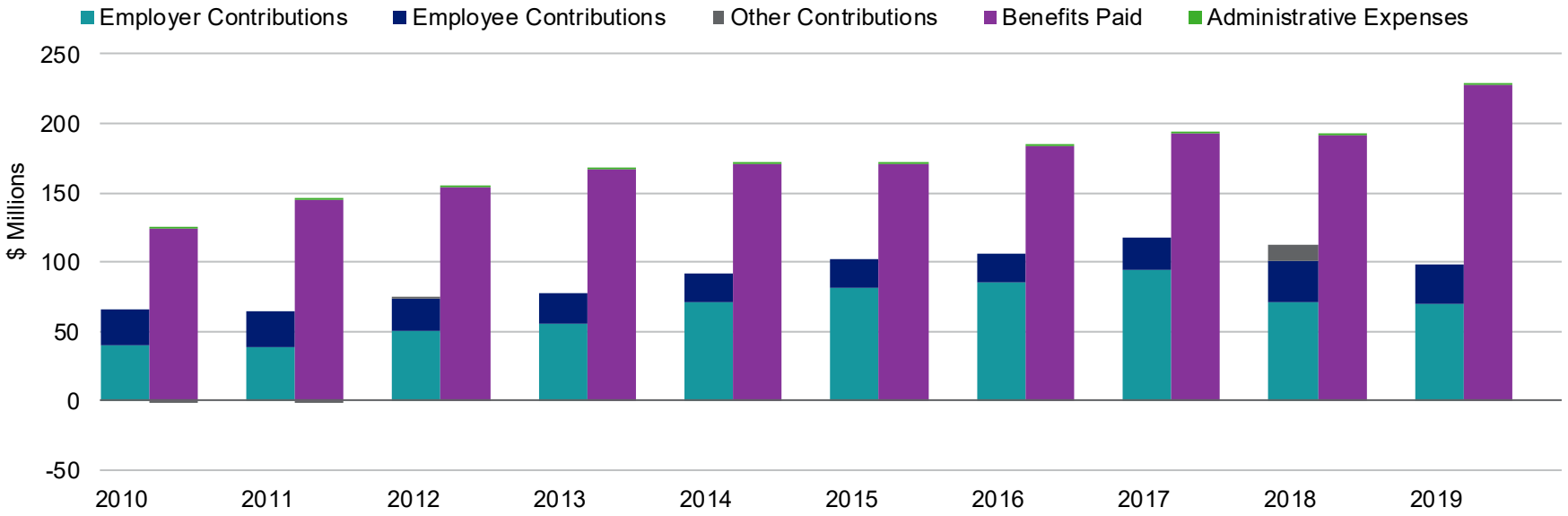
	Active Participants			Retired Participants and Beneficiaries		
Year Ended September 30	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount Excluding Supplement
2010	6,280	47.0	10.5	4,504	70.4	$2,240
2011	6,109	47.4	10.8	4,603	70.6	2,335
2012	5,485	47.7	11.2	4,783	70.5	2,441
2013	5,139	48.1	11.6	4,896	70.7	2,528
2014	5,026	48.3	11.8	4,907	70.9	2,606
2015	4,817	48.5	12.1	4,976	71.2	2,675
2016	4,678	48.5	12.5	5,065	71.4	2,756
2017	4,644	48.6	12.5	5,105	71.7	2,845
2018	4,234	49.3	13.2	5,176	72.1	2,919
2019	3,937	50.1	14.0	5,215	72.4	2,892

Financial information

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

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

Comparison of Contributions Made with Benefits and Expenses Paid
for Years Ended September 30, 2010 – 2019



Section 2: Actuarial Valuation Results

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

Determination of Actuarial Value of Assets for Year Ended September 30, 2019

1	Market value of assets, September 30, 2019				$1,970,206,000
2	Calculation of unrecognized return	**Original Amount ***	**Percent Deferred**	**Unrecognized Amount****	
(a)	Year ended September 30, 2019	-$126,629,625	80%	-$101,303,700	
(b)	Year ended September 30, 2018	3,347,148	60	2,008,290	
(c)	Year ended September 30, 2017	133,575,436	40	53,430,174	
(d)	Year ended September 30, 2016	39,489,525	20	7,897,905	
(e)	Year ended September 30, 2015	-175,540,475	0	0	
(f)	Total unrecognized return				-37,967,331
3	Preliminary actuarial value:	**(1) - (2f)**			$2,008,173,331
4	Adjustment to be within 20% corridor				0
5	Final actuarial value of assets as of September 30, 2019:	**(3) + (4)**			2,008,173,331
6	Actuarial value as a percentage of market value:	**(5) ÷ (1)**			101.9%
7	Amount deferred for future recognition***:	**(1) - (5)**			-$37,967,331

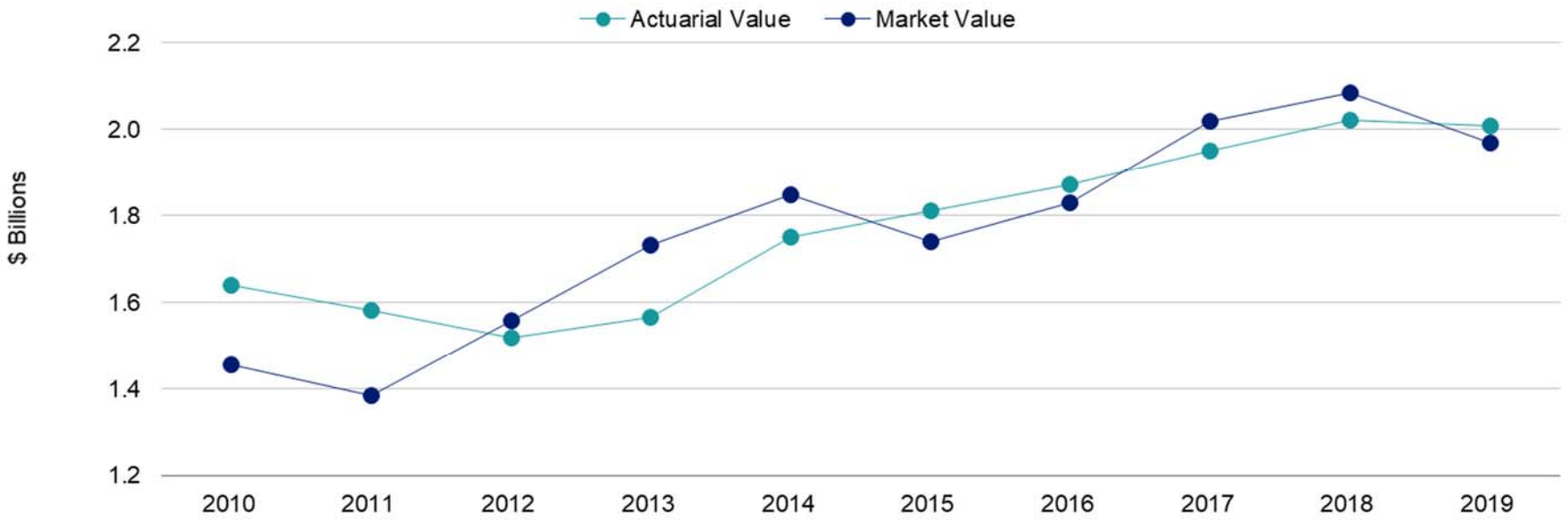
*Total return minus expected return on a market value basis
**Recognition at 20% per year over four years
***Deferred return as of September 30, 2019 recognized in each of the next four years:

(a) Amount recognized on September 30, 2020	$9,956,497
(b) Amount recognized on September 30, 2021	2,058,592
(c) Amount recognized on September 30, 2022	-24,656,495
(d) Amount recognized on September 30, 2023	-25,325,925

Section 2: Actuarial Valuation Results

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

Actuarial Value of Assets vs. Market Value of Assets as of September 30, 2010 – 2019



Actuarial experience

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

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

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

The total loss is $69,707,205, which includes $20,705,851 from investment losses and $49,001,354 in losses from all other sources. The net experience variation from individual sources other than investments was 1.5% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended September 30, 2019

1	Net loss from investments*	-$20,705,851
2	Net gain from administrative expenses	287,118
3	Net loss from other experience	-49,288,472
4	Net experience loss: **1 + 2 + 3**	-$69,707,205

Investment experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the market value of assets was 0.73% for the year ended September 30, 2019.

For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.00% for the year ended September 30, 2019. The actual rate of return on an actuarial basis for the 2019 plan year was 5.94%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended September 30, 2019 with regard to its investments.

Investment Experience

		Year Ended September 30, 2019		Year Ended September 30, 2018	
		Market Value	**Actuarial Value**	**Market Value**	**Actuarial Value**
1	Net investment income	$14,787,000	$116,265,025	$145,470,000	$149,294,449
2	Average value of assets	2,020,237,500	1,956,726,806	1,973,928,500	1,906,593,357
3	Rate of return: **1 ÷ 2**	0.73%	5.94%	7.37%	7.83%
4	Assumed rate of return	7.00%	7.00%	7.20%	7.20%
5	Expected investment income: **2 x 4**	141,416,625	136,970,876	142,122,852	137,274,722
6	Actuarial gain/(loss): **1 - 5**	-$126,629,625	-$20,705,851	$3,347,148	$12,019,727

Section 2: Actuarial Valuation Results

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the actual market value investment return for the last 12 years, including averages over select time periods.

Investment Return – Actuarial Value vs. Market Value: 2008 - 2019

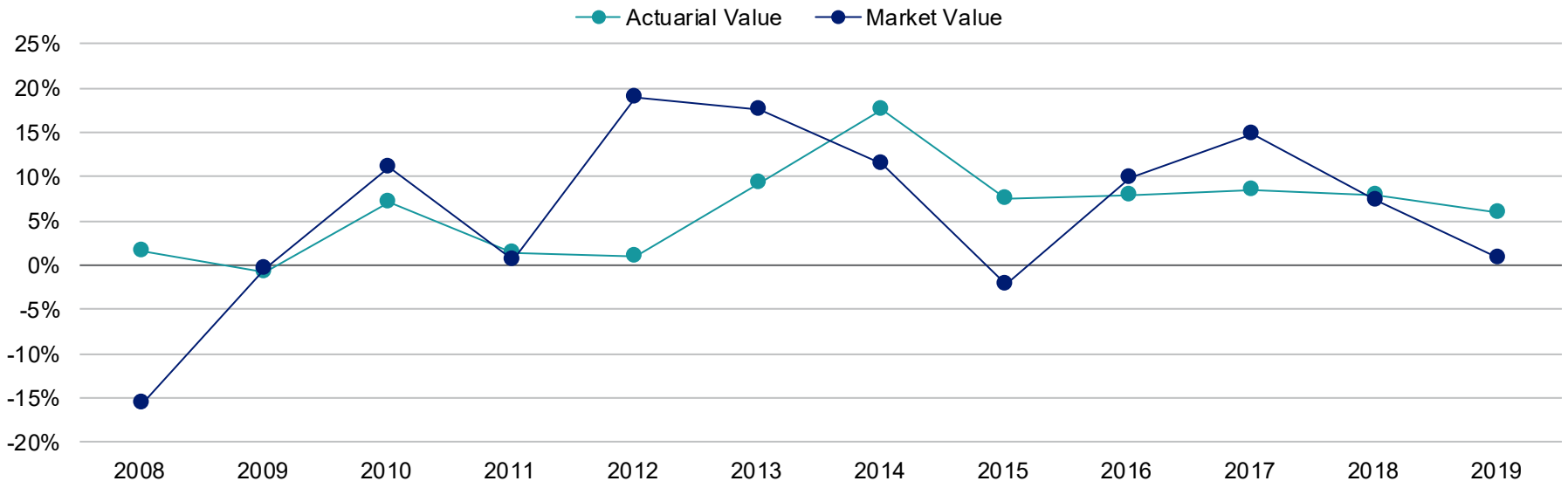
Year Ended September 30	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2008	- -	1.59%	- -	-15.65%
2009	- -	-0.70	- -	-0.31
2010	$110,280,623	7.07	$148,054,000	11.07
2011	22,313,906	1.39	9,313,000	0.66
2012	16,512,253	1.07	254,394,000	18.92
2013	136,580,384	9.27	264,541,000	17.48
2014	266,591,200	17.48	194,864,000	11.51
2015	128,075,601	7.46	-39,506,000	-2.18
2016	139,333,989	7.86	167,067,000	9.82
2017	155,254,757	8.46	266,138,000	14.86
2018	149,294,449	7.81	145,470,000	7.37
2019	116,265,025	5.94	14,787,000	0.73
Most recent five-year average return		7.49%		5.95%
Most recent ten-year average return		7.34%		8.58%

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

Section 2: Actuarial Valuation Results

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

Market and Actuarial Rates of Return for Years Ended September 30, 2008 - 2019



Non-investment experience

Administrative expenses

- Administrative expenses for the year ended September 30, 2019 totaled $959,000, as compared to the assumption of $1,193,000. The resulted in a gain of $287,118, due to timing.

Other experience

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

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

The net loss from this other experience for the year ended September 30, 2019 amounted to $49,288,472, which is 1.5% of the actuarial accrued liability.

Actuarial assumptions

- The mortality assumption, including an allowance for future longevity improvement, was updated to match that which is used for the Florida Retirement System Pension Plan for personnel who are neither Special Risk nor K-12 School Instructional Personnel.
- The discount rate was lowered from 7.00% to 6.90%.
- These changes increased the actuarial accrued liability by 0.15% and increased the total normal cost by 1.73%.

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

Plan provisions

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

Section 2: Actuarial Valuation Results

Development of Unfunded Actuarial Accrued Liability for Year Ended September 30, 2019

1	Unfunded actuarial accrued liability at beginning of year		$1,175,135,210
2	Normal cost at beginning of year		17,468,984
3	Employer contributions		-70,338,000
4	Interest		
	• For whole year on **1 + 2**	$83,482,294	
	• For half year on **3**	-2,229,112	
	Total interest		81,253,182
5	Expected unfunded actuarial accrued liability		$1,203,519,376
6	Changes due to:		
	• (Gain)/loss	69,707,205	
	• Assumptions	4,913,569	
	Total changes		$74,620,774
7	Unfunded actuarial accrued liability at end of year		$1,278,140,150

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

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

The contribution requirement as of October 1, 2019 are based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

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

		2019		2018	
		Amount	% of Projected Payroll	Amount	% of Projected Payroll
1.	Total normal cost	$39,959,741	15.75%	$39,904,477	15.48%
2.	Administrative expenses	959,000	0.37%	1,193,000	0.46%
3.	Expected employee contributions	-23,166,958	-9.12%	-23,628,493	-9.17%
4.	Employer normal cost: (1) + (2) + (3)	$17,751,783	7.00%	$17,468,984	6.78%
5.	Actuarial accrued liability	$3,286,313,481		$3,196,680,516	
6.	Actuarial value of assets	2,008,173,331		2,021,545,306	
7.	Unfunded actuarial accrued liability: (5) - (6)	$1,278,140,150		$1,175,135,210	
8.	Payment on unfunded actuarial accrued liability	85,434,101	33.67%	78,115,225	30.30%
9.	Florida Chapter 112 determined employer contribution: (4) + (8)[1]	108,568,188	42.79%	100,620,425	39.03%
10.	Discounted and amortized value of projected surtax revenue[1,2]	-31,735,211	-12.51%	-29,370,746	-11,39%
11.	City's minimum required contribution: (9) + (10)[2]	$76,832,977	30.28%	$71,249,679	27.64%
12.	Projected payroll	$253,732,620		$257,791,908	

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

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

Reconciliation of City's Minimum Required Contribution

The chart below details the changes in the City's Minimum required contribution from the prior valuation to the current year's valuation.

Reconciliation of City's Minimum Required Contribution from October 1, 2019 to October 1, 2020

	Amount
City's Minimum Required Contribution as of October 1, 2019	$71,249,679
• Effect of expected change in amortization payment due to payroll growth	792,904
• Effect of change in administrative expense assumption	-246,329
• Effect of contribution deferral to budget year and balancing amortization bases for surtax credit	2,082,782
• Effect of investment loss	1,451,656
• Effect of other gains and losses on accrued liability	3,435,410
• Effect of gain on updated surtax projection	-143,186
• Effect of updated surtax allocation	-1,246,577
• Effect of change in actuarial assumptions	-390,986
• Net effect of other changes, including composition and number of participants	-152,376
Total change	$5,583,298
City's Minimum Required Contribution as of October 1, 2020	$76,832,977

History of employer contributions

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

History of Employer Contributions: 2012 – 2021

Fiscal Year Ended September 30	City's Minimum Required	Actual Employer Contribution	Percent Contributed
2012	$39,123,971	$39,378,000	83.09%
2013	66,659,915	55,386,000	83.09%
2014	81,351,295	71,000,000	87.28%
2015	86,069,361	81,751,000	94.98%
2016	89,058,931	84,898,000	95.33%
2017	94,526,754	94,700,000	100.18%
2018	70,166,221	71,024,000	101.22%
2019	69,247,524	70,338,000	101.57%
2020	71,249,679	- -	- -
2021	76,832,977	- -	- -

Risk

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

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

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

  The market value rate of return over the last 10 years has ranged from a low of -2.18% to a high of 18.92%.

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

  The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.

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

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

  If the City paid the Florida Chapter 112 determined contribution, the effective amortization period would be 27 years, meaning that the current contribution level, with amortization payments growing 1.5%, would be adequate to be expected to reduce the unfunded liability to zero over 27 years. Under the City's current policy of paying the City's required contribution, over the immediate term, the unfunded liability has an expected growth rate of 2.3% and increases at this level can be expected to continue until the surtax income becomes payable to the Plan's trust. If plan experience is less favorable than anticipated, the unfunded liability will grow faster than 2.3% per year. By comparison, the surtax revenue is assumed to grow 4.25% per year.

  If the surtax revenue for fiscal 2019 had been 1% lower, the City's required contribution would increase by $373,045 or 0.15% of projected payroll. For comparison purposes, the allocated surtax revenue is 27.3% of the market value of assets and 16.4% of the actuarial accrued liability.

Section 2: Actuarial Valuation Results

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

  Examples of this risk include:

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

  – More or less active participant turnover than assumed.

  – Participants' use of plan provisions allowing conversion of benefits from the DB plan to the DC plan.

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

  Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

  The investment gain/loss on a market value basis for a year has ranged from a loss of $175,540,475 to a gain of $147,228,359. If all investment returns were equal to the assumed return over the last years, the market value of assets as of the current valuation date would be approximately $1,879,386,386 as opposed to the actual value of $1,970,206,000. Over the past ten years, the Plan's market value performance has, on average, exceeded the expected annual return.

  The non-investment gain/loss for a year has ranged from a loss of $55,702,357 to a gain of $20,285,622.

  The funded percentage on the actuarial value of assets has ranged from a low of 61.1% to a high of 75.9% since 2010. There has been a downward trend in funded percentage that has come from a combination of reducing the discount rate assumption and implementation of a funding policy that defers some funding until surtax revenue is allocated to the plan at the end of 2030.

  Segal Consulting has only been provided with data on surtax income for fiscal 2016, 2017, 2018 and 2019, and over this period, the surtax revenue grew by 3.9% for fiscal 2017, 6.2% for fiscal 2018 and 4.7% for fiscal 2019. We encourage the City to consider reviewing any additional historical data on growth of their tax base to develop a sense of a range of possible outcomes for the surtax revenue that will be paid to the plan.

- **Maturity Measures**

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

  Currently the Plan has a non-active to active participant ratio of 1.37. For the prior year benefits and expenses paid were $129.6 million more contributions received. As the Plan matures, more cash will be needed from the investment portfolio to meet benefit payments.

GFOA funded liability by type

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

GFOA Solvency Test as of September 30

	2019	2018
Actuarial accrued liability (AAL)		
• Active member contributions	$193,534,210	$185,538,727
• Retirees and beneficiaries	2,235,258,792	2,179,539,282
• Active and inactive members (employer-financed)	857,520,479	831,602,507
Total	$3,286,313,481	$3,196,680,516
Actuarial value of assets	$2,008,173,331	$2,021,545,306
Cumulative portion of AAL covered		
• Active member contributions	100.00%	100.00%
• Retirees and beneficiaries	81.18%	84.24%
• Active and inactive members (employer-financed)	0.00%	0.00%

Supplemental Information

Exhibit A: Table of Plan Coverage

Category	Year Ended September 30 2019	2018	Change From Prior Year
Active participants in valuation:			
• Number	3,937	4,234	-7.0%
• Average age	50.1	49.3	0.8
• Average years of service	14.0	13.2	0.8
• Projected total payroll	$249,982,877	$253,982,175	-1.6%
• Projected average payroll	63,496	59,986	5.9%
• Account balances	193,534,210	185,538,727	4.3%
• Total active vested participants	3,331	3,366	-1.0%
Inactive vested participants	196	185	5.9%
Retired participants:			
• Number in pay status	3,860	3,856	0.1%
• Average age	71.2	70.8	0.4
• Average monthly benefit	$3,364	$3,266	3.0%
Disabled participants:			
• Number in pay status	106	102	3.9%
• Average age	66.7	67.2	-0.5
• Average monthly benefit	$1,696	$1,631	4.0%
Beneficiaries:			
• Number in pay status	1,249	1,218	2.5%
• Average age	76.6	76.3	0.3
• Average monthly benefit	$2,018	$1,929	4.6%

Exhibit B: Participants in Active Service as of September 30, 2019 by Age, Years of Service, and Average Payroll

		Years of Service								
Age	**Total**	**0 - 4**	**5 - 9**	**10 - 14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
Under 25	39	39	- -	- -	- -	- -	- -	- -	- -	- -
	$34,482	$34,482	- -	- -	- -	- -	- -	- -	- -	- -
25 - 29	139	89	49	1	- -	- -	- -	- -	- -	- -
	50,427	46,344	$57,437	$70,366	- -	- -	- -	- -	- -	- -
30 - 34	267	92	128	45	2	- -	- -	- -	- -	- -
	60,098	52,204	64,192	65,037	$50,098	- -	- -	- -	- -	- -
35 - 39	392	98	129	122	42	1	- -	- -	- -	- -
	61,980	52,652	60,157	71,298	62,296	$61,194	- -	- -	- -	- -
40 - 44	386	55	140	88	70	31	2	- -	- -	- -
	66,675	58,604	65,537	71,353	68,272	68,372	$80,169	- -	- -	- -
45 - 49	569	74	174	116	105	70	25	5	- -	- -
	64,938	56,945	61,039	73,803	65,842	65,568	69,434	$62,957	- -	- -
50 - 54	671	71	157	100	122	93	62	64	2	- -
	68,280	57,169	62,252	66,591	70,077	71,842	85,811	72,985	$51,087	- -
55 - 59	719	58	174	91	126	81	71	99	19	- -
	64,566	59,727	55,854	64,700	65,065	66,941	74,267	70,558	77,568	- -
60 - 64	486	19	118	85	107	46	41	55	13	2
	62,908	58,419	55,323	59,542	69,127	68,015	58,478	65,254	98,988	$37,618
65 - 69	177	9	42	31	37	19	15	18	3	3
	60,697	74,975	41,858	60,102	68,081	58,462	75,340	61,236	53,329	141,761
70 & over	92	2	25	15	19	11	8	7	1	4
	54,840	55,299	41,909	47,129	64,910	68,676	44,803	67,367	90,938	67,579
Total	3,937	606	1,136	694	630	352	224	248	38	9
	$63,496	$53,280	$59,343	$67,311	$67,152	$67,809	$73,105	$69,088	$81,940	$85,648

Exhibit C: Reconciliation of Participant Data

	Active Participants	Inactive Vested Participants	Disableds	Retired Participants	Beneficiaries	Total
Number as of October 1, 2018	**4,234**	**185**	**102**	**3,856**	**1,218**	**9,595**
• New participants	0	N/A	N/A	N/A	N/A	0
• Terminations – with vested rights	-10	10	0	0	0	0
• Terminations – without vested rights	-91	N/A	N/A	N/A	N/A	-91
• Retirements	-143	-3	N/A	146	N/A	0
• New disabilities	-5	0	5	N/A	N/A	0
• Deceased	-12	0	-4	-144	-57	-217
• New beneficiaries	0	0	0	0	88	88
• Lump sum cash-outs	-43	-1	0	0	0	-44
• Rehire	25	-2	N/A	0	N/A	23
• Certain period expired	N/A	N/A	0	0	0	0
• Data adjustments	0	7	3	2	0	12
• Net transfers (to)/from DC Plan or Corrections	-18	0	0	0	0	-18
Number as of October 1, 2019	**3,937**	**196**	**106**	**3,860**	**1,249**	**9,348**

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

	Year Ended September 30, 2019		Year Ended September 30, 2018	
Net assets at market value at the beginning of the year		$2,085,056,000		$2,019,668,000
Contribution income:				
• Employer contributions	$70,338,000		$71,024,000	
• Employee contributions	28,334,000		29,919,000	
• Transfers	0		11,397,000	
• Less administrative expenses	-959,000		-1,193,000	
Net contribution income		*$97,713,000*		*$111,147,000*
Investment income:				
• Interest, dividends and other income	$20,071,000		$19,788,000	
• Asset appreciation	4,197,000		134,552,000	
• Less investment fees	-9,481,000		-8,870,000	
Net investment income		*$14,787,000*		*$145,470,000*
Total income available for benefits		**$112,500,000**		**$256,617,000**
Less benefit payments:				
• Benefit payments	-$185,078,000		-$175,217,000	
• Refunds	-42,272,000		-16,012,000	
Net benefit payments		*-$227,350,000*		*-$191,229,000*
Change in market value of assets		**-$114,850,000**		**$65,388,000**
Net assets at market value at the end of the year		**$1,970,206,000**		**$2,085,056,000**

Exhibit E: Development of the Fund through September 30, 2019

Year Ended September 30	Employer Contributions	Employee Contributions	Other Contributions	Net Investment Return*	Admin. Expenses	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2010	$40,551,000	$25,196,000	-$2,000	$148,054,000	$775,000	$124,656,000	$1,456,079,000	$1,640,892,767	112.7%
2011	39,378,000	25,051,000	-6,000	9,313,000	701,000	144,899,000	1,384,227,000	1,582,041,673	114.3%
2012	49,899,000	24,098,000	1,040,000	254,394,000	705,000	154,308,000	1,558,645,000	1,518,577,926	97.4%
2013	55,386,000	21,878,000	0	264,541,000	671,000	166,460,000	1,733,319,000	1,565,291,310	90.3%
2014	71,000,000	20,961,000	0	194,864,000	828,000	171,127,000	1,848,189,000	1,751,888,510	94.8%
2015	81,751,000	20,893,000	0	-39,506,000	762,000	170,674,000	1,739,891,000	1,811,172,111	104.1%
2016	84,898,000	21,840,000	0	167,067,000	762,000	183,692,000	1,829,242,000	1,872,790,100	102.4%
2017	94,700,000	23,037,000	0	266,138,000	787,000	192,662,000	2,019,668,000	1,952,332,857	96.7%
2018	71,024,000	29,919,000	11,397,000	145,470,000	1,193,000	191,229,000	2,085,056,000	2,021,545,306	97.0%
2019	70,338,000	28,334,000	0	14,787,000	959,000	227,350,000	1,970,206,000	2,008,173,331	101.9%

* On a market basis, net of investment fees

Exhibit F: Table of Amortization Bases

Type*	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Fresh start	10/01/2016	30	$1,024,497,072	$68,753,772	27	$1,025,281,737
Experience gain	10/01/2017	30	-5,594,096	-369,422	28	-5,600,095
Plan change	10/01/2017	30	-3,528,667	-233,025	28	-3,532,451
Change in assumptions	10/01/2017	30	64,164,450	4,237,280	28	64,233,259
Experience gain	10/01/2018	29	-922,806	-60,863	28	-922,627
Change in assumptions	10/01/2018	29	88,449,536	5,833,621	28	88,432,323
Plan change	10/01/2018	29	5,920,390	390,475	28	5,919,238
Experience loss	10/01/2019	28	99,415,197	6,558,129	28	99,415,197
Change in assumptions	10/01/2019	28	4,913,569	324,134	28	4,913,569
Total				**$85,434,101**		**$1,278,140,150**

Surtax Amortization Bases

Type*	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Discounted surtax revenue applied	10/01/2016	30	-$322,190,859	-$22,293,255	27	-$332,445,285
Surtax offset gain	10/01/2017	30	-7,927,401	-523,508	28	-7,935,903
Allocation change	10/01/2017	30	-10,588,075	-699,213	28	-10,599,430
Discount rate change	10/01/2017	30	-18,720,570	-1,236,265	28	-18,740,646
Surtax offset gain	10/01/2018	29	-8,089,137	-533,516	28	-8,087,613
Allocation change	10/01/2018	29	-20,241,389	-1,335,005	28	-20,237,450
Discount rate change	10/01/2018	29	-21,761,957	-1,435,293	28	-21,757,722
Surtax offset gain	10/01/2019	28	-2,042,344	-134,727	28	-2,042,344
Allocation change	10/01/2019	28	-17,780,689	-1,172,940	28	-17,780,689
Discount rate change	10/01/2019	28	-12,100,053	-798,205	28	-12,100,053
Total				**-$30,161,927**		**-$451,727,135**

* Level percentage of payroll; per Part VII, Chapter 112.64 (5)(b) of Florida Statues, outstanding balances were amortized using a 1.50% payroll growth rate for October 1, 2019 valuation.

Exhibit G: Definition of Pension Terms

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

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

Section 3: Supplemental Information

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

Section 3: Supplemental Information

Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: Investment return - the rate of investment yield that the Fund will earn over the long-term future; Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates – the probability of disability retirement at a given age; Withdrawal rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; Salary increase rates - the rates of salary increase due to inflation and productivity growth.
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Section 3: Supplemental Information

GASB 67 and GASB 68:	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.
Investment Return:	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL):	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Plan Fiduciary Net Position:	Market value of assets.
Total Pension Liability (TPL):	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Exhibit H: Section 415

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $225,000 for 2019. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

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

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

Exhibit I: Supplementary State of Florida Information
Summary of Salary Changes

Year Ended September 30	Total Salary	Percent Change in Total Salary	Percent Change in Salary of Employees Remaining Active	Expected Percent Change in Salary of Employees Remaining Active
2009	$276,257,000	5.30%	3.16%	5.42%
2010*	275,173,962	-0.39%	0.61%	5.36%
2010	322,530,502	17.21%	N/A	N/A
2011	314,054,361	-2.63%	0.94%	5.62%
2012	283,020,575	-9.88%	2.31%	5.83%
2013	265,404,735	-6.22%	1.60%	2.84%
2014	262,368,813	-1.14%	0.04%	2.84%
2015	254,034,479	-3.18%	3.85%	2.48%
2016	250,894,295	-1.24%	2.76%	4.27%
2017	257,850,484	2.77%	4.64%	5.30%
2018	253,982,175	-1.50%	7.33%	5.13%
2019	249,982,877	-1.57%	5.78%	5.03%

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

The average total payroll growth for the most recent ten years was -0.99% per year. Additional analysis of pay of DC Plan participants was used support a payroll increases assumption of 1.50%.

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

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

Exhibit J: Supplementary State of Florida Information
Recent History of Recommended and Actual Contributions

Fiscal Year Ended September 30	Valuation Date October 1	Contribution Rate as Percent of Valuation Payroll	Valuation Payroll	Florida Chapter 112 Recommended Contribution	City's Minimum Required Contribution	Actual Contribution
2011	2008*	13.50%	$289,807,191	$39,123,971	- -	$39,378,000
2012	2010	17.22%	333,819,070	57,497,706	- -	49,899,000
2013	2011	20.51%	325,046,264	66,659,915	- -	55,386,000
2014	2012	27.91%	291,511,192	81,351,295	- -	71,000,000
2015	2013	31.60%	272,358,339	86,069,361	- -	81,751,000
2016	2014	33.20%	268,245,874	89,058,931	- -	84,898,000
2017	2015	36.79%	256,930,472	94,526,764	- -	94,700,000
2018	2016	36.81%	254,657,709	93,743,647	$70,166,211	71,024,000
2019	2017	36.41%	261,718,241	95,290,428	69,247,529	70,338,000
2020	2018	39.03%	257,791,908	100,620,425	71,249,679	- -
2021	2019	42.79%	253,732,620	108,568,188	76,832,977	- -

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

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

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

	Year Ended September 30, 2019		
	New Assumptions	Old Assumptions	Year Ended September 30, 2018
Participant data			
• Active members	3,937	3,937	4,234
• Total annual payroll	$249,982,877	$249,982,877	$253,982,175
• Retired members and beneficiaries	5,215	5,215	5,176
• Total annualized benefit	$188,240,796	$188,240,796	$181,292,088
• Terminated vested members	196	196	185
• Total annualized benefit	$3,478,032	$3,478,032	$3,344,160
Actuarial value of assets	$2,008,173,331	$2,008,173,331	$2,021,545,306
Present value of all future expected benefit payments:			
• Active members:			
◦ Retirement benefits	$1,108,155,598	$1,076,605,142	$1,074,750,796
◦ Vesting benefits	25,046,540	24,824,405	26,569,658
◦ Disability benefits	18,270,892	17,160,922	17,377,689
◦ Death benefits	25,901,928	38,895,882	39,378,770
◦ Return of contributions	193,534,210	193,534,210	185,538,727
◦ Total	$1,370,909,168	$1,351,020,561	$1,343,613,640
• Terminated vested members	28,631,348	28,099,453	25,251,691
• Retired members and beneficiaries	2,235,258,792	2,240,907,247	2,179,539,282
Total	$3,634,799,308	$3,620,027,261	$3,548,404,613

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

	Year Ended September 30, 2019		
	New Assumptions	Old Assumptions	Year Ended September 30, 2018
Unfunded actuarial accrued liability	$1,278,140,150	$1,273,226,581	$1,175,135,210
Actuarial present value of accrued benefits			
Vested accrued benefits			
Active members	$711,142,885	$707,164,239	$685,187,700
Inactive members	28,631,348	28,099,453	25,251,691
Pensioners and beneficiaries	2,235,258,792	2,240,907,247	2,179,539,282
Nonvested active members	35,524,495	35,647,116	39,787,473
Total	$3,010,557,520	$3,011,818,055	$2,929,766,146
Pension cost			
Normal cost, including administrative expenses	$40,918,741	$40,240,370	$41,097,477
Expected employee contributions	-23,166,958	-23,150,135	-23,628,493
Level % of payroll payment to amortize unfunded actuarial accrued liability	85,434,101	85,907,950	78,115,225
Discounted and amortized value of allocated surtax revenue	-30,161,927	-28,455,223	-27,900,692
Total minimum annual cost payable monthly at valuation date	73,023,957	74,542,962	70,196,729
Total employer cost projected to budget year	76,832,977	78,470,540	71,249,679
Projected payroll	253,732,620	253,732,620	257,791,908
As % of payroll	30.28%	30.93%	27.64%
Present value of active members' future salaries at attained age	$1,987,797,845	$1,962,984,855	$2,049,771,913
Present value of expected future employee contributions	$198,779,785	196,298,485	$204,977,191

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

Factors	Change in Actuarial Present Value of Accumulated Plan Benefits	
Actuarial present value of accumulated benefits as of October 1, 2018		$2,929,766,146
Benefits accumulated, net experience gain or loss, changes in data	$112,275,529	
Benefits paid	-227,350,000	
Interest	197,126,380	
Changes in assumptions	-1,260,535	
Plan changes	0	
Net increase	$80,791,374	
As % of payroll	31.84%	
Actuarial present value of accumulated benefits as of October 1, 2019		$3,010,557,520

Exhibit M: Actuarial Projections through Fiscal 2062

Plan Year Beginning	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio	Fiscal Year Ending	Surtax Contribution	% of Total Contribution	Required City Contribution	% of Total Contribution	Total Contribution
					2020	0	0.0%	71,249,679	100.0%	71,249,679
2019	3,286,313,481	2,008,173,331	1,278,140,150	61.11%	2021	0	0.0%	76,832,977	100.0%	76,832,977
2020	3,340,357,970	2,035,246,972	1,305,110,998	60.93%	2022	0	0.0%	76,585,529	100.0%	76,585,529
2021	3,390,570,896	2,056,604,762	1,333,966,134	60.66%	2023	0	0.0%	76,919,244	100.0%	76,919,244
2022	3,435,655,151	2,044,402,320	1,391,252,831	59.51%	2024	0	0.0%	79,193,810	100.0%	79,193,810
2023	3,475,245,739	2,024,856,400	1,450,389,339	58.27%	2025	0	0.0%	81,493,751	100.0%	81,493,751
2024	3,509,792,424	2,026,241,540	1,483,550,884	57.73%	2026	0	0.0%	81,825,974	100.0%	81,825,974
2025	3,539,308,997	2,023,316,679	1,515,992,318	57.17%	2027	0	0.0%	82,154,687	100.0%	82,154,687
2026	3,563,624,335	2,013,982,402	1,549,641,933	56.52%	2028	0	0.0%	82,519,930	100.0%	82,519,930
2027	3,583,141,161	1,998,476,221	1,584,664,940	55.77%	2029	0	0.0%	82,944,791	100.0%	82,944,791
2028	3,598,272,565	1,977,077,584	1,621,194,981	54.95%	2030	0	0.0%	83,355,984	100.0%	83,355,984
2029	3,608,308,200	1,949,167,525	1,659,140,675	54.02%	2031	40,931,765	32.8%	83,837,036	67.2%	124,768,801
2030	3,613,580,130	1,957,137,607	1,656,442,523	54.16%	2032	56,895,154	40.3%	84,245,893	59.7%	141,141,047
2031	3,612,259,190	1,976,495,848	1,635,763,342	54.72%	2033	59,313,198	41.2%	84,701,131	58.8%	144,014,329
2032	3,603,998,112	1,993,849,436	1,610,148,676	55.32%	2034	61,834,009	42.1%	85,180,522	57.9%	147,014,531
2033	3,588,737,146	2,009,657,788	1,579,079,358	56.00%	2035	64,461,954	42.9%	85,653,300	57.1%	150,115,254
2034	3,565,808,580	2,023,832,603	1,541,975,977	56.76%	2036	67,201,587	43.8%	86,160,904	56.2%	153,362,491
2035	3,535,621,313	2,037,231,218	1,498,390,095	57.62%	2037	70,057,654	44.7%	86,688,387	55.3%	156,746,041
2036	3,498,178,395	2,050,479,372	1,447,699,023	58.62%	2038	73,035,105	45.6%	87,245,260	54.4%	160,280,365
2037	3,454,138,048	2,064,846,534	1,389,291,514	59.78%	2039	76,139,097	46.4%	87,853,268	53.6%	163,992,365
2038	3,403,699,364	2,081,161,652	1,322,537,712	61.14%	2040	79,375,008	47.3%	88,505,873	52.7%	167,880,881
2039	3,346,879,242	2,100,190,117	1,246,689,125	62.75%	2041	82,748,446	48.1%	89,220,565	51.9%	171,969,011
2040	3,284,089,026	2,123,091,101	1,160,997,925	64.65%	2042	86,265,255	48.9%	89,967,846	51.1%	176,233,101
2041	3,215,469,772	2,150,925,772	1,064,544,000	66.89%	2043	89,931,528	49.8%	90,740,682	50.2%	180,672,210
2042	3,140,025,361	2,183,632,596	956,392,765	69.54%	2044	93,753,618	50.6%	91,581,745	49.4%	185,335,363
2043	3,059,205,486	2,223,546,705	835,658,781	72.68%	2045	97,738,147	51.4%	92,491,531	48.6%	190,229,678
2044	2,974,276,367	2,272,991,836	701,284,531	76.42%	2046	101,892,018	52.2%	93,438,757	47.8%	195,330,775
2045	2,884,207,900	2,332,152,656	552,055,244	80.86%	2047	106,222,429	52.9%	94,428,327	47.1%	200,650,756
2046	2,790,894,452	2,404,141,006	386,753,446	86.14%	2048	110,736,882	83.2%	22,424,758	16.8%	133,161,640
2047	2,695,999,395	2,491,854,200	204,145,195	92.43%	2049	115,443,200	97.3%	3,152,001	2.7%	118,595,201
2048	2,599,130,502	2,520,783,997	78,346,505	96.99%	2050	120,349,536	97.6%	2,933,955	2.4%	123,283,491
2049	2,501,357,588	2,542,785,224	(41,427,636)	101.66%	2051	0	0.0%	2,779,452	100.0%	2,779,452
2050	2,404,137,211	2,448,938,897	(44,801,686)	101.86%	2052	0	0.0%	2,646,364	100.0%	2,646,364
2051	2,306,721,463	2,355,071,757	(48,350,294)	102.10%	2053	0	0.0%	2,524,671	100.0%	2,524,671
2052	2,209,140,404	2,261,251,089	(52,110,685)	102.36%	2054	0	0.0%	2,461,701	100.0%	2,461,701
2053	2,114,263,878	2,170,247,424	(55,983,546)	102.65%	2055	0	0.0%	2,428,817	100.0%	2,428,817
2054	2,021,806,689	2,081,855,163	(60,048,474)	102.97%	2056	0	0.0%	2,432,154	100.0%	2,432,154
2055	1,932,670,352	1,996,975,569	(64,305,217)	103.33%	2057	0	0.0%	2,471,172	100.0%	2,471,172
2056	1,847,398,717	1,916,168,643	(68,769,926)	103.72%	2058	0	0.0%	2,521,300	100.0%	2,521,300
2057	1,765,070,047	1,838,587,975	(73,517,928)	104.17%	2059	0	0.0%	2,578,804	100.0%	2,578,804
2058	1,685,673,983	1,764,252,283	(78,578,300)	104.66%	2060	0	0.0%	2,643,215	100.0%	2,643,215
2059	1,609,344,096	1,693,318,156	(83,974,060)	105.22%	2061	0	0.0%	2,709,295	100.0%	2,709,295
2060	1,535,922,185	1,625,663,517	(89,741,332)	105.84%	2062	0	0.0%	2,777,028	100.0%	2,777,028
Total:						$1,654,325,590	40.4%	$2,436,502,070	59.6%	$4,090,827,660
Total Present Value at 6.9%:						$397,088,075	28.8%	$979,710,416	71.2%	1,376,798,491

Assumptions

Investment Return Assumption	6.9% per year
Actuarial Value of Assets	5-year smoothed market value
Payroll Growth Assumption	1.50% per year
Pension Liability Surtax Proceeds	34.57%, projected to increase 4.25% annually
Administrative Expenses	Projected to increase 2.5% annually

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

Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions

The information and analysis used in selecting each demographic assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended September 30, 2017.

Net Investment Return:

6.90%.

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

Salary Increases (including inflation):

COJ/JHA/NFTPO				JEA	
Service	**Rate (%)**	**Service**	**Rate (%)**	**Service**	**Rate (%)**
0	6.5	11	3.9	0-4	7.5
1	6.1	12	3.8	5	5.1
2	5.7	13	3.7	6	4.9
3	5.3	14	3.6	7	4.7
4	4.9	15	3.5	8	4.5
5	4.5	16	3.4	9	4.3
6	4.4	17	3.3	10	4.1
7	4.3	18	3.2	11	3.9
8	4.2	19	3.1	12	3.7
9	4.1	20	3.0	13-24	3.5
10	4.0			25+	3.0

Inflation Rate:

2.50%

Section 4: Actuarial Valuation Basis

Payroll Growth:

1.50% used for amortization of unfunded liability amounts, based on the requirement in the Florida Statutes that the assumption for this purpose may not exceed the average annual growth for the preceding ten years. Negotiated pay level increases and pay of DC Plan participants were taken into consideration in setting a payroll growth that is expected to be achieved and maintained on a ten-year average basis. The Fund's long-term payroll growth assumption is equal to the inflation assumption of 2.50%.

Mortality Rates:

Healthy pre-retirement: FRS pre-retirement mortality tables for personnel other than special risk and K-12 instructional personnel, set forward 2 years, projected generationally from 2010 with Scale MP2018

Healthy post-retirement: FRS healthy post-retirement mortality tables for personnel other than special risk and K-12 instructional personnel, set forward 2 years, projected generationally from 2010 with Scale MP2018

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

The FRS tables for personnel other than special risk and K-12 instructional personnel, set forward 2 years, reasonably reflect the healthy annuitant mortality experience of the General Employees Retirement Plan as of the measurement date. The FRS disabled mortality tables for personnel other than special risk reasonably reflect the disabled annuitant mortality experience as of the measurement date.

Annuitant Mortality Rates:

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

Mortality rates shown for base table.

Section 4: Actuarial Valuation Basis

Termination Rates Before Retirement:

	Rate (%)			
	Mortality[1]			
Age	Male	Female	Disability	Withdrawal[2]
20	0.04	0.01	0.01	0.01
25	0.05	0.02	0.01	0.01
30	0.06	0.03	0.02	0.02
35	0.08	0.04	0.03	0.03
40	0.11	0.06	0.04	0.04
45	0.16	0.09	0.06	0.06
50	0.25	0.13	0.10	0.10
55	0.36	0.20	0.16	0.16
60	0.52	0.29	0.25	0.25
65	0.75	0.47	0.00	0.00

* Mortality rates shown for base table.

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

Section 4: Actuarial Valuation Basis

Termination Retirement before Retirement (continued)

	Withdrawal*	
Service	**COJ**	**JEA**
0	16.00	6.00
1	15.00	5.50
2	13.00	4.50
3	10.00	3.50
4	9.50	3.25
5	9.00	3.00
6	8.50	2.75
7	8.00	2.50
8	7.50	2.25
9	7.00	2.00
10	6.50	2.00
11	5.60	2.00
12	4.70	2.00
13	3.80	2.00
14	2.90	2.00
15	2.00	2.00
16	1.80	1.80
17	1.60	1.60
18	1.40	1.40
19	1.20	1.20
20	1.00	1.00
21	0.80	0.80
22	0.60	0.60
23	0.40	0.40
24+	0.20	0.20

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

Section 4: Actuarial Valuation Basis

Retirement Rates:

Fewer Than 31 Years of Service	
Age	**Rate (%)***
45-54	5
55	15
56-60	7
61-63	10
64-65	30
66-69	20
70 & Over	100

31 or More Years of Service	
Service	**Rate (%)***
31-33	15
34-35	30
36	35
37	60
38-39	50
40	100

** 100% retirement is assumed at the earlier of age 70 or 40 years of service.*

Interest on BACKDROP Account:	4.00%
Refund of Contributions:	95% of participants that are vested and terminate are assumed to take a refund of their employee contributions in lieu of their accrued benefit deferred to age 65
Retirement Age for Inactive Vested Participants:	65, or date of retirement as provided in data
Unknown Data for Participants:	Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.
Value of Applicable Tax Revenue:	Actual revenue of $95,804,756 for fiscal 2019 is used as the basis of the City's revenue projection. This amount is prior to application of the allocation percentage.
Tax Revenue Growth Rate:	4.25%. This assumption is determined by the City. Segal has not reviewed the information used to set this assumption, but Segal previously reviewed the sensitivity of this assumption when it was initially set.
Projected Tax Revenue Allocation:	34.57%. This percentage is determined by the City.
Administrative Expenses:	Previous year's actual expenses; $959,000 for October 1, 2019.
Family Composition:	75% of males and 55% of females are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their spouses.
Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual and the expected market return, and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.

Section 4: Actuarial Valuation Basis

Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age at the time the participant commenced employment. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis based on each member's benefit accrual rate and are allocated by compensation. Normal Cost is not included for participants who are assumed to retire with 100% certainty in the upcoming plan year based on the retirement assumptions.
Justification for Change in Actuarial Assumptions and Methods:	Following ongoing board review of discount rate options and newly released FRS mortality assumptions: ➢ The discount rate was lowered from 7.00% to 6.90%. ➢ The mortality assumptions were changed from being based on the FRS mortality tables used in the July 1, 2018 FRS actuarial valuation for the non-special risk personnel to the FRS mortality tables used in the July 1, 2019 FRS actuarial valuation for personnel other than special risk and K-12 instructional personnel. The set forward used to adjust for the plan's experience was changed for healthy pre- and post-retirement lives was changed from 2.5 years to 2.0 years with the adoption of the new base table. The mortality improvement scale was changed from scale BB to scale MP2018 in conjunction with this change.

Exhibit II: Summary of Plan Provisions

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

Plan Year:	October 1 through September 30	
Plan Status:	Closed as of October 1, 2017	
Normal Retirement:	*Age Requirement*	Age 65 with five years of Credited Service, age 55 with 20 years of Credited Service or any age with 30 years of Credited Service.
	Regular Benefit Amount	2.5% of Final Monthly Compensation times years of Credited Service, not more than 80% of Final Monthly Compensation.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Early Retirement:	*Age Requirement*	Age 50 with 20 years of Credited Service
	Regular Benefit Amount	Accrued Service Retirement Regular Benefit Amount reduced by 0.5 percent for each month the benefit commencement precedes age 55.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
	Age Requirement	Any age with 25 years of Credited Service
	Regular Benefit Amount	2.0% of Final Monthly Compensation times years of Credited Service
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Off-the-job Disability:	*Service Requirement*	5 years of Credited Service
	Regular Benefit Amount	Final Monthly Compensation times 25% plus 2.5% per year of Credited Service in excess of 5, not to exceed 50% of Final Monthly Compensation
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.

Section 4: Actuarial Valuation Basis

	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Off-the-job Disability:	*Service Requirement*	Immediate eligibility
	Regular Benefit Amount	Final Monthly Compensation times 25% plus 2.5% per year of Credited Service in excess of 5, not to exceed 50% of Final Monthly Compensation
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Vesting:	*Age Requirement*	None
	Service Requirement	5 years of Credited Service
	Regular Benefit Amount	Accrued Service Retirement Regular Benefit payable at age 65.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month. Payable at Age 65.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Spouse's Pre-Retirement Death Benefit:	*Age Requirement*	None
	Service Requirement	None
	Regular Benefit Amount	If the Member is eligible for retirement, the surviving spouse is entitled to 75% of the member's accrued regular benefit. If the Member is not eligible for retirement, the surviving spouse is entitled to 75% of the pension the Member would have received if the Member had worked to eligibility for a Service Retirement at current salary with the benefit based on a 2% accrual rate.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Member's Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	75% of $66.65 per whole year of Member's Credited Service, not to exceed 30.
Member:	All full-time JEA, JHA, NFTPO, and City General Employees hired prior to October 1, 2017.	
Member Contributions:	10.0% of Earnable Compensation	
Credited Service:	The number of full years and months worked from date of participation to date of termination or retirement, plus any prior service purchased.	

Section 4: Actuarial Valuation Basis

Final Monthly Compensation:	Average monthly rate of Earnable Compensation during the highest 36 consecutive months (78 pay periods) out of the last ten years of employment.
Earnable Compensation:	Base pay for regular hours worked as an employee, plus service raises and excluding bonuses, adjusted compensation, overtime or any extra compensation over and above regularly budgeted salaries.
Cost of Living Adjustment:	On the April 1st nearest the fifth anniversary of the initial benefit commencement date, and on each April 1st thereafter, the regular benefit is increased by 3%.
BackDROP:	Members with 30 or more years of service may elect to have their retirement benefits calculated as if the member had retired up to 5 years earlier on or after October 1, 2005. Benefits that would have been payable are accumulated with interest to date of termination and paid or rolled over in a single sum, and payments are made directly to the Member thereafter. The 5-year wait to receive COLA increases starts at termination of employment rather than at the start of BackDROP.
Partial Lump-sum Option (PLOP):	Members who are eligible for retirement may elect to receive a lump-sum benefit of up to 15% of the benefit value and a reduced life annuity actuarially equivalent to the benefit that would otherwise be payable.
Changes in Plan Provisions:	There have been no changes in plan provisions since the prior valuation.

City of Jacksonville Corrections Officers Retirement Plan

Actuarial Valuation and Review

As of October 1, 2019

Segal

Segal

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Atlanta, GA 30339-4053
segalco.com
T 678.306.3100

March 24, 2020

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

Dear Board Members:

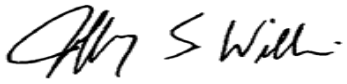
We are pleased to submit this Actuarial Valuation and Review as of October 1, 2019. The census information on which our calculations were based was prepared by the Plan and the financial information was provided by the City's Finance Department. That assistance is gratefully acknowledged.

Statement by Enrolled Actuary: This actuarial valuation and/or cost determination was prepared and completed by me, or under my direct supervision, and I acknowledge responsibility for the results. To the best of my knowledge, the results are complete and accurate, and in my opinion, the techniques and assumptions used are reasonable and meet the requirements and intent of part VII, Chapter 112, Florida Statutes. There is no benefit or expense to be provided by the plan and/or paid from the plan's assets for which liabilities or current costs have not been established or otherwise taken into account in the valuation. All known events or trends which may require a material increase in plan costs or required contribution rates have been taken into account in the valuation.

The actuarial calculations were directed under the supervision of Jeffrey S. Williams. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in this actuarial valuation is complete and accurate. Further, in my opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.

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

Sincerely,
Segal



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

Table of Contents

Table of Contents

Actuarial Valuation Summary

Purpose and basis

This report was prepared by Segal to present a valuation of the Plan as of October 1, 2019. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to provide information for required disclosures under Governmental Accounting Standards Board (GASB) Statements No. 67 and 68. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of September 30, 2019 provided by the Retirement System Administrative Office;
- The assets of the Plan as of September 30, 2019, provided by the City's Finance Department;
- Economic assumptions regarding future salary increases and investment earnings;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. and
- The funding policy adopted by the Board, subject to the requirements of Part VII, Chapter 112, Florida Statutes.

Valuation highlights

1. Segal Consulting ("Segal") strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance.
2. The City's minimum required contribution calculated in the October 1, 2019 actuarial valuation is for the plan year beginning October 1, 2020.
3. Actual City contributions made during the fiscal year ending September 30, 2019 were $14,498,000, 100% of the City's minimum required contribution for fiscal 2019.
4. The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 50.75%, compared to the prior year funded ratio of 49.70%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio is 50.61%, compared to 52.00% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.
5. Actuarial Standard of Practice No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions, states that an actuary preparing calculations of actuarially determined contributions should assess the material implications of the funding policy. This report includes two distinct contribution amounts, each with different implications.
    a. The **Florida Chapter 112 Determined Employer Contribution** is an amount consistent with a funding policy which seeks to stabilize the unfunded actuarial accrued liability (UAAL) as a percentage of total Corrections Officers Retirement Plan (CORP) payroll, including Defined Contribution participants, where UAAL is measured relative to assets currently available to make benefit payments. Under this policy, assuming that all assumptions are met in aggregate, the UAAL is expected to be reduced to zero over a period of 27 years after reflecting an amortization period reset as of October 1, 2016. Over the short term, this contribution policy would be expected to keep the UAAL roughly level over the next few years, primarily making payments on interest, and begin paying down the UAAL after that point.
    b. The **City's required minimum contribution**, which is the Chapter 112 contribution adjusted to comply with state law, reduced by amortization of discounted allocated surtax revenue, is an amount consistent with a funding policy which seeks to stabilize the contribution requirement as a percentage of total CORP payroll, including Corrections Officers Defined Contribution Plan participants, relative to an anticipated increase in contribution income set to begin January 1, 2031. Under this policy, assuming that all assumptions are met in aggregate, the UAAL is expected to be reduced to zero by December 31, 2060, after all of the surtax revenue allocated to the plan is collected and contributed. Over the short term, this contribution policy is expected to lead to an increase in the UAAL, prior to the revenue stream commencing and paying it down.

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

Section 1: Actuarial Valuation Summary

6. The City's minimum required contribution (the amount which will be contributed) for fiscal 2021 is $15,044,530, an increase of $1,907 from the City's minimum required contribution for fiscal 2020.
7. The unfunded actuarial accrued liability (UAAL) is $213,842,070, which is an increase of $4,258,723 since the prior valuation.
8. The actuarial loss from investment and other experience was $6,636,880, 1.50% of actuarial accrued liability.
   - The actuarial loss from investment experience was $828,084, or 0.19% of actuarial accrued liability.
   - The net experience loss from sources other than investment experience was $5,808,796, or 1.32% of the actuarial accrued liability.
9. The rate of return on the market value of assets was 1.62% for the October 1, 2018 to September 30, 2019 plan year. The return on the actuarial value of assets was 6.60% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial gain when measured against the assumed rate of return of 7.00%.
10. The following changes in actuarial assumptions are first reflected with this valuation.
    - The discount rate was lowered from 7.00% to 6.90%.
    - The mortality assumptions were changed from being based on the FRS mortality tables used in the July 1, 2018 FRS actuarial valuation for the special risk personnel to the FRS mortality tables used in the July 1, 2019 FRS actuarial valuation for special risk personnel. The set forward used to adjust for the plan's experience was changed for healthy pre- and post-retirement lives from 2.5 years to 2.0 years with the adoption of the new base table. The mortality improvement scale was changed from scale BB to scale MP2018 in conjunction with this change.

    As a result of these assumption changes, the total normal cost increased by $63,495 and the actuarial accrued liability decreased by $7,304,312. The present value of surtax revenue allocated to CORP increased by $2,159,598 as a result of the discount rate change. The total impact was a decrease in the City's minimum required contribution of $1,221,242.
11. There were no changes in plan provisions reflected in this valuation.
12. The City changed the surtax allocation percentage from the prior valuation to the current valuation. In the 2018 valuation, CORP's allocation percentage was 5.70%; in the 2019 valuation, the allocation percentage has been increased to 6.17%. This change was directed by the City based on its updated calculation of the Corrections Officers Retirement Plan's share of the City's unfunded liabilities. The change in the surtax allocation percentage caused the City's required contribution to decrease by $512,131.
13. The City is solely responsible for the assumption as to what percentage the surtax revenue will grow and Segal relies on the City for this assumption. This rate was set at 4.25% by the City for the projection period January 1, 2019 through December 31, 2060, and will be recalculated by the City every year and adopted by the City Council. Segal will ask the City each year to provide actual surtax revenue for the preceding fiscal year and an assumption as to future growth. The difference in actual and projected surtax revenue each year will be amortized over the period by which each year's gain or loss is being amortized. If

surtax revenue grows more slowly or more quickly than expected, contribution requirements will increase or decrease accordingly.

14. The present value of the projected surtax revenue was determined and used in determination of the City's required contribution as follows:
    a. Actual 2019 surtax revenue was projected to increase by 4.25% each year thereafter through 2060.
    b. A share of 6.17% of the projected revenue for January 1, 2031 through December 31, 2060 was allocated to CORP.
    c. The revenue allocated to CORP was discounted at the valuation discount rate of 6.90% to October 1, 2019.
    d. The original allocated present value amount of $64,295,005 was amortized over a 30-year initial period (Section 3, Exhibit F), with subsequent charges amortized over new periods. The present value of projected surtax revenue as of October 1, 2019 allocated to CORP is $95,926,136.
    e. After the amortized value amount was adjusted for the timing of contributions and projected to October 1, 2020, this amount was used as an offset to the Florida Chapter 112 Determined Employer Contribution to determine the City's minimum required contribution for fiscal 2020.
15. The present value of projected surtax revenue does not decrease the UAAL. The amortized value of the projected surtax revenue is used as an offset to the Chapter 112 contribution.
16. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of September 30, 2019, is included with this report.
17. GASB accounting does not permit any recognition of the allocated surtax revenue in determining the Net Pension Liability or Pension Expense. It is Segal's understanding that the City has discussed this issue with their external auditors and does not include any recognition of allocated surtax revenue in its audited financial statements.
18. This actuarial report as of October 1, 2019 is based on financial and demographic data as of that date. Changes subsequent to that date are not reflected and will affect future actuarial costs of the plan.
19. Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions.
20. The financial information received states all results rounded to the nearest thousand. The results in this valuation are shown to the nearest dollar. Therefore, occasionally rounded numbers are combined with unrounded ones.

Summary of key valuation results

		2020	2019	2018
Contributions for fiscal year beginning October 1:	• Florida Chapter 112 determined employer contribution	$20,812,130	$20,111,161	$19,141,501
	• Less amortized value of discounted value of projected surtax revenue	-5,767,600	-5,068,538	-4,643,713
	• City's minimum required contribution*	15,044,530	15,042,623	14,497,788
	• Actual employer contributions	- -	- -	14,498,000
Actuarial accrued liability	• Retired participants and beneficiaries		$289,920,395	$280,451,383
	• Inactive vested participants		4,426,283	2,911,360
	• Active participants		139,830,166	133,310,485
	• Total actuarial accrued liability		434,176,844	416,673,228
	• Normal cost including administrative expenses		7,833,038	7,487,444
Assets	• Market value of assets (MVA)		$219,754,000	$216,667,000
	• Actuarial value of assets (AVA)		220,334,774	207,089,881
	• Actuarial value of assets as a percentage of market value of assets		100.26%	95.58%
Funded status	• Unfunded actuarial accrued liability on market value of assets		$214,422,844	$200,006,228
	• Funded percentage on MVA basis		50.61%	52.00%
	• Unfunded actuarial accrued liability on actuarial value of assets		$213,842,070	$209,583,347
	• Funded percentage on AVA basis		50.75%	49.70%
Key assumptions	• Net investment return		6.90%	7.00%
	• Inflation rate		2.50%	2.50%
	• Payroll growth for amortization purposes		1.25%	1.25%
Demographic data	• Number of retired participants and beneficiaries		385	369
	• Number of inactive vested participants		9	7
	• Number of active participants		532	587
	• Covered payroll		$28,726,006	$28,164,021
	• Average payroll		53,996	47,980
	• Projected total payroll		$29,085,081	$28,516,071

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

Important information about actuarial valuations

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

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

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

Section 1: Actuarial Valuation Summary

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

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

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

Actuarial Valuation Results

Participant data

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

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

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

Participant Population: 2010 – 2019

Year Ended September 30	Active Participants	Inactive Vested Participants[1]	Retired Participants and Beneficiaries[2]	Total Non-Actives	Ratio of Non-Actives to Actives
2010	688	1	164	165	0.24
2011	675	1	199	200	0.30
2012	629	1	241	242	0.38
2013	631	1	274	275	0.44
2014	616	1	306	307	0.50
2015	651	1	328	329	0.51
2016	610	4	355	359	0.59
2017	638	4	368	372	0.58
2018	587	7	369	376	0.64
2019	532	9	385	394	0.74

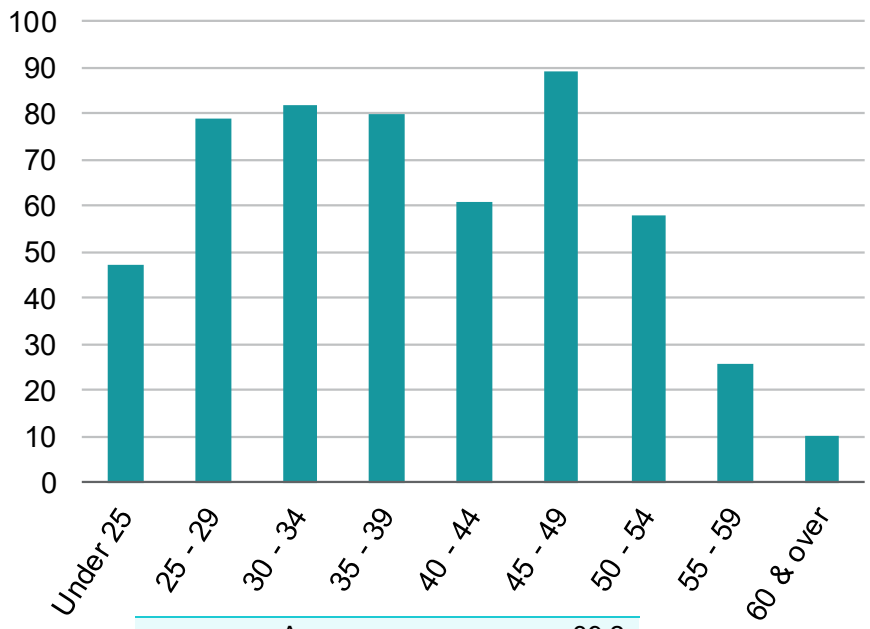
[1] Excludes terminated participants due a refund of employee contributions
[2] Includes DROP participants

Active participants

Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 532 active participants with an average age of 39.2, average years of service of 10.2 years and average payroll of $53,996. The 587 active participants in the prior valuation had an average age of 37.8, average service of 9.2 years and average payroll of $47,980.

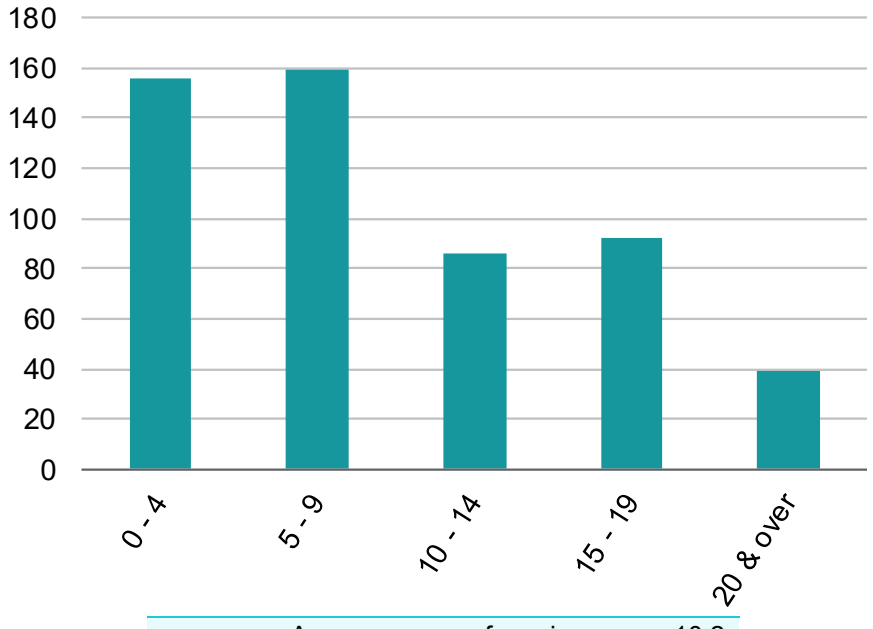
Distribution of Active Participants as of September 30, 2019

Actives by Age



Average age	39.2
Prior year average age	37.8
Difference	1.4

Actives by Years of Service



Average years of service	10.2
Prior year average years of service	9.2
Difference	1.0

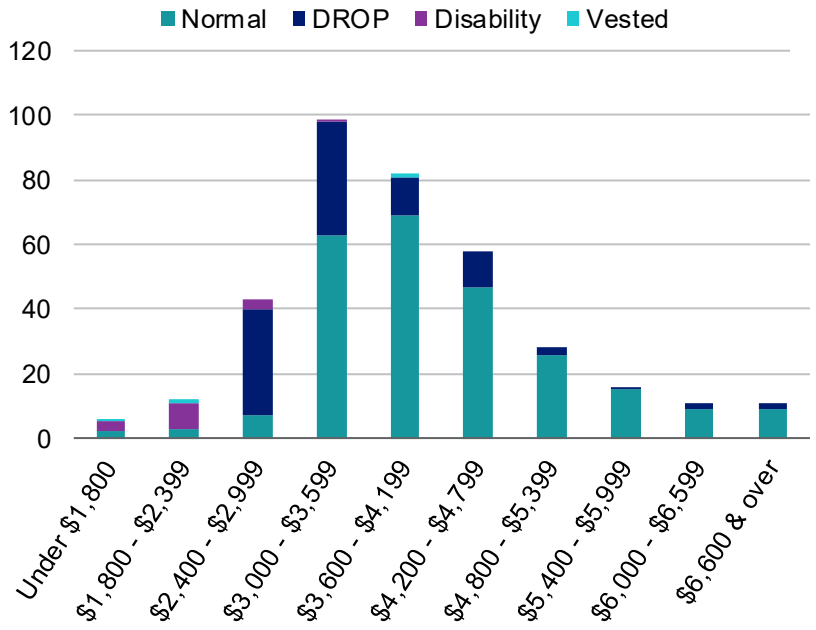
Retired participants and beneficiaries

As of September 30, 2019, 366 retired participants and 19 beneficiaries were receiving, or reserving for future receipt in the case of DROP participants, total monthly benefits of $1,506,547. For comparison, in the previous valuation, there were 352 retired participants and 17 beneficiaries receiving monthly benefits of $1,400,936.

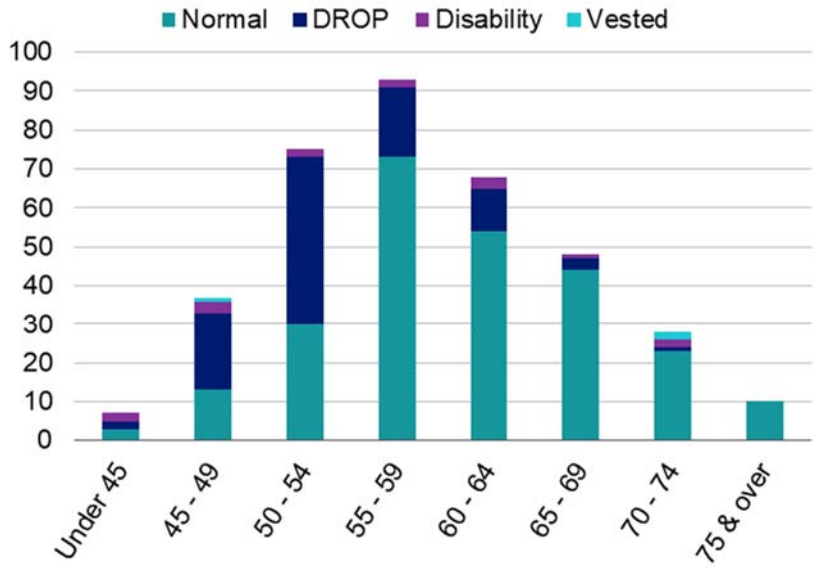
As of September 30, 2019, the average monthly benefit including supplement for retired participants is $3,913, compared to $3,797 in the previous valuation. The average age for retired participants is 58.8 in the current valuation, compared with 58.2 in the prior valuation.

Distribution of Pensioners as of September 30, 2019

Pensioners by Type and Monthly Amount Including Supplement



Pensioners by Type and Age



Historical plan population

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

Participant Data Statistics: 2010 – 2019

	Active Participants			Retired Participants and Beneficiaries*		
Year Ended September 30	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount Including Supplement
2010	688	38.3	8.6	164	54.8	$3,354
2011	675	38.1	8.6	199	54.7	3,398
2012	629	38.3	8.8	241	55.4	3,359
2013	631	37.6	8.4	274	55.7	3,422
2014	616	37.4	8.3	306	56.0	3,532
2015	651	37.0	8.1	328	56.6	3,562
2016	610	37.1	8.3	355	57.1	3,655
2017	638	36.3	8.0	368	57.5	3,724
2018	587	37.8	9.2	369	58.2	3,797
2019	532	39.2	10.2	385	58.8	3,913

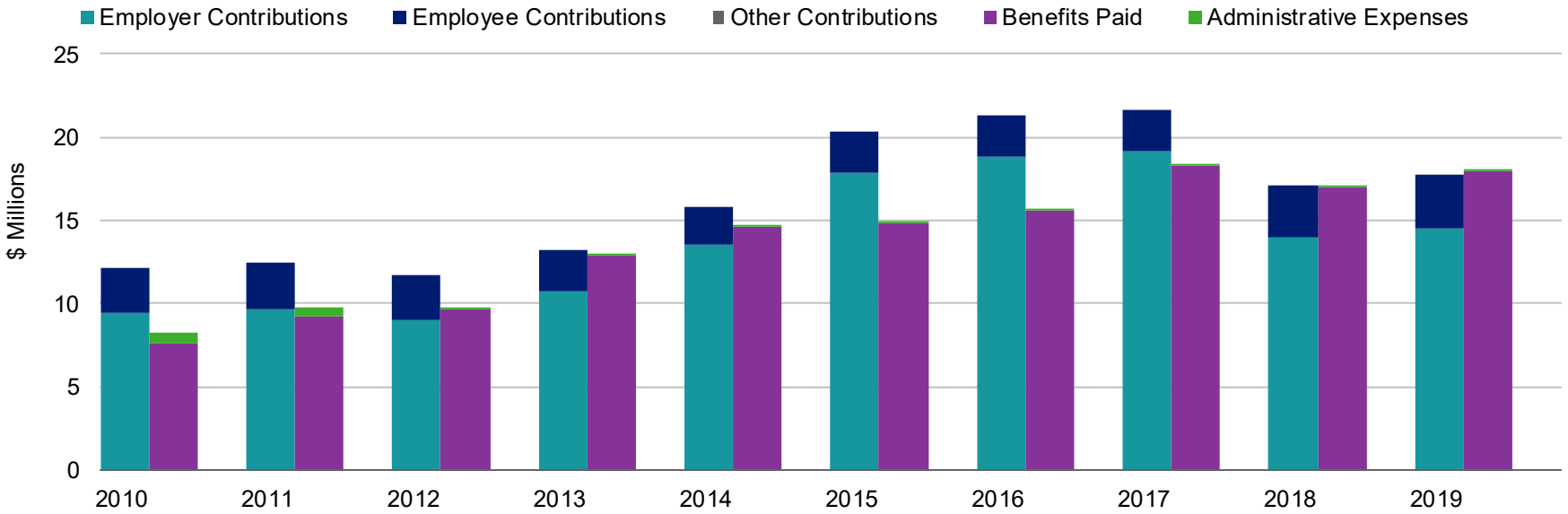
*Includes DROP participants not yet in pay status

Financial information

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

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

Comparison of Contributions Made with Benefits and Expenses Paid
for Years Ended September 30, 2010 – 2019



Section 2: Actuarial Valuation Results

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

Determination of Actuarial Value of Assets for Year Ended September 30, 2019

1	Market value of assets, September 30, 2019					$219,754,000
2	Calculation of unrecognized return		**Original Amount ***	**Percent Deferred**	**Unrecognized Amount****	
(a)	Year ended September 30, 2019		-$11,656,375	80%	-$9,325,100	
(b)	Year ended September 30, 2018		5,056,884	60	3,034,131	
(c)	Year ended September 30, 2017		14,240,149	40	5,696,060	
(d)	Year ended September 30, 2016		70,675	20	14,135	
(e)	Year ended September 30, 2015		-15,203,738	0	0	
(f)	Total unrecognized return					-580,774
3	Preliminary actuarial value:	**(1) - (2f)**				$220,334,774
4	Adjustment to be within 20% corridor					0
5	Final actuarial value of assets as of September 30, 2019:	**(3) + (4)**				220,334,774
6	Actuarial value as a percentage of market value:	**(5) ÷ (1)**				100.3%
7	Amount deferred for future recognition***:	**(1) - (5)**				-$580,774

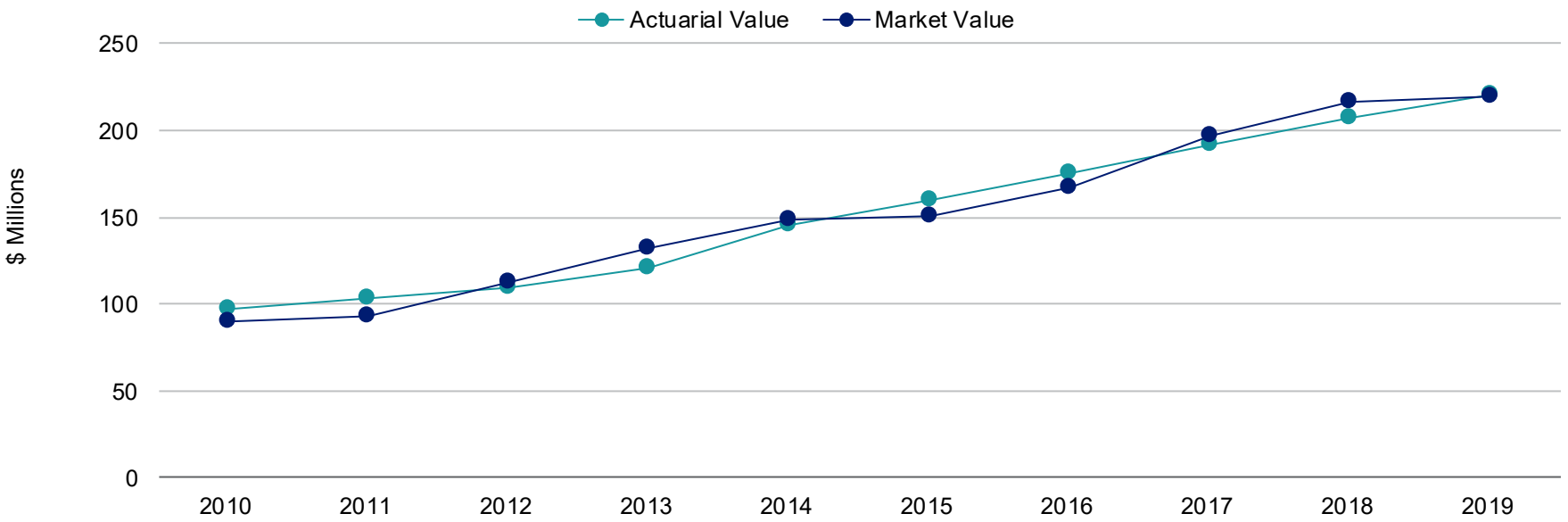
*Total return minus expected return on a market value basis
**Recognition at 20% per year over five years
***Deferred return as of September 30, 2019 recognized in each of the next four years:

(a) Amount recognized on September 30, 2020	$1,542,267
(b) Amount recognized on September 30, 2021	1,528,132
(c) Amount recognized on September 30, 2022	-1,319,898
(d) Amount recognized on September 30, 2023	-2,331,275

Section 2: Actuarial Valuation Results

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

Actuarial Value of Assets vs. Market Value of Assets as of September 30, 2010 – 2019



Actuarial experience

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

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

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

The total loss is $6,636,880, which includes $828,084 from investment losses and $5,808,796 in losses from all other sources. The net experience variation from individual sources other than investments was 1.3% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended September 30, 2019

1	Net loss from investments*	-$828,084
2	Net loss from administrative expenses	-26,047
3	Net loss from other experience	-5,782,749
4	Net experience loss: **1 + 2 + 3**	-$6,636,880

*Details on next page

Investment experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the market value of assets was 1.62% for the year ended September 30, 2019.

For valuation purposes, the assumed rate of return on the actuarial value of assets was 7.00% for the year ended September 30, 2019. The actual rate of return on an actuarial basis for the 2019 plan year was 6.60%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended September 30, 2019 with regard to its investments.

Investment Experience

		Year Ended September 30, 2019		Year Ended September 30, 2018	
		Market Value	**Actuarial Value**	**Market Value**	**Actuarial Value**
1	Net investment income	$3,496,000	$13,653,893	$19,269,000	$15,334,298
2	Average value of assets	216,462,500	206,885,381	197,390,500	191,748,083
3	Rate of return: **1 ÷ 2**	1.62%	6.60%	9.76%	8.00%
4	Assumed rate of return	7.00%	7.00%	7.20%	7.20%
5	Expected investment income: **2 x 4**	15,152,375	14,481,977	14,212,116	13,805,862
6	Actuarial gain/(loss): **1 - 5**	-$11,656,375	-$828,084	$5,056,884	$1,528,436

Section 2: Actuarial Valuation Results

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the actual market value investment return for the last 12 years, including averages over select time periods.

Investment Return – Actuarial Value vs. Market Value: 2008 - 2019

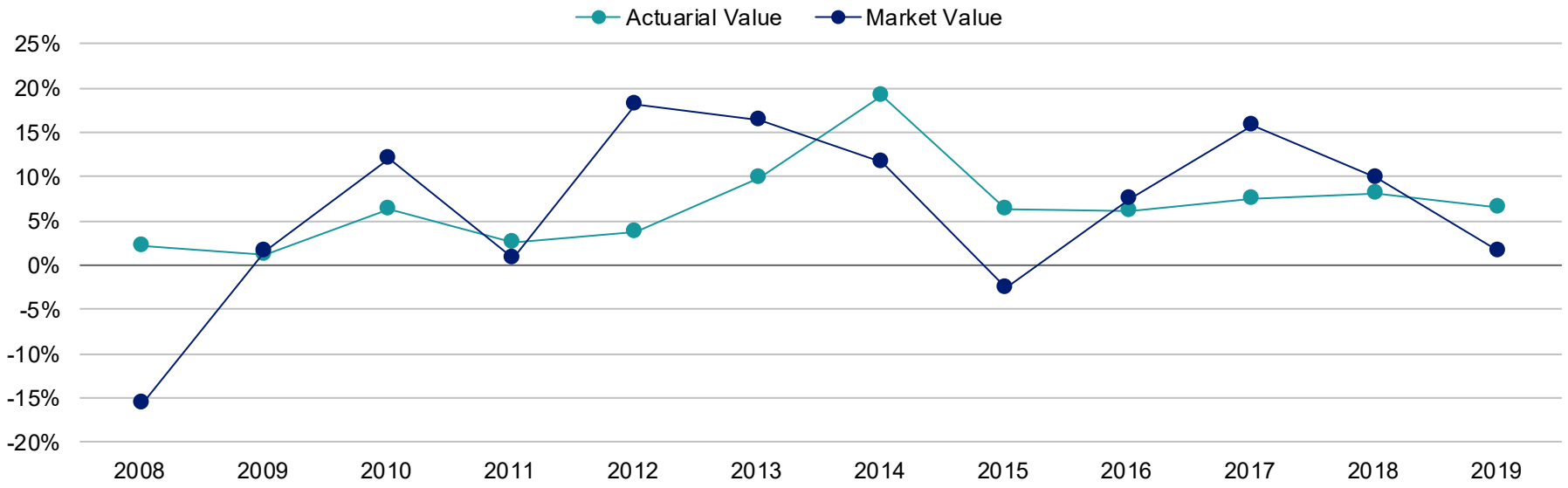
Year Ended September 30	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2008	- -	2.14%	- -	-15.61%
2009	- -	1.23	- -	1.49
2010	$5,675,853	6.33	$9,391,000	12.03
2011	2,620,301	2.65	717,000	0.79
2012	3,890,663	3.73	17,166,000	18.14
2013	10,789,123	9.82	18,466,000	16.29
2014	23,230,602	19.12	15,468,000	11.66
2015	9,286,603	6.28	-3,849,000	-2.54
2016	9,803,158	6.02	11,548,000	7.55
2017	13,158,178	7.44	26,747,000	15.83
2018	15,334,298	8.00	19,269,000	9.76
2019	13,653,893	6.60	3,496,000	1.62
Most recent five-year average return		6.91%		6.45%
Most recent ten-year average return		7.62%		8.48%

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

Section 2: Actuarial Valuation Results

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

Market and Actuarial Rates of Return for Years Ended September 30, 2008 - 2019



Non-investment experience

Administrative expenses

- Administrative expenses for the year ended September 30, 2019 totaled $158,000, as compared to the assumption of $128,000. This resulted in a loss of $26,047 for the year, due to timing.

Other experience

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

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

The net loss from this other experience for the year ended September 30, 2019 amounted to $5,782,749, which is 1.3% of the actuarial accrued liability.

Actuarial assumptions

The assumption changes reflected in this report are:

- The mortality assumption, including an allowance for future longevity improvement, was updated to match that which is used for the Florida Retirement System Pension Plan for Special Risk Personnel.
- The discount rate was lowered from 7.00% to 6.90%.
- These changes decreased the actuarial accrued liability by 1.65% and increased the total normal cost by 0.83%.

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

Plan provisions

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

Section 2: Actuarial Valuation Results

Development of Unfunded Actuarial Accrued Liability for Year Ended September 30, 2019

1	Unfunded actuarial accrued liability at beginning of year		$209,583,347
2	Employer normal cost at beginning of year		4,871,760
3	Employer contributions		-14,498,000
4	Interest		
	• For whole year on **1 + 2**	$15,011,857	
	• For half year on **3**	-459,462	
	Total interest		14,552,395
5	Expected unfunded actuarial accrued liability		$214,509,502
6	Changes due to:		
	• (Gain)/loss	6,636,880	
	• Assumptions	-7,304,312	
	Total changes		-$667,432
7	Unfunded actuarial accrued liability at end of year		$213,842,070

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

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

The contribution requirement as of October 1, 2019 are based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

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

		2019		2018	
		Amount	% of Projected Payroll	Amount	% of Projected Payroll
1.	Total normal cost	$7,675,038	26.39%	$7,359,444	25.81%
2.	Administrative expenses	158,000	0.54%	128,000	0.45%
3.	Expected employee contributions	-2,659,247	-9.14%	-2,615,684	-9.17%
4.	Employer normal cost: (1) + (2) + (3)	$5,173,791	17.79%	$4,871,760	17.08%
5.	Actuarial accrued liability	$434,176,844		$416,673,228	
6.	Actuarial value of assets	220,334,774		207,089,881	
7.	Unfunded actuarial accrued liability: (5) - (6)	$213,842,070		$209,583,347	
8.	Payment on unfunded actuarial accrued liability	14,655,411	50.39%	14,279,976	50.08%
9.	Florida Chapter 112 determined employer contribution: (4) + (8)[1]	20,812,130	71.56%	20,111,161	70.53%
10.	Amortized value of discounted value of projected surtax revenue[1, 2]	5,767,600	19.83%	-5,068,538	-17.77%
11.	City's minimum required contribution: (9) + (10)[2]	$15,044,530	51.73%	$15,042,623	52.75%
12.	Projected payroll	$29,085,081		$28,516,071	

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

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

Reconciliation of City's Minimum Required Contribution

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

Reconciliation of City's Minimum Required Contribution from October 1, 2019 to October 1, 2020

	Amount
City's Minimum Required Contribution as of October 1, 2019	$15,042,623
• Effect of expected change in amortization payment due to payroll growth	124,085
• Effect of change in administrative expense assumption	31,503
• Effect of contribution deferral to budget year and balancing amortization bases for surtax credit	396,854
• Effect of investment loss	59,374
• Effect of other gains and losses on accrued liability	416,492
• Effect of gain on updated surtax projection	-24,991
• Effect of updated surtax allocation	-512,131
• Effect of change in actuarial assumptions	-709,110
• Net effect of other changes, including composition and number of participants	219,832
• Total change	$1,907
City's Minimum Required Contribution as of October 1, 2020	$15,044,530

History of employer contributions

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

History of Employer Contributions: 2012 – 2021

Fiscal Year Ended September 30	City's Minimum Required	Actual Employer Contribution	Percent Contributed
2012	$11,860,912	$9,066,000	76.44%
2013	12,884,770	10,742,000	83.37%
2014	14,884,963	13,522,000	90.84%
2015	17,618,896	17,832,000	101.21%
2016	18,863,935	18,864,000	100.00%
2017	19,155,820	19,162,000	100.03%
2018	13,973,105	13,973,000	100.00%
2019	14,497,788	14,498,000	100.00%
2020	15,042,623	- -	- -
2021	15,044,530	- -	- -

Risk

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

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

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

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

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

  The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.

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

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

  If the City paid the Florida Chapter 112 determined contribution, the effective amortization period would be 27 years, meaning that the current contribution level, with amortization payments growing 1.25%, would be adequate to be expected to reduce the unfunded liability to zero over 27 years. Under the City's current policy of paying the City's minimum required contribution, over the immediate term, the unfunded liability has an expected growth rate of 2.3% and increases at this level can be expected to continue until the surtax income becomes payable to the Plan's trust. If plan experience is less favorable than anticipated, the unfunded liability will grow faster than 2.3% per year. By comparison, the surtax revenue is assumed to grow 4.25% per year.

  The City's minimum required contribution is determined pursuant to State Law Chapter 2016-146 and City of Jacksonville Ordinances 2017-257-E and 2017-258-E

  If the surtax revenue for fiscal 2019 had been 1% lower, the City's minimum required contribution would increase by $68,101 or 0.23% of projected payroll. For comparison purposes, the allocated surtax revenue is 43.7% of the market value of assets and 22.1% of the actuarial accrued liability.

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

  Examples of this risk include:

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

  – More or less active participant turnover than assumed.

  – DROP participation other than anticipated.

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

  Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

- The investment gain/loss for a year has ranged from a loss of $15,203,738 to a gain of $14,240,149. If all investment returns were equal to the assumed return over the last ten years, the market value of assets as of the current valuation date would be approximately $224,856,157 as opposed to the actual value of $219,754,000. Over the past ten years, the Plan's market value performance has, on average, exceeded the expected annual return.

- The non-investment gain/loss for a year has ranged from a loss of $7,402,084 to a gain of $1,978,720.

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

  Segal Consulting has only been provided with data on surtax income for fiscal 2016, 2017, 2018, and 2019, and over this period, the surtax revenue grew by 3.9% for fiscal 2017, 6.2% for fiscal 2018, and 4.7% for fiscal 2019. We encourage the City to consider reviewing any additional historical data on growth of their tax base to develop a sense of a range of possible outcomes for the surtax revenue that will be paid to the plan.

- **Maturity Measures**

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

  Currently the Plan has a non-active to active participant ratio of 0.74. For the prior year benefits and expenses paid were $409,000 more than contributions received. As the Plan matures, more cash will be needed from the investment portfolio to meet benefit payments.

GFOA funded liability by type

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

GFOA Solvency Test as of September 30

	2019	2018
Actuarial accrued liability (AAL)		
• Active member contributions	$19,136,185	$18,019,525
• Retirees and beneficiaries	289,920,395	280,451,383
• Active and inactive members (employer-financed)	125,120,264	118,202,320
Total	$434,176,844	$416,673,228
Actuarial value of assets	$220,334,774	$207,089,881
Cumulative portion of AAL covered		
• Active member contributions	100.00%	100.00%
• Retirees and beneficiaries	69.40%	67.42%
• Active and inactive members (employer-financed)	0.00%	0.00%

Supplemental Information

Exhibit A: Table of Plan Coverage

Category	Year Ended September 30 2019	2018	Change From Prior Year
Active participants in valuation:			
• Number	532	587	-9.4%
• Average age	39.2	37.8	1.4
• Average years of service	10.2	9.2	1.0
• Projected total payroll	$28,726,006	$28,164,021	2.0%
• Projected average payroll	53,996	47,980	12.5%
• Employee contribution balances	19,136,185	18,019,525	6.2%
• Total active vested participants	376	377	-0.3%
Inactive vested participants	9	7	28.6%
Retired participants:			
• Number in pay status	252	240	5.0%
• Average age	60.8	60.2	0.6
• Average monthly benefit	$4,252	$4,162	2.2%
Disabled participants:			
• Number in pay status	15	15	0.0%
• Average age	55.5	54.5	1.0
• Average monthly benefit	$2,331	$2,265	2.9%
Beneficiaries:			
• Number in pay status	19	17	11.8%
• Average age	64.1	63.6	0.5
• Average monthly benefit	$2,503	$2,327	7.6%
DROP participants not yet in pay status			
• Number	98	97	1.0%
• Average age	53.3	53.0	0.3
• Average monthly benefit	$3,555	$3,445	3.2%

Exhibit B: Participants in Active Service as of September 30, 2019 by Age, Years of Service, and Average Payroll

Age	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29
Under 25	47	46	1	- -	- -	- -	- -
	$41,071	$40,990	$44,808	$0	$0	$0	$0
25 - 29	79	55	24	- -	- -	- -	- -
	43,864	42,083	47,945	- -	- -	- -	- -
30 - 34	82	29	36	16	1	- -	- -
	48,667	42,539	50,867	54,413	55,272	- -	- -
35 - 39	80	9	25	28	18	- -	- -
	56,225	43,455	53,130	57,317	65,210	- -	- -
40 - 44	61	8	15	12	21	5	- -
	60,362	44,886	52,930	55,773	66,776	91,495	- -
45 - 49	89	3	26	13	26	18	3
	63,062	45,920	53,915	57,931	64,457	72,780	111,313
50 - 54	58	3	23	5	16	11	- -
	60,412	42,452	54,044	57,190	64,420	74,259	- -
55 - 59	26	2	6	8	8	2	- -
	57,675	42,462	55,722	56,849	63,234	59,820	- -
60 - 64	7	- -	2	3	2	- -	- -
	57,031	- -	53,436	55,768	62,520	- -	- -
65 - 69	3	1	1	1	- -	- -	- -
	48,152	42,432	47,052	54,972	- -	- -	- -
Total	532	156	159	86	92	36	3
	$53,996	$42,156	$52,088	$56,522	$64,879	$75,111	$111,313

Exhibit C: Reconciliation of Participant Data

	Active Participants	Inactive Vested Participants	DROP Participants	Disableds	Retired Participants	Beneficiaries	Total
Number as of October 1, 2018	**587**	**7**	**97**	**15**	**240**	**17**	**963**
• New participants	0	N/A	0	N/A	N/A	N/A	0
• Terminations – with vested rights	-3	3	0	0	0	0	0
• Terminations – without vested rights	-34	N/A	0	N/A	N/A	N/A	-34
• Retirements	-6	-1	-8	N/A	15	N/A	0
• New DROP participants	-9	0	9	0	0	0	0
• New disabilities	0	0	0	0	N/A	N/A	0
• Return to work	0	0	0	0	0	N/A	0
• Deceased	0	0	0	0	-2	0	-2
• New beneficiaries	0	0	0	0	0	2	2
• Lump sum cash-outs	-2	0	0	0	0	0	-2
• Rehire	0	0	0	N/A	0	N/A	0
• Certain period expired	N/A	N/A	0	0	0	0	0
• Data adjustments	0	0	0	0	0	0	0
• Active participants no longer accruing benefits	0	0	0	N/A	N/A	N/A	0
• Net transfers (to)/from General and DC	-1	0	0	0	0	0	-1
Number as of October 1, 2019	**532**	**9**	**98**	**15**	**253**	**19**	**926**

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

	Year Ended September 30, 2019	Year Ended September 30, 2018
Net assets at market value at the beginning of the year	$216,667,000	$197,383,000
Contribution income:		
• Employer contributions	$14,498,000	$13,973,000
• Employer contributions	3,225,000	3,151,000
• Less administrative expenses	-158,000	-128,000
Net contribution income	*$17,565,000*	*$16,996,000*
Investment income:		
• Interest, dividends and other income	$5,667,000	$5,687,000
• Asset appreciation	-1,075,000	14,594,000
• Less investment fees	-1,096,000	-1,012,000
Net investment income	*$3,496,000*	*$19,269,000*
Total income available for benefits	**$21,061,000**	**$36,265,000**
Less benefit payments:		
• Benefit payments	-$14,931,000	-$13,174,000
• DROP credits	-2,643,000	-4,424,000
• Refunds	-3,575,000	-6,645,000
• DROP withdrawals	3,374,000	6,419,000
• DROP interest/adjustment	-199,000	843,000
Net benefit payments	*-$17,974,000*	*-$16,981,000*
Change in market value of assets	**$3,087,000**	**$19,284,000**
Net assets at market value at the end of the year	**$219,754,000**	**$216,667,000**

Exhibit E: Development of the Fund through September 30, 2019

Year Ended September 30	Employer Contributions	Employee Contributions	Other Contributions	Net Investment Return*	Admin. Expenses	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2010	$9,491,000	$2,632,000	$485,000	$9,391,000	$560,000	$7,651,000	$89,622,000	$97,463,955	108.8%
2011	9,711,000	2,807,000	309,000	717,000	560,000	9,197,000	93,409,000	103,154,256	110.4%
2012	9,066,000	2,621,000	472,000	17,166,000	55,000	9,675,000	113,004,000	109,473,919	96.9%
2013	10,742,000	2,525,000	392,000	18,466,000	50,000	12,925,000	132,154,000	120,947,042	91.5%
2014	13,522,000	2,253,000	0	15,468,000	65,000	14,611,000	148,721,000	145,276,644	97.7%
2015	17,832,000	2,466,000	0	-3,849,000	73,000	14,874,000	150,223,000	159,914,247	106.5%
2016	18,864,000	2,410,000	0	11,548,000	75,000	15,583,000	167,387,000	175,333,405	104.7%
2017	19,162,000	2,500,000	0	26,747,000	75,000	18,338,000	197,383,000	191,740,583	97.1%
2018	13,973,000	3,151,000	0	19,269,000	128,000	16,981,000	216,667,000	207,089,881	95.6%
2019	14,498,000	3,225,000	0	3,496,000	158,000	17,974,000	219,754,000	220,334,774	100.3%

* On a market basis, net of investment fees

Exhibit F: Table of Amortization Bases

Type*	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Fresh start	10/01/2016	30	$178,901,268	$12,234,716	27	$178,054,439
Experience gain	10/01/2017	30	-2,816,018	-189,982	28	-2,808,700
Assumptions change	10/01/2017	30	-283,924	-19,155	28	-283,186
Plan change	10/01/2017	30	9,863,395	665,431	28	9,837,760
Experience loss	10/01/2018	29	5,111,441	345,045	28	5,101,156
Assumptions change	10/01/2018	29	19,111,594	1,290,118	28	19,073,138
Experience loss	10/01/2019	28	12,171,775	823,306	28	12,171,775
Assumptions change	10/01/2019	28	-7,304,312	-494,068	28	-7,304,312
Total				**$14,655,411**		**$213,842,070**

Surtax Amortization Bases

Type*	Date Established	Initial Period	Initial Amount	Annual Payment*	Years Remaining	Outstanding Balance
Discounted surtax revenue applied	10/01/2016	30	-$64,295,005	-$4,397,012	27	-$63,990,664
Surtax offset gain	10/01/2017	30	-1,534,336	-103,514	28	-1,530,347
Allocation assumption change	10/01/2017	30	4,705,811	317,476	28	4,693,581
Discount rate change	10/01/2017	30	-3,286,369	-221,714	28	-3,277,827
Surtax offset gain	10/01/2018	29	-1,420,046	-95,859	28	-1,417,188
Allocation change	10/01/2018	29	-1,349,426	-91,092	28	-1,346,711
Discount rate change	10/01/2018	29	-3,713,867	-250,703	28	-3,706,394
Surtax offset gain	10/01/2019	28	-384,544	-23,576	28	-384,544
Allocation change	10/01/2019	28	-7,142,670	-483,134	28	-7,142,670
Discount rate change	10/01/2019	28	-2,159,598	-146,076	28	-2,159,598
Total				**-$5,495,204**		**-$80,226,362**

* Level percentage of payroll; per Part VII, Chapter 112.64(5)(b) of Florida Statutes, outstanding balances were amortized using a 1.25% payroll growth rate for October 1, 2019 valuation.

Exhibit G: Definition of Pension Terms

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

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

Section 3: Supplemental Information

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

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

Section 3: Supplemental Information

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

Exhibit H: Section 415

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $225,000 for 2019. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as form of benefits chosen and after tax contributions.

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

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

Exhibit I: Supplementary State of Florida Information
Summary of Salary Changes

Year Ended September 30	Total Salary	Percent Change in Total Salary	Percent Change in Salary of Employees Remaining Active	Expected Percent Change in Salary of Employees Remaining Active
2009	$27,661,000	5.04%	3.93%	5.18%
2010*	27,869,052	0.75%	N/A	N/A
2010	32,329,400	16.88%	2.45%	5.28%
2011	31,832,037	-1.54%	3.09%	5.80%
2012	28,944,158	-9.07%	0.78%	6.15%
2013	27,871,010	-3.71%	3.03%	1.72%
2014	27,373,702	-1.78%	3.89%	1.70%
2015	28,091,083	2.62%	3.08%	1.66%
2016	26,585,054	-5.36%	2.63%	4.26%
2017	27,548,015	3.62%	4.03%	8.21%
2018	28,164,021	2.24%	10.21%	8.31%
2019	28,726,006	2.00%	12.46%	8.34%

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

The average total payroll growth for the most recent ten years was 0.38% per year. Additional analysis of bargained pay increase applicable for the next year and pay of DC plan participants was used to support a payroll increase assumption of 1.25%.

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

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

Exhibit J: Supplementary State of Florida Information
Recent History of Recommended and Actual Contributions

Fiscal Year Ended September 30	Valuation Date October 1	Contribution Rate as Percent of Valuation Payroll	Valuation Payroll	Florida Chapter 112 Recommended Contribution	City's Minimum Required Contribution	Actual Contribution
2011	2008*	31.78%	$27,957,188	$8,884,794	- -	$9,711,000
2012	2010	35.45%	33,460,929	11,860,912	- -	9,066,000
2013	2011	39.11%	32,946,158	12,884,770	- -	10,742,000
2014	2012	49.93%	29,812,483	14,884,963	- -	13,522,000
2015	2013	62.81%	28,049,384	17,618,896	- -	17,832,000
2016	2014	68.64%	27,480,459	18,863,935	- -	18,864,000
2017	2015	67.73%	28,282,102	19,155,820	- -	19,162,000
2018	2016	69.26%	26,917,306	18,643,233	$13,973,105	13,973,000
2019	2017	68.63%	27,892,365	19,141,501	14,497,788	14,498,000
2020	2018	70.53%	28,516,071	20,111,161	15,042,623	- -
2021	2019	71.56%	29,085,081	20,812,130	15,044,530	- -

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

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

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

	Year Ended September 30, 2019		
	New Assumptions	Old Assumptions	Year Ended September 30, 2018
Participant data			
• Active members	532	532	587
• Total annual payroll	$28,726,006	$28,726,006	$28,164,021
• Retired members and beneficiaries	287	287	272
• Total annualized benefit	$13,898,136	$13,898,136	$12,868,296
• Terminated vested members	9	9	7
• Total annualized benefit	$286,056	$286,056	$202,044
• DROP participants	98	98	97
• Total annualized benefit	$4,180,428	$4,180,428	$4,010,280
Actuarial value of assets	$220,334,774	$220,334,774	$207,089,881
Present value of all future expected benefit payments:			
• Active members:			
◦ Retirement benefits	$170,928,866	$170,233,024	$165,972,475
◦ Vesting benefits	2,739,041	2,722,969	2,942,745
◦ Disability benefits	3,816,850	3,403,471	3,343,710
◦ Death benefits	1,272,892	1,885,213	1,876,033
◦ Return of contributions	19,136,185	19,136,185	18,019,525
◦ Total	197,893,834	197,380,862	$192,154,488
• Terminated vested members	4,426,283	4,490,782	2,911,360
• Retired members and beneficiaries	214,269,144	219,939,739	206,180,474
• DROP participants	75,651,250	76,810,907	74,270,909
Total	$492,240,511	$498,622,290	$283,362,743

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

	Year Ended September 30, 2019		
	New Assumptions	Old Assumptions	Year Ended September 30, 2018
Unfunded actuarial accrued liability	$213,842,070	$221,146,382	$209,583,347
Actuarial present value of accrued benefits			
Vested accrued benefits			
Active members	$100,403,017	$101,019,695	$96,798,420
Inactive members	4,426,283	4,490,782	2,911,360
Pensioners and beneficiaries	214,269,144	219,939,739	206,180,474
DROP participants	75,651,250	76,810,907	74,270,909
Nonvested active members	1,157,779	1,143,862	1,217,353
Total	$395,907,473	403,404,985	$381,378,516
Pension cost			
Normal cost, including administrative expenses	$7,833,038	$7,769,543	$7,487,444
Expected employee contributions	-2,659,247	-2,658,440	-2,615,684
Level % of payroll payment to amortize unfunded actuarial accrued liability	14,655,411	15,289,563	14,279,976
Discounted and amortized value of allocated surtax revenue	-5,495,204	-4,910,870	-4,826,738
Total minimum annual cost payable monthly at valuation date	14,858,795	16,064,960	14,856,911
Total employer cost projected to budget year	15,044,530	16,265,772	15,042,623
Projected payroll	29,085,081	29,085,081	28,516,071
As % of payroll	51.73%	55.92%	52.75%
Present value of active members' future salaries at attained age	$201,300,936	$199,754,247	$210,908,216
Present value of expected future employee contributions	20,130,094	19,975,425	$20,890,104

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

Factors	Change in Actuarial Present Value of Accumulated Plan Benefits	
Actuarial present value of accumulated benefits as of October 1, 2018		$381,378,516
Benefits accumulated, net experience gain or loss, changes in data	$13,933,064	
Benefits paid	-17,974,000	
Interest	26,067,406	
Changes in assumptions	-7,497,512	
Plan changes	0	
Net increase	$14,528,958	
As % of payroll	49.95%	
Actuarial present value of accumulated benefits as of October 1, 2019		$395,907,474

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

Attained Age	Total Actives*	Eligible for Normal**	Number Retiring	Number Entering DROP
Under 40	336	1	- -	1
40	15	2	1	- -
41	13	2	1	1
42	12	2	- -	- -
43	10	2	- -	- -
44	10	2	- -	- -
45	21	6	- -	1
46	17	5	1	1
47	17	3	- -	- -
48	24	5	- -	- -
49	21	7	- -	- -
50	14	5	- -	- -
51	10	2	- -	1
52	11	4	- -	2
53	12	1	- -	- -
54	8	2	1	1
55	7	3	- -	1
56	6	-	- -	- -
57	8	2	1	- -
58	2	- -	- -	- -
59	2	- -	- -	- -
60	3	- -	- -	- -
61	0	- -	- -	- -
62	3	- -	- -	- -
63	1	- -	- -	- -
64	2	- -	- -	- -
65	2	- -	1	- -
Total	587	56	6	9

*Number of active participants from prior valuation
**Number of active participants either eligible for retire as of October 1, 2018 or who became eligible during the plan year ended October 1, 2019.

Exhibit N: Actuarial Projections through Fiscal 2062

Plan Year Beginning	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio	Fiscal Year Ending	Surtax Contribution	% of Total Contribution	Required City Contribution	% of Total Contribution	Total Contribution
					2020	0	0.0%	15,042,623	100.0%	15,042,623
2019	434,176,844	220,334,774	213,842,070	50.75%	2021	0	0.0%	15,044,530	100.0%	15,044,530
2020	451,675,870	234,519,424	217,156,446	51.92%	2022	0	0.0%	14,786,178	100.0%	14,786,178
2021	468,676,172	248,467,392	220,208,780	53.01%	2023	0	0.0%	14,547,086	100.0%	14,547,086
2022	485,108,433	258,670,872	226,437,561	53.32%	2024	0	0.0%	14,580,106	100.0%	14,580,106
2023	501,055,242	266,962,326	234,092,916	53.28%	2025	0	0.0%	14,597,716	100.0%	14,597,716
2024	516,059,318	276,652,300	239,407,018	53.61%	2026	0	0.0%	14,547,288	100.0%	14,547,288
2025	530,547,742	285,595,551	244,952,191	53.83%	2027	0	0.0%	14,555,263	100.0%	14,555,263
2026	544,695,879	293,854,695	250,841,184	53.95%	2028	0	0.0%	14,490,662	100.0%	14,490,662
2027	558,145,442	301,255,151	256,890,291	53.97%	2029	0	0.0%	14,433,097	100.0%	14,433,097
2028	570,849,817	307,614,786	263,235,031	53.89%	2030	0	0.0%	14,449,269	100.0%	14,449,269
2029	583,045,454	313,047,584	269,997,870	53.69%	2031	7,305,438	33.7%	14,396,018	66.3%	21,701,456
2030	594,403,317	324,980,051	269,423,266	54.67%	2032	10,154,559	42.1%	13,940,404	57.9%	24,094,963
2031	603,051,579	337,955,227	265,096,352	56.04%	2033	10,586,128	43.5%	13,731,098	56.5%	24,317,226
2032	609,875,028	349,595,232	260,279,796	57.32%	2034	11,036,038	44.7%	13,633,796	55.3%	24,669,834
2033	615,309,161	360,606,395	254,702,766	58.61%	2035	11,505,070	45.9%	13,552,730	54.1%	25,057,800
2034	619,361,164	371,222,383	248,138,781	59.94%	2036	11,994,035	47.1%	13,467,774	52.9%	25,461,809
2035	621,956,254	381,490,776	240,465,478	61.34%	2037	12,503,782	48.4%	13,307,762	51.6%	25,811,544
2036	622,695,791	391,223,620	231,472,171	62.83%	2038	13,035,192	49.7%	13,197,752	50.3%	26,232,944
2037	621,708,170	400,467,626	221,240,544	64.41%	2039	13,589,188	51.2%	12,938,683	48.8%	26,527,871
2038	618,245,878	408,897,634	209,348,244	66.14%	2040	14,166,728	52.4%	12,880,269	47.6%	27,046,997
2039	613,074,259	416,870,579	196,203,680	68.00%	2041	14,768,814	53.4%	12,906,176	46.6%	27,674,990
2040	606,527,499	425,021,381	181,506,118	70.07%	2042	15,396,489	54.2%	12,985,617	45.8%	28,382,106
2041	598,831,527	433,761,927	165,069,600	72.43%	2043	16,050,840	55.1%	13,096,774	44.9%	29,147,614
2042	590,130,612	443,421,572	146,709,040	75.14%	2044	16,733,000	55.8%	13,232,122	44.2%	29,965,122
2043	580,548,526	454,300,257	126,248,269	78.25%	2045	17,444,153	56.6%	13,385,756	43.4%	30,829,909
2044	570,184,052	466,683,585	103,500,467	81.85%	2046	18,185,529	57.3%	13,548,366	42.7%	31,733,895
2045	559,116,189	480,856,718	78,259,471	86.00%	2047	18,958,414	58.0%	13,719,084	42.0%	32,677,498
2046	547,418,700	497,101,732	50,316,968	90.81%	2048	19,764,147	89.2%	2,390,369	10.8%	22,154,516
2047	535,156,728	515,711,309	19,445,419	96.37%	2049	20,604,123	98.4%	331,082	1.6%	20,935,205
2048	522,384,763	525,053,243	(2,668,480)	100.51%	2050	0	0.0%	339,360	100.0%	339,360
2049	509,161,536	512,010,757	(2,849,221)	100.56%	2051	0	0.0%	347,843	100.0%	347,843
2050	495,548,553	498,590,904	(3,042,351)	100.61%	2052	0	0.0%	356,539	100.0%	356,539
2051	481,610,955	484,859,674	(3,248,719)	100.67%	2053	0	0.0%	365,453	100.0%	365,453
2052	467,414,345	470,883,582	(3,469,237)	100.74%	2054	0	0.0%	374,590	100.0%	374,590
2053	453,025,563	456,730,443	(3,704,880)	100.82%	2055	0	0.0%	383,953	100.0%	383,953
2054	438,508,624	442,465,315	(3,956,691)	100.90%	2056	0	0.0%	393,553	100.0%	393,553
2055	423,929,969	428,155,748	(4,225,779)	101.00%	2057	0	0.0%	403,391	100.0%	403,391
2056	409,352,367	413,865,705	(4,513,338)	101.10%	2058	0	0.0%	413,477	100.0%	413,477
2057	394,836,662	399,657,298	(4,820,636)	101.22%	2059	0	0.0%	423,814	100.0%	423,814
2058	380,441,211	385,590,244	(5,149,033)	101.35%	2060	0	0.0%	434,409	100.0%	434,409
2059	366,221,936	371,721,924	(5,499,988)	101.50%	2061	0	0.0%	445,269	100.0%	445,269
2060	352,228,772	358,103,821	(5,875,049)	101.67%	2062	0	0.0%	456,402	100.0%	456,402
Total:						$273,781,667	40.8%	$396,853,503	59.2%	$670,635,170
Total Present Value at 6.9%:						$68,064,872	28.7%	$169,373,344	71.3%	237,438,216

Assumptions

Investment Return Assumption	6.9% per year
Actuarial Value of Assets	5-year smoothed market value
Payroll Growth Assumption	1.25% per year
Pension Liability Surtax Proceeds	6.17%, projected to increase 4.25% annually
Administrative Expenses	Projected to increase 2.5% annually

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

Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions	The information and analysis used in selecting each demographic assumption that has a significant effect on this actuarial valuation is shown in the Experience Study Report for the five-year period ended September 30, 2017.
Net Investment Return:	6.90%. The net investment return assumption was chosen by the Retirement System's Board of Trustees with input from the actuary. The assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes as provided by Segal Marco Advisors, as well as the Plan's target asset allocation.
Salary Increases (including inflation):	**Service** / **Rate (%)** 0 — 7.50 1 — 6.50 2 — 6.00 3 — 5.50 4 — 5.25 5 — 5.00 6 — 4.50 7 - 10 — 4.00 11 - 14 — 3.75 15+ — 2.80 The inflation component of the salary scale has been adjusted from 2.50% to 7.00% for 2019, with subsequent increases resuming at the assumed inflation rate of 2.50%.
Inflation Rate:	2.50%

Section 4: Actuarial Valuation Basis

Payroll Growth:

1.25% used for amortization of unfunded liability amounts, based on the requirement in the Florida Statutes that the assumption for this purpose may not exceed the average annual growth for the preceding ten years. Negotiated pay level increases and pay of DC Plan participants were taken into consideration in setting a payroll growth that is expected to be achieved and maintained on a ten-year average basis. The Fund's long-term payroll growth assumption is equal to the inflation assumption of 2.50%.

Mortality Rates:

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

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

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

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

Annuitant Mortality Rates:

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

[1] Mortality rates shown for base table.

Section 4: Actuarial Valuation Basis

Termination Rates before Retirement:

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

* Mortality rates shown for base table

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

Retirement Rates:

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

Service	Rate (%)
Under 20	0%
20	50
21 – 24	40
25 – 27	50
28 & Over	100

Refund of Contributions:

95% of participants that are vested and terminate are assumed to take a refund of their employee contributions in lieu of their accrued benefit deferred to age 65.

Retirement Rates for Inactive Vested Participants:

65

Section 4: Actuarial Valuation Basis

Unknown Data for Participants:	Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.
Value of Applicable Tax Revenue:	Actual revenue of $95,804,756 for fiscal 2019 is used as the basis of the City's revenue projection. This amount is prior to application of the allocation percentage.
Tax Revenue Growth Rate:	4.25%. This assumption is determined by the City. Segal has not reviewed the information used to set this assumption, but Segal previously reviewed the sensitivity of this assumption when it was initially set.
Projected Tax Revenue Allocation:	6.17%. This percentage is determined by the City. Last year's percentage was 5.70%.
Administrative Expenses:	Previous year's actual expenses; $158,000 for October 1, 2019.
Family Composition:	60% of participants are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their spouses.
Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual and the expected market return, and is recognized over a five - year period, further adjusted, if necessary, to be within 20% of the market value.
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age at the time the participant commenced employment. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis based on each member's benefit accrual rate and are allocated by compensation. Normal Cost is not included for participants who are assumed to retire with 100% certainty in the upcoming plan year based on the retirement assumptions.
Justification for Change in Actuarial Assumptions and Methods:	Following ongoing board review of discount rate options and newly released FRS mortality assumptions: ➢ The discount rate was lowered from 7.00% to 6.90%. ➢ The mortality assumptions were changed from being based on the FRS mortality tables used in the July 1, 2018 FRS actuarial valuation for the special risk personnel to the FRS mortality tables used in the July 1, 2019 FRS actuarial valuation for special risk personnel. The set forward used to adjust for the plan's experience was changed for healthy pre- and post-retirement lives was changed from 2.5 years to 2.0 years with the adoption of the new base table. The mortality improvement scale was changed from scale BB to scale MP2018 in conjunction with this change.

Exhibit II: Summary of Plan Provisions

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

Plan Year:	October 1 through September 30	
Plan Status:	Closed as of September 30, 2017	
Normal Retirement:	*Age Requirement*	Age 65 with five years of Credited Service or any age with 20 years of Credited Service.
	Regular Benefit Amount	3.0% of Final Monthly Compensation times years of Credited Service for the first 20 years plus 2.0% of Final Monthly Compensation times years of Credited Service for years in excess of 20. However, the benefit may not exceed 80% of Final Monthly Compensation.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Early Retirement:	None	

Section 4: Actuarial Valuation Basis

Service-Incurred Disability:	*Age Requirement*	None
	Service Requirement	None
	Regular Benefit Amount	50% of the average salary earned in the last three years immediately preceding disability retirement.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Non-service Incurred Disability:	*Age Requirement*	None
	Service Requirement	5 years of Credited Service
	Regular Benefit Amount	25% percent of the average salary earned in the last three years immediately preceding disability retirement. For each year of service in excess of 5 years, the benefit shall be increased 2.5%, to a maximum of 50%.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Vesting:	*Age Requirement*	None
	Service Requirement	5 years of Credited Service
	Regular Benefit Amount	Accrued Normal Retirement Benefit payable at age 65.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Credited Service, not less than $25 per month or more than $150 per month. Payable at Age 65.
	Minimum Benefit Amount	$66.65 per whole year of Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Spouse's Pre-Retirement Death Benefit:	*Age Requirement*	None
	Service Requirement	None
	Regular Benefit Amount	If the Member is eligible for retirement, the surviving spouse is entitled to 75% of the member's accrued retirement benefit. If the Member is not eligible for retirement, the surviving spouse is entitled to 75% of the pension the Member would have received if the Member had worked to eligibility for Normal Retirement at current salary, using a 2% annual accrual rate.
	Supplemental Benefit Amount	Monthly benefit of $5 times years of Member's Credited Service, not less than $25 per month or more than $150 per month.

Section 4: Actuarial Valuation Basis

	Minimum Benefit Amount	75% of $66.65 per whole year of Member's Credited Service, not to exceed 30. Minimum accrual rate increases 4% each October 1st.
Spouse's Post-Retirement Death Benefit:	*Regular Benefit Amount*	Surviving spouse is entitled to 75% of the Member's regular benefit.
	Supplemental Benefit Amount	Surviving spouse is entitled to 100% of the Member's supplemental benefit.
	Minimum Benefit Amount	75% of the Member's Minimum Benefit Amount at retirement.
Member:	All City Corrections Officers hired prior to October 1, 2017.	
Member Contributions:	10% of Earnable Compensation, additional 2% of Earnable Compensation during DROP participation.	
Credited Service:	The number of full years and months worked from date of participation to date of termination or retirement, plus any prior service purchased.	
Final Monthly Compensation:	Average monthly rate of Earnable Compensation during the highest 36 consecutive months (78 pay periods) out of the last ten years of employment.	
Earnable Compensation:	Base pay for regular hours worked as an employee, plus service raises and excluding bonuses, adjusted compensation, overtime or any extra compensation over and above regularly budgeted salaries.	
Cost of Living Adjustment:	On the December 1st after the initial benefit commencement date, and on each December 1st thereafter, the regular benefit is increased by 3%.	
DROP:	Members with 20 or more years of service may elect to defer receipt of their retirement benefits while continuing employment with the City for up to 5 years. Upon the effective date of participating in the DROP, a member's years of service and Final Monthly Compensation become frozen for purposes of determining pension benefits. Additional service beyond the date of DROP participation no longer accrues any additional benefits under the Retirement System. Benefits that would have been payable are accumulated at interest to date of termination and paid or rolled over in a single sum, and payments are made directly to the Member thereafter based on the accrued retirement benefit at the DROP start date. COLA increases start at termination of employment rather than at the start of the DROP.	
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.	

GASB 67 and 68 Information

General information about the pension plan

Plan membership. At October 1, 2019, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	385
Vested terminated members entitled to but not yet receiving benefits	9
Active members	532
Total	926

Net pension liability

Reporting Date for Employer under GASB 68 Measurement Date	September 30, 2020 October 1, 2019	September 30, 2019 October 1, 2018
Components of the Net Pension Liability		
Total Pension Liability	$434,176,844	$429,475,228
Plan Fiduciary Net Position	232,024,000	229,469,000
Net Pension Liability	202,152,844	200,006,228
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	53.44%	53.43%

The Net Pension Liability (NPL) for the plan was measured as of October 1, 2019 and 2018. Plan Fiduciary Net Position (plan assets) was valued as of the measurement dates and the Total Pension Liability (TPL) was determined from actuarial valuations as of October 1, 2019 and 2018, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL are the same as those used in the CORP actuarial valuations as of September 30, 2018 and September 30, 2017, respectively.

Actuarial assumptions. The TPL as of October 1, 2019 and 2018, that were measured by actuarial valuations as of October 1, 2019 and 2018, respectively, used the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.50%
Salary increases	2.80% - 7.50%, of which 2.50% is the Plan's long-term payroll inflation assumption.
Investment rate of return	6.90%, net of pension plan investment expense, including inflation (previously 7.00%)
Other assumptions	See the October 1, 2019 actuarial valuation for a complete description of all actuarial assumptions. These assumptions were developed in the analysis of actuarial experience study for the period October 1, 2012 through September 30, 2017.

Determination of discount rate and investment rates of return

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

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Domestic equity	30.0%	6.40%
International equity	20.0%	7.05%
Fixed income	20.0%	1.15%
Real estate	15.0%	4.50%
Private equity	7.5%	10.40%
Alternatives	7.5%	3.32%
Total	100.0%	

* Arithmetic real rates of return are net of inflation.

Discount rate. The discount rates used to measure the Total Pension Liability (TPL) were 6.90% and 7.00% as of October 1, 2019 and October 1, 2018, respectively. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Plan Fiduciary Net Position (FNP) was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both October 1, 2019 and October 1, 2018.

Discount rate sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability (NPL) of the plan as of October 1, 2019, calculated using the discount rate of 6.90%, as well as what the plan's NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (5.90%) or 1-percentage-point higher (7.90%) than the current rate.

	1% Decrease (5.90%)	Current Discount Rate (6.90%)	1% Increase (7.90%)
Net Pension Liability	$266,103,879	$202,152,844	$150,551,091

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

Reporting Date for Employer under GASB 68 Measurement Date	September 30, 2020 October 1, 2019	September 30, 2019 October 1, 2018
Total Pension Liability		
Service cost	$7,359,444	$7,975,759
Interest	29,930,717	28,317,858
Change of benefit terms	- -	- -
Differences between expected and actual experience	-6,778,233	718,682
Changes of assumptions	-7,304,312	17,044,608
Benefit payments, including refunds of member contributions	-18,506,000	-19,819,000
Net change in Total Pension Liability	$4,701,616	$34,237,907
Total Pension Liability – beginning	429,475,228	395,237,321
Total Pension Liability – ending	$434,176,844	$429,475,228
Plan Fiduciary Net Position		
Contributions – employer	$14,498,000	$13,973,000
Contributions – employee	3,225,000	3,151,000
Net investment income	3,496,000	19,269,000
Benefit payments, including refunds of member contributions	-18,506,000	-19,819,000
Administrative expense	-158,000	-128,000
Other	- -	- -
Net change in Plan Fiduciary Net Position	$2,555,000	$16,446,000
Plan Fiduciary Net Position – beginning	$229,469,000	$213,023,000
Plan Fiduciary Net Position – ending	232,024,000	229,469,000
Net Pension Liability – ending	$202,152,844	$200,006,228
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	53.44%	53.43%
Covered employee payroll[1]	$28,726,006	$28,164,021
Plan Net Pension Liability as percentage of covered employee payroll	703.73%	710.15%

[1] Pensionable payroll as of the measurement date

Section 5: GASB Information

Notes to Schedule:

Benefit changes:	*No benefit changes have been reflected in the past two fiscal years.*
Assumption changes:	*As of September 30, 2018, the assumed investment return was lowered from 7.20% to 7.00%.*
	As of September 30, 2018, inflation rates were reduced from 2.75% to 2.50%.
	As of September 30, 2018, withdrawal rates were increased for participants with fewer than eight years of service.
	As of September 30, 2018, disability rates were changed from sex-distinct rates to unisex rates, blending 75% of the previous male rates with 25% of the previous female rates.
	As of September 30, 2018, retirement rates for active participants with between 21 and 23 years of service were increased from 30% to 40% and set to 100% at 28 years of service.
	As of September 30, 2018, the percent married assumption was increased from 50% to 60%.
	As of September 30, 2018, the salary scale rates were increased for participants with fewer than two years of service and slightly reduced for participants with a larger amount of service.
	As of September 30, 2018, the funding method was changed from Replacement Entry Age to Traditional Entry Age. The Normal Cost and expected employee contributions were further updated to include a reduction for participants projected to retire during the year, to reflect the Plan now being closed to new entrants.
	As of September 30, 2018 the amortization period for newly created bases was reduced from 30 to 29 years for the plan year ended 2018, and will be further reduced by one year for new bases in each successive year beyond 2018.
	As of September 30, 2019 the assumed investment return was lowered from 7.00% to 6.90%.
	As of September 30, 2019 the mortality assumptions were changed from being based on the FRS mortality tables used in the July 1, 2018 FRS actuarial valuation for the non-special risk personnel to the FRS mortality tables used in the July 1, 2019 FRS actuarial valuation for personnel other than special risk and K-12 instructional personnel. The set forward used to adjust for the plan's experience was changed for healthy pre- and post-retirement lives was changed from 2.5 years to 2.0 years with the adoption of the new base table. The mortality improvement scale was changed from scale BB to scale MP2018 in conjunction with this change.

Deferred outflows of resources and deferred inflows of resources

Reporting Date for Employer under GASB 68 Measurement Date	September 30, 2020 October 1, 2019	September 30, 2019 October 1, 2018
Deferred Outflows of Resources		
Changes of assumptions or other inputs	$14,697,540	$33,713,121
Net difference between projected and actual earnings on pension plan investments	2,582,136	- -
Difference between expected and actual experience in the Total Pension Liability	12,700,466	3,030,952
Total Deferred Outflows of Resources	$29,980,142	$36,744,073
Deferred Inflows of Resources		
Changes of assumptions or other inputs	$6,198,592	$532,716
Net difference between projected and actual earnings on pension plan investments	- -	7,376,609
Difference between expected and actual experience in the Total Pension Liability	7,204,336	2,277,831
Total Deferred Inflows of Resources	$13,402,928	$10,187,156
Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:		
Reporting Date for Employer under GASB 68 Year Ended September 30:		
2020	N/A	$8,740,783
2021	$5,154,108	5,463,838
2022	2,543,103	2,852,833
2023	5,101,157	5,410,887
2024	3,778,846	4,088,576
2025	- -	- -
Thereafter	- -	- -

The net effect of the change on the NPL and deferred outflows of resources and deferred inflows of resources is recognized over the average of the expected remaining service lives of all employees that are provided with pensions through CORP which is 5 years determined as of October 1, 2018 (the beginning of the measurement period ending October 1, 2019). This is described in Paragraph 33a. of GASB 68.

Section 5: GASB Information

The average of the expected service lives of all employees is determined by:

- Calculating each active employee's expected remaining service life as the present value of $1 per year of future service at zero percent interest.
- Setting the remaining service life to zero for each nonactive or retired member.
- Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.

Schedule of recognition of change in total Net Pension Liability

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

Reporting Date for Employer under GASB 68 Year Ended September 30	Differences between Expected and Actual Experience	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	Thereafter
2015	$5,963,454	5	$851,922	$851,922	$851,922	$0	$0	$0	$0	$0
2016	1,699,155	5	242,736	242,736	242,736	242,736	0	0	0	0
2017	-1,418,089	5	-202,584	-202,584	-202,584	-202,584	-202,584	0	0	0
2018	-2,054,491	5	-293,499	-293,499	-293,499	-293,499	-293,499	-293,499	0	0
2019	17,044,608	6	2,840,768	2,840,768	2,840,768	2,840,768	2,840,768	2,840,768	0	0
2020	-6,778,233	5	N/A	-1,355,645	-1,355,647	-1,355,647	-1,355,647	-1,355,647	0	0
Net increase (decrease) in pension expense			N/A	$2,083,698	$2,083,696	$1,231,774	$989,038	$1,1,91,622	$0	$0

As described in Exhibit of Deferred Outflows of Resources and Deferred Inflows of Resources, the average of the expected remaining service lives of all employees that are provided with pensions through CORP (active and inactive employees) determined as of October 1, 2018 (the beginning of the measurement period ending October 1, 2019) is 5 years.

Section 5: GASB Information

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

Reporting Date for Employer under GASB 68 Year Ended September 30	Assumption Changes	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	Thereafter
2015	$10,764,915	5	$1,537,845	$1,537,845	$1,537,845	$0	$0	$0	$0	$0
2016	-1,243,005	5	-177,572	-177,572	-177,572	-177,572	0	0	0	0
2017	16,320,426	5	2,331,489	2,331,489	2,331,489	2,331,489	2,331,489	0	0	0
2018	9,950,689	5	1,421,527	1,421,527	1,421,527	1,421,527	1,421,527	1,421,527	0	0
2019	718,682	6	119,782	119,780	119,780	119,780	119,780	119,780	0	0
2020	-7,304,312	5	N/A	-1,460,864	-1,460,862	-1,460,862	-1,460,862	-1,460,862	0	0
Net increase (decrease) in pension expense			N/A	$3,772,205	$3,772,207	$2,234,362	$2,411,934	$80,445	$0	$0

As described in Exhibit of Deferred Outflows of Resources and Deferred Inflows of Resources, the average of the expected remaining service lives of all employees that are provided with pensions through CORP (active and inactive employees) determined as of October 1, 2018 (the beginning of the measurement period ending October 1, 2019) is 5 years.

Section 5: GASB Information

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

Reporting Date for Employer under GASB 68 Year Ended September 30	Differences between Projected and Actual Earnings	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	Thereafter
2015	-$4,030,046	5	-$806,009	$0	$0	$0	$0	$0	$0	$0
2016	16,384,725	5	3,276,945	3,276,945	0	0	0	0	0	0
2017	1,106,188	5	221,238	221,238	221,238	0	0	0	0	0
2018	-13,116,089	5	-2,623,218	-2,623,218	-2,623,218	-2,623,218	0	0	0	0
2019	-4,032,972	5	-806,596	-806,594	-806,594	-806,594	-806,594	0	0	0
2020	12,533,895	5	N/A	2,506,779	2,506,779	2,506,779	2,506,779	2,506,779	0	0
Net increase (decrease) in pension expense			N/A	$2,575,150	-$701,795	-$923,033	$1,700,185	$2,506,779	$0	$0

Section 5: GASB Information

Total Increase (Decrease) in Pension Expense

Reporting Date for Employer under GASB 68 Year Ended September 30	Total Increase (Decrease) in Pension Expense	2019	2020	2021	2022	2023	2024	2025	Thereafter
2015	$12,698,323	$1,583,758	$2,389,767	$2,389,767	$0	$0	$0	$0	$0
2016	16,840,875	3,342,109	3,342,109	65,164	65,164	0	0	0	0
2017	16,008,525	2,350,143	2,350,143	2,350,143	2,128,905	2,128,905	0	0	0
2018	-5,219,891	-1,495,190	-1,495,190	-1,495,190	-1,495,190	1,128,028	1,128,028	0	0
2019	13,730,318	2,153,954	2,153,954	2,153,954	2,153,954	2,153,954	2,960,548	0	0
2020	-1,548,650	N/A	-309,730	-309,730	-309,730	-309,730	-309,730	0	0
Net increase (decrease) in pension expense		N/A	$8,431,053	$5,154,108	$2,543,103	$5,101,157	$3,778,846	$0	$0

Pension expense

Reporting Date for Employer under GASB 68 Measurement Date	September 30, 2020 October 1, 2019	September 30, 2019 October 1, 2018
Components of Pension Expense		
Service cost	$7,359,444	$7,975,759
Interest on the Total Pension Liability	29,930,717	28,317,858
Current-period benefit changes	- -	- -
Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	-1,355,645	119,782
Expensed portion of current-period changes of assumptions or other inputs	-1,460,864	2,840,768
Member contributions	-3,225,000	-3,151,000
Projected earnings on plan investments	-16,029,895	-15,236,028
Expensed portion of current-period differences between actual and projected earnings on plan investments	2,506,779	-806,596
Administrative expense	158,000	128,000
Other	- -	- -
Recognition of beginning of year deferred outflows of resources as pension expense	12,844,250	9,883,702
Recognition of beginning of year deferred inflows of resources as pension expense	-4,103,467	-4,102,882
Pension Expense	**$26,624,319**	**$25,969,363**

Schedule of reconciliation of Net Pension Liability

Reporting Date for Employer under GASB 68 Measurement Date	September 30, 2020 October 1, 2019	September 30, 2019 October 1, 2018
Beginning Net Pension Liability	$200,006,228	$182,214,321
Pension expense	26,624,319	25,969,363
Employer contributions	-14,498,000	-13,973,000
New net deferred inflows/outflows	-1,238,920	11,576,364
Change in allocation of prior deferred inflows/outflows	- -	- -
Recognition of prior deferred inflows/outflows	-8,740,783	-5,780,820
Ending Net Pension Liability	$202,152,844	$200,006,228

Schedule of contributions – Last ten fiscal years

Year Ended September 30	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered-Employee Payroll[1]	Contributions as a Percentage of Covered Employee Payroll
2010	$9,096,850	$9,491,000	($394,150)	$32,329,400	29.36%
2011	8,884,794	9,711,000	(826,206)	31,832,037	30.51%
2012	11,860,912	9,066,000	2,794,912	28,944,158	31.32%
2013	12,884,770	10,742,000	2,142,770	27,871,010	38.54%
2014	14,884,963	13,522,000	1,362,963	27,373,702	49.40%
2015	17,618,896	17,832,000	(213,104)	28,091,083	63.48%
2016	18,863,935	18,864,000	(65)	26,585,054	70.96%
2017	19,155,820	19,162,000	(6,180)	27,548,015	69.56%
2018	18,643,233	13,973,000	4,670,233	28,164,021	49.61%
2019	19,141,501	14,498,000	4,643,501	28,726,006	50.47%

See accompanying notes to this schedule on next page.

[1] Pensionable payroll as of the measurement date.

Section 5: GASB Information

Notes to Schedule:

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

Valuation date	Actuarially determined contribution rates are calculated as of October 1, two years prior to the end of the fiscal year in which contributions are reported
Actuarial cost method	Entry Age Actuarial Cost Method
Amortization method	Level percent of payroll, using 1.25% annual increases[1]
Remaining amortization period	As of October 1, 2017 the effective amortization period is 29 years.
Asset valuation method	The market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between actual and expected returns on a market value basis and is recognized over a seven-year period. The deferred return is further adjusted, if necessary, so that the actuarial value of assets will stay within 20% of the market value of assets.
Actuarial assumptions:	
Investment rate of return	7.00%, net of pension plan investment expense, including inflation.
Inflation rate	2.75%
Projected salary increases	3.00% - 6.00%, of which 2.75% is the Plan's long-term payroll inflation assumption.
Cost of living adjustments	Plan provisions contain a 3.00% COLA
Other assumptions	Same as those used in the October 1, 2017 funding actuarial valuation.

[1] *The Fund's payroll inflation assumption was 2.75% as of October 1, 2017. Per Part VII, Chapter 112.64(5)(a) of Florida Statutes, the payroll growth assumption used for amortization of the unfunded liability is not allowed to exceed the average annual payroll growth for the proceeding ten years. However, pursuant to Chapter 112.64(5)(b), and after adjusting this analysis to account for bargained pay level increases and inclusion of DC plan participants in the total payroll, the assumption was set at 1.25%.*

April 23, 2020

Eagle Capital Large Cap Value Review

City of Jacksonville Employees' Retirement System

RVK

Philosophy & Process

- Since the inception of the mandate back in 2007, Eagle Capital (Eagle) has maintained a consistent philosophy of seeking to identify companies that are undervalued with undiscovered growth potential. Less of a traditional deep value manager, they use a much more absolute value mindset and contrarian process, whereby they buy value, hold growth, and sell momentum. This flexibility has allowed Eagle to hold securities outside of the normal value spectrum from time to time in that they identify stocks that are inexpensive relative to both their core earnings power and long-term prospects.
    - A great example of their absolute value mindset is Amazon. Eagle first added the position at $290 in 2014, but continue to own it to this day. Eagle believes given Amazon's earnings profile with a market multiple applied, it's very much still a value stock, even with the substantial increase in price .

- Eagle's fundamental, bottom-up research process has also not changed over time. Quantitative screens, or any narrowing of the universe are not used, instead the portfolio managers are trying to identify change early by conducting very long-term research-heavy analysis of earnings and revenues. The strategy employs a low turnover/long-term investment horizon with the average holding period historically being 4 years. The manager also continues to target a concentrated portfolio of between 25 and 35 positions.
    - Going back to 2007, the highest number of positions held was 33, with the lowest being 26. As of 12/31/19 the portfolio held 27 positions.

Portfolio Positioning

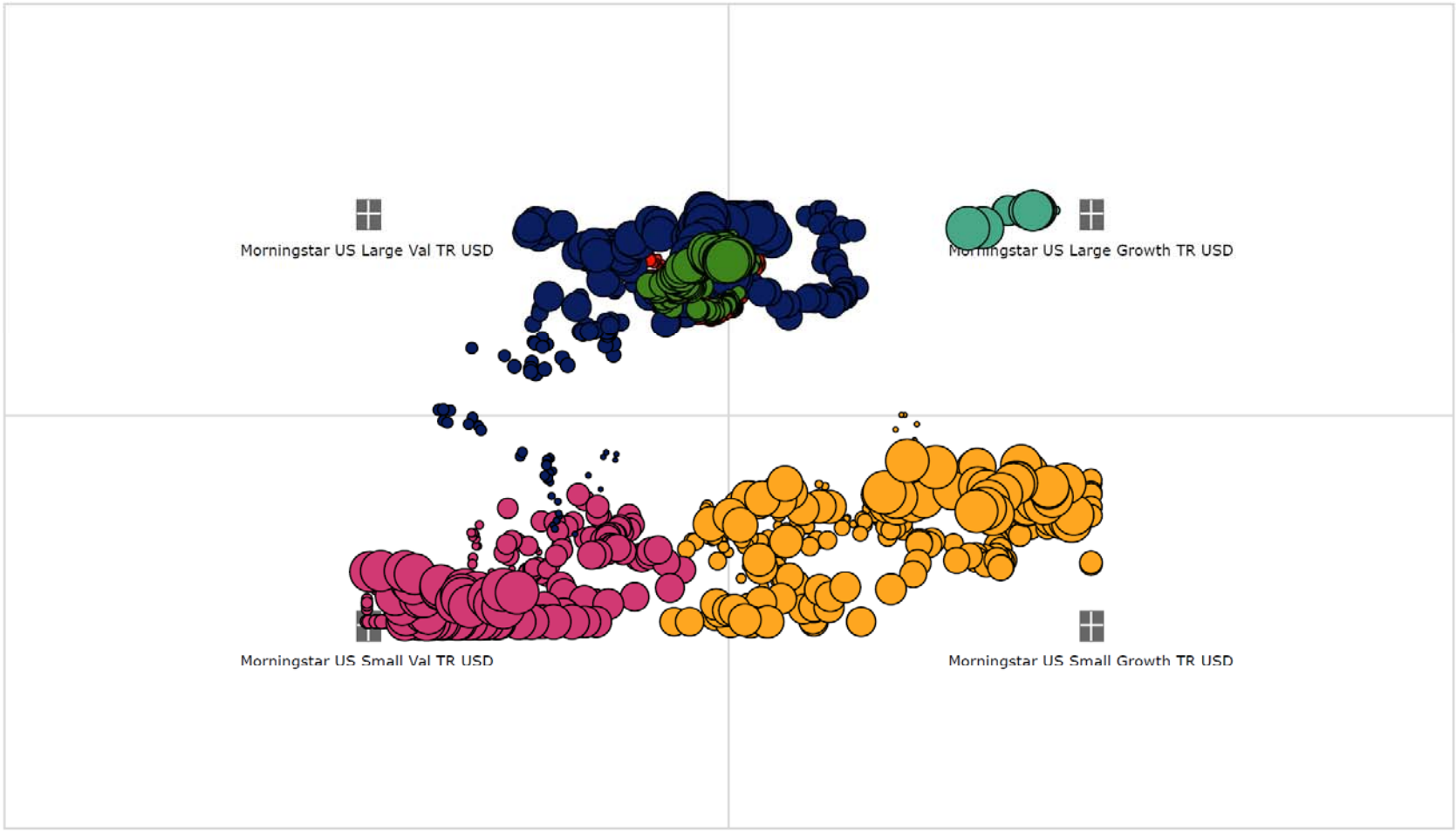
Returns-Based Style Analysis – Eagle vs. R1000 Value Since Product Inception

- Since inception, Eagle has mapped at or near Core / Core-Value, with greater tilt towards Value at different points in the cycle. For instance, during periods in the market where fundamentals are not being rewarded, such as the recent FAANG (Facebook, Apple, Amazon, Netflix, Google) frenzy, Eagle was able to add what they believe are high quality value names in GE and a few of the cable companies. These were stocks deemed to be a “falling knife” by pure value managers and that could not be owned by growth managers.

Source: Morningstar Direct. As of December 31, 2019. Calculation based on monthly rolling 3-year time periods using Eagle Capital LCV inception date of January 1989.

Portfolio Positioning (Cont.)

Returns-Based Style Analysis – US Equity Composite Since Product Inception



Source: Morningstar Direct. As of December 31, 2019. Calculation based on monthly rolling 3-year time periods. Eagle Capital LCV was incepted in January 1989. Mellon LCC Index was incepted in December 1986. Loomis Sayles LCG was incepted in November 2014. Willaim Blair SCV was incepted in December 1996. Pinnacle SMID was incepted in December 1990.

Evaluation

- While the Eagle strategy's investment style has historically been more value oriented at different points in the cycle, performance over the last several years has drifted the portfolio toward somewhat more of a Core / Core-Value orientation.

- However, as shown in the US Equity Composite style analysis on the previous slide, Eagle is not the only manager that demonstrates style drift over time. Additionally, RVK specifically observes most concentrated/high active share value managers operating in a similar Core / Core-Value space during recent years. Further, because of the concentration of the portfolio, a small number of positions can meaningfully shift the orientation at any given point in time, depending on the style mapping of those individual names (e.g. Amazon).

- The flexibility of the strategy to stray from traditional value, at differing points over time, has contributed to sizable outperformance relative to the Russell 1000 Value Index (shown below).

	YTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Eagle Capital LCV (SA)	-24.2	-16.3	-12.0	3.1	5.4	8.8	10.8	8.2	02/01/2007
Russell 1000 Value Index	-26.7	-21.3	-17.2	-2.2	1.9	5.6	7.7	4.0	
Difference	2.6	5.0	5.2	5.3	3.5	3.2	3.1	4.2	

Performance shown is net of fees as of March 31, 2020.

RVK

Next Steps

- Eagle has produced strong returns, outpacing its benchmark over all trailing periods since inception. Risk adjusted characteristics are attractive as well, ranking well ahead of median when measured by information ratio and Sharpe ratio. Recent outperformance can be partially attributed to portfolio management's decision to flex away from a deep value orientation given headwinds in this space. But, the strategy have also benefited from the management team's adherence to their long-term investment philosophy. As such, RVK continues to have high conviction in the manager.

- However, we observe from a portfolio construction perspective, Eagle's potential to drift stylistically can at times leave investors less exposed to traditional value stocks and sectors. Therefore, as part of this ongoing review, RVK will seek to evaluate the benefit of adding a complementary value oriented strategy to the US equity composite.

- Should it be amenable to the Board, RVK and Staff will look to prepare an updated US equity structure review later this year to re-evaluate the following versus the broad US equity market and ensure the US equity composite continues to be well positioned moving forward:
    - Capitalization structure
    - Sector distribution
    - Style biases
    - Active vs. passive
    - Historical performance statistics

PORTLAND BOISE CHICAGO **NEW YORK**

RVK

Monthly Investment Performance Analysis

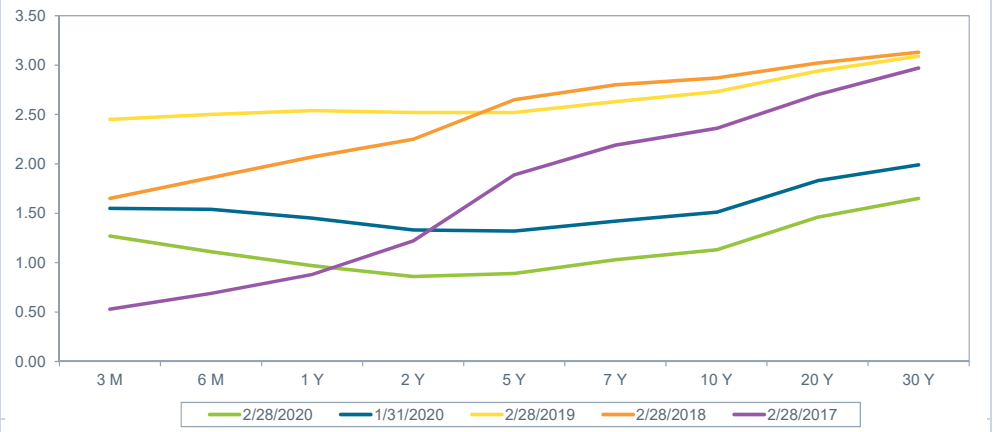
City of Jacksonville Employees' Retirement System

Period Ended: February 29, 2020

General Market Commentary

- Global equity markets sold off sharply during February, driven by heightened fears of the coronavirus (COVID-19) reaching pandemic status. Concerns of a global economic slowdown increased as the virus spread beyond China to South Korea, Italy, and Iran among other countries.
- US equity markets experienced their fastest correction in history, as the S&P 500 dropped more than 10% in just six days.
- US Treasury interest rates dropped significantly in February and the spread between the 2 and 10 year Treasury widened. A decrease in forward-looking inflation expectations coupled with continued flows from equity markets into safe haven fixed income assets pushed rates lower.
- Equity markets posted negative returns in February as the S&P 500 (Cap Wtd) Index returned -8.23% and the MSCI EAFE (Net) Index returned -9.04%. Emerging markets returned -5.27% as measured by the MSCI EM (Net) Index.
- The Bloomberg US Aggregate Bond Index returned 1.80% in February, outperforming the 1.66% return by the Bloomberg US Treasury Intermediate Term Index. International fixed income markets returned -0.06%, as measured by the FTSE Non-US World Gov't Bond Index.
- Public real estate, as measured by the FTSE NAREIT Eq REITs Index (TR), returned -8.01% in February and 5.06% over the trailing five-year period.
- The Cambridge US Private Equity Index returned 7.76% for the trailing one-year period and 11.68% for the trailing five-year period ending September 2019.
- Absolute return strategies, as measured by the HFRI FOF Comp Index, returned -1.60% for the month and 3.22% over the trailing one-year period.
- Crude oil's price fell by 13.19% during the month, and has decreased by 21.78% YoY.

Treasury Yield Curve (%)



Economic Indicators	Feb-20		Jan-20	Feb-19	10 Yr	20 Yr
Federal Funds Rate (%)	1.58	▼	1.59	2.40	0.64	1.76
Breakeven Inflation - 5 Year (%)	1.37	▼	1.60	1.86	1.75	1.84
Breakeven Inflation - 10 Year (%)	1.43	▼	1.64	1.94	1.99	2.03
Breakeven Inflation - 30 Year (%)	1.54	▼	1.73	1.98	2.12	2.25
Bloomberg US Agg Bond Index - Yield (%)	1.68	▼	2.02	3.21	2.49	3.75
Bloomberg US Agg Bond Index - OAS (%)	0.50	▲	0.44	0.45	0.52	0.63
Bloomberg US Agg Credit Index - OAS (%)	1.17	▲	0.98	1.14	1.31	1.45
Bloomberg US Corp: HY Index - OAS (%)	5.00	▲	3.90	3.79	4.77	5.45
Capacity Utilization (%)	76.98	▲	76.64	78.46	76.78	77.06
Unemployment Rate (%)	3.5	▼	3.6	3.8	6.1	5.9
PMI - Manufacturing (%)	50.1	▼	50.9	54.1	54.1	52.6
Baltic Dry Index - Shipping	535	▲	487	658	1,240	2,319
Consumer Conf (Conf Board)	130.70	▲	130.40	131.40	92.58	92.46
CPI YoY (Headline) (%)	2.3	▼	2.5	1.5	1.8	2.2
CPI YoY (Core) (%)	2.4	▲	2.3	2.1	1.9	2.0
PPI YoY (%)	1.2	▼	2.5	0.5	1.8	2.2
M2 YoY (%)	7.4	▲	7.0	4.1	5.9	6.2
US Dollar Total Weighted Index	117.77	▲	115.79	114.12	102.71	102.90
WTI Crude Oil per Barrel ($)	45	▼	52	57	72	62
Gold Spot per Oz ($)	1,586	▼	1,589	1,313	1,355	945

Treasury Yield Curve (%)	Feb-20	Jan-20	Feb-19	Feb-18	Feb-17
3 Month	1.27	1.55	2.45	1.65	0.53
6 Month	1.11	1.54	2.50	1.86	0.69
1 Year	0.97	1.45	2.54	2.07	0.88
2 Year	0.86	1.33	2.52	2.25	1.22
5 Year	0.89	1.32	2.52	2.65	1.89
7 Year	1.03	1.42	2.63	2.80	2.19
10 Year	1.13	1.51	2.73	2.87	2.36
20 Year	1.46	1.83	2.94	3.02	2.70
30 Year	1.65	1.99	3.09	3.13	2.97

Market Performance (%)	MTD	QTD	CYTD	1 Yr	3 Yr	5 Yr	7 Yr	10 Yr
S&P 500 (Cap Wtd)	-8.23	-8.27	-8.27	8.19	9.87	9.23	12.29	12.65
Russell 2000	-8.42	-11.36	-11.36	-4.92	3.52	5.12	8.62	10.41
MSCI EAFE (Net)	-9.04	-10.94	-10.94	-0.57	3.92	1.96	3.98	4.83
MSCI EAFE SC (Net)	-9.80	-12.42	-12.42	-0.94	4.13	4.65	6.42	7.57
MSCI EM (Net)	-5.27	-9.69	-9.69	-1.88	4.89	2.73	1.75	3.18
Bloomberg US Agg Bond	1.80	3.76	3.76	11.68	5.01	3.58	3.29	3.93
ICE BofAML 3 Mo US T-Bill	0.15	0.28	0.28	2.18	1.73	1.13	0.82	0.61
NCREIF ODCE (Gross)	N/A	N/A	N/A	5.34	7.09	8.97	10.17	11.42
FTSE NAREIT Eq REITs Index (TR)	-8.01	-6.90	-6.90	4.22	4.38	5.06	7.63	11.16
HFRI FOF Comp Index	-1.60	-1.30	-1.30	3.22	2.78	1.73	2.88	2.72
Bloomberg Cmdty Index (TR)	-5.04	-12.03	-12.03	-11.05	-5.19	-6.20	-8.17	-5.58

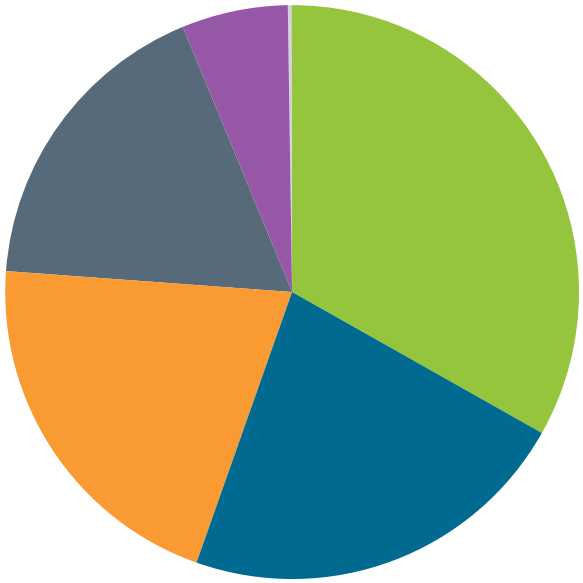
NCREIF performance is reported quarterly; MTD and QTD returns are shown as "N/A" on interim-quarter months and until available. Data shown is as of most recent quarter-end.
Treasury data courtesy of the US Department of the Treasury. Economic data courtesy of Bloomberg Professional Service.

RVK

Asset Allocation by Asset Class, Asset Allocation vs. Target, and Schedule of Investable Assets

Asset Allocation by Asset Class

February 29, 2020 : $2,214,061,556

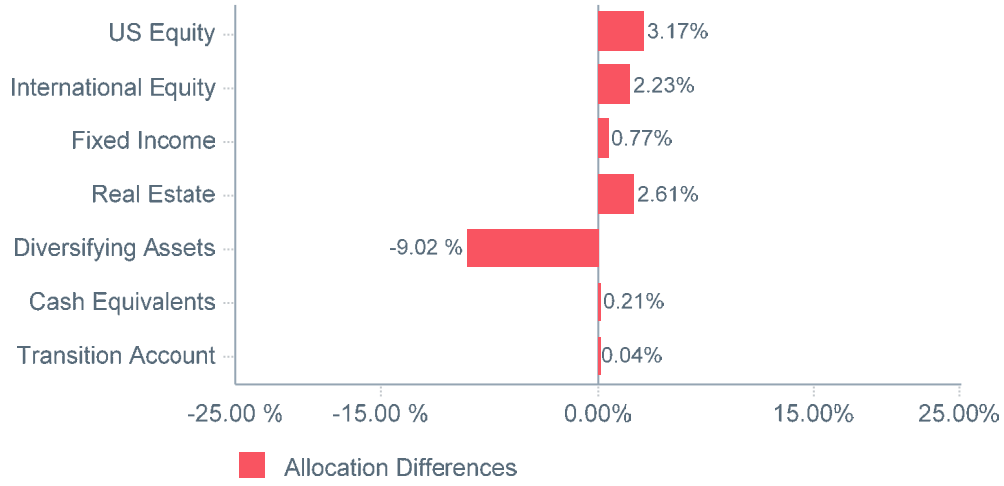


	Market Value ($)	Allocation (%)
US Equity	734,448,387	33.17
International Equity	492,209,546	22.23
Fixed Income	459,766,284	20.77
Real Estate	389,903,431	17.61
Diversifying Assets	132,344,653	5.98
Cash Equivalents	4,590,142	0.21
Transition Account	799,112	0.04

Asset Allocation vs. Target Allocation

	Market Value ($)	Allocation (%)	Min (%)	Target (%)	Max (%)
Total Fund	2,214,061,556	100.00	-	100.00	-
US Equity	734,448,387	33.17	20.00	30.00	40.00
International Equity	492,209,546	22.23	10.00	20.00	25.00
Fixed Income	459,766,284	20.77	10.00	20.00	30.00
Real Estate	389,903,431	17.61	0.00	15.00	20.00
Diversifying Assets	132,344,653	5.98	0.00	15.00	20.00
Cash Equivalents	4,590,142	0.21	0.00	0.00	10.00
Transition Account	799,112	0.04	0.00	0.00	0.00

Asset Allocation vs. Target Allocation Differences

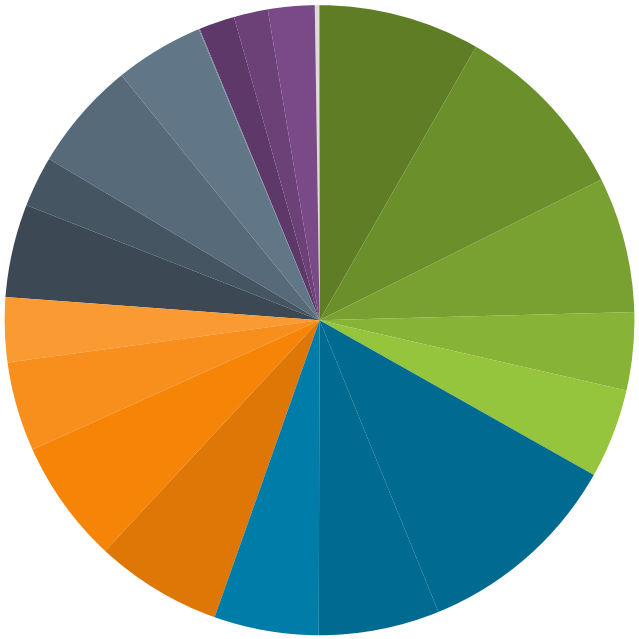


Schedule of Investable Assets

Periods Ending	Beginning Market Value ($)	Net Cash Flow ($)	Gain/Loss ($)	Ending Market Value ($)	% Return	Unit Value
CYTD	2,342,377,799	589,721	-128,905,964	2,214,061,556	-5.50	94.50

Market values and performance shown are preliminary and subject to change. Performance shown is net of fees. Allocations shown may not sum up to 100% exactly due to rounding.

February 29, 2020 : $2,214,061,556



	Market Value ($)	Allocation (%)
Eagle Capital Large Cap Value (SA)	183,427,806	8.28
Mellon Large Cap Core Index (CF)	207,034,320	9.35
Loomis Sayles Large Cap Growth (CF)	153,934,553	6.95
William Blair Small Cap Value (SA)	88,418,325	3.99
Pinnacle Associates US SMID Cap Growth (SA)	101,633,382	4.59
Silchester International Value (CF)	236,085,577	10.66
Baillie Gifford International Growth (BGEFX)	137,400,928	6.21
Acadian Emerging Markets (CF)	118,723,041	5.36
Richmond Capital Core (SA)	144,206,857	6.51
Taplin Canida & Habacht Intermediate Duration (SA)	140,532,284	6.35
Franklin Templeton Global Multisector Plus (CF)	101,674,261	4.59
Loomis Sayles Multisector Full Discretion (CF)	73,352,882	3.31
Harrison Street Core Property, LP	105,742,052	4.78
PGIM Real Estate PRISA II (CF)	57,763,360	2.61
Principal US Property (CF)	124,516,062	5.62
UBS Trumbull Property (CF)	100,799,985	4.55
Vanguard RE Idx;ETF (VNQ)	1,081,972	0.05
Harvest Fund Advisors MLP (SA)	40,829,545	1.84
Tortoise Capital Advisors MLP (SA)	38,659,560	1.75
Hancock Timberland (SA)	52,855,549	2.39
Dreyfus Gvt Csh Mgt;Inst (DGCXX)	4,590,142	0.21
Transition Account	799,112	0.04

Market values shown are preliminary and subject to change. Allocations shown may not sum up to 100% exactly due to rounding.

RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of February 29, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Total Fund	**2,214,061,556**	**100.00**	**-4.40**	**-5.50**	**-5.50**	**0.29**	**2.86**	**5.72**	**5.05**	**7.24**	**8.43**	**6.03**	**07/01/1999**
Current Total Fund Policy Index			-5.04	-5.80	-5.80	-1.59	2.77	5.20	4.90	6.82	7.94	5.55	
Difference			0.64	0.30	0.30	1.88	0.09	0.52	0.15	0.42	0.49	0.48	
Legacy Total Fund Policy Index			-5.03	-5.62	-5.62	-0.89	3.78	5.64	5.16	7.01	8.07	5.62	
Difference			0.63	0.12	0.12	1.18	-0.92	0.08	-0.11	0.23	0.36	0.41	
Total Equity	**1,226,657,933**	**55.40**	**-7.31**	**-9.24**	**-9.24**	**0.18**	**3.51**	**7.48**	**6.28**	**9.03**	**10.09**	**5.80**	**07/01/1999**
US Equity	**734,448,387**	**33.17**	**-7.63**	**-8.38**	**-8.38**	**0.73**	**6.37**	**9.22**	**7.81**	**11.14**	**11.91**	**6.28**	**07/01/1999**
US Equity Index			-8.19	-8.29	-8.29	0.06	6.90	9.28	8.72	11.90	12.48	6.23	
Difference			0.56	-0.09	-0.09	0.67	-0.53	-0.06	-0.91	-0.76	-0.57	0.05	
International Equity	**492,209,546**	**22.23**	**-6.82**	**-10.51**	**-10.51**	**-0.62**	**-0.92**	**4.70**	**3.66**	**5.25**	**6.71**	**5.44**	**07/01/1999**
International Equity Index			-7.90	-10.38	-10.38	-2.38	-0.69	4.15	2.18	3.37	4.22	3.54	
Difference			1.08	-0.13	-0.13	1.76	-0.23	0.55	1.48	1.88	2.49	1.90	
Fixed Income	**459,766,284**	**20.77**	**0.77**	**1.97**	**1.97**	**2.83**	**5.90**	**3.57**	**2.82**	**2.67**	**4.23**	**5.33**	**07/01/1999**
Fixed Income Index			1.50	3.32	3.32	3.79	11.26	4.94	3.53	3.26	3.91	5.07	
Difference			-0.73	-1.35	-1.35	-0.96	-5.36	-1.37	-0.71	-0.59	0.32	0.26	
Real Estate	**389,903,431**	**17.61**	**0.13**	**0.22**	**0.22**	**1.47**	**3.71**	**6.20**	**7.56**	**8.45**	**9.20**	**5.70**	**12/01/2005**
NCREIF ODCE Index (AWA) (Net)			0.00	0.00	0.00	1.27	4.39	6.13	7.98	9.17	10.39	6.08	
Difference			0.13	0.22	0.22	0.20	-0.68	0.07	-0.42	-0.72	-1.19	-0.38	
Diversifying Assets	**132,344,653**	**5.98**	**-6.58**	**-9.41**	**-9.41**	**-9.75**	**-12.18**	**-4.12**	**-3.51**	**1.79**	**N/A**	**4.60**	**03/01/2011**
Diversifying Assets Index			-8.65	-12.27	-12.27	-14.00	-13.89	-5.09	-3.95	0.07	3.46	2.03	
Difference			2.07	2.86	2.86	4.25	1.71	0.97	0.44	1.72	N/A	2.57	

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RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of February 29, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
US Equity													
Eagle Capital Large Cap Value (SA)	**183,427,806**	**8.28**	**-7.91**	**-7.81**	**-7.81**	**1.72**	**7.92**	**10.22**	**9.20**	**12.34**	**13.48**	**9.83**	**02/01/2007**
Russell 1000 Val Index			-9.68	-11.63	-11.63	-5.08	0.54	3.78	5.51	9.03	10.40	5.47	
Difference			1.77	3.82	3.82	6.80	7.38	6.44	3.69	3.31	3.08	4.36	
Mellon Large Cap Core Index (CF)	**207,034,320**	**9.35**	**-8.18**	**-8.08**	**-8.08**	**0.22**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**1.84**	**05/01/2019**
Russell 1000 Index			-8.17	-8.07	-8.07	0.24	7.82	9.73	9.00	12.16	12.64	1.87	
Difference			-0.01	-0.01	-0.01	-0.02	N/A	N/A	N/A	N/A	N/A	-0.03	
Loomis Sayles Large Cap Growth (CF)	**153,934,553**	**6.95**	**-5.00**	**-4.25**	**-4.25**	**5.18**	**11.93**	**N/A**	**N/A**	**N/A**	**N/A**	**12.95**	**08/01/2017**
Russell 1000 Grth Index			-6.81	-4.73	-4.73	5.39	15.11	15.67	12.41	15.21	14.79	14.66	
Difference			1.81	0.48	0.48	-0.21	-3.18	N/A	N/A	N/A	N/A	-1.71	
William Blair Small Cap Value (SA)	**88,418,325**	**3.99**	**-10.19**	**-14.18**	**-14.18**	**-9.91**	**-11.02**	**-1.88**	**2.71**	**N/A**	**N/A**	**2.91**	**11/01/2014**
Russell 2000 Val Index			-9.72	-14.59	-14.59	-7.34	-9.29	-0.83	3.61	6.62	8.67	3.87	
Difference			-0.47	0.41	0.41	-2.57	-1.73	-1.05	-0.90	N/A	N/A	-0.96	
Pinnacle Associates US SMID Cap Growth (SA)	**101,633,382**	**4.59**	**-7.56**	**-10.54**	**-10.54**	**4.01**	**6.15**	**8.88**	**7.42**	**10.92**	**12.70**	**12.70**	**03/01/2010**
Russell 2500 Grth Index			-6.78	-6.68	-6.68	3.18	3.78	10.57	8.11	11.82	13.14	13.14	
Difference			-0.78	-3.86	-3.86	0.83	2.37	-1.69	-0.69	-0.90	-0.44	-0.44	
International Equity													
Silchester International Value (CF)	**236,085,577**	**10.66**	**-9.29**	**-12.98**	**-12.98**	**-5.05**	**-5.13**	**1.65**	**2.63**	**5.73**	**7.30**	**8.39**	**06/01/2009**
MSCI EAFE Val Index (USD) (Net)			-9.46	-12.74	-12.74	-5.92	-6.61	0.54	-0.40	2.25	3.20	4.24	
Difference			0.17	-0.24	-0.24	0.87	1.48	1.11	3.03	3.48	4.10	4.15	
Baillie Gifford International Growth (BGEFX)	**137,400,928**	**6.21**	**-3.11**	**-5.74**	**-5.74**	**7.54**	**11.01**	**12.96**	**7.74**	**8.89**	**9.14**	**10.28**	**06/01/2009**
Baillie Gifford Index			-7.30	-8.19	-8.19	0.61	5.79	6.99	4.06	5.50	6.30	7.35	
Difference			4.19	2.45	2.45	6.93	5.22	5.97	3.68	3.39	2.84	2.93	
Baillie Gifford Spliced Index			-7.90	-10.38	-10.38	-2.05	1.10	4.50	2.30	4.23	5.01	6.04	
Difference			4.79	4.64	4.64	9.59	9.91	8.46	5.44	4.66	4.13	4.24	
Acadian Emerging Markets (CF)	**118,723,041**	**5.36**	**-5.90**	**-10.70**	**-10.70**	**-0.14**	**-4.39**	**1.94**	**1.24**	**0.59**	**N/A**	**1.48**	**02/01/2011**
MSCI Emg Mkts Index (USD) (Net)			-5.27	-9.69	-9.69	1.00	-1.88	4.89	2.73	1.75	3.18	1.26	
Difference			-0.63	-1.01	-1.01	-1.14	-2.51	-2.95	-1.49	-1.16	N/A	0.22	

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RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of February 29, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Fixed Income													
Richmond Capital Core (SA)	**144,206,857**	**6.51**	**1.74**	**3.51**	**3.51**	**3.90**	**11.23**	**4.95**	**3.70**	**3.46**	**4.21**	**5.37**	**06/01/1999**
Richmond Capital Index			1.80	3.76	3.76	3.95	11.68	5.01	3.58	3.29	3.93	5.07	
Difference			-0.06	-0.25	-0.25	-0.05	-0.45	-0.06	0.12	0.17	0.28	0.30	
Taplin Canida & Habacht Intermediate Duration (SA)	**140,532,284**	**6.35**	**0.93**	**2.15**	**2.15**	**2.97**	**7.97**	**3.99**	**3.02**	**2.79**	**3.88**	**5.00**	**06/01/1999**
ICE BofAML US Corp & Gov't 1-10 Yr Index			1.36	2.78	2.78	3.21	8.82	3.99	2.99	2.59	3.23	4.51	
Difference			-0.43	-0.63	-0.63	-0.24	-0.85	0.00	0.03	0.20	0.65	0.49	
Franklin Templeton Global Multisector Plus (CF)	**101,674,261**	**4.59**	**-1.10**	**-1.32**	**-1.32**	**0.27**	**-5.73**	**-0.23**	**0.13**	**0.58**	**3.72**	**5.91**	**09/01/2007**
Frank. Temp. Global Multisector Index			0.53	1.72	1.72	2.37	7.70	4.40	3.04	2.04	2.80	3.72	
Difference			-1.63	-3.04	-3.04	-2.10	-13.43	-4.63	-2.91	-1.46	0.92	2.19	
Loomis Sayles Multisector Full Discretion (CF)	**73,352,882**	**3.31**	**1.22**	**3.34**	**3.34**	**4.14**	**10.34**	**5.94**	**4.61**	**4.88**	**6.99**	**6.75**	**10/01/2007**
Bloomberg Gbl Agg Bond Index			0.67	1.96	1.96	2.45	7.92	4.39	2.91	1.90	2.63	3.36	
Difference			0.55	1.38	1.38	1.69	2.42	1.55	1.70	2.98	4.36	3.39	
Real Estate													
Harrison Street Core Property, LP	**105,742,052**	**4.78**	**0.00**	**0.00**	**0.00**	**2.20**	**6.83**	**7.99**	**N/A**	**N/A**	**N/A**	**7.82**	**11/01/2015**
NCREIF ODCE Index (AWA) (Net)			0.00	0.00	0.00	1.27	4.39	6.13	7.98	9.17	10.39	6.78	
Difference			0.00	0.00	0.00	0.93	2.44	1.86	N/A	N/A	N/A	1.04	
PGIM Real Estate PRISA II (CF)	**57,763,360**	**2.61**	**0.00**	**0.00**	**0.00**	**1.86**	**6.29**	**7.09**	**9.15**	**N/A**	**N/A**	**8.85**	**01/01/2015**
NCREIF ODCE Index (AWA) (Net)			0.00	0.00	0.00	1.27	4.39	6.13	7.98	9.17	10.39	7.72	
Difference			0.00	0.00	0.00	0.59	1.90	0.96	1.17	N/A	N/A	1.13	
Principal US Property (CF)	**124,516,062**	**5.62**	**0.46**	**0.75**	**0.75**	**2.08**	**5.71**	**7.47**	**8.89**	**N/A**	**N/A**	**9.58**	**01/01/2014**
NCREIF ODCE Index (AWA) (Net)			0.00	0.00	0.00	1.27	4.39	6.13	7.98	9.17	10.39	8.32	
Difference			0.46	0.75	0.75	0.81	1.32	1.34	0.91	N/A	N/A	1.26	
UBS Trumbull Property (CF)	**100,799,985**	**4.55**	**0.00**	**0.00**	**0.00**	**-0.16**	**-2.90**	**2.70**	**5.15**	**6.49**	**8.20**	**5.10**	**12/01/2005**
NCREIF ODCE Index (AWA) (Net)			0.00	0.00	0.00	1.27	4.39	6.13	7.98	9.17	10.39	6.08	
Difference			0.00	0.00	0.00	-1.43	-7.29	-3.43	-2.83	-2.68	-2.19	-0.98	
Vanguard RE Idx;ETF (VNQ)	**1,081,972**	**0.05**	**-7.02**	**-5.88**	**-5.88**	**-5.37**	**7.64**	**4.80**	**5.15**	**7.58**	**10.77**	**13.41**	**12/01/2008**
Custom REITs Index			-7.07	-5.97	-5.97	-5.36	7.78	5.56	5.64	8.09	11.53	14.30	
Difference			0.05	0.09	0.09	-0.01	-0.14	-0.76	-0.49	-0.51	-0.76	-0.89	

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RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of February 29, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Diversifying Assets													
Harvest Fund Advisors MLP (SA)	**40,829,545**	**1.84**	**-9.88**	**-13.89**	**-13.89**	**-14.86**	**-16.64**	**-8.77**	**-8.13**	**-1.31**	**N/A**	**3.46**	**03/01/2011**
S&P MLP Index (TR)			-12.91	-18.07	-18.07	-20.60	-21.04	-10.49	-10.01	-4.42	2.49	-0.76	
Difference			3.03	4.18	4.18	5.74	4.40	1.72	1.88	3.11	N/A	4.22	
Tortoise Capital Advisors MLP (SA)	**38,659,560**	**1.75**	**-11.16**	**-15.65**	**-15.65**	**-16.97**	**-19.38**	**-10.43**	**-8.84**	**-1.75**	**N/A**	**2.02**	**03/01/2011**
S&P MLP Index (TR)			-12.91	-18.07	-18.07	-20.60	-21.04	-10.49	-10.01	-4.42	2.49	-0.76	
Difference			1.75	2.42	2.42	3.63	1.66	0.06	1.17	2.67	N/A	2.78	
Hancock Timberland (SA)	**52,855,549**	**2.39**	**0.02**	**0.04**	**0.04**	**1.41**	**-1.68**	**6.13**	**5.86**	**7.40**	**5.84**	**3.42**	**10/01/2006**
NCREIF Timberland Index			0.00	0.00	0.00	-0.04	1.30	2.71	3.13	5.07	4.45	5.43	
Difference			0.02	0.04	0.04	1.45	-2.98	3.42	2.73	2.33	1.39	-2.01	
Dreyfus Gvt Csh Mgt;Inst (DGCXX)	**4,590,142**	**0.21**	**0.12**	**0.25**	**0.25**	**0.66**	**1.97**	**1.71**	**1.13**	**0.83**	**0.62**	**1.43**	**04/01/2001**
FTSE 3 Mo T-Bill Index			0.13	0.26	0.26	0.72	2.12	1.71	1.10	0.79	0.58	1.42	
Difference			-0.01	-0.01	-0.01	-0.06	-0.15	0.00	0.03	0.04	0.04	0.01	

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Performance Related Comments:

- Performance is annualized for periods greater than one year.
- Performance and market values shown are preliminary and subject to change.
- The inception date shown indicates the first full month of performance following initial funding.
- The market value shown for the Transition Account includes residual assets from terminated managers.
- RVK began monitoring the assets of the City of Jacksonville Retirement System on 01/01/2019. Prior historical data was provided by the custodian and previous consultant.
- Franklin Templeton Global Multisector Plus (CF) performance prior to 03/2016 is represented by Templeton Global Total Return (SICAV).

Custom Composite Benchmark Comments:

- **Current Total Fund Policy Index**: The passive Current Total Fund Policy Index is calculated monthly and currently consists of 30% Russell 3000 Index, 20% MSCI ACW Ex US Index (USD) (Net), 20% Fixed Income Index, 15% NCREIF ODCE Index (AWA) (Net), and 15% Diversifying Assets Index. Prior to 11/01/2017, the Current Total Fund Policy Index consists of the Legacy Total Fund Policy Index.
- **Legacy Total Fund Policy Index**: The passive Legacy Total Fund Policy Index is calculated monthly and currently consists of 35% Russell 3000 Index, 20% MSCI ACW Ex US Index (USD) (Net), 19% Fixed Income Index, 15% NCREIF ODCE Index (AWA) (Net), 10% Diversifying Assets Index, and 1% FTSE 3 Mo US T-Bill Index.
- **US Equity Index**: The passive US Equity Index consists of 100% DJ US TSM Index through 06/2009 and 100% Russell 3000 Index thereafter.
- **International Equity Index**: The passive International Equity Index consists of 100% MSCI EAFE Index (USD) (Gross) through 01/2011 and 100% MSCI ACW Ex US Index (USD) (Net) thereafter.
- **Fixed Income Index**: The passive Fixed Income Index consists of 100% Bloomberg US Agg Bond Index through 10/2017 and 100% Bloomberg US Universal Bond Index thereafter.
- **Diversifying Assets Index**: The passive Diversifying Assets Index is calculated monthly and consists of 50% S&P MLP Index (TR)/50% NCREIF Timberland Index through 10/2017 and 67% S&P MLP Index (TR)/33% NCREIF Timberland Index thereafter.

Custom Manager Benchmark Comments:

- **Baillie Gifford Index**: The passive Baillie Gifford Index consists of 100% MSCI EAFE Grth Index (USD) (Net) through 10/2017 and 100% MSCI ACW Ex US Grth Index (USD) (Net) thereafter.
- **Baillie Gifford Spliced Index**: The passive Baillie Gifford Spliced Index consists of 100% MSCI EAFE Index (USD) (Net) through 11/2019 and 100% MSCI ACW Ex US Index (USD) (Net) thereafter.
- **Richmond Capital Index**: The passive Richmond Capital Index consists of 100% ICE BofAML US Domestic Master through 06/2011 and 100% Bloomberg US Agg Bond Index thereafter.
- **Frank. Temp. Global Multisector Index**: The passive Frank. Temp. Global Multisector Index consists of 100% ICE BofAML Gbl Hi Yld Index through 12/2009 and 100% Bloomberg Multiverse Index thereafter.
- **Custom REITs Index**: The passive Custom REITs Index consists of 100% MSCI US REIT Index (USD) (Gross) through 01/2019 and 100% Vanguard Spl Real Estate Index thereafter.
- **Vanguard Spliced Real Estate Index**: The Vanguard Spl Real Estate Index consists of MSCI US REIT Index (USD) (Gross) adjusted to include a 2% cash position (Lipper Money Market Average) through 04/30/2009, MSCI US REIT Index (USD) (Gross) through 01/31/2018, MSCI US IM Real Estate 25/50 Transition Index through 07/24/2018, and MSCI US IM Real Estate 25/50 Index (Gross) thereafter.

PORTLAND BOISE CHICAGO **NEW YORK**

RVK

Monthly Investment Performance Analysis

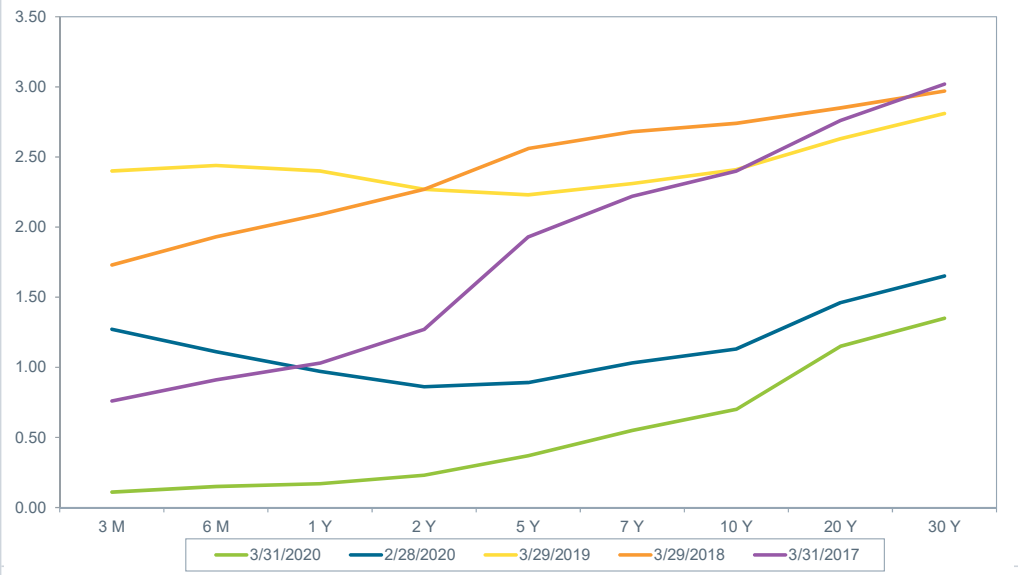
City of Jacksonville Employees' Retirement System

Period Ended: March 31, 2020

General Market Commentary

- Financial markets experienced unprecedented turmoil during March, as COVID-19 spread rapidly across the globe. Containment efforts to reduce the number of infections have resulted in a standstill of many world economies.
- The unprecedented lockdown and "shelter in place" orders have materially impacted supply and demand dynamics at many stages of the supply chain. Supply chain disruptions have shifted from initial pressures following China's lockdown, to unprecedented logistics issues across the globe. While the true economic impact of COVID-19 is still unknown, many economists and organizations are predicting negative global growth throughout 2020, with some economists predicting between a 10% - 30% drop in US GDP in the second quarter.
- In the United States, the Federal Reserve slashed interest rates 150 basis points during March to a range of 0% - 0.25% and announced the restart of quantitative easing to support business growth and market liquidity. Additionally, the US Congress and President Trump passed the CARES stimulus package, which provides financial assistance to US consumers and small businesses, as well as large corporations.
- Equity markets posted negative returns in March as the S&P 500 (Cap Wtd) Index returned -12.35% and the MSCI EAFE (Net) Index returned -13.35%. Emerging markets returned -15.40% as measured by the MSCI EM (Net) Index.
- The Bloomberg US Aggregate Bond Index returned -0.59% in March, underperforming the 2.08% return by the Bloomberg US Treasury Intermediate Term Index. International fixed income markets returned -2.88%, as measured by the FTSE Non-US World Gov't Bond Index.
- Public real estate, as measured by the FTSE NAREIT Eq REITs Index (TR), returned -21.92% in March and -0.35% over the trailing five-year period.
- The Cambridge US Private Equity Index returned 7.76% for the trailing one-year period and 11.68% for the trailing five-year period ending September 2019.
- Absolute return strategies, as measured by the HFRI FOF Comp Index, returned -6.16% for the month and -3.94% over the trailing one-year period.
- Crude oil's price fell by 54.24% during the month, and has decreased by 65.95% YoY.

Treasury Yield Curve (%)



Economic Indicators	Mar-20		Feb-20	Mar-19	10 Yr	20 Yr
Federal Funds Rate (%)	0.08	▼	1.58	2.43	0.64	1.73
Breakeven Inflation - 5 Year (%)	0.53	▼	1.37	1.79	1.74	1.84
Breakeven Inflation - 10 Year (%)	0.93	▼	1.43	1.87	1.98	2.02
Breakeven Inflation - 30 Year (%)	1.25	▼	1.54	1.92	2.11	2.25
Bloomberg US Agg Bond Index - Yield (%)	1.59	▼	1.68	2.93	2.48	3.73
Bloomberg US Agg Bond Index - OAS (%)	0.95	▲	0.50	0.44	0.52	0.63
Bloomberg US Agg Credit Index - OAS (%)	2.55	▲	1.17	1.13	1.32	1.46
Bloomberg US Corp: HY Index - OAS (%)	8.80	▲	5.00	3.91	4.78	5.46
Capacity Utilization (%)	72.72	▼	76.96	78.40	76.79	77.02
Unemployment Rate (%)	4.4	▲	3.5	3.8	6.1	5.9
PMI - Manufacturing (%)	49.1	▼	50.1	54.6	54.1	52.6
Baltic Dry Index - Shipping	626	▲	535	689	1,217	2,315
Consumer Conf (Conf Board)	120.00	▼	132.60	124.20	93.20	92.38
CPI YoY (Headline) (%)	1.5	▼	2.3	1.9	1.8	2.2
CPI YoY (Core) (%)	2.1	▼	2.4	2.0	1.9	2.0
PPI YoY (%)	-0.9	▼	1.2	1.4	1.8	2.2
M2 YoY (%)	N/A	N/A	7.4	4.0	6.0	6.2
US Dollar Total Weighted Index	122.82	▲	117.77	115.05	102.95	102.96
WTI Crude Oil per Barrel ($)	20	▼	45	60	72	62
Gold Spot per Oz ($)	1,577	▼	1,586	1,292	1,359	951

Treasury Yield Curve (%)	Mar-20	Feb-20	Mar-19	Mar-18	Mar-17
3 Month	0.11	1.27	2.40	1.73	0.76
6 Month	0.15	1.11	2.44	1.93	0.91
1 Year	0.17	0.97	2.40	2.09	1.03
2 Year	0.23	0.86	2.27	2.27	1.27
5 Year	0.37	0.89	2.23	2.56	1.93
7 Year	0.55	1.03	2.31	2.68	2.22
10 Year	0.70	1.13	2.41	2.74	2.40
20 Year	1.15	1.46	2.63	2.85	2.76
30 Year	1.35	1.65	2.81	2.97	3.02

Market Performance (%)	MTD	QTD	CYTD	1 Yr	3 Yr	5 Yr	7 Yr	10 Yr
S&P 500 (Cap Wtd)	-12.35	-19.60	-19.60	-6.98	5.10	6.73	9.62	10.53
Russell 2000	-21.73	-30.61	-30.61	-23.99	-4.64	-0.25	4.21	6.90
MSCI EAFE (Net)	-13.35	-22.83	-22.83	-14.38	-1.82	-0.62	1.75	2.72
MSCI EAFE SC (Net)	-17.24	-27.52	-27.52	-18.15	-2.88	0.97	3.31	4.81
MSCI EM (Net)	-15.40	-23.60	-23.60	-17.69	-1.62	-0.37	-0.40	0.69
Bloomberg US Agg Bond	-0.59	3.15	3.15	8.93	4.82	3.36	3.19	3.88
ICE BofAML 3 Mo US T-Bill	0.29	0.58	0.58	2.25	1.83	1.19	0.86	0.64
NCREIF ODCE (Gross)	0.97	0.97	0.97	4.87	6.81	8.46	9.90	11.45
FTSE NAREIT Eq REITs Index (TR)	-21.92	-27.30	-27.30	-21.26	-3.14	-0.35	3.46	7.40
HFRI FOF Comp Index	-6.16	-7.30	-7.30	-3.94	0.50	0.33	1.83	1.91
Bloomberg Cmdty Index (TR)	-12.81	-23.29	-23.29	-22.31	-8.61	-7.76	-10.04	-6.74

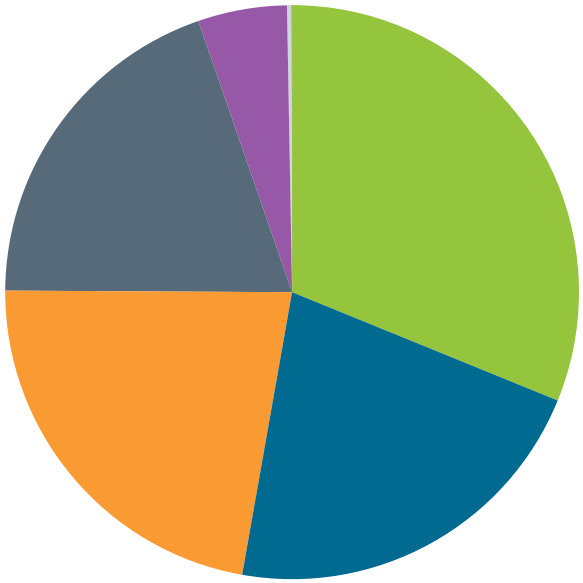
NCREIF performance is reported quarterly; MTD and QTD returns are shown as "N/A" on interim-quarter months and until available. Data shown is as of most recent quarter-end.
Treasury data courtesy of the US Department of the Treasury. Economic data courtesy of Bloomberg Professional Service.

RVK

Asset Allocation by Asset Class, Asset Allocation vs. Target, and Schedule of Investable Assets

Asset Allocation by Asset Class

March 31, 2020 : $1,997,318,128

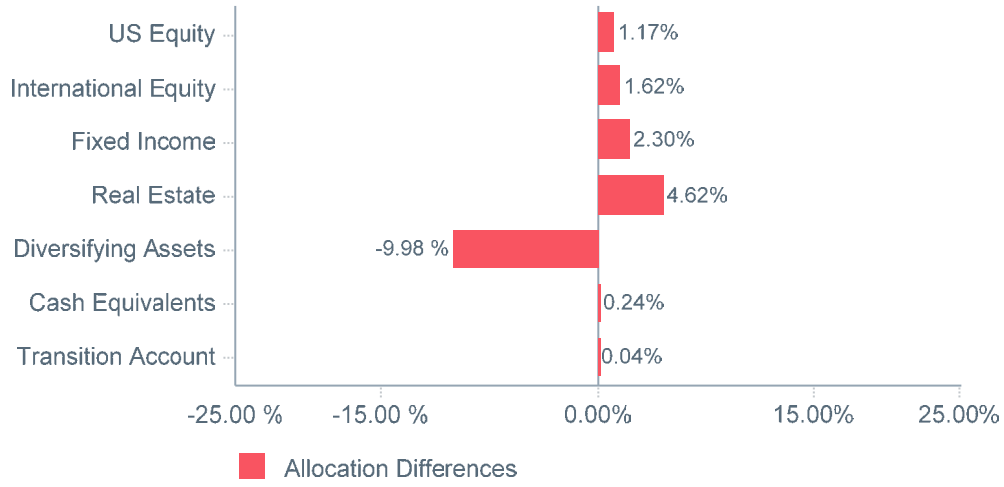


	Market Value ($)	Allocation (%)
US Equity	622,519,214	31.17
International Equity	431,782,640	21.62
Fixed Income	445,390,378	22.30
Real Estate	391,774,298	19.62
Diversifying Assets	100,223,845	5.02
Cash Equivalents	4,797,363	0.24
Transition Account	830,390	0.04

Asset Allocation vs. Target Allocation

	Market Value ($)	Allocation (%)	Min (%)	Target (%)	Max (%)
Total Fund	1,997,318,128	100.00	-	100.00	-
US Equity	622,519,214	31.17	20.00	30.00	40.00
International Equity	431,782,640	21.62	10.00	20.00	25.00
Fixed Income	445,390,378	22.30	10.00	20.00	30.00
Real Estate	391,774,298	19.62	0.00	15.00	20.00
Diversifying Assets	100,223,845	5.02	0.00	15.00	20.00
Cash Equivalents	4,797,363	0.24	0.00	0.00	10.00
Transition Account	830,390	0.04	0.00	0.00	0.00

Asset Allocation vs. Target Allocation Differences

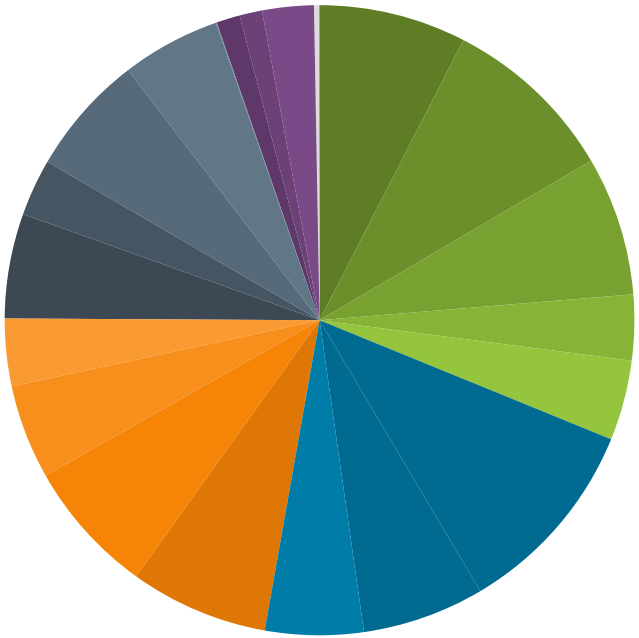


Schedule of Investable Assets

Periods Ending	Beginning Market Value ($)	Net Cash Flow ($)	Gain/Loss ($)	Ending Market Value ($)	% Return	Unit Value
CYTD	2,342,377,799	793,715	-345,853,386	1,997,318,128	-14.76	85.24

Market values and performance shown are preliminary and subject to change. Performance shown is net of fees. Allocations shown may not sum up to 100% exactly due to rounding.

March 31, 2020 : $1,997,318,128



	Market Value ($)	Allocation (%)
Eagle Capital Large Cap Value (SA)	150,915,715	7.56
Mellon Large Cap Core Index (CF)	179,674,322	9.00
Loomis Sayles Large Cap Growth (CF)	142,574,782	7.14
William Blair Small Cap Value (SA)	67,147,009	3.36
Pinnacle Associates US SMID Cap Growth (SA)	82,207,386	4.12
Silchester International Value (CF)	205,764,826	10.30
Baillie Gifford International Growth (BGEFX)	125,347,653	6.28
Acadian Emerging Markets (CF)	100,670,161	5.04
Richmond Capital Core (SA)	141,958,852	7.11
Taplin Canida & Habacht Intermediate Duration (SA)	137,696,474	6.89
Franklin Templeton Global Multisector Plus (CF)	96,599,192	4.84
Loomis Sayles Multisector Full Discretion (CF)	69,135,860	3.46
Harrison Street Core Property, LP	107,394,108	5.38
PGIM Real Estate PRISA II LP (CF)	58,360,378	2.92
Principal US Property (CF)	124,108,796	6.21
UBS Trumbull Property (CF)	101,038,198	5.06
Vanguard RE Idx;ETF (VNQ)	872,818	0.04
Harvest Fund Advisors MLP (SA)	24,162,362	1.21
Tortoise Capital Advisors MLP (SA)	23,200,697	1.16
Hancock Timberland (SA)	52,860,786	2.65
Dreyfus Gvt Csh Mgt;Inst (DGCXX)	4,797,363	0.24
Transition Account	830,390	0.04

Market values shown are preliminary and subject to change. Allocations shown may not sum up to 100% exactly due to rounding.

RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of March 31, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Total Fund	**1,997,318,128**	**100.00**	**-9.80**	**-14.76**	**-14.76**	**-9.54**	**-7.94**	**1.83**	**2.92**	**5.28**	**6.88**	**5.48**	**07/01/1999**
Current Total Fund Policy Index			-11.94	-17.05	-17.05	-13.34	-10.86	0.58	2.31	4.58	6.20	4.89	
Difference			2.14	2.29	2.29	3.80	2.92	1.25	0.61	0.70	0.68	0.59	
Legacy Total Fund Policy Index			-11.06	-16.06	-16.06	-11.85	-9.01	1.34	2.77	4.92	6.44	5.00	
Difference			1.26	1.30	1.30	2.31	1.07	0.49	0.15	0.36	0.44	0.48	
Total Equity	**1,054,301,854**	**52.79**	**-14.05**	**-22.00**	**-22.00**	**-13.89**	**-11.56**	**1.75**	**3.22**	**6.28**	**7.76**	**5.00**	**07/01/1999**
US Equity	**622,519,214**	**31.17**	**-15.24**	**-22.34**	**-22.34**	**-14.62**	**-10.65**	**3.15**	**4.43**	**7.99**	**9.41**	**5.41**	**07/01/1999**
US Equity Index			-13.75	-20.90	-20.90	-13.70	-9.13	4.00	5.77	8.96	10.15	5.45	
Difference			-1.49	-1.44	-1.44	-0.92	-1.52	-0.85	-1.34	-0.97	-0.74	-0.04	
International Equity	**431,782,640**	**21.62**	**-12.28**	**-21.50**	**-21.50**	**-12.82**	**-13.15**	**-0.59**	**1.08**	**3.15**	**4.63**	**4.75**	**07/01/1999**
International Equity Index			-14.48	-23.36	-23.36	-16.52	-15.57	-1.96	-0.64	1.06	1.98	2.75	
Difference			2.20	1.86	1.86	3.70	2.42	1.37	1.72	2.09	2.65	2.00	
Fixed Income	**445,390,378**	**22.30**	**-3.13**	**-1.22**	**-1.22**	**-0.38**	**1.91**	**2.26**	**2.20**	**2.15**	**3.77**	**5.14**	**07/01/1999**
Fixed Income Index			-1.95	1.30	1.30	1.76	7.15	4.27	3.03	2.96	3.72	4.95	
Difference			-1.18	-2.52	-2.52	-2.14	-5.24	-2.01	-0.83	-0.81	0.05	0.19	
Real Estate	**391,774,298**	**19.62**	**0.48**	**0.70**	**0.70**	**1.96**	**3.31**	**6.18**	**7.18**	**8.28**	**9.05**	**5.70**	**12/01/2005**
NCREIF ODCE Index (AWA) (Net)			0.75	0.75	0.75	2.03	3.93	5.85	7.48	8.91	10.42	6.10	
Difference			-0.27	-0.05	-0.05	-0.07	-0.62	0.33	-0.30	-0.63	-1.37	-0.40	
Diversifying Assets	**100,223,845**	**5.02**	**-24.27**	**-31.39**	**-31.39**	**-31.65**	**-35.27**	**-12.50**	**-8.77**	**-3.30**	**N/A**	**1.41**	**03/01/2011**
Diversifying Assets Index			-30.92	-39.40	-39.40	-40.59	-42.18	-16.09	-10.61	-5.54	-0.42	-2.06	
Difference			6.65	8.01	8.01	8.94	6.91	3.59	1.84	2.24	N/A	3.47	

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RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of March 31, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
US Equity													
Eagle Capital Large Cap Value (SA)	**150,915,715**	**7.56**	**-17.72**	**-24.15**	**-24.15**	**-16.31**	**-11.99**	**3.09**	**5.40**	**8.76**	**10.75**	**8.15**	**02/01/2007**
Russell 1000 Val Index			-17.09	-26.73	-26.73	-21.30	-17.17	-2.18	1.90	5.56	7.67	3.95	
Difference			-0.63	2.58	2.58	4.99	5.18	5.27	3.50	3.20	3.08	4.20	
Mellon Large Cap Core Index (CF)	**179,674,322**	**9.00**	**-13.22**	**-20.23**	**-20.23**	**-13.02**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**-11.62**	**05/01/2019**
Russell 1000 Index			-13.21	-20.22	-20.22	-13.01	-8.03	4.64	6.22	9.32	10.39	-11.60	
Difference			-0.01	-0.01	-0.01	-0.01	N/A	N/A	N/A	N/A	N/A	-0.02	
Loomis Sayles Large Cap Growth (CF)	**142,574,782**	**7.14**	**-7.38**	**-11.31**	**-11.31**	**-2.58**	**0.83**	**N/A**	**N/A**	**N/A**	**N/A**	**9.34**	**08/01/2017**
Russell 1000 Grth Index			-9.84	-14.10	-14.10	-4.98	0.91	11.32	10.36	12.93	12.97	9.82	
Difference			2.46	2.79	2.79	2.40	-0.08	N/A	N/A	N/A	N/A	-0.48	
William Blair Small Cap Value (SA)	**67,147,009**	**3.36**	**-24.06**	**-34.82**	**-34.82**	**-31.58**	**-30.45**	**-10.41**	**-3.18**	**N/A**	**N/A**	**-2.23**	**11/01/2014**
Russell 2000 Val Index			-24.67	-35.66	-35.66	-30.20	-29.64	-9.51	-2.42	1.80	4.79	-1.48	
Difference			0.61	0.84	0.84	-1.38	-0.81	-0.90	-0.76	N/A	N/A	-0.75	
Pinnacle Associates US SMID Cap Growth (SA)	**82,207,386**	**4.12**	**-19.11**	**-27.64**	**-27.64**	**-15.87**	**-14.27**	**0.89**	**2.93**	**7.11**	**9.50**	**10.24**	**03/01/2010**
Russell 2500 Grth Index			-17.72	-23.22	-23.22	-15.10	-14.40	3.35	3.64	8.09	10.10	10.86	
Difference			-1.39	-4.42	-4.42	-0.77	0.13	-2.46	-0.71	-0.98	-0.60	-0.62	
International Equity													
Silchester International Value (CF)	**205,764,826**	**10.30**	**-12.84**	**-24.15**	**-24.15**	**-17.24**	**-16.69**	**-3.35**	**-0.12**	**3.35**	**5.25**	**6.96**	**06/01/2009**
MSCI EAFE Val Index (USD) (Net)			-17.72	-28.20	-28.20	-22.59	-22.76	-6.65	-3.83	-0.58	0.62	2.35	
Difference			4.88	4.05	4.05	5.35	6.07	3.30	3.71	3.93	4.63	4.61	
Baillie Gifford International Growth (BGEFX)	**125,347,653**	**6.28**	**-8.77**	**-14.01**	**-14.01**	**-1.89**	**-1.07**	**8.10**	**5.78**	**7.36**	**7.27**	**9.27**	**06/01/2009**
Baillie Gifford Index			-10.95	-18.25	-18.25	-10.41	-7.31	2.02	1.90	3.54	4.41	6.14	
Difference			2.18	4.24	4.24	8.52	6.24	6.08	3.88	3.82	2.86	3.13	
Baillie Gifford Spliced Index			-14.48	-23.36	-23.36	-16.23	-14.08	-1.70	-0.55	1.80	2.75	4.47	
Difference			5.71	9.35	9.35	14.34	13.01	9.80	6.33	5.56	4.52	4.80	
Acadian Emerging Markets (CF)	**100,670,161**	**5.04**	**-15.21**	**-24.28**	**-24.28**	**-15.32**	**-18.45**	**-4.44**	**-1.69**	**-1.67**	**N/A**	**-0.34**	**02/01/2011**
MSCI Emg Mkts Index (USD) (Net)			-15.40	-23.60	-23.60	-14.55	-17.69	-1.62	-0.37	-0.40	0.69	-0.58	
Difference			0.19	-0.68	-0.68	-0.77	-0.76	-2.82	-1.32	-1.27	N/A	0.24	

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RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of March 31, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Fixed Income													
Richmond Capital Core (SA)	**141,958,852**	**7.11**	**-1.56**	**1.90**	**1.90**	**2.28**	**7.43**	**4.43**	**3.28**	**3.21**	**4.05**	**5.27**	**06/01/1999**
Richmond Capital Index			-0.59	3.15	3.15	3.33	8.93	4.82	3.36	3.19	3.88	5.02	
Difference			-0.97	-1.25	-1.25	-1.05	-1.50	-0.39	-0.08	0.02	0.17	0.25	
Taplin Canida & Habacht Intermediate Duration (SA)	**137,696,474**	**6.89**	**-2.02**	**0.09**	**0.09**	**0.90**	**4.48**	**3.25**	**2.55**	**2.45**	**3.64**	**4.88**	**06/01/1999**
ICE BofAML US Corp & Gov't 1-10 Yr Index			-0.64	2.13	2.13	2.55	6.68	3.74	2.76	2.47	3.19	4.46	
Difference			-1.38	-2.04	-2.04	-1.65	-2.20	-0.49	-0.21	-0.02	0.45	0.42	
Franklin Templeton Global Multisector Plus (CF)	**96,599,192**	**4.84**	**-4.99**	**-6.24**	**-6.24**	**-4.74**	**-8.57**	**-2.69**	**-0.66**	**-0.19**	**2.70**	**5.44**	**09/01/2007**
Frank. Temp. Global Multisector Index			-2.78	-1.11	-1.11	-0.47	3.47	3.37	2.67	1.66	2.58	3.46	
Difference			-2.21	-5.13	-5.13	-4.27	-12.04	-6.06	-3.33	-1.85	0.12	1.98	
Loomis Sayles Multisector Full Discretion (CF)	**69,135,860**	**3.46**	**-5.75**	**-2.61**	**-2.61**	**-1.85**	**2.52**	**3.74**	**3.47**	**3.80**	**6.06**	**6.20**	**10/01/2007**
Bloomberg Gbl Agg Bond Index			-2.24	-0.33	-0.33	0.16	4.20	3.55	2.64	1.61	2.47	3.15	
Difference			-3.51	-2.28	-2.28	-2.01	-1.68	0.19	0.83	2.19	3.59	3.05	
Real Estate													
Harrison Street Core Property, LP	**107,394,108**	**5.38**	**1.56**	**1.56**	**1.56**	**3.80**	**7.17**	**8.55**	**N/A**	**N/A**	**N/A**	**8.05**	**11/01/2015**
NCREIF ODCE Index (AWA) (Net)			0.75	0.75	0.75	2.03	3.93	5.85	7.48	8.91	10.42	6.82	
Difference			0.81	0.81	0.81	1.77	3.24	2.70	N/A	N/A	N/A	1.23	
PGIM Real Estate PRISA II LP (CF)	**58,360,378**	**2.92**	**1.03**	**1.03**	**1.03**	**2.91**	**5.61**	**7.46**	**8.67**	**N/A**	**N/A**	**8.91**	**01/01/2015**
NCREIF ODCE Index (AWA) (Net)			0.75	0.75	0.75	2.03	3.93	5.85	7.48	8.91	10.42	7.74	
Difference			0.28	0.28	0.28	0.88	1.68	1.61	1.19	N/A	N/A	1.17	
Principal US Property (CF)	**124,108,796**	**6.21**	**-0.33**	**0.42**	**0.42**	**1.75**	**4.83**	**7.00**	**8.52**	**N/A**	**N/A**	**9.38**	**01/01/2014**
NCREIF ODCE Index (AWA) (Net)			0.75	0.75	0.75	2.03	3.93	5.85	7.48	8.91	10.42	8.33	
Difference			-1.08	-0.33	-0.33	-0.28	0.90	1.15	1.04	N/A	N/A	1.05	
UBS Trumbull Property (CF)	**101,038,198**	**5.06**	**0.24**	**0.24**	**0.24**	**0.08**	**-3.14**	**2.50**	**4.63**	**6.31**	**8.04**	**5.09**	**12/01/2005**
NCREIF ODCE Index (AWA) (Net)			0.75	0.75	0.75	2.03	3.93	5.85	7.48	8.91	10.42	6.10	
Difference			-0.51	-0.51	-0.51	-1.95	-7.07	-3.35	-2.85	-2.60	-2.38	-1.01	
Vanguard RE Idx;ETF (VNQ)	**872,818**	**0.04**	**-19.33**	**-24.07**	**-24.07**	**-23.66**	**-16.67**	**-1.64**	**0.38**	**3.92**	**7.43**	**11.18**	**12/01/2008**
Custom REITs Index			-19.26	-24.07	-24.07	-23.58	-16.47	-0.92	0.87	4.40	8.12	12.06	
Difference			-0.07	0.00	0.00	-0.08	-0.20	-0.72	-0.49	-0.48	-0.69	-0.88	

Market values and performance shown are preliminary and subject to change. Performance shown is net of fees and is annualized for periods greater than one year. Allocations may not sum up to 100% due to the exclusion of managers in liquidation. Please see the addendum for custom benchmark definitions. Fiscal year for the COJ ends 09/30. Performance for Harrison Street Core Property LP, PGIM Real Estate PRISA II (CF), UBS Trumbull Property (CF), NCREIF ODCE Index (AWA) (Net) and NCREIF Timberland Index is available quarterly; interim months assume a 0.00% return.

RVK

City of Jacksonville Employees' Retirement System
Asset Allocation & Performance (Net of Fees)

As of March 31, 2020

	Allocation		Performance (%)										
	Market Value ($)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Incep.	Inception Date
Diversifying Assets													
Harvest Fund Advisors MLP (SA)	**24,162,362**	**1.21**	**-40.82**	**-49.04**	**-49.04**	**-49.62**	**-52.54**	**-23.40**	**-16.91**	**-9.22**	**N/A**	**-2.38**	**03/01/2011**
S&P MLP Index (TR)			-46.15	-55.88	-55.88	-57.24	-59.21	-26.97	-19.88	-13.16	-3.92	-7.29	
Difference			5.33	6.84	6.84	7.62	6.67	3.57	2.97	3.94	N/A	4.91	
Tortoise Capital Advisors MLP (SA)	**23,200,697**	**1.16**	**-39.99**	**-49.38**	**-49.38**	**-50.17**	**-53.74**	**-24.17**	**-17.09**	**-9.41**	**N/A**	**-3.57**	**03/01/2011**
S&P MLP Index (TR)			-46.15	-55.88	-55.88	-57.24	-59.21	-26.97	-19.88	-13.16	-3.92	-7.29	
Difference			6.16	6.50	6.50	7.07	5.47	2.80	2.79	3.75	N/A	3.72	
Hancock Timberland (SA)	**52,860,786**	**2.65**	**0.01**	**0.05**	**0.05**	**1.42**	**-1.69**	**6.14**	**4.51**	**5.40**	**5.84**	**3.40**	**10/01/2006**
NCREIF Timberland Index			0.00	0.00	0.00	-0.04	1.19	2.45	2.78	4.85	4.47	5.40	
Difference			0.01	0.05	0.05	1.46	-2.88	3.69	1.73	0.55	1.37	-2.00	
Dreyfus Gvt Csh Mgt;Inst (DGCXX)	**4,797,363**	**0.24**	**0.07**	**0.31**	**0.31**	**0.72**	**1.84**	**1.72**	**1.15**	**0.84**	**0.62**	**1.43**	**04/01/2001**
FTSE 3 Mo T-Bill Index			0.13	0.39	0.39	0.85	2.04	1.74	1.12	0.81	0.59	1.42	
Difference			-0.06	-0.08	-0.08	-0.13	-0.20	-0.02	0.03	0.03	0.03	0.01	

Market values and performance shown are preliminary and subject to change. Performance shown is net of fees and is annualized for periods greater than one year. Allocations may not sum up to 100% due to the exclusion of managers in liquidation. Please see the addendum for custom benchmark definitions. Fiscal year for the COJ ends 09/30. Performance for Harrison Street Core Property LP, PGIM Real Estate PRISA II (CF), UBS Trumbull Property (CF), NCREIF ODCE Index (AWA) (Net) and NCREIF Timberland Index is available quarterly; interim months assume a 0.00% return.

RVK

Performance Related Comments:

- Performance is annualized for periods greater than one year.
- Performance and market values shown are preliminary and subject to change.
- The inception date shown indicates the first full month of performance following initial funding.
- The market value shown for the Transition Account includes residual assets from terminated managers.
- RVK began monitoring the assets of the City of Jacksonville Retirement System on 01/01/2019. Prior historical data was provided by the custodian and previous consultant.
- Franklin Templeton Global Multisector Plus (CF) performance prior to 03/2016 is represented by Templeton Global Total Return (SICAV).

Custom Composite Benchmark Comments:

- **Current Total Fund Policy Index**: The passive Current Total Fund Policy Index is calculated monthly and currently consists of 30% Russell 3000 Index, 20% MSCI ACW Ex US Index (USD) (Net), 20% Fixed Income Index, 15% NCREIF ODCE Index (AWA) (Net), and 15% Diversifying Assets Index. Prior to 11/01/2017, the Current Total Fund Policy Index consists of the Legacy Total Fund Policy Index.
- **Legacy Total Fund Policy Index**: The passive Legacy Total Fund Policy Index is calculated monthly and currently consists of 35% Russell 3000 Index, 20% MSCI ACW Ex US Index (USD) (Net), 19% Fixed Income Index, 15% NCREIF ODCE Index (AWA) (Net), 10% Diversifying Assets Index, and 1% FTSE 3 Mo US T-Bill Index.
- **US Equity Index**: The passive US Equity Index consists of 100% DJ US TSM Index through 06/2009 and 100% Russell 3000 Index thereafter.
- **International Equity Index**: The passive International Equity Index consists of 100% MSCI EAFE Index (USD) (Gross) through 01/2011 and 100% MSCI ACW Ex US Index (USD) (Net) thereafter.
- **Fixed Income Index**: The passive Fixed Income Index consists of 100% Bloomberg US Agg Bond Index through 10/2017 and 100% Bloomberg US Universal Bond Index thereafter.
- **Diversifying Assets Index**: The passive Diversifying Assets Index is calculated monthly and consists of 50% S&P MLP Index (TR)/50% NCREIF Timberland Index through 10/2017 and 67% S&P MLP Index (TR)/33% NCREIF Timberland Index thereafter.

Custom Manager Benchmark Comments:

- **Baillie Gifford Index**: The passive Baillie Gifford Index consists of 100% MSCI EAFE Grth Index (USD) (Net) through 10/2017 and 100% MSCI ACW Ex US Grth Index (USD) (Net) thereafter.
- **Baillie Gifford Spliced Index**: The passive Baillie Gifford Spliced Index consists of 100% MSCI EAFE Index (USD) (Net) through 11/2019 and 100% MSCI ACW Ex US Index (USD) (Net) thereafter.
- **Richmond Capital Index**: The passive Richmond Capital Index consists of 100% ICE BofAML US Domestic Master through 06/2011 and 100% Bloomberg US Agg Bond Index thereafter.
- **Frank. Temp. Global Multisector Index**: The passive Frank. Temp. Global Multisector Index consists of 100% ICE BofAML Gbl Hi Yld Index through 12/2009 and 100% Bloomberg Multiverse Index thereafter.
- **Custom REITs Index**: The passive Custom REITs Index consists of 100% MSCI US REIT Index (USD) (Gross) through 01/2019 and 100% Vanguard Spl Real Estate Index thereafter.
- **Vanguard Spliced Real Estate Index**: The Vanguard Spl Real Estate Index consists of MSCI US REIT Index (USD) (Gross) adjusted to include a 2% cash position (Lipper Money Market Average) through 04/30/2009, MSCI US REIT Index (USD) (Gross) through 01/31/2018, MSCI US IM Real Estate 25/50 Transition Index through 07/24/2018, and MSCI US IM Real Estate 25/50 Index (Gross) thereafter.

PORTLAND BOISE CHICAGO **NEW YORK**

RVK

Capital Markets Review | 1st Quarter 2020

March 31, 2020

Overview

The first quarter of 2020 was historic, both for markets and for the world at large, as a local outbreak in late 2019 of a previously unknown coronavirus in the Hubei Province of China morphed into a global pandemic. The disease caused by the virus, named COVID-19, has infected millions and led to tens of thousands of fatalities. In order to contain the virus and reduce the burden on healthcare systems, governments around the globe have closed down meaningful portions of their economies—imposing travel restrictions, cancelling social gatherings and events, shuttering non-essential businesses, and even locking down entire cities. In response to this extraordinary economic disruption, the United States Federal Reserve (the Fed) announced two emergency rate cuts, first by 50 basis points on March 3 and then by 100 basis points on March 16—bringing the Fed funds rate range down to 0 - 25 basis points. In addition, the Fed announced open-ended Quantitative Easing alongside a host of other liquidity enhancing programs. Meanwhile, the US Federal government passed the bipartisan Coronavirus Aid, Relief, and Economic Securities (CARES) Act, which provided $2.3 trillion in fiscal stimulus. These concurrent acts of fiscal and monetary policy were unprecedented in terms of size and scope, as well as the speed with which they were enacted—a direct reaction to a problem unseen in modern times.

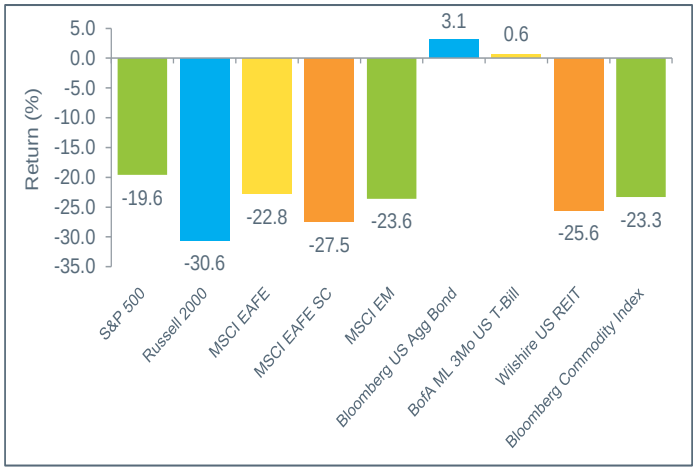
Markets did not begin heavily discounting the economic risks associated with the COVID-19 outbreak until the last week of February. As recently as February 19, the S&P 500 closed at an all-time high of 3,386 and the VIX, a market implied measure of S&P 500 volatility, finished the day at 14.4. Over the course of the following 3 weeks, the S&P 500 closed in bear market territory—representing the fastest 20% drawdown from an all-time high in the history of the index. Ultimately, the index fell 33.9% from peak-to-trough before partially rebounding near month-end. The VIX touched levels last seen in October 2008, hitting an intraday high of 85.5 on March 18. **Exhibit 1**, on the following page, illustrates the spike in implied volatility across equity and fixed income markets, as the VIX (based on S&P 500 option prices) and TYVIX (based on Treasury option prices) both rose significantly in March.

Risk assets saw significant declines during the quarter. Although equities grabbed most of the headlines, stresses in lesser followed markets were in some ways more acute and did more to force the hand of monetary authorities. Spreads in short-term commercial paper and interbank lending markets relative to the target federal funds rate reached their highest levels since the Global Financial Crisis, as the market began to price in severely elevated credit risks. **Exhibit 2,** on the following page, shows the spread between the 3-month LIBOR and Treasury rates, an indicator of the health of funding markets (commonly referred to as the TED spread), which rose far higher than its long-term average. These short-term funding pressures created an elevated demand for dollars, leading to spillover effects and eventually forced selling of other assets. Credit markets across the quality spectrum sold off in earnest, as issuance seized up and investors found

Trailing Period Market Performance (%)

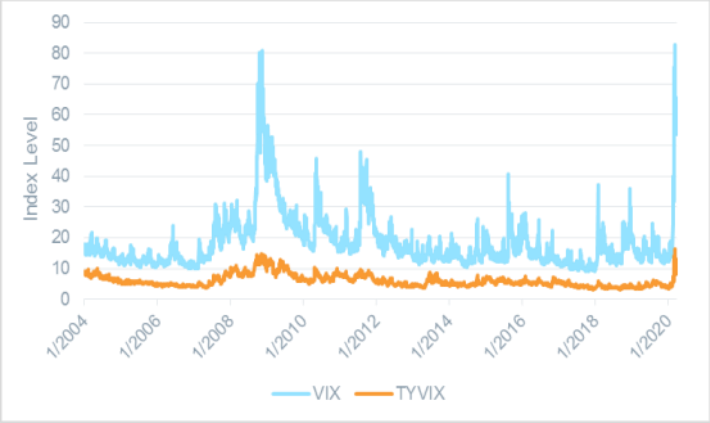
	QTD	CYTD	1 Year	5 Years	10 Years
S&P 500	-19.6	-19.6	-7.0	6.7	10.5
Russell 2000	-30.6	-30.6	-24.0	-0.2	6.9
MSCI EAFE	-22.8	-22.8	-14.4	-0.6	2.7
MSCI EAFE SC	-27.5	-27.5	-18.1	1.0	4.8
MSCI EM	-23.6	-23.6	-17.7	-0.4	0.7
Bloomberg US Agg Bond	3.1	3.1	8.9	3.4	3.9
BofA ML 3Mo US T-Bill	0.6	0.6	2.3	1.2	0.6
Wilshire US REIT	-25.6	-25.6	-19.4	-0.2	7.7
Bloomberg Commodity Index	-23.3	-23.3	-22.3	-7.8	-6.7

Quarter-to-Date Performance (%)



Overview, cont.

Exhibit 1: Significant Implied Volatility Spike



a lack of willing buyers amid record mutual fund and ETF outflows. Credit ETFs, which normally track the value of their underlying bonds, routinely closed at large discounts to their Net Asset Value (NAV) due to liquidity mismatches and difficulty in price discovery. Lower-quality credit assets, such as high yield debt and bank loans, fell in excess of 20% intra-month, while investment grade debt and high-quality structured credit also suffered severe losses. Compounding the effects of the reduction in demand caused by COVID-19 was an oil price war that erupted between Saudi Arabia and Russia in early March. The ensuring price drop in oil further stressed the valuations and debt of companies, and the stability of economies, tied to oil revenues. The US Dollar appreciated by nearly 10% against its trade weighted basket from March 3 through March 23, weighing heavily on returns in emerging markets.

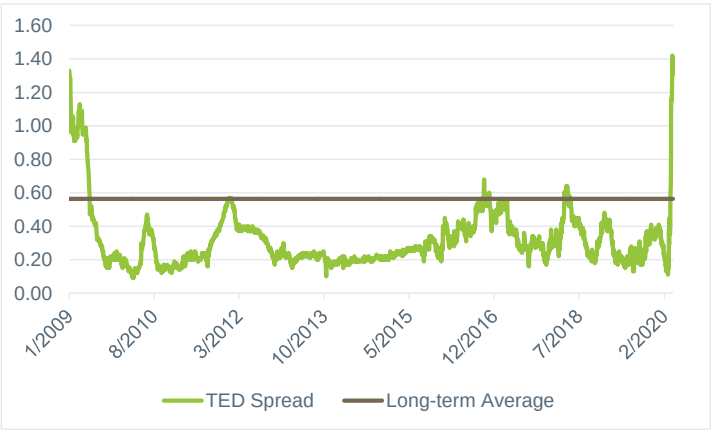
In response to these market conditions, the Fed announced a host of new programs designed to alleviate short-term funding stresses and restore functionality to primary and secondary credit markets. These programs included open-ended large-scale purchases of Treasuries, agency mortgage backed securities, and agency commercial mortgage backed securities. In addition, facilities were launched to provide bridge financing to investment grade corporate borrowers and to backstop some of the associated credit risk in the market through asset purchases. Other programs included support for consumer and business borrowing, a facility to act as a liquidity provider in short-term commercial funding markets, and an expanded effort to provide liquidity to otherwise stressed money market funds for eligible collateral. Also, the Fed extended dollar liquidity swap lines to foreign central banks to alleviate dollar funding shortages abroad.

The Fed's extraordinary steps took place alongside the development and eventual passing of the CARES Act, which included myriad provisions designed to stabilize the economy. The Act provided $500 billion to an Exchange Stabilization Fund, managed by the US Treasury Department in connection with the Fed, to backstop household and business balance sheets through the aforementioned programs and others during the forced economic shutdown. The wide ranging emergency spending authorized by the CARES Act also included $300 billion for cash payments to individuals, $260 billion for enhanced unemployment benefits, $350 billion for small business loans, and $340 billion to state and local governments.

Due to the policy response, markets rallied significantly from their lows by quarter-end. However, considerable uncertainty remains with respect to the balancing act policy makers must perform between ensuring public health and restoring economic activity. Experts believe the virus can incubate for up to 14 days—during which an otherwise healthy person could spread it to others. Safely reopening the economy without pushing infections, hospitalizations, and deaths higher is likely to require expanded testing capacity, serology tests to indicate immunity, and increased surveillance of potential hot spots to reduce flare-ups until reliable treatments or a vaccine are developed. The timeline for these innovations is believed to be several months with respect to testing capacity, but upwards of 12 to 18 months for a scientifically reliable vaccine.

The most recent IMF World Economic Outlook report forecasted global GDP growth of -3% for 2020, a level significantly below what was experienced during the Global Financial Crisis in 2008. This model still relies on a gradual recovery taking hold beginning in the second half of the year. Recent US GDP growth estimates for Q2 2020 across major investment banks indicate an annualized contraction in economic activity ranging anywhere from 15% to in excess of 30%. Employment data for the three weeks ending April 4 was not encouraging, as 16.8 million Americans filed for jobless claims during the period.

Exhibit 2: Stressed Funding Markets



Key Economic Indicators

	Q1 2020	Q4 2019	Q3 2019	10 Year Average
Federal Funds Rate	0.08%	1.55%	1.90%	0.64%
Treasury - 1 Year	0.17%	1.59%	1.75%	0.76%
Treasury - 10 Year	0.70%	1.92%	1.68%	2.34%
Treasury - 30 Year	1.35%	2.39%	2.12%	3.12%
Breakeven Inflation - 5 Year	0.53%	1.70%	1.35%	1.74%
Breakeven Inflation - 10 Year	0.93%	1.79%	1.52%	1.97%
Breakeven Inflation - 30 Year	1.25%	1.81%	1.59%	2.11%
Barclays US Corp: Hi Yld Index - OAS	8.80%	3.36%	3.73%	4.78%
Capacity Utilization	72.72%	77.10%	77.43%	76.86%
Unemployment Rate	4.40%	3.50%	3.50%	6.07%
ISM PMI - Manufacturing	49.10%	47.80%	48.20%	54.05%
Baltic Dry Index - Shipping	626	1,090	1,823	1,216
Consumer Confidence (Conf. Board)	120.00	128.20	126.30	93.55
CPI YoY (Headline)	1.50%	2.30%	1.70%	1.77%
PPI YoY - Producer Prices	-0.90%	1.90%	-0.10%	1.72%
US Dollar Total Weighted Index	122.82	114.72	117.99	102.94
WTI Crude Oil per Barrel	$20	$61	$54	$72
Gold Spot per Ounce	$1,577	$1,517	$1,472	$1,360

Asset Class Commentary

US Equity

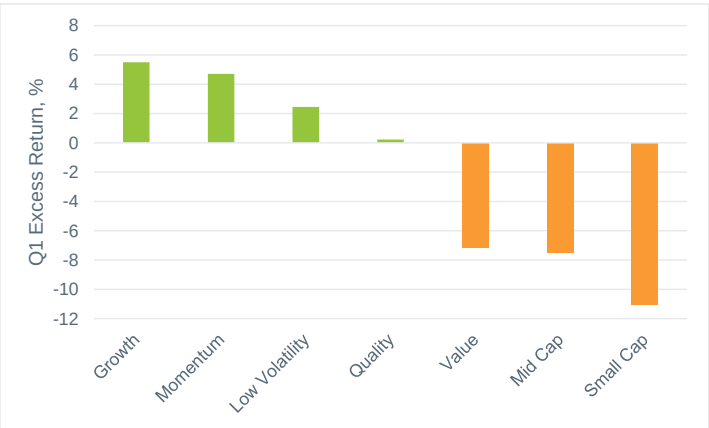
US markets hit their peak in mid-February before growing concerns about the spread of COVID-19 caused the S&P 500 to draw down nearly -34% over a 3 week period. In response, Federal lawmakers passed a fiscal stimulus package through the CARES Act, and the Fed worked to combat the effects of the pandemic by cutting interest rates to near zero and launching large scale asset purchases. Buoyed by these relief measures, the market experienced a 15.5% gain from the trough to end Q1, however the S&P 500 still finished the quarter down -19.6%, marking the ninth worst quarter since 1926. Small- and mid-cap stocks were hardest hit with the Russell 2000 and Russell Mid Cap indexes down -30.6% and -27.1%, respectively.

Volatility in the markets reached levels last seen during the Global Financial Crisis, with the VIX index closing near 83 in mid-March. However, volatility levels declined at the end of Q1, dropping to the low 50s. The month of March experienced two of the six worst days in the stock market dating back to 1928 with daily returns of -12.0% and -9.5%. Conversely, March also included the ninth (9.3%) and tenth (9.4%) best days since 1928.

As expected, low volatility stocks held up well in the risk-off environment of Q1. Less expected was the downside protection provided by momentum and growth stocks, as shown in **Exhibit 3**. Value underperformed growth across all market capitalizations, experiencing a sharper drawdown than growth. The Russell 1000 Value finished Q1 down -26.7% while the Russell 1000 Growth finished down -14.1%. Additionally, the Russell 2000 Value finished down -35.7% with the Russell 2000 Growth down -25.8%.

Active management continued to deliver mixed results in Q1 with approximately 50% of managers providing excess returns. Large-cap value managers and small-cap growth managers outperformed their respective benchmarks with the highest rates of success. Large-cap growth and small-cap value managers struggled, on average, against their benchmarks. Overall, many value managers provided notably better relative returns in March as more growth managers failed to outpace comparatively higher benchmark returns. Across the style spectrum, manager exposure (or lack thereof) to cyclical industries—especially airlines, leisure, and oil-related businesses—drove benchmark-relative returns.

Exhibit 3: Style/Factor Returns vs. S&P 500



Non-US Equity

Developed international markets fared slightly worse than domestic markets during Q1 with broad indexes declining nearly -25%. Value stocks continued to underperform growth, with the gap between the style groups widening meaningfully and larger companies with diversified business lines generally outperformed their smaller counterparts. Sectors were negative across the board, but defensive sectors (such as healthcare, consumer staples, and utilities) held up better amidst the volatility. Healthcare stocks performed best, as the sector was the only one to avoid double-digit negative returns. On the other hand, more economically-sensitive and commodity-linked stocks were hit hard. In particular, energy and financial stocks lost about a third of their value. By region, performance was not as diverse as it was by sector; although the Pacific region was propped up by Japan which provided investors a measure of safety. Japan reported a lower infection rate than other developed countries, and the high cash balances carried by many Japanese companies, which previously had been seen as a detriment to returns, proved useful in providing ballast to stocks during the quarter. Most European country returns were in line with the developed markets index, but there were a few standouts, such as Denmark and Switzerland. Among the active managers that RVK follows closely, most emphasized an increased focus on quality companies with healthy balance sheets and confirming that the companies they hold will be able to make it through these uncertain times.

For the quarter, emerging markets were the worst performing equity asset class, although they only trailed developed equity markets by a thin margin. Similar to the rest of the world, value significantly underperformed growth, and large-cap stocks also outperformed small. Emerging markets were also negative across sectors and countries, but with greater disparity by region than the developed world, as there was a flight to countries perceived as safe havens. The worst performers were less industrialized countries, such as Colombia and Brazil, where index levels were roughly cut in half. On the other hand, China was the second-best performing country in the world, behind Denmark. Generally, larger-cap Asian countries, such as China and Taiwan, buoyed the emerging markets, whereas performance in Latin America was more challenged. China's growth-oriented economy, coupled with declining reported cases of COVID-19, helped to limit its depreciation.

Fixed Income

COVID-19-related fears and subsequent monetary policy responses led Treasury yields to steep declines of more than 100 basis points across all maturities. On March 9, the 30-year yield ended the day at just 0.99%, marking the first time ever that all maturities ended below the 1% threshold. The declines benefitted Treasuries, as the Bloomberg US Treasury Index returned 8.2% for the quarter. Long-dated Treasury returns were even more pronounced, as the Bloomberg US Long Treasury Index returned 20.6%.

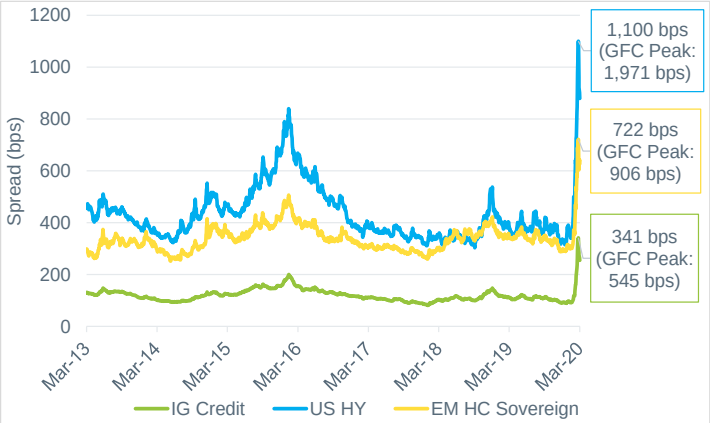
Credit experienced significant selloffs and volatility over the quarter. Investment-grade corporates recorded the two most severe weeks of spread-widening ever in March, only to be followed by the most extreme week of spread-tightening. At one point, spreads reached 373 basis points, surpassing the previous month's high yield levels. In all, the Bloomberg US Corporate Index returned -3.6% in Q1 with bifurcated returns between quality groups, as AAA-rated bonds returned 4.7% while BBB-rated bonds returned -7.1%. This disparity highlighted concerns of potential downgrades amid an uncertain economic outlook.

Non-investment grade credit was hit even harder. High yield spreads exceeded 1,000 basis points for the first time since 2008, and the Bloomberg US High Yield Index registered its second-worst quarter on record with a return of -12.7%. Energy was the worst-performing sector, returning -38.9%. The spread of the sector widened 342 basis points on March 9 in response to the oil price war launched between Russia and Saudi Arabia. This represented the largest single-day move ever recorded and was nearly twice as severe as the next largest increase, which occurred three days later. The change was more than four times the magnitude reached during the worst day of the 2015/2016 energy crisis. Similarly, the Credit Suisse Leveraged Loan Index fell -13.0%, and posted its lowest (-3.8%) and highest (3.0%) single-day returns since its launch in a span of just eight days. It also recorded its three worst trading days ever during the week of March 16.

Global markets were heavily impacted as well. With so many countries relying on oil exportation, emerging market debt suffered from both declining oil prices and coronavirus-induced reductions in demand. The JPM EMBI Global Diversified Index had its worst quarterly decline in more than 20 years, returning -13.4%, which was worse than the total losses experienced in 2008.

Exhibit 4 illustrates the sharp widening of OAS spreads of investment grade credit, high yield, and hard currency emerging market yields versus Treasuries that occurred in March.

Exhibit 4: Significant Spread Widening



Diversified Hedge Funds

The HFRI Fund Weighted Composite Index returned -8.3% for the quarter, led lower by hedged equity (-13.0%) and event-driven (-15.0%) strategies that generally maintain significant net market exposure. The managers that RVK follows closely fared better than many peers, albeit with considerable dispersion across investment styles.

Equity Long/Short (ELS) managers protected against major capital impairment through strong short alpha generation, particularly through bets against stocks in the physical retail or travel and leisure sub-sectors. However, long books were challenged across the board. Managers that outperformed on the long side generally entered the quarter with measured outlooks for cyclicals and global growth relative to peers. In aggregate, ELS managers that RVK tracks closely avoided capturing an outsized portion of the equity market drawdown, and given surging levels of stock price dispersion, remain constructive on the opportunity set for generating alpha via stock selection and industry shifts going forward. While impacted by deleveraging activity during the week of March 16, which caused massive pricing headwinds and volatility across more crowded names, ELS funds were largely spared some of the major factor rotations that negatively affected strategies in prior periods, such as Q1-2016 and Q4-2018.

Within the multi-strategy space, dispersion of returns across managers varied widely. Those managers who lean toward market neutrality and trade highly liquid, high quality instruments tended to outperform managers with a directional bias, or those who rely on complex restructuring situations in lower quality, less liquid securities to generate returns. Programs enacted by the Fed specifically targeted dislocations in treasury and agency mortgage markets as well as investment grade bonds. Managers who rely heavily on market neutral equity and liquid fixed income relative value trading consequently performed relatively well, as did those with sophisticated hedging overlay programs. Managers with merger-arbitrage and credit event driven exposure suffered significant losses mid-month and did not benefit to the same degree from the subsequent rally on the back of the monetary and fiscal stimulus.

Macro managers provided protection during the quarter, with discretionary thematic managers up 3.91% YTD and systematic managers up 2.07% YTD on average, according to HFR. Discretionary managers that maintain cheap long convexity exposure, including options that bet on the front-end of the US yield curve were rewarded when the Fed slashed rates during the quarter. Systematic managers and trend followers in particular benefited from being long USD and short energy commodities as the complex sold off amid the oil price war.

Importantly, RVK's ongoing conversations with managers throughout the quarter indicate that few are experiencing material issues with respect to liquidity, execution, or portfolio financing. Industry lessons learned from 2008—using multiple prime brokerage relationships, improving risk management systems, and avoiding liquidity mismatches—have kept operations flowing smoothly to date.

Global Tactical Asset Allocation (GTAA)

GTAA managers largely provided negative absolute returns during the quarter with long-biased strategies generally underperforming a static and less diversified blend of 60% US equity and 40% US fixed income. Although most long-biased GTAA strategies RVK tracks underperformed this measure, the degree to which strategies lagged varied. Strategies that provided the weakest relative returns versus peers tended to have higher relative allocations to emerging markets equities or exposure to oil markets and US small-cap equities. Within emerging market equities, growth equities once again out-paced value, detracting from performance for

managers. Emerging market debt allocations also detracted from the relative performance of these strategies. Even though many of these strategies held or added hedges to various equity markets during the quarter, contributions from these hedges were outweighed by other long exposures. Long-biased managers that outperformed peers on a relative basis tended to have more exposure across US markets as opposed to emerging markets, both within fixed income and equities. Allocations to preferred securities also provided positive relative performance versus riskier assets. Among multi-asset managers that intend to provide reduced correlations, lower volatility, and less market sensitivity, most outperformed long-biased GTAA managers. While this group still generally provided negative absolute returns, this subset of managers largely outperformed a static blend of 60% US equity and 40% US fixed income during the quarter.

Diversified Inflation Strategies (DIS)

Performance across DIS managers RVK tracks was generally negative on an absolute basis during Q1, though there was dispersion among strategies driven by exposure differences. In a reversal from 2019, managers with larger TIPS allocations tended to outperform peers as riskier assets saw relatively large drawdowns during the quarter. These strategies also tended to hold relatively higher allocations to commodities, which was a headwind in part due to the price war in the oil industry. Despite the commodity exposures, TIPS allocations helped to buoy Q1 returns relative to peers. Managers that underperformed by the widest margins versus peers emphasized allocations to REITs, global listed infrastructure and/or global natural resource equities in varying proportions. All of these assets detracted from performance significantly in Q1. Over the quarter, inflation and market-based measures of future expected inflation both decreased. Inflation, as measured by the year-over-year change in Headline CPI, decreased over the quarter from 2.30% in December to 1.50% in March. The decrease from February to March alone is the largest one month drop seen since January 2015 and was largely attributed to the oil price drop. Other contributors included decreased rates across airfares and lodging. The 10-year Treasury break-evens, a market-based measure of future inflation expectations, also decreased over the quarter from 1.79% to 0.93%.

Real Estate

Core private real estate returned 0.97% during the first quarter (on a preliminary basis), as reported by the NCREIF-ODCE Index, with the total return comprised of a 1.02% gain from income with a -0.05% loss due to price appreciation. While the income component remained in line with historical levels, price appreciation experienced a meaningful decrease of -0.52% compared to the prior quarter. Investments in publicly traded real estate trailed their private market counterparts by a wide margin, delivering a first quarter total return of -25.4% as measured by FTSE/NAREIT All REITs Index.

Overall, the significant divergence between public and private real estate performance in the first quarter was largely due to the public market sell-off in March, whereas in private real estate, there is a lagged pricing effect. The impact on property pricing and rent collections stemming from the economic slowdown forced by COVID-19 will be more evident in second quarter returns and through the remainder of the year.

The effects of the economic slowdown on investments in commercial real estate are expected to be far-reaching, with both income and appreciation returns at risk. In the near term, most real estate sectors are expected to see below-trend rent collections as tenants request various forms of rent relief from property owners. This is expected to have a meaningful influence on future capital values as owners and appraisers re-evaluate underlying property value, income, and lease-up assumptions. To a large extent, these impacts were not widely factored into first quarter returns, as only a subset of managers felt it was appropriate to make adjustments to valuations where the effects were most immediate.

Given the wide reaching consequences of this pandemic, the sensitivity and operational issues experienced by property type will vary significantly. In the near-term, the retail, leisure and hospitality sectors are the heaviest hit segments of the market. Senior and student housing also have unique circumstances which can cause these properties to be more at-risk. Seniors are the most vulnerable to the global pandemic while student housing is beholden to campus policies and potential cancellations of classes for the remainder of the academic year.

Disclaimer

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RVK was founded in 1985 to focus exclusively on investment consulting and today employs over 100 professionals. The firm is headquartered in Portland, Oregon, with regional offices in Boise, Chicago and New York City. RVK is one of the ten largest consulting firms in the US (as defined by Pension & Investments) and has been named a Quality Leader among large US consultants by independent research firm, Greenwich Associates, for the last two consecutive years. RVK's diversified client base of over 190 clients covers 30 states and includes endowments, foundations, corporate and public defined benefit and contribution plans, Taft-Hartley plans, and high-net-worth individuals and families. The firm is independent, employee-owned, and derives 100% of its revenues from investment consulting services.

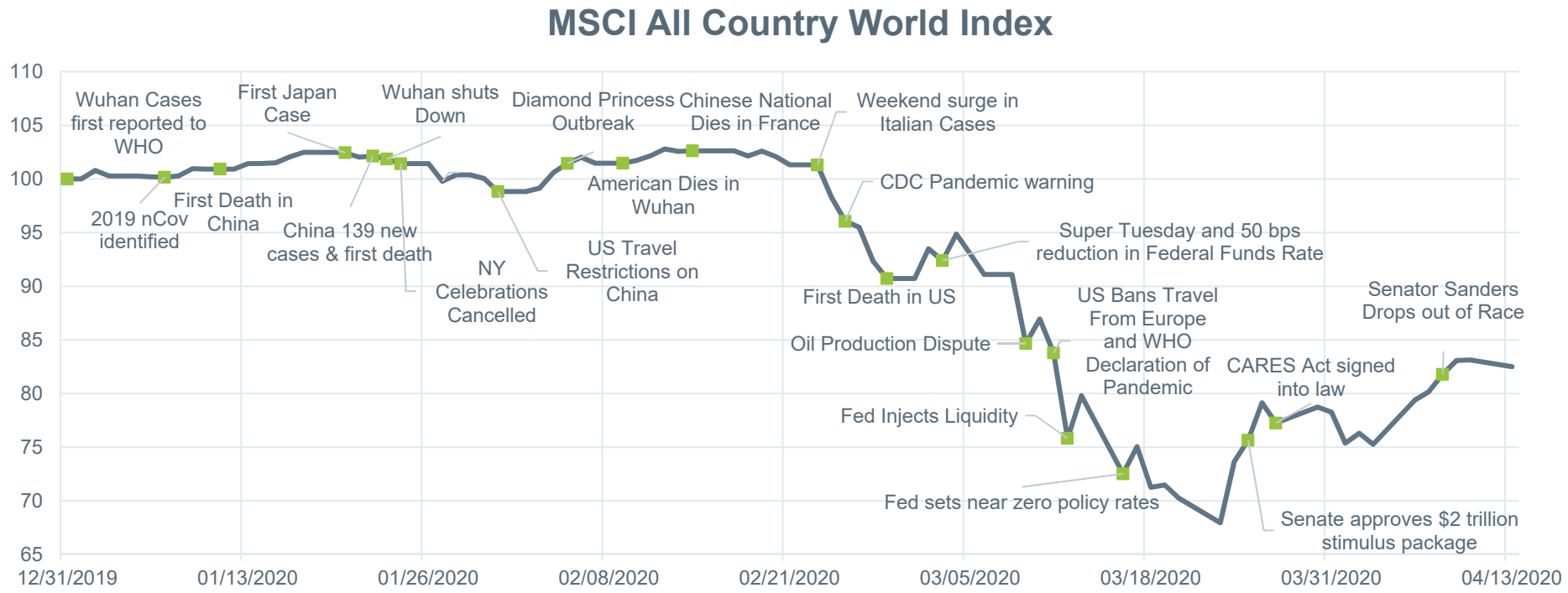
April 23, 2020

2020 Update: COVID-19 and Economic Implications

City of Jacksonville Employees' Retirement System

Introduction

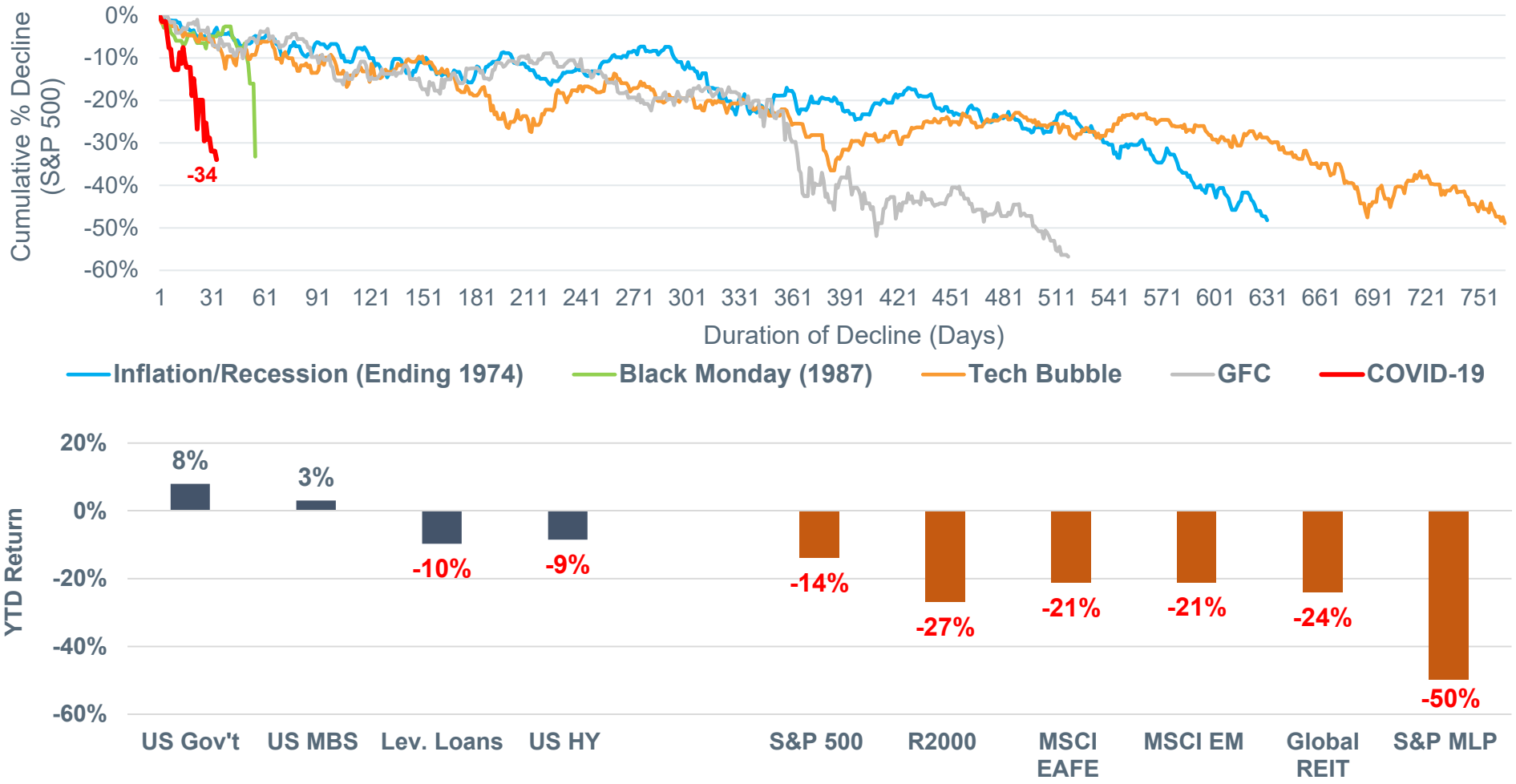
- Over the last several weeks, investors have faced increased market volatility due to uncertainty surrounding developments with the novel (new) Coronavirus, and other geopolitical events:
  - Oil production/price disputes between Russia and Saudi Arabia.
  - 2020 Presidential Election brings the potential for a significant shift in US policy.
- Given the rapidly evolving nature of “COVID-19” and the related ongoing developments, this analysis is meant to provide a brief update on an ongoing situation.
- The following slides provide an overview of key developments thus far on these topics as well as the implications for investors.



Source: Bloomberg, New York Times, Aljazeera, Global Endowment Management

Market Impact in Context

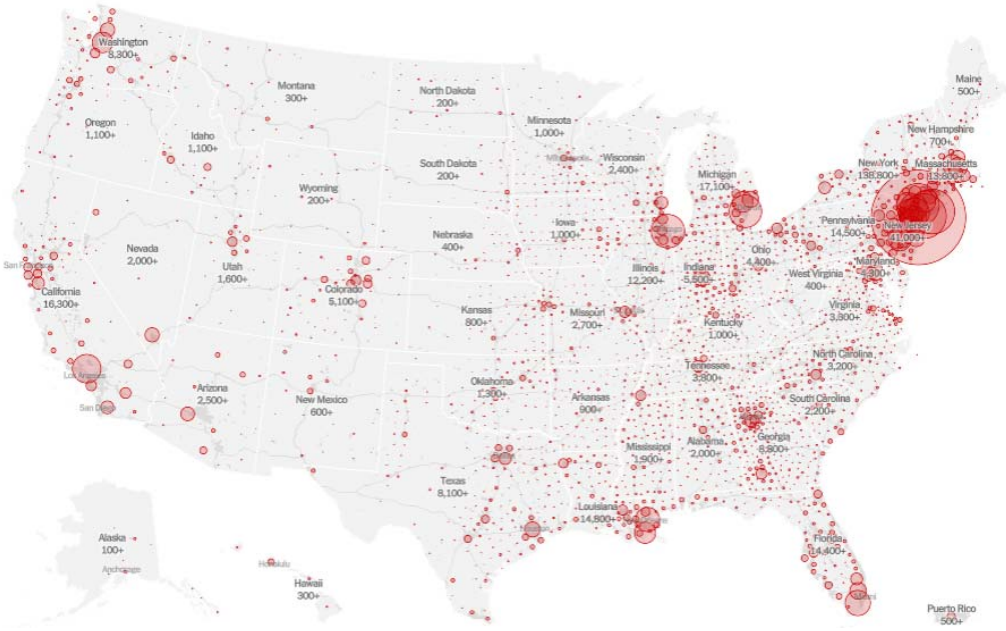
- The sheer speed of this decline has been astonishing, particularly relative to other equity market drawdowns in the last 40 years.
- US large cap equity, as represented by the S&P 500 Index, declined 34% between February 19th and March 23rd (current trough) of this year before regaining some of the losses; posting -14% YTD as of April 13th.



Data is as of April 13, 2020.

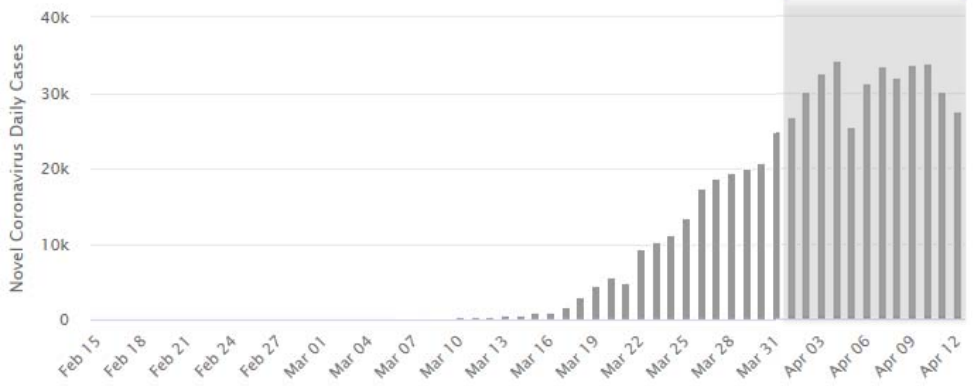
COVID-19 US Impact

- In the US, cases jumped to approximately **594,000[1] as of April 14th** representing the highest number of reported cases globally within a single country. Although lockdown measures and restrictions on gatherings remain in effect, several states have begun to strategize ways to safely reopen local economies.
- Despite state specific dispersion in daily new case growth rates, COVID-19 cases in the US may be showing early signs of stabilization, as the growth rate in domestic cases fell for a third straight day on Monday, April 13th.
- Informed by lessons learned during past drawdowns, policy-maker actions have been swift and sizable. A few of the more notable countermeasures implemented to date domestically include:
  - Global travel bans
  - Emergency rate reductions of 150 bps by the Federal Reserve over two week timeframe, bringing the target range for the federal funds rate to 0-0.25%
  - Federal Reserve injection of liquidity, announcement of open-ended QE, and other significant actions aimed to support market liquidity
  - $2 trillion CARES stimulus package, with potentially more stimulus on the horizon



Illnesses that began during this time may not be reported yet

Daily New Cases[2]

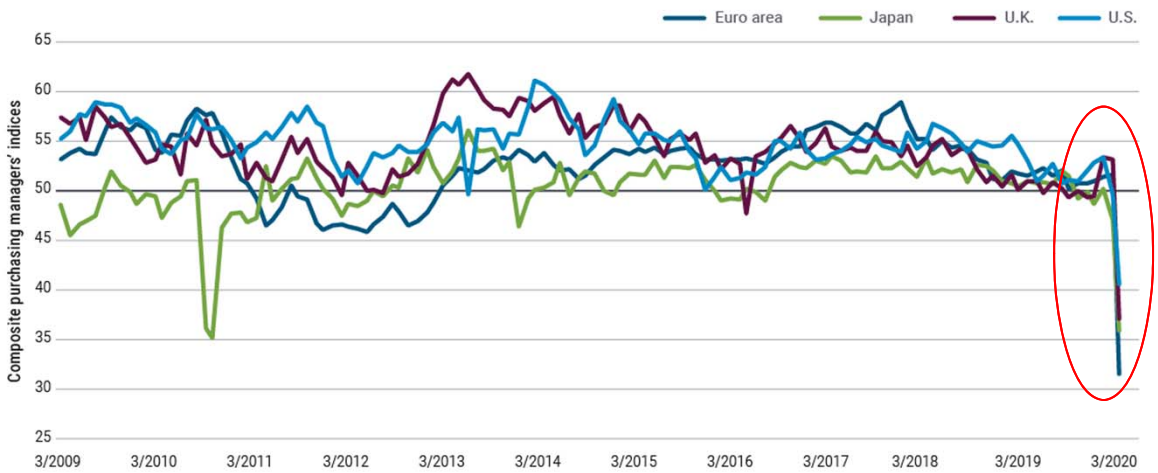


Source: [1]Johns Hopkins University & Medicine, The New York Times, [2]Worldometer, CDC

Economic Impact of COVID-19

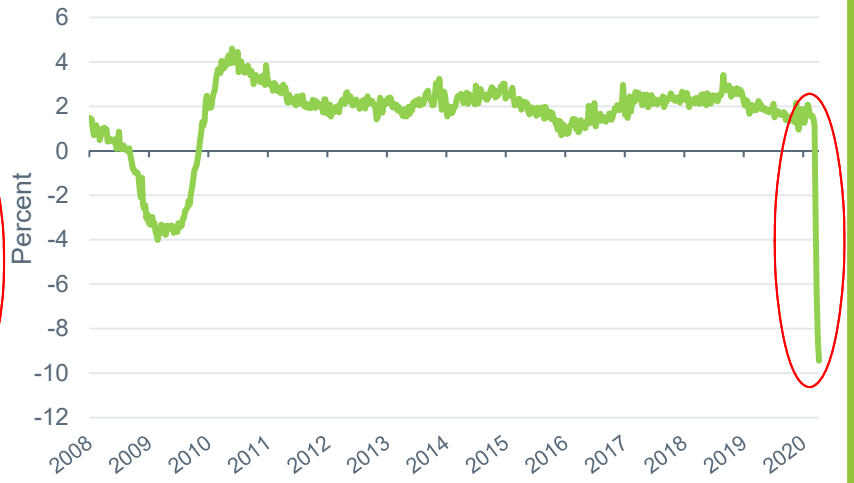
- Containment efforts to reduce the number of infections have resulted in a standstill of many economies. The unprecedented lockdown and “shelter in place” orders have materially impacted supply and demand dynamics at many stages of the supply chain. Supply chain disruptions have shifted from initial pressures following China’s lockdown, to unprecedented logistics issues across the globe.
- The industries hardest hit by COVID-19 around the world to date have been commercial aerospace, air & travel, insurance carriers, oil and gas, automotive and entertainment activities.
- Globally, the International Monetary Fund (IMF) and the Organisation for Economic Co-operation and Development (OECD) both issued a negative global growth outlook for 2020, anticipating a recession at least as bad as during the global financial crisis.
  - A sharp drop in global economic activity is already evident as shown by a massive decline in the composite purchasing managers’ indices.
  - In addition, the Weekly Economic Index (WEI), measuring real economic activity in the US on a weekly frequency and comprised of 10 economic indicators, unsurprisingly displayed a drastic drop in the US economic activity as well.

Composite Purchasing Manager’s Indices



Source: PIMCO, Haver Analytics as of March 2020.

Weekly Economic Index (WEI)



Source: https://www.jimstock.org/ as of April 11, 2020.

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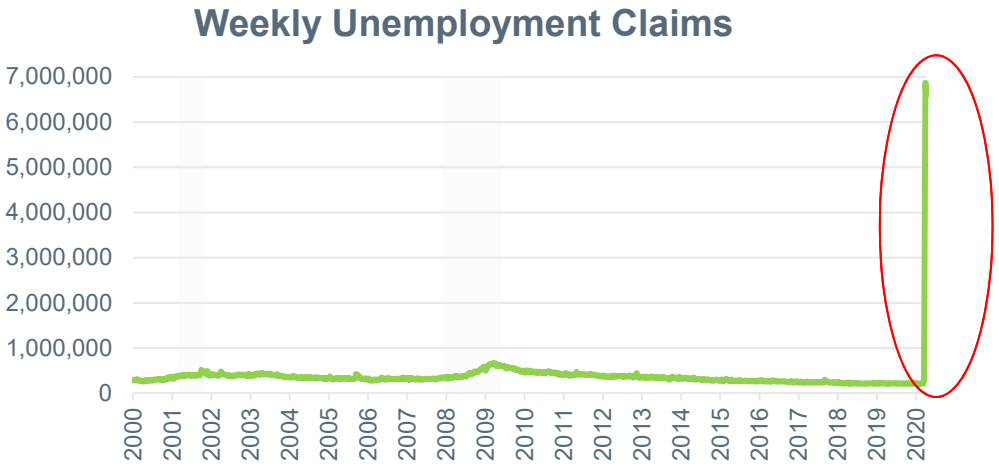
Economic Impact of COVID-19: Unemployment

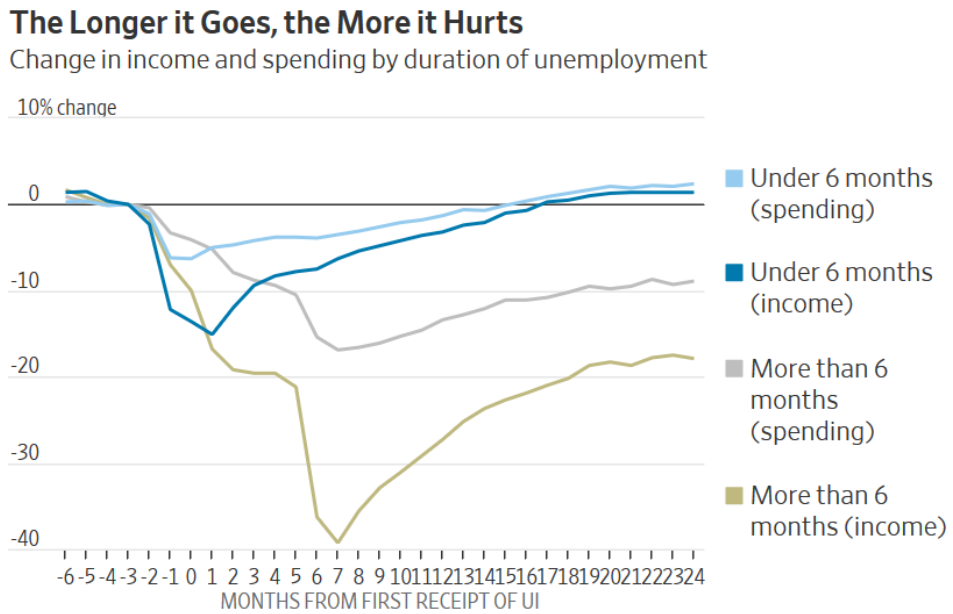
- Unemployment claims continued to be markedly high with reported claims of 6.6 million for the week ended April 4th. The claims over the last two weeks are nearly 10 times the highest weekly claims number witnessed during the GFC.

- Reduced employment can have a cascading effect as consumer confidence decreases and consumers spend less, thus potentially contributing to a slower recovery.

- Individuals unemployed for a short period of time tend to revert back to historical spending patterns relatively quickly, while data shows that those unemployed for a longer period of time may significantly change their spending behavior.



Source: St. Louis FRED. Data as of April 4, 2020.



Note: For unemployment insurance recipients in states with six months of benefits.
Source: J.P. Morgan Chase Institute

Economic Impact of COVID-19: GDP

- The range of GDP estimates is wide in the US as economists estimate that GDP will suffer a 9-40% decline during Q2.
- According to recent data, economists are projecting a recovery in 2021 (with some estimating a recovery beginning in Q4 2020). There is also a wide range of opinions about the various paths of the recovery.
- Could it be fast as pent up demand quickly unravels and firms rehire the majority of workers?
- Or could it be slow and protracted as firms may be reluctant to rehire until they see signs of a sustained recovery?

Firm	Q2 2020 GDP Estimate
Bloomberg Economics	-9.0%
UBS	-9.5%
Pantheon	-10.0%
Strategas	-10.0%
Cornerstone Macro	-11.0%
Oxford Economics	-11.9%
Citigroup	-12.0%
Credit Suisse	-12.0%
Bank of America Merrill Lynch	-12.0%
Deutsche Bank	-12.9%
HIS Markit	-13.0%
Wells Fargo	-14.7%
TSLombard	-17.7%
Evercore ISI	-20.0%
JPMorgan	-25.0%
Morgan Stanley	-30.1%
Goldman Sachs	-34.0%
Capital Economics	-40.0%

Source: Charles Schwab
Data as of April 1, 2020

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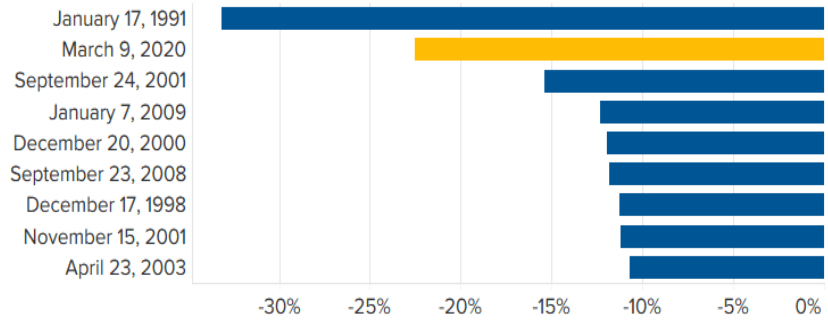
Oil Supply and Demand Shocks

- Further exacerbating the global economic picture is oil price volatility due to (a) disputes between Russia and Saudi Arabia over oil production levels and price and (b) a significant and sudden drop in global oil demand.
- **Supply Side**: the sell-off in crude began the first week of March following the failure of the OPEC deal with its allies to reduce production as a countermeasure to lessened demand due to COVID-19.
  - In response to Russia's non-compliance, Saudi Arabia slashed its prices sending oil prices 24.6% lower on March 9th, settling at $31.13 per barrel, and resulting in the WTI's (West Texas Intermediate) second worst day on record.
  - On Thursday, April 2nd, WTI had its single best day on record, rising 24.7% to $25.32 per barrel as some concern regarding oversupply was alleviated following talks of a potential production agreement between Russia and Saudi Arabia.
    - On Sunday, April 12th, OPEC+ agreed to reduce production by 10 million barrels (the largest cutback in history).
    - However, despite sizeable production cuts, concerns remain about whether this will be sufficient to overcome the drop in demand.
- **Demand Side**: Demand for oil has plunged as social distancing measures have been adopted across the world, manufacturing activity has decreased, and travel has come to a halt.

Largest Single Day Percent Drops in Oil Prices



Source: Factset data as of 3/9/20. CNBC.

Sustainability of Current Oil Prices

Country	Fiscal Breakeven Price Per Barrel
Russia	$65
Saudi Arabia	$94
OPEC	$90

Source: Harvest Fund Advisors. RBC, "OPEC Watch List," 3/19/2020.

Downside Scenario Analysis

Recent historical US Equity market corrections:

- The table below illustrates three recent 1-year periods with significant equity market corrections as well as the COJ's actual return.

MSCI ACWI Market Corrections 1-Year

	Mar 2008 - Feb 2009	Apr 2002 - Mar 2003	Oct 2000 - Sep 2001	*YTD Through March 31, 2020*
MSCI ACWI Return	-48%	-24%	-28%	-21%
COJ Return	-31%	-11%	-3%	-15%

Subsequent Performance

- The table below illustrates the subsequent performance over the following 1, 3 and 5 year periods that followed each of the above periods.

MSCI ACWI Subsequent Performance 1, 3 and 5 Year

Subsequent Returns Following a Drawdown Event	Mar 2008 – Feb 2009	Apr 2002 – Mar 2003	Oct 2000 – Sep 2001
MSCI ACWI Return – 1 year	59%	46%	-18%
COJ Return – 1 year	33%	26%	-4%
MSCI ACWI Return – 3 year	24%	25%	7%
COJ Return – 3 year	18%	13%	7%
MSCI ACWI Return – 5 year	20%	18%	11%
COJ Return – 5 year	16%	10%	8%

Performance shown is net of fees. Performance figures are preliminary and subject to change.

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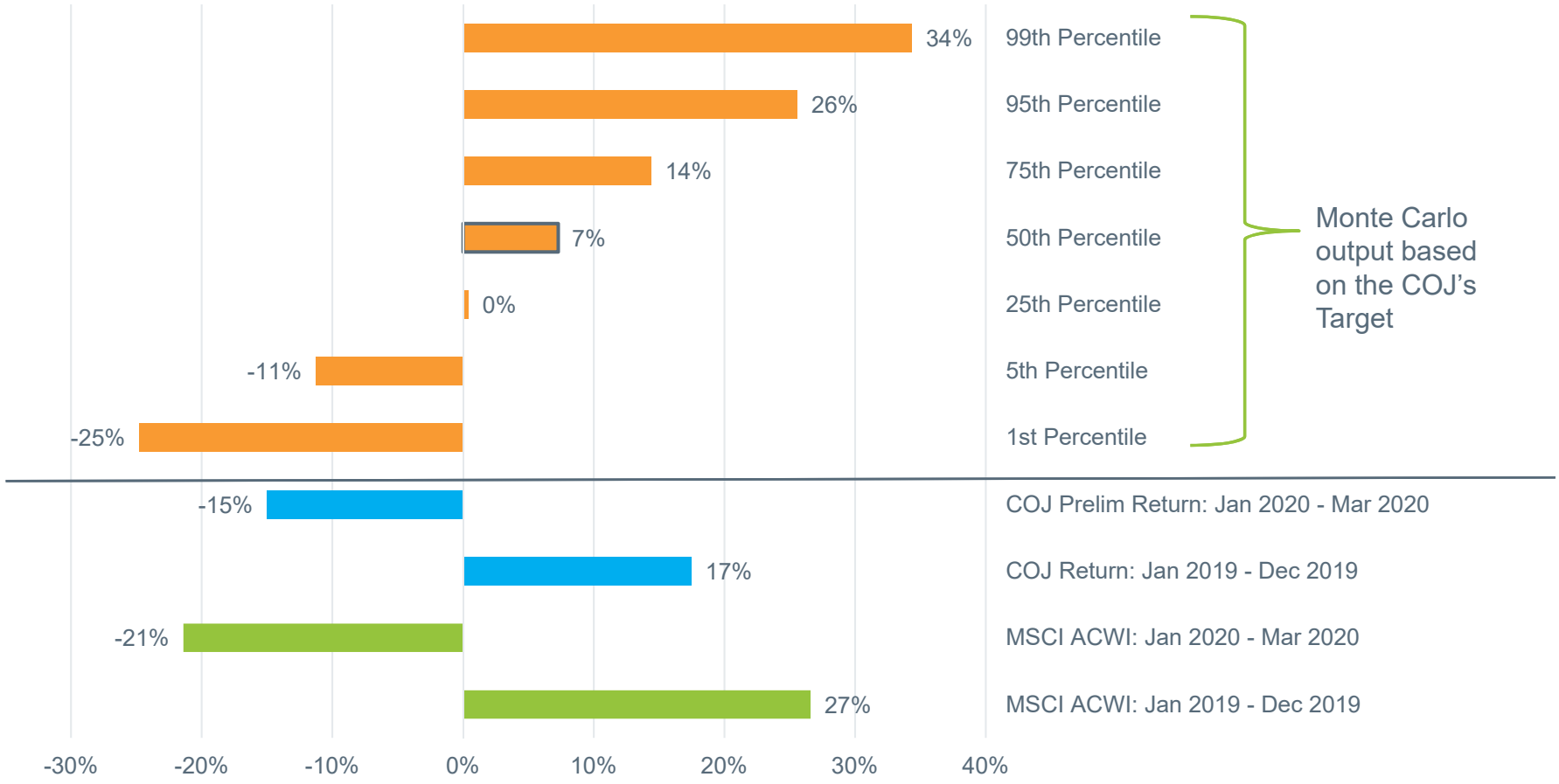
Downside Scenario Analysis

2019 and 2020 Performance in Context

- Based on RVK's capital market assumptions and corresponding Monte Carlo analysis, the chart below illustrates how both current Q1 return for 2020 and the 2019 returns compare to the range of expected potential outcomes.



Figures shown are representative of the Monte Carlo analysis completed through the Asset Allocation modeling.
Performance shown is preliminary and subject to change.

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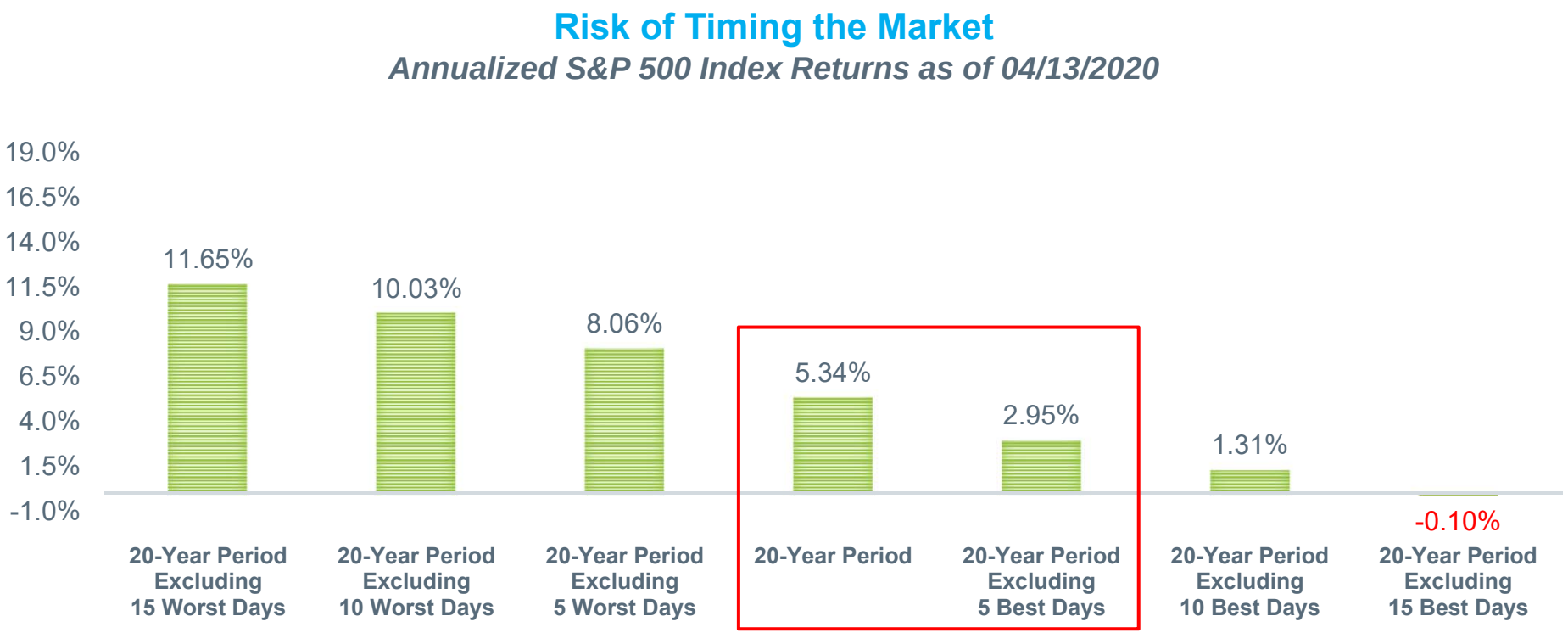
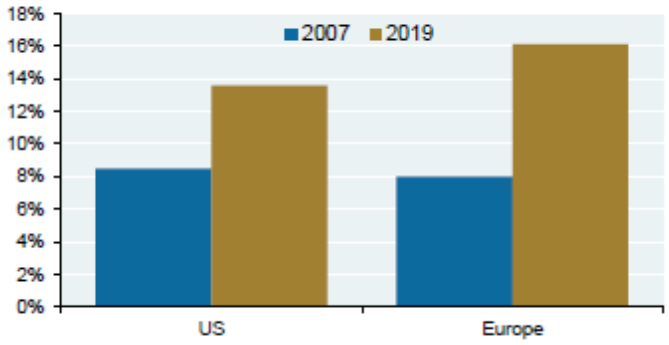
Risk of Timing the Market

- Market timing is a risky proposition. History shows that investors typically miss market swings when they attempt to time major entry and exit points, because when the market moves, it often moves quickly.
- Systematic rebalancing can help resolve market timing risks; it addresses the uncertainty inherent in the question, "…is now a good time to rebalance?" It does not try to catch market peaks or bottoms.



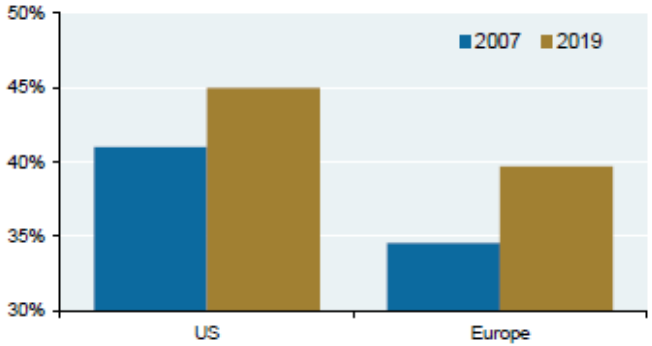
Comparison to 2008-09 GFC and Market Liquidity

Rising capital ratios
Risk-weighted capital ratio



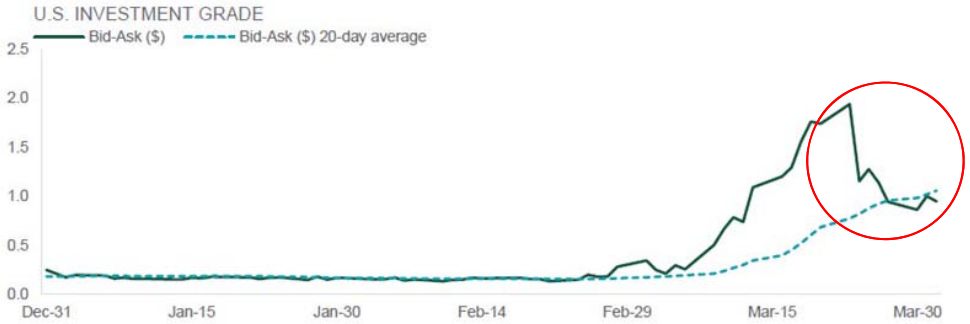
Source: Federal Reserve Bank of New York, Bloomberg. Q4 2019.

Improving liquidity ratios
Liquid assets as % of short term liabilities



Source: FDIC, Goldman Sachs, JP Morgan. Q4 2019.

Illiquidity has made bond trading much more expensive, but it has improved recently.



Source: Northern Trust Asset Management, MarketAxess. Data as of 4/1/2020. Chart shows the MarketAxess U.S. Investment Grade Bid-Ask ($) Index. It measures current aggregate bid-ask spread ($) for index securities; higher levels imply greater market-wide trading costs.

- Some investors may draw parallels between the current drawdown and that of the 2008-09 global financial crisis (GFC).
- It is important to remember, however, that from a liquidity perspective, thanks to reform following the GFC, the US financial system is now better positioned to demonstrate greater resilience than it did during the GFC (true for Europe as well, but to a lesser degree).
- The Federal Reserve, having learned from the GFC, is also better positioned to support market liquidity. For example, after the GFC, the span of QE1 to QE3 took 5 years whereas it only took 9 days for the Fed to expand QE to its current open-ended form.
- As is usually the case during times of market stress, signs of liquidity strains began to emerge in March given the speed with which the drawdown in risk assets occurred as investors fled to the dollar.
  - During normal times, bid-ask spreads on IG bonds have historically been around $0.20, and with recent market stress, grew to as high as $1.94. The Fed's open-ended QE and liquidity programs have started to have an impact, decreasing spreads from recent highs (though still elevated relative to history).

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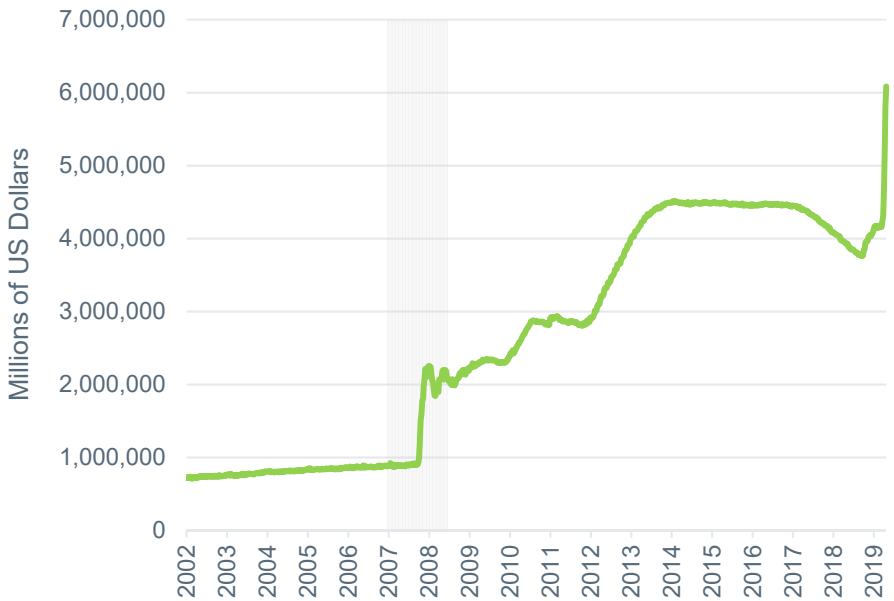
Monetary Policy: The Role of the Federal Reserve

- On March 12th, the Fed introduced measures of liquidity injection. On March 15th, it announced new quantitative easing, reduced the fed funds rate to essentially zero, and continues to take significant measures to support liquidity in the market, including reintroducing tools last used during the GFC and developing new tools to combat the unique challenges presented by COVID-19.

- Despite the Fed's important and decisive actions thus far, fiscal policy has the potential to play a much larger role, with the CARES Act having recently been signed into law, and further stimulus potentially on the horizon.

Federal Reserve Total Assets



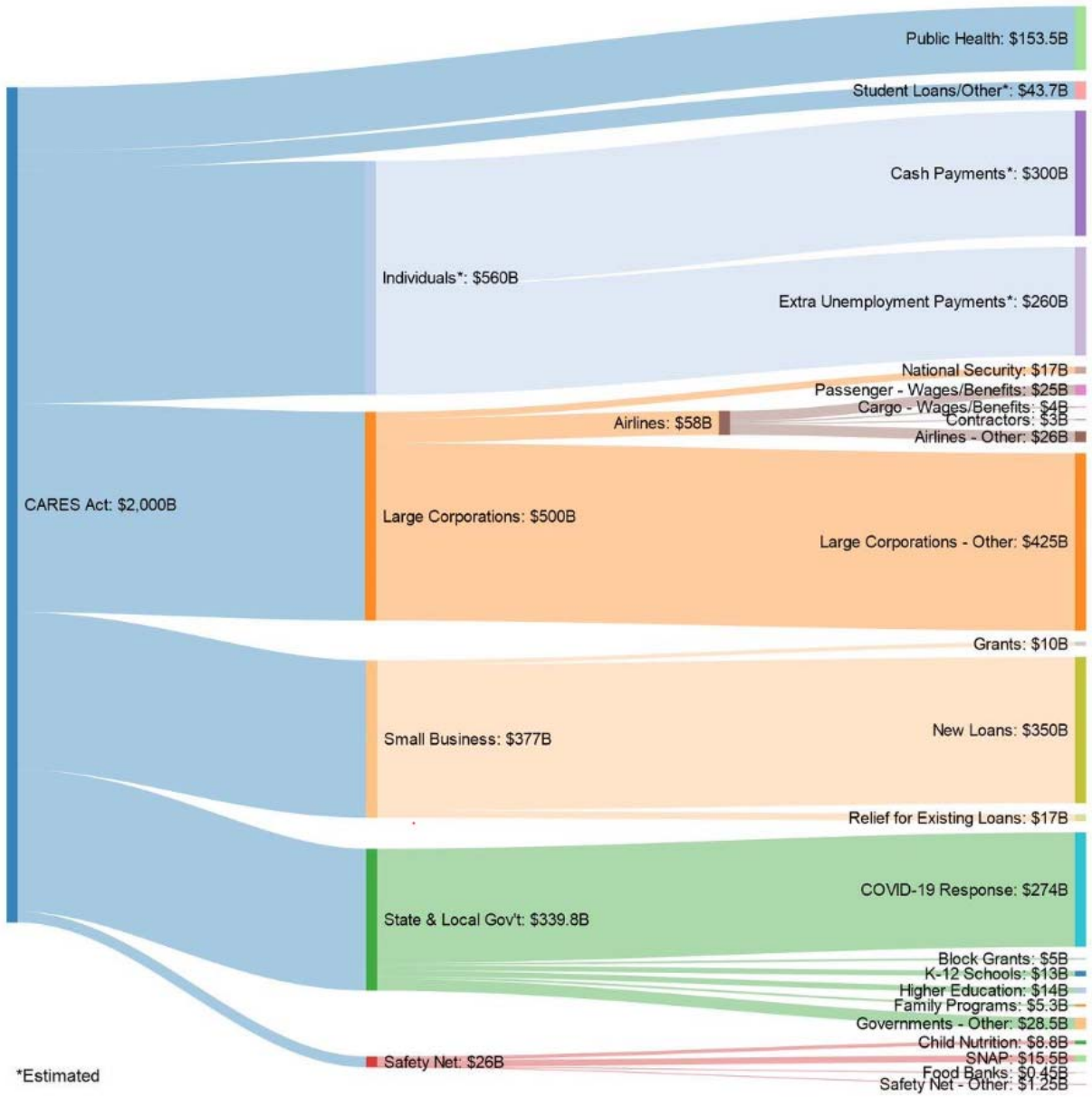
Source: St. Louis FRED; Data as of April 8, 2020.

US 10-Year Treasury Yields

Source: Global Endowment Management

Fiscal Policy: CARES Act and Additional Stimulus

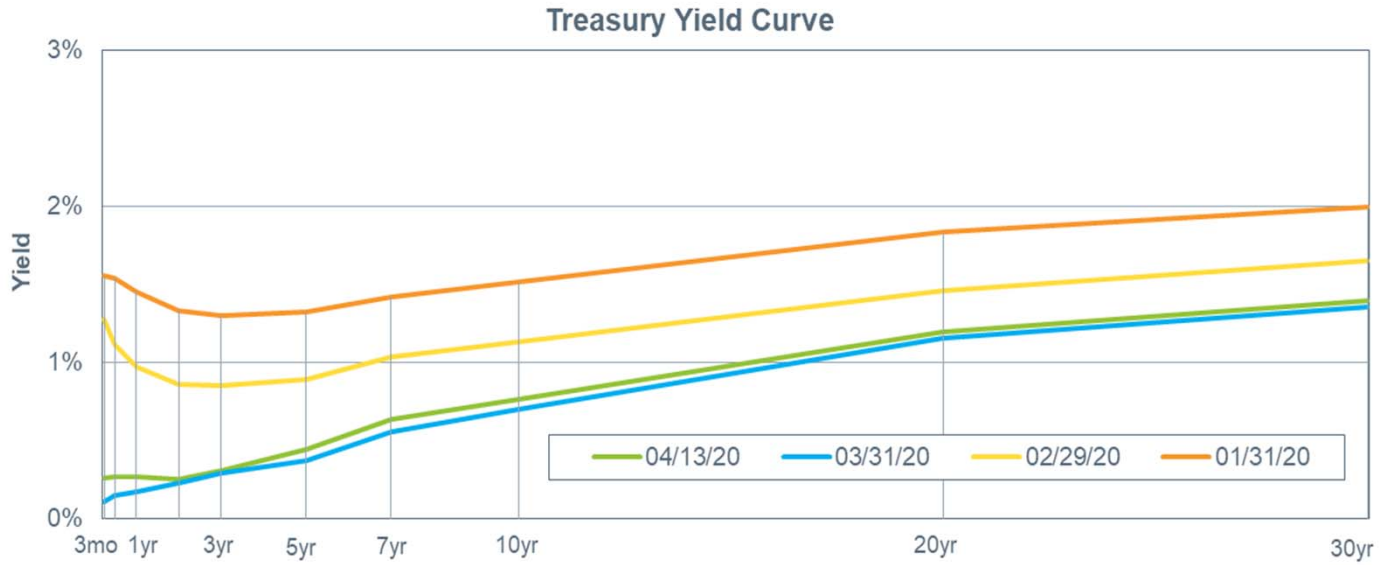
- On March 27, the CARES[1] Act was enacted, marking the third policy relief measure instituted by the US and cementing it as the largest fiscal stimulus package in US history.
- The package totals $2 trillion and includes cash payments for individuals, expansion to unemployment benefits, money for state-level governments, loans to corporations, and more.
- Loans to corporations come with conditions, including maintenance of payrolls and limitations to share buybacks.
- The Senate is already exploring a fourth fiscal stimulus package to further stimulate the economy.



[1] Coronavirus Aid, Relief, and Economic Security "CARES" Act.
*Bill data sourced from NPR.

Update on Fixed Income Markets

- As expected, US Treasuries have provided a safe haven for investors nervous about market risks.
- Rates were generally on a slow downward trend to start the year, but began a steeper decline toward the end of February. In particular, between February 28th and March 9th, the 10-year treasury fell to just 0.54% (a 76 basis point drop from the 1.30% start).
- The decline has been across all maturities. The 30-year treasury also fell to a record low 0.70% overnight before ending Monday, March 9th at 0.99%, putting all treasury yields below 1% for the first time in history.
- The Federal Reserve on Sunday, March 15th announced a comprehensive easing package including near-zero policy rates, large-scale purchases of U.S. Treasuries and mortgage-backed securities (MBS), lower rates on currency swaps, and regulatory relief for banks.
  - The move took the 10-year Treasury yield briefly to 31 basis points and the 30-year to 71 basis points, record lows.
- Yields have since risen, but remain well below levels seen at the beginning of the year.



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Summary

- Institutional portfolios are designed with a specific purpose and time horizon in mind. Returns this year, although dramatic, are within the range of expected possibilities that were contemplated in the asset allocation process. Unless something has changed with regards to the purpose or time horizon of the portfolio, it is unlikely that strategic asset allocation changes are advisable as a result of recent events.

- We expect diversified portfolios to provide meaningful protection in turbulent capital markets.

- During times like these, it is also important to remember that:
  - Thoughtful rebalancing is key, as this tends to reward investors over the long-term.
  - Sharp declines in equity and credit markets may create new investment opportunities.
  - Funds (and portfolio managers) which have carefully analyzed and managed liquidity prior to the decline will be better prepared to meet their near-term obligations and more likely be able to capitalize on opportunities resulting from these market dislocations.

- Finally, because the current market rout is driven by a healthcare crisis first and foremost, the healthcare response is of paramount importance. We view monetary and fiscal measures as necessary to ameliorate the damage, steps which we observe being taken by governments across the world. However, a solution to the crisis will be a healthcare / public health one.

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PORTLAND BOISE CHICAGO **NEW YORK**

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April 23, 2020

Private Real Estate Review

City of Jacksonville Employees' Retirement System

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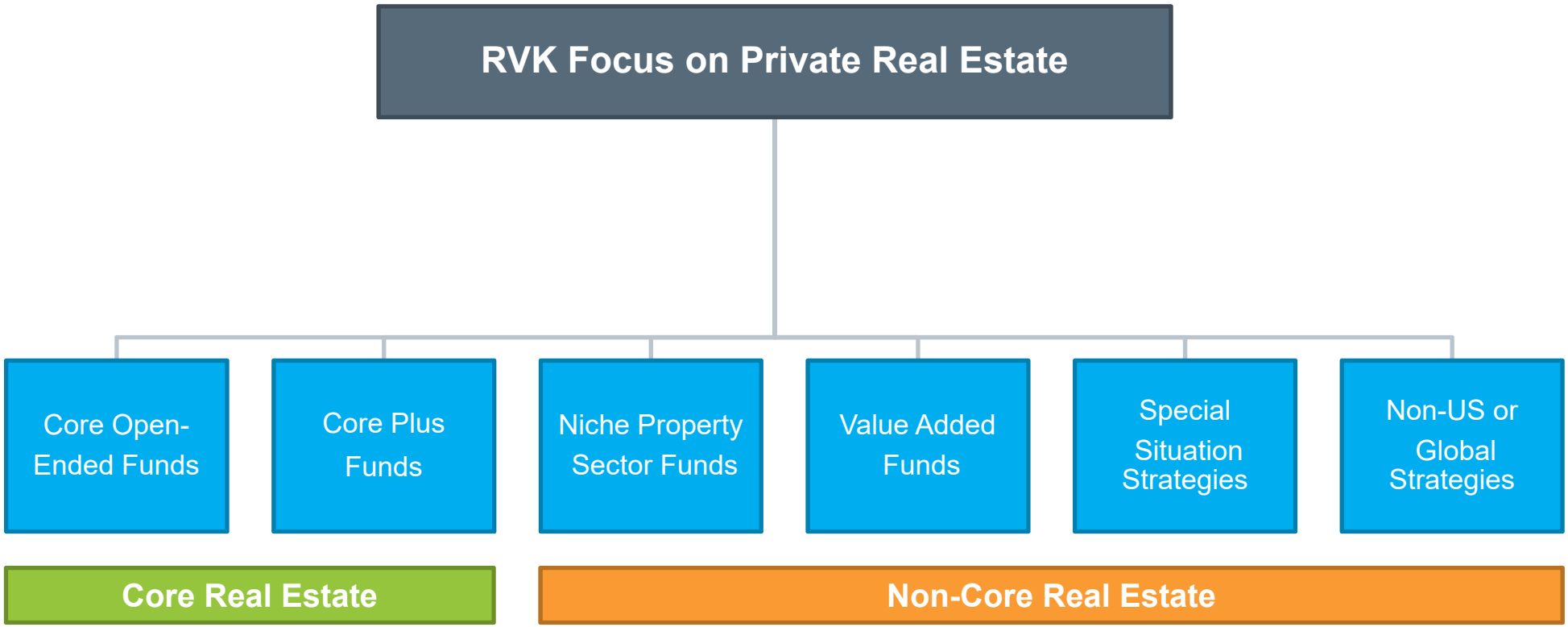
Agenda

1. Private Real Estate Overview
2. Current Real Estate Portfolio
3. Comprehensive View
4. RVK Pacing Analysis: Non-Core Real Estate
5. Key Takeaways & Recommendations
6. Appendix

Real Estate Overview

Private Real Estate – RVK Focus



Investments in Real Estate

What is Commercial Real Estate?

Traditional Commercial Real Estate Sectors	Non-Traditional Commercial Real Estate Sectors
• Office • Retail • Apartments / Residential • Industrial • Hotels / Hospitality	• Self Storage • Senior Housing • Student Housing • Other “Hybrid” Types • (e.g., Health Care, Infrastructure)

Reasons for Investment in Private Real Estate

- **Low Correlation**: Private real estate-oriented investments have generated attractive long-term returns with low correlations to traditional asset classes
- **Inflationary Hedge**: Rental growth and appraised values are tied to inflation, as the replacement cost of real estate acts as a natural hedge
- **Liability Matching**: Longer-term nature of real estate hedges against longer-term liabilities
- **Higher Sharpe Ratio**: The inclusion of real estate in a broadly diversified portfolio can increase expected returns while lowering overall portfolio volatility, resulting in higher risk-adjusted return ratios
- **Increased Transparency**: Greater numbers of opportunities in both public and private real estate that are much more transparent than in the past, and stronger corporate governance protections are available to investors

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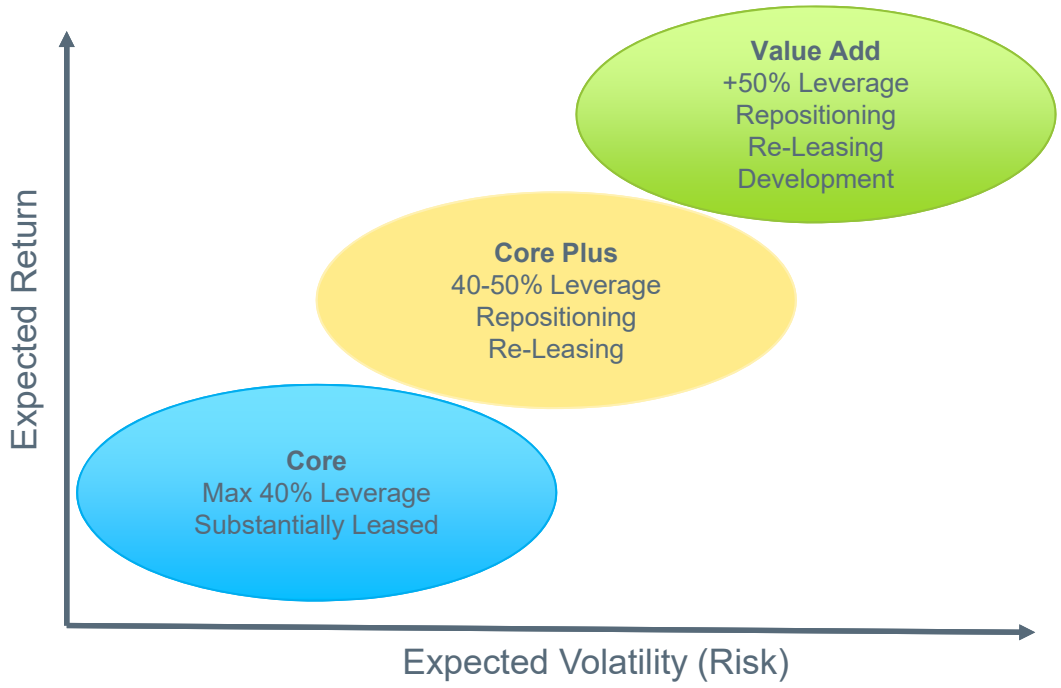
Asset Class Overview

- **Core**: Predominately high quality assets; minimal vacancy; secure leases; conservatively levered (below 40% Loan to Value ratio) and low asset turnover. Open-end fund structures for pooled vehicles.

- **Core Plus**: Will include some lower quality assets; higher income yield; may include higher vacancy risk with asset refurbishment and/or repositioning; leverage in the 40% to 50% LTV range. Either open or closed-end fund structures for pooled vehicles.

- **Value Add**: Higher risk profile; lower allocation to core holdings; Leverage > 50%. Focus mainly on asset refurbishment. Returns are back-ended like private equity. Typical fund life is 5 to 7 years via close-end structures.



Private Real Estate Categories

Private real estate investments can be broken into two "risk" categories:

1. **"Core"** – strategies focused on stabilized properties characterized by (i) fewer property-level risks, (ii) fewer "problems" that need to be fixed, and (iii) a greater reliance on income, but with **lower** absolute returns.

2. **"Non-Core"** – strategies generally focused on creating value by fixing property-level problems, characterized by (i) greater property-level risk, (ii) more reliance on capital appreciation, and (iii) higher total return potential.

	Core Real Estate	Non-Core Real Estate
Typical Fund Structure	Open-End, Perpetual Life	Closed-End, 8-10 Year Fund Life
Debt Limitations	Typically < 40%	Typically 50% - 70%
Fees Charged	Asset Management Fees (Limited, if any, incentive fees)	Asset Management + Incentive Fees
Expected Returns	Net IRR: 6% - 8% (Typically 70%+ generated through income)	Net IRR: 10% -14% (Majority generated through capital gains)
Return Volatility	Lower	Higher
Liquidity	Moderate	Low
Capital Expenditures	Minimal	Greater
Typical Strategy	Buy and Hold; Maximize Operating Income; Minimal Value-Add components	Buy at discount and convert to Core RE through repositioning, re-leasing, and/or redevelopment; Maximize capital appreciation potential

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Considerations in Private Real Estate

Return Calculation

More difficult to measure direct real estate and private real estate fund returns due to appraisal-based processes, compared to “marked-to-market” with REITs, equities, and fixed income investments

Liquidity

Investment in direct real estate and private real estate funds cannot be entered into or liquidated as quickly as REITs, equities, and fixed income investments

Valuation Differences

Three main approaches to valuing real estate can lead to different outcomes

- Replacement cost approach *(i.e., how much would it cost to replicate a particular building?)*
- Comparative sales approach *(i.e., how much did a similar building sell for recently?)*
- Discounted cash flow (income) approach *(i.e., what value would one apply to the income generated from a particular building?)*

Fees

Private real estate investment options generally are more expensive than investment in public real estate

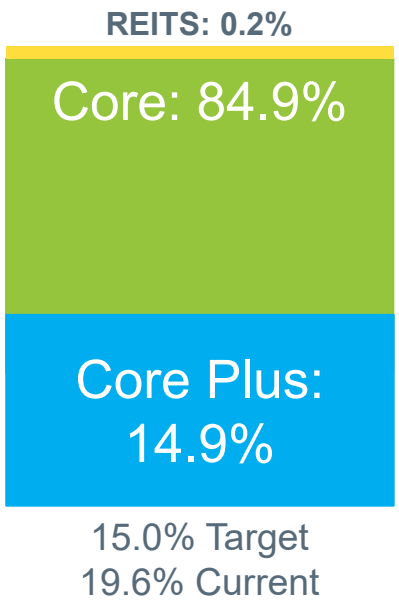
- However, private real estate vehicles range from core to opportunistic, with a wide range of strategies and fees

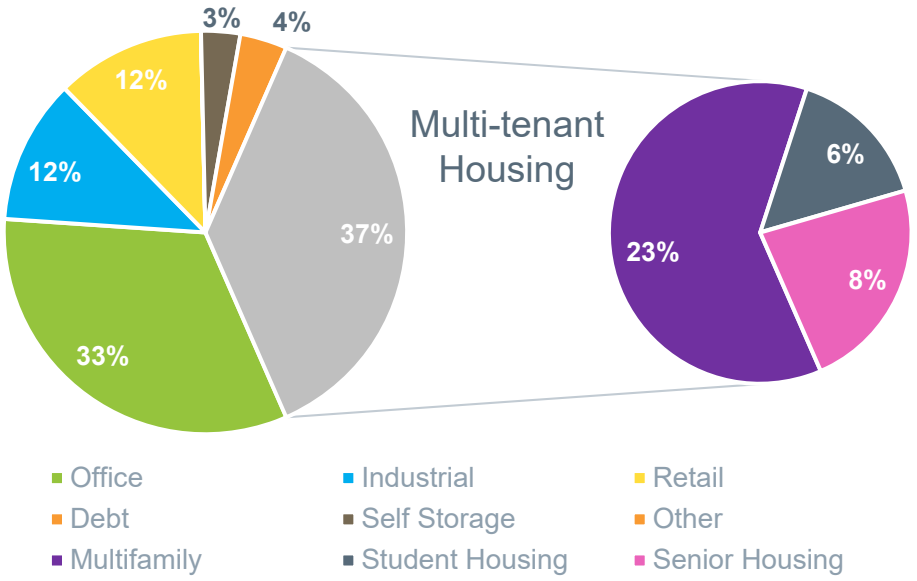
RVK

Current Real Estate Portfolio

Real Estate Commitments

Commitment Date	Fund Name	Sector	Commitment	Market Value (3/31/2020)	Current Allocation
2015	Harrison Street Core Property	Diversified – Niche Core	$77M	$107,394,108	27.41%
2014 | 2015 | 2016	PGIM Real Estate PRISA II	Diversified – Core Plus	$40M	$58,360,378	14.90%
2013 | 2014	Principal US Property Account	Diversified – Core	$62M	$124,108,796	31.68%
2005 | 2006	UBS Trumbull Property	Diversified – Core	$20M*	$101,038,198	25.79%
N/A	Vanguard RE Idx; ETF (VNQ)	REIT	N/A	$872,818	0.22%
	Total		**$199M**	**$391,774,298**	**100.0%**





Sector allocations as of 2019 Q4.
*Committed $50M in 2005 and $40M in 2006. Received $13.7M in 2016 and $56.3M in 2017.

RVK

Fund Comparisons

	Harrison Street Core Property	PGIM Real Estate PRISA II	Principal US Property Account	UBS Trumbull Property
Gross Return Expectations*	9-10% annual return	NFI-ODCE + 100 bps	Outperform the NFI-ODCE	Outperform the NFI-ODCE
Meeting Return Expectations				
Fund Structure	Open-end	Open-end	Open-end	Open-end
Investment Minimum	$10.0M	$5.0M	$1.0M	$5.0M
Leverage Limitations / Current Leverage	40.0% / 25.3%	40.0% / 37.7%	33.0% / 19.8%	20.0% / 18.6%
Size of Fund (GAV)	$9.70 Bln	$14.1 Bln	$10.36 Bln	$19.4 Bln
Entry Queue (Status)	Under Review	Under Review	Paused / Under Review	Under Review
Fees	Tiered: 1.15% to 0.85%	1.20%	1.10%	Tiered: 0.52% to 0.955% + incentive fee**
Target Sectors	Life Sciences, Medical Office, Self Storage, Senior Housing, Student Housing	Industrial, Multifamily, Office, Retail, Self-Storage	Industrial, Multifamily, Office, Retail	Industrial, Multifamily, Office, Retail, Hotel
Value Add Limitations / Current Value Add Allocation	15.0% / 9.0%	35.0% / 25.0%	15.0% / 8.4%	15.0% / 5.5%

*Return expectations are over a full market cycle
**Incentive fee is currently not being charged

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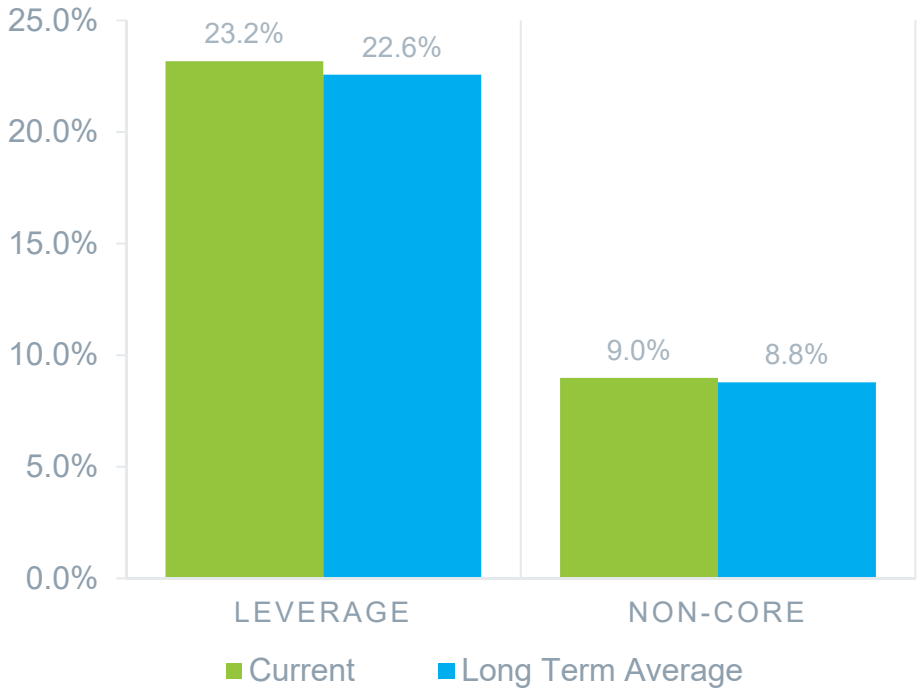
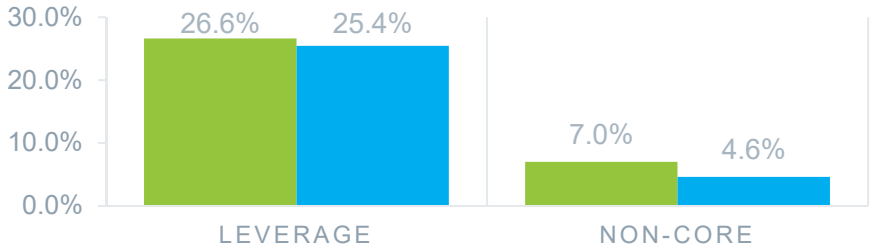
Leverage and Non-Core Investments

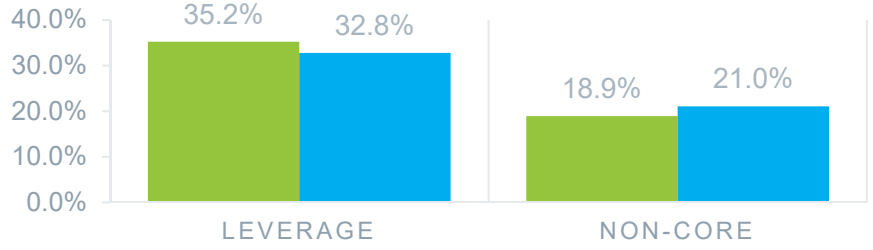
COJ Real Estate Portfolio



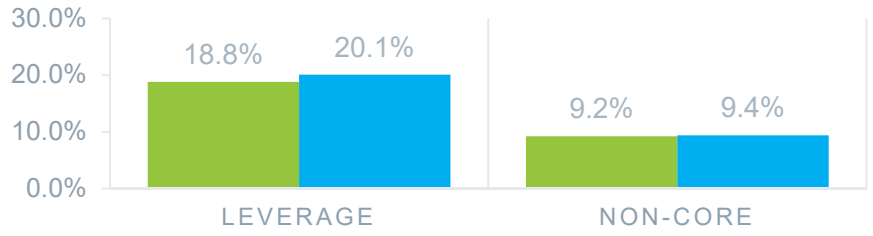
Harrison Street Core Property Fund



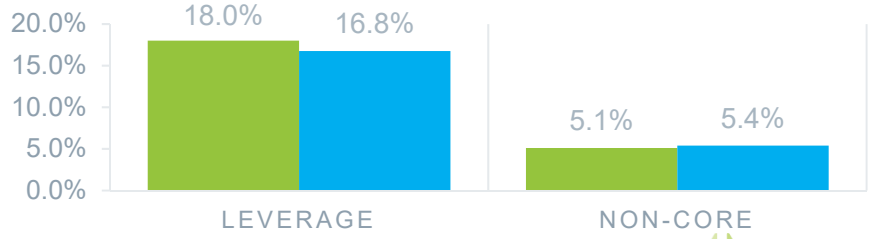
PGIM Real Estate PRISA II



Principal US Property Account



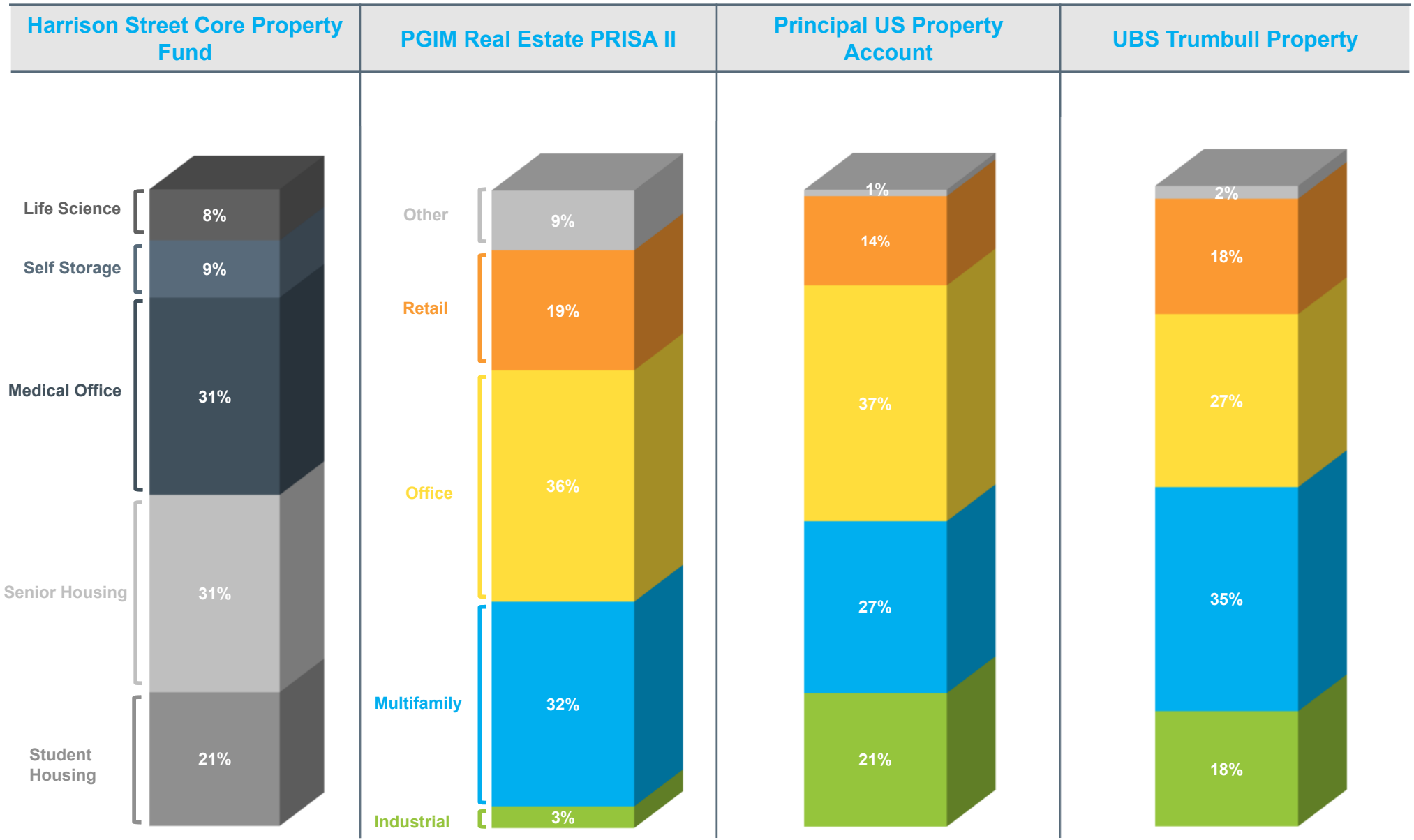
UBS Trumbull Property



Data as of 2019 Q4.
Non-Core trend average from 2016-2019.

RVK

Sector Exposure



Data as of 2019 Q4.
Other for PGIM Real Estate PRISA II consists of Land and Storage, for Principal US Property Account consists of Land, for UBS Trumbull Property consists of Hotel.

Portfolio Sector Exposure

Relative Exposure

Industrial

Underweight

Multifamily

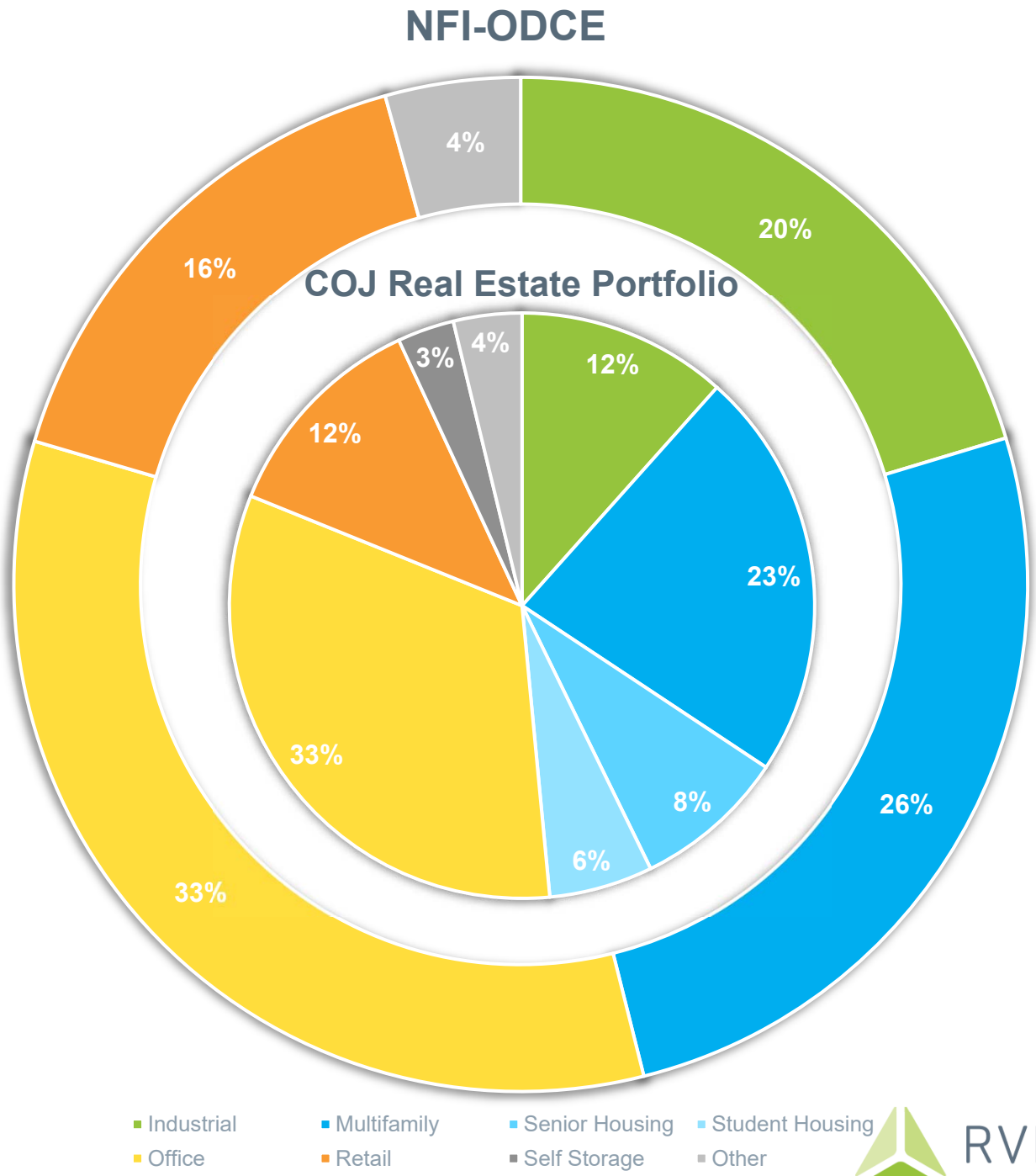
Overweight

Office

Neutral

Retail

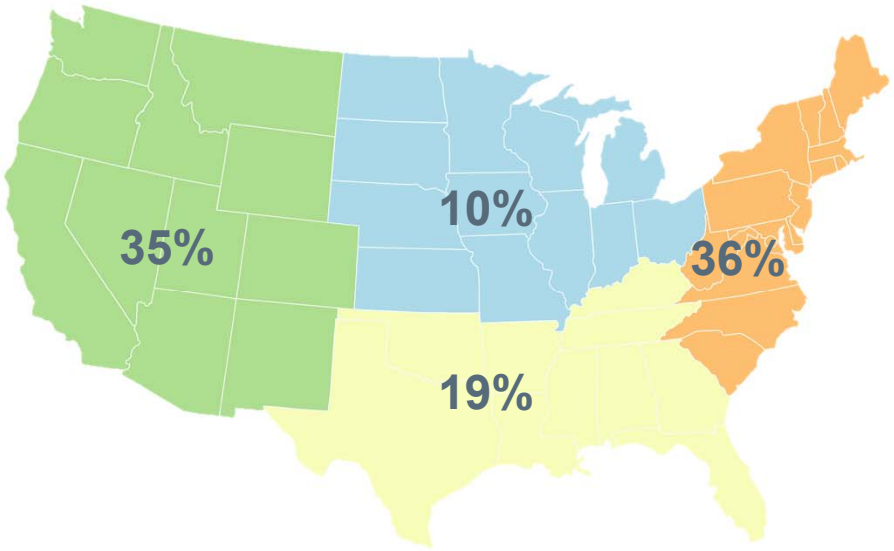
Underweight



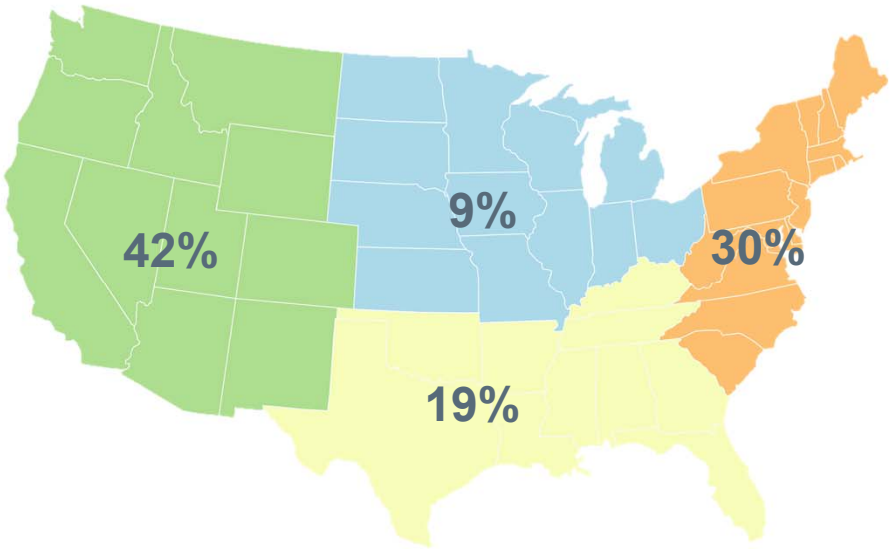
Data as of 2019 Q4.

RVK

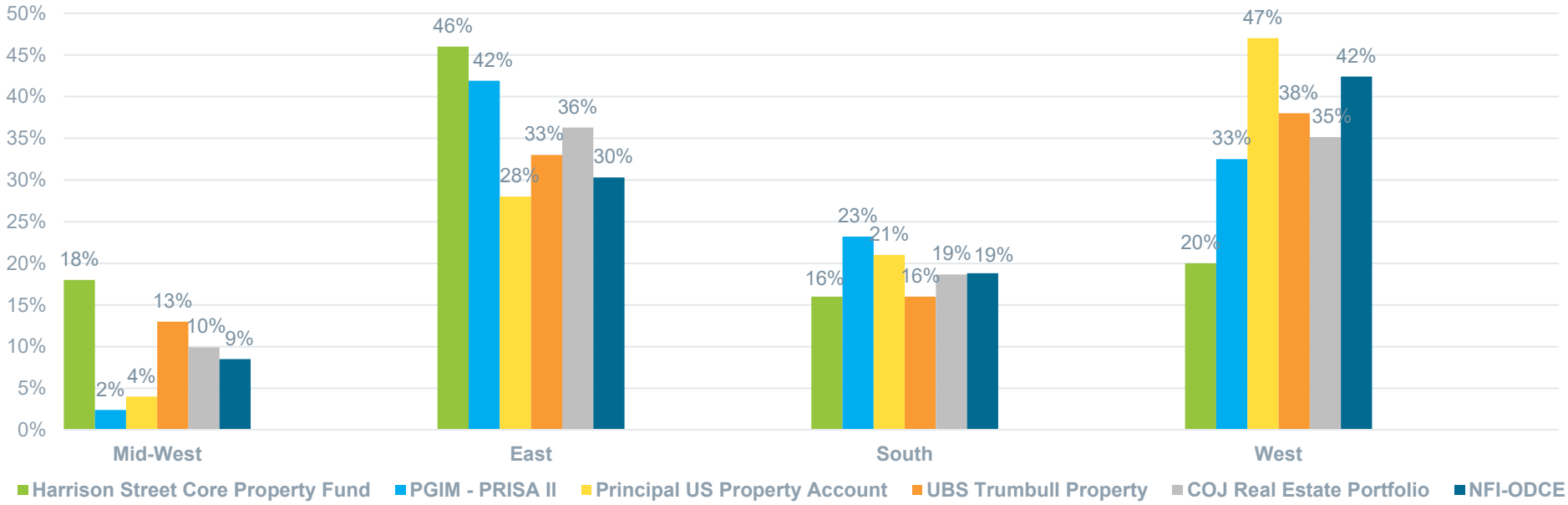
Geographic Exposure



COJ Real Estate Portfolio



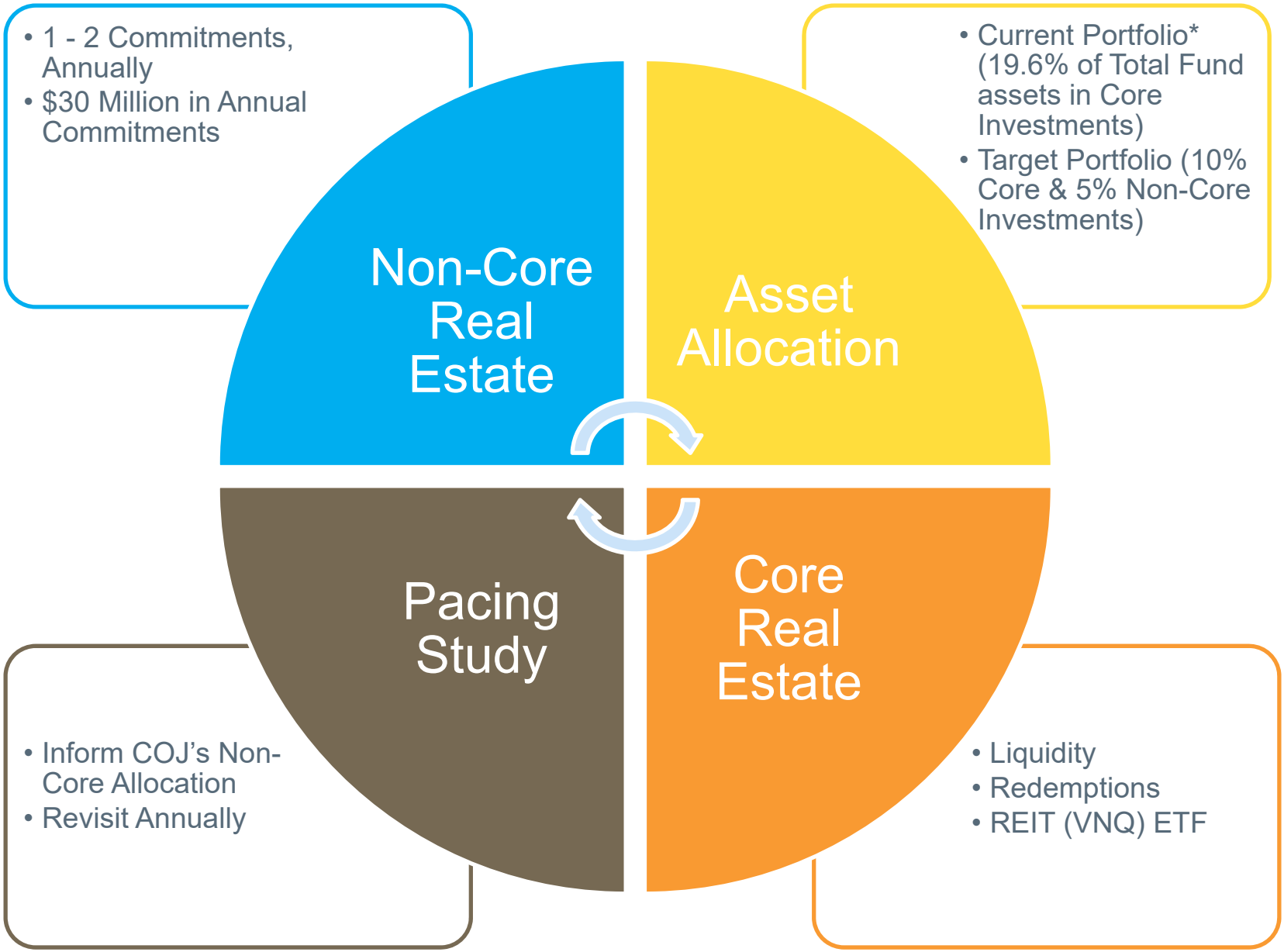
NFI-ODCE



Data as of 2019 Q4.

Comprehensive View

Path Forward



*Data as of 2020 Q1.

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RVK Pacing Study: Non-Core Real Estate

Pacing Study Outline

OBJECTIVE

Set a reasonable 5-year target commitment allocation schedule that results in the total fund approaching the private real estate allocation.

- *The commitment pacing plan should be revisited annually*

PROCESS

RVK uses proprietary software to model the existing portfolio and expected forward commitments. A number of assumptions are made throughout this analysis and include the following:

- *Private real estate investment cash flow/valuation patterns*
- *A custom annualized growth rate for the overall total composite, net of spending rate*

OUTPUT

The pacing study provides a recommended annual commitment volume to meet the total fund's private real estate target.

- *Vintage commitments shown below may be made to one or more investment managers depending on individual product diversification*
- *Likely to approach private real estate target slowly to minimize vintage year risk*

RVK

Pacing Recommendation Summary

1 *Current Plan Statistics**

Total plan size	$2.0 billion
Current real estate non-core target	5.0%
Current real estate non-core allocation	0.0%
Expected growth rate	Approximately 1.32% (Net)

2 *Recommendation*

Year	Commitments
2020	$30 million
2021	$30 million
2022	$30 million
2023	$30 million
2024	$30 million

RVK recommends annual commitments of $30 million to achieve the target allocation.

3 *Expected Results*

*Data as of 2020 Q1.

RVK

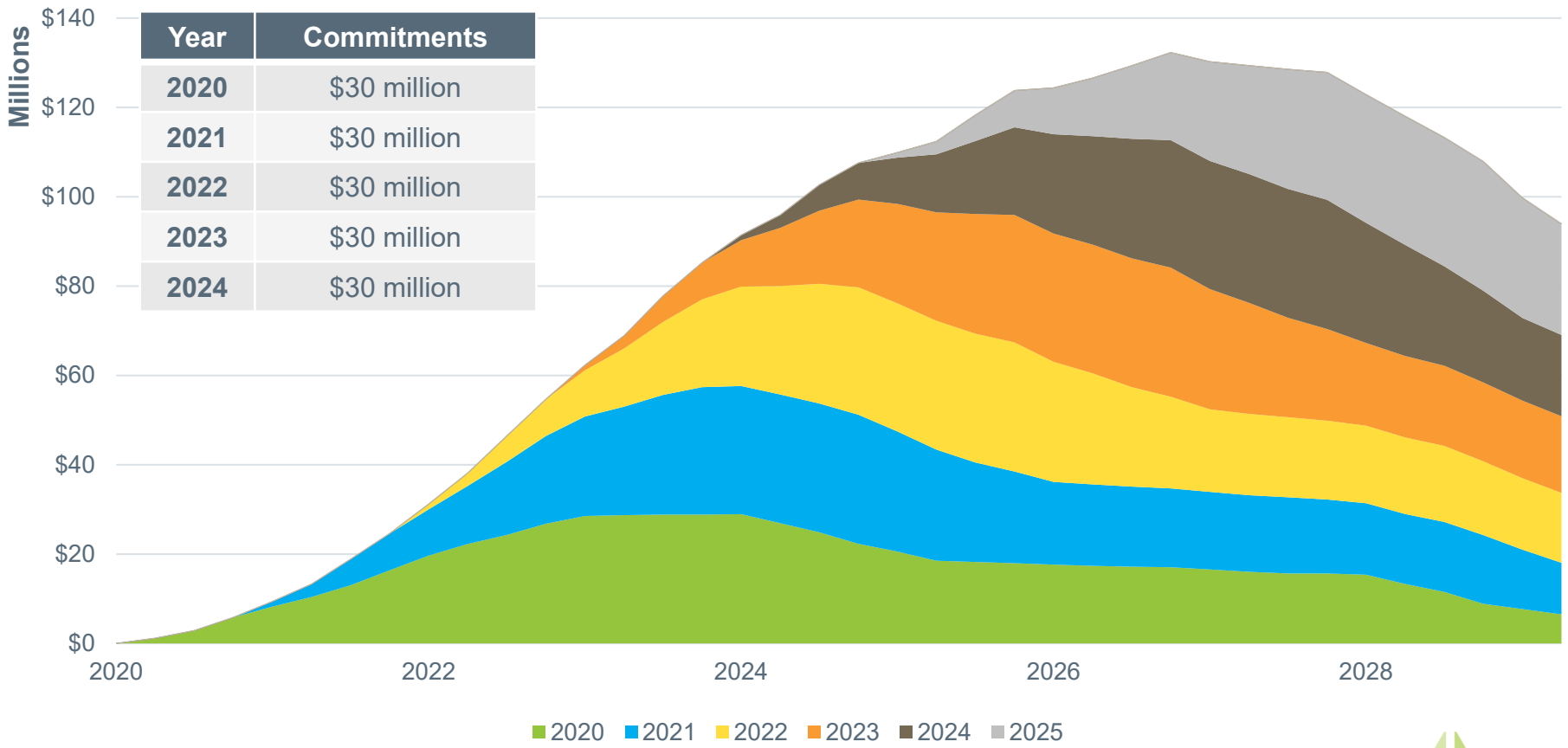
Commitment Recommendation

RVK recommends the following commitment schedule:

- → Vintage year concentration is a large risk in private real estate funds
- → Recommended commitments are approximate
- → Annual commitments are likely to represent multiple funds & strategies
- → Attractive real estate opportunities may not present equally each year

Estimated Total Valuation by Vintage Year

Year	Commitments
2020	$30 million
2021	$30 million
2022	$30 million
2023	$30 million
2024	$30 million



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Key Takeaways & Recommendations

Commitment Schedule & Strategic Plan

Commitment Schedule

Vintage	Core	Non-Core	Number of Non-Core Commitments
2020	Reduce	$30M	1-2
2021	Reduce	$30M	1-2
2022	Reduce	$30M	1-2

Strategic Plan

Core

- Reduce commitments to core open-ended funds as a source of capital to fund non-core allocation
- Use (VNQ) as a 'conduit' or 'revolver' between redemptions and non-core capital calls

Non-Core

- Potentially 1 to 2 non-core commitments in 2020

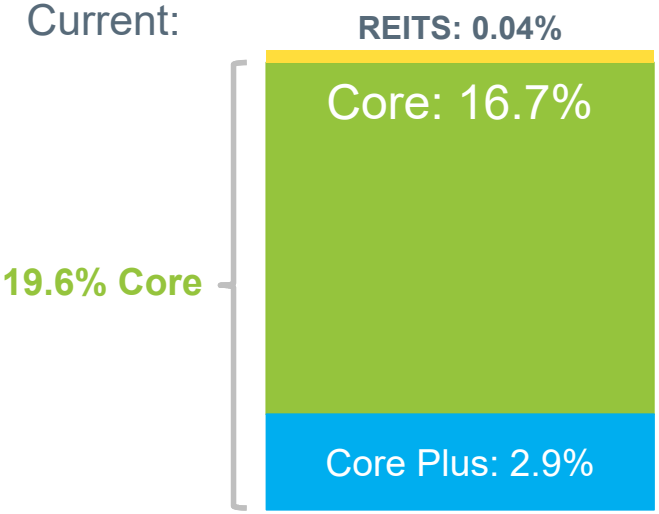
RVK

Recommendations

Current Portfolio*

Fund Name	Sector	Market Value (3/31/2020)	Current Allocation
Harrison Street Core Property	Diversified – Niche Core	$107,394,108	5.38%
PGIM Real Estate PRISA II	Diversified – Core Plus	$58,360,378	2.92%
Principal US Property Account	Diversified – Core	$124,108,796	6.21%
UBS Trumbull Property	Diversified – Core	$101,038,198	5.06%
Vanguard RE Idx; ETF (VNQ)	REIT	$872,818	0.04%
Total		**$391,774,298**	**19.62%**

Current:



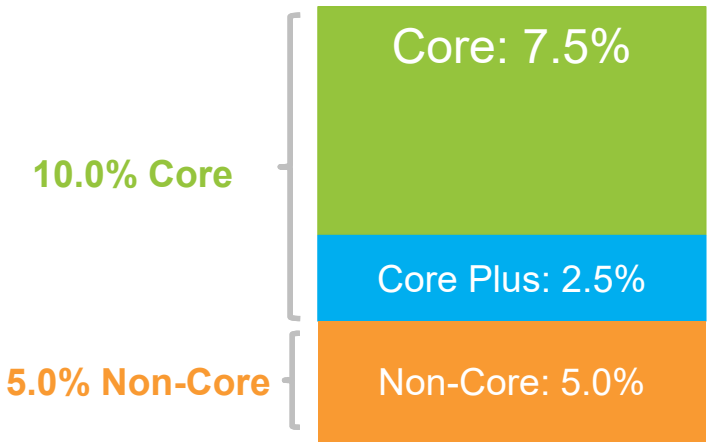
15.0% Target (10% Core, 5% Non-Core)

*Data as of 2020 Q1.

Recommended Portfolio

Fund Name	Sector	Recommended Commitment / Redemption	Recommended Allocation
Harrison Street Core Property	Diversified – Niche Core	$47,536,171	3.00%
PGIM Real Estate PRISA II	Diversified – Core Plus	$8,338,736	2.50%
Principal US Property Account	Diversified – Core	$74,100,503	2.50%
UBS Trumbull Property	Diversified – Core	$61,117,935	2.00%
Vanguard RE Idx; ETF (VNQ)	REIT	$872,818	0.00%
Future Non-Core Commitments	Non-Core	Consistent $30M commitments	5.00%
Total			**15.00%**

Recommended:



15.0% Target (10% Core, 5% Non-Core)

RVK

Key Takeaways & Recommendations

- RVK currently maintains a “positive” view of Harrison St. Core Property Fund, PGIM PRISA II Fund, and Principal US Property Fund.

- RVK recommends partially redeeming from existing core and core plus funds over time to establish and continue funding the City’s non-core real estate allocation.
  - The existing manager roster offers varying degrees of liquidity to source capital to be re-deployed into non-core commitments.
  - As capital from core fund redemptions is received, it can temporarily be invested in (VNQ) in order to maintain real estate characteristics of capital.

- Pacing: annual commitments of $30 million between 1-2 private real estate managers each year.
  - RVK will bring forward our “best ideas” within private real estate for consideration.
  - Through methodical manager selection, RVK expects to build out the private non-core real estate portfolio and reach the target allocation by 2026.

Vintage Year	Commitments	Cumulative Non-Core Real Estate Managers
2020	$30 million	1-2
2021	$30 million	2-4
2022	$30 million	4-6
2023	$30 million	6-8
2024	$30 million	8-10

UBS Trumbull Property Fund Updates

- RVK currently maintains a “neutral” view of the UBS Trumbull Fund given current events.
  - Extended underperformance relative to NFI-ODCE
  - Exceptionally large investor redemption queue
  - Recent professional turnover

- UBS’ Loyalty Incentive proposal has gained traction with investors and stands at ~$3.2 billion of committed capital, with investors choosing the four year option.

- UBS has announced they have been evaluating various ways to improve the liquidity position of TPF in order to address the $8 billion redemption queue and will look to bifurcate fund assets into two groups. The first group being long-term strategic hold assets and the second group consisting of short-term non-strategic assets. The approximate breakdown of assets is $14 billion and $5 billion, respectively, and is subject to change over time as conditions allow.

- UBS anticipates the splitting of the fund into two will allow Paul Canning, Head Portfolio Manager to focus his efforts on the long-term positioning TPF. Additionally, UBS announced Mario Maturo will be taking over as Portfolio Manager and is tasked with positioning and selling of the short-term non-strategic assets. Both Paul and Mario will be evaluated and held accountable to their respective portfolio objectives. UBS has also indicated that the splitting of TPF effective on July 1, 2020 will not be disruptive to investors, nor will it cause any additional accounting for two share classes. This process is expected to take place entirely behind-the-scenes.

RVK

UBS Trumbull Property Fund Recommendations

Recommendations

- RVK recommends reducing COJ's investment in TPF to the 2% target outlined earlier in the presentation.
  - Submit a redemption request for the balance (~$61 million).
  - UBS has communicated to investors that they are working on satisfying all redemption requests and are setting expectations of many quarters until requests are fully satisfied.

- RVK recommends participating in UBS' Loyalty Incentive proposal and voluntarily soft lock-up the Plan's target allocation for four years in exchange for a 25% reduction in management fee.
  - Note, participation in the Loyalty Incentive proposal does not require a hard lock-up of the City's remaining investment. The City will still retain the option to redeem (partially or fully) over the next four years; however, doing so will require the fee savings associated with participation in this proposal to be paid back to UBS and with no additional punitive charges.

RVK

Next Steps

- ✓ Submit partial redemption request for proportion of UBS TPF shares not part of long-term hold (~$61 million).
- ✓ Participate in UBS' TPF voluntary four year Loyalty Incentive proposal with the City's long-term hold position of ~$40 million.
- ✓ RVK will continue to monitor and evaluate steps UBS is taking to address TPF's redemption queue.
- ✓ Monitor core fund redemption queues for liquidity, redeem as appropriate in order to fund non-core investment opportunities RVK brings forward.
- ✓ RVK to bring forward non-core investment opportunities to the Board as they arise.
- ✓ RVK to closely monitor and adjust the pacing analysis and/or redemption framework as needed and in concert with Staff, particularly as markets evolve in the coming months. We'll seek to keep the Board apprised of any relevant updates.

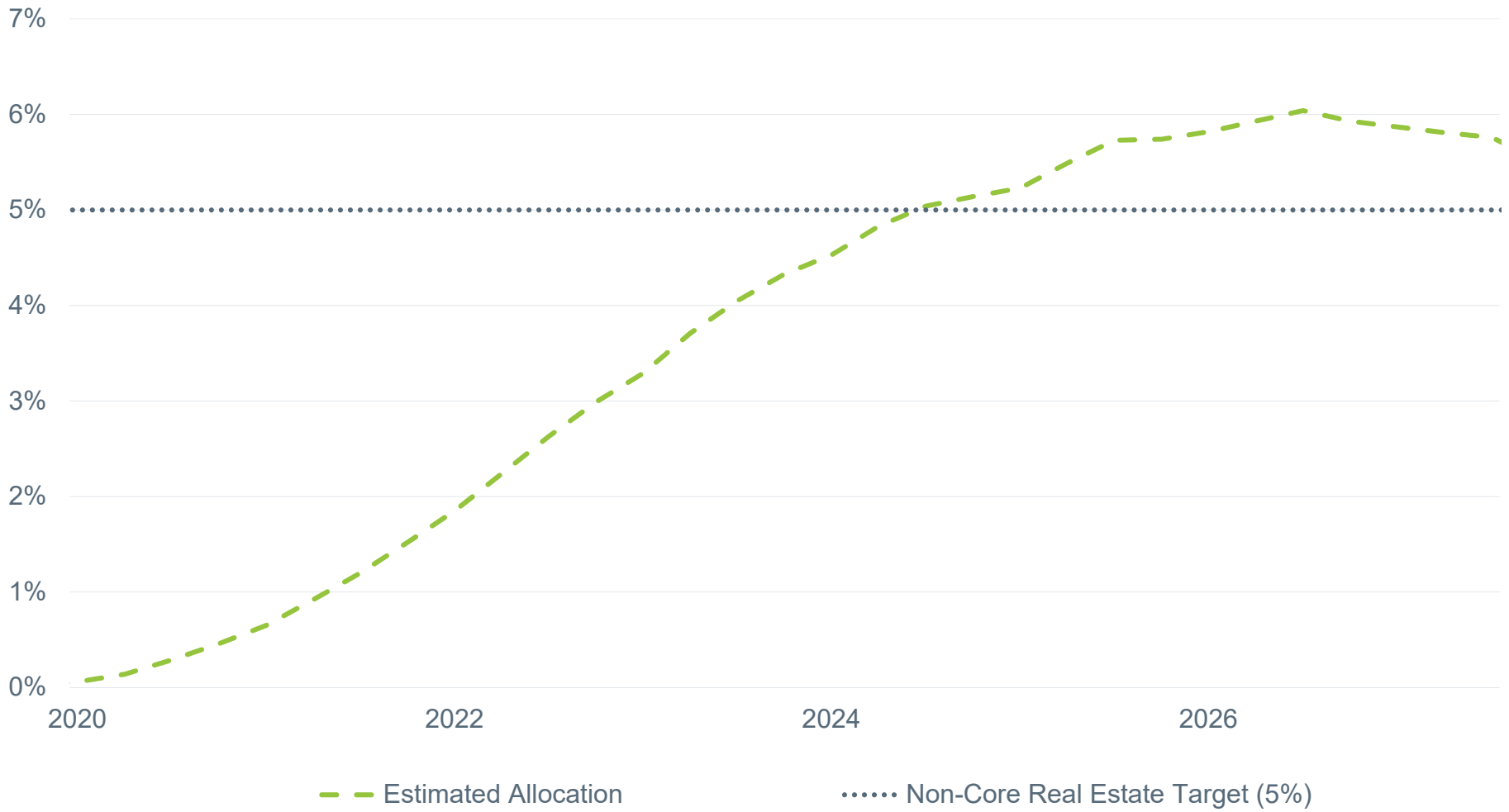
RVK

Appendix: Allocation Analysis

Allocation Analysis

The total fund's allocation to non-core real estate is expected to continue to increase with additional commitments and is anticipated to reach the target allocation in approximately 2026.

Estimated versus Actual - Allocation Percentage



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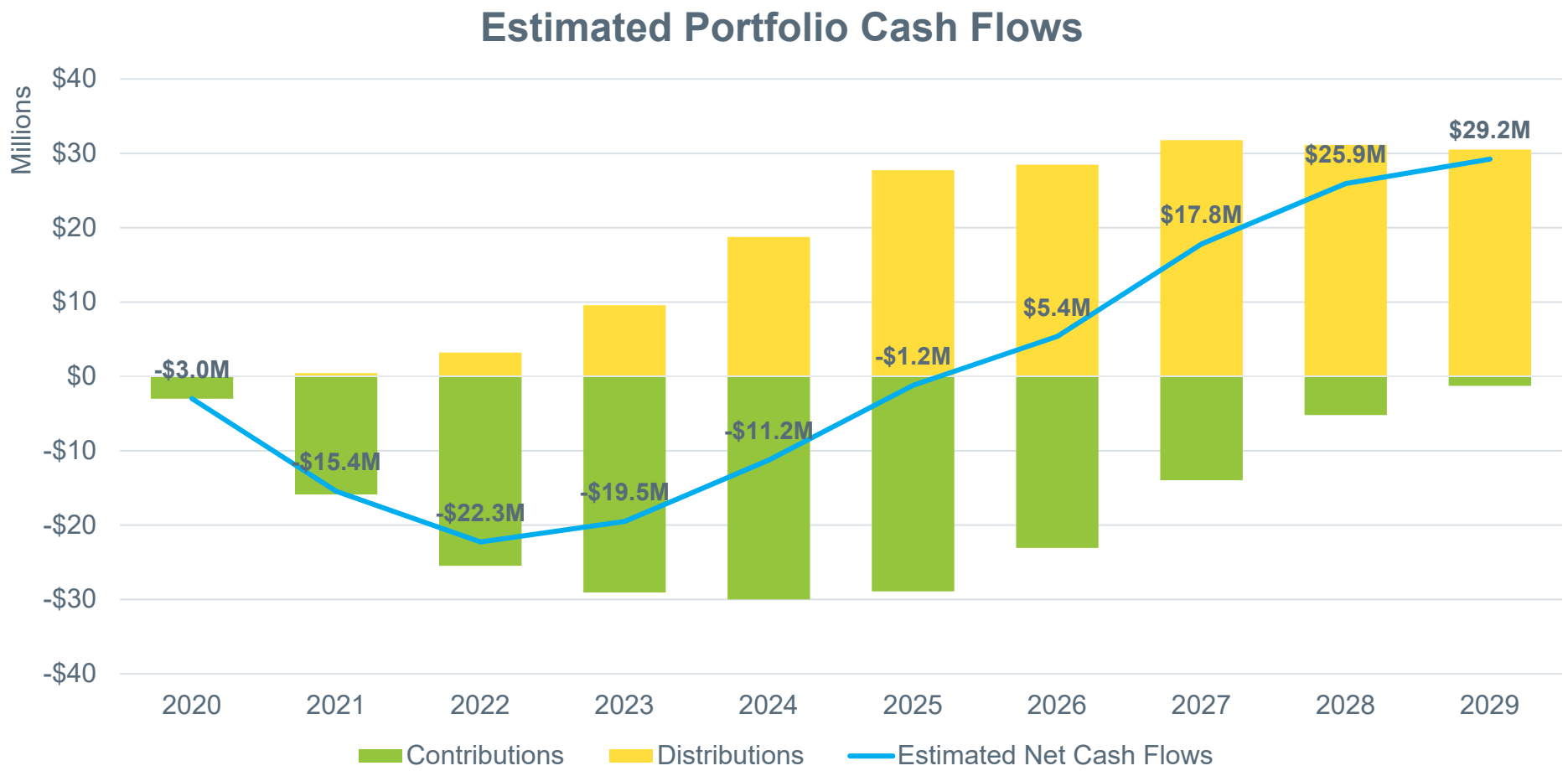
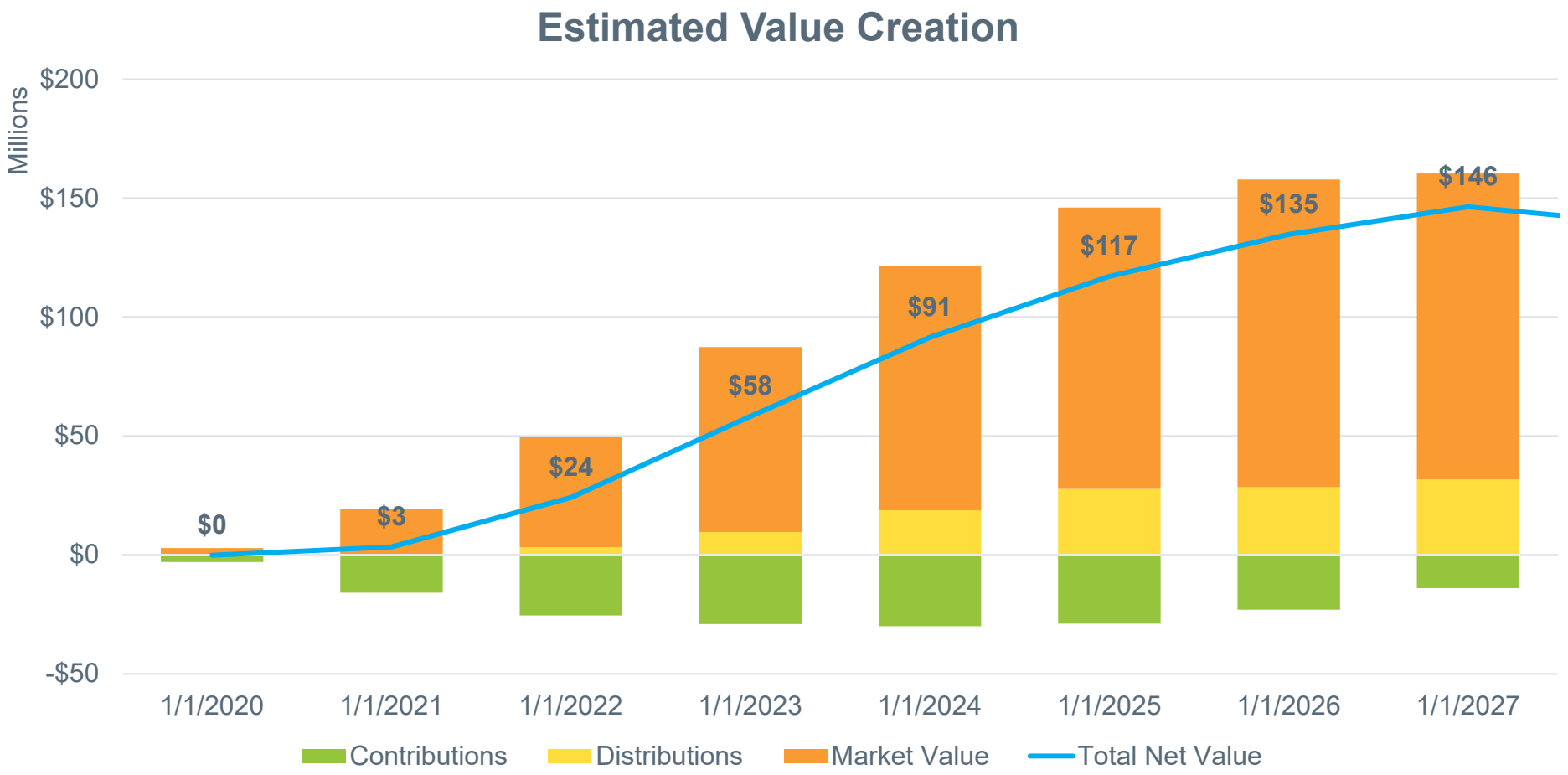
Cash Flows

Including new commitments, the portfolio is expected to continue to require capital commitments through 2025. The private real estate portfolio is expected to reach peak capital contributions in 2025 before approaching self funding status in subsequent years.



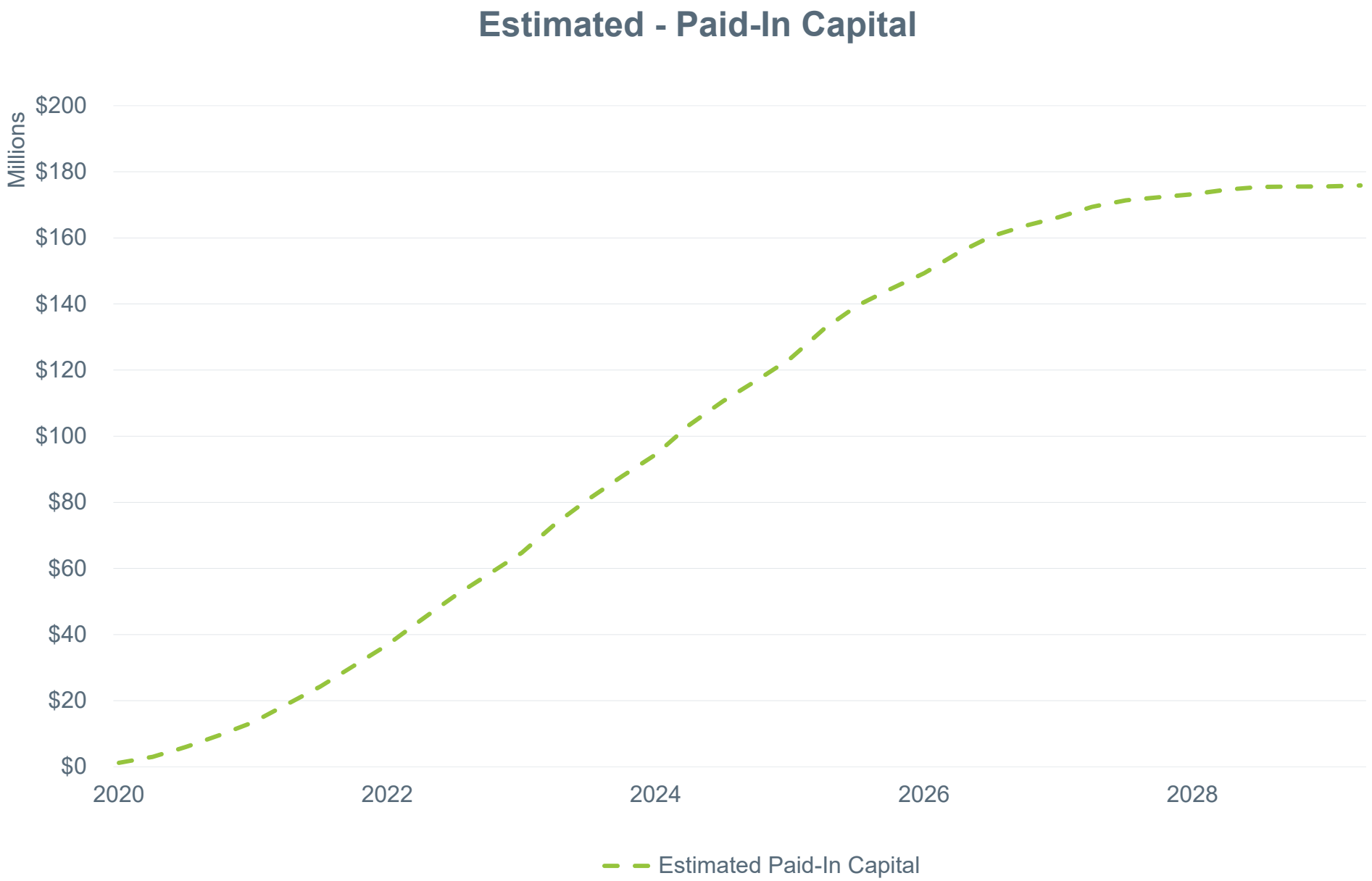
Value Creation

Including new commitments, the portfolio is expected to create approximately $146 million in net value by 2027. Total Net Value is calculated as the sum of market value and distributions, minus contributions, and represents the total realized and unrealized value created by the portfolio.

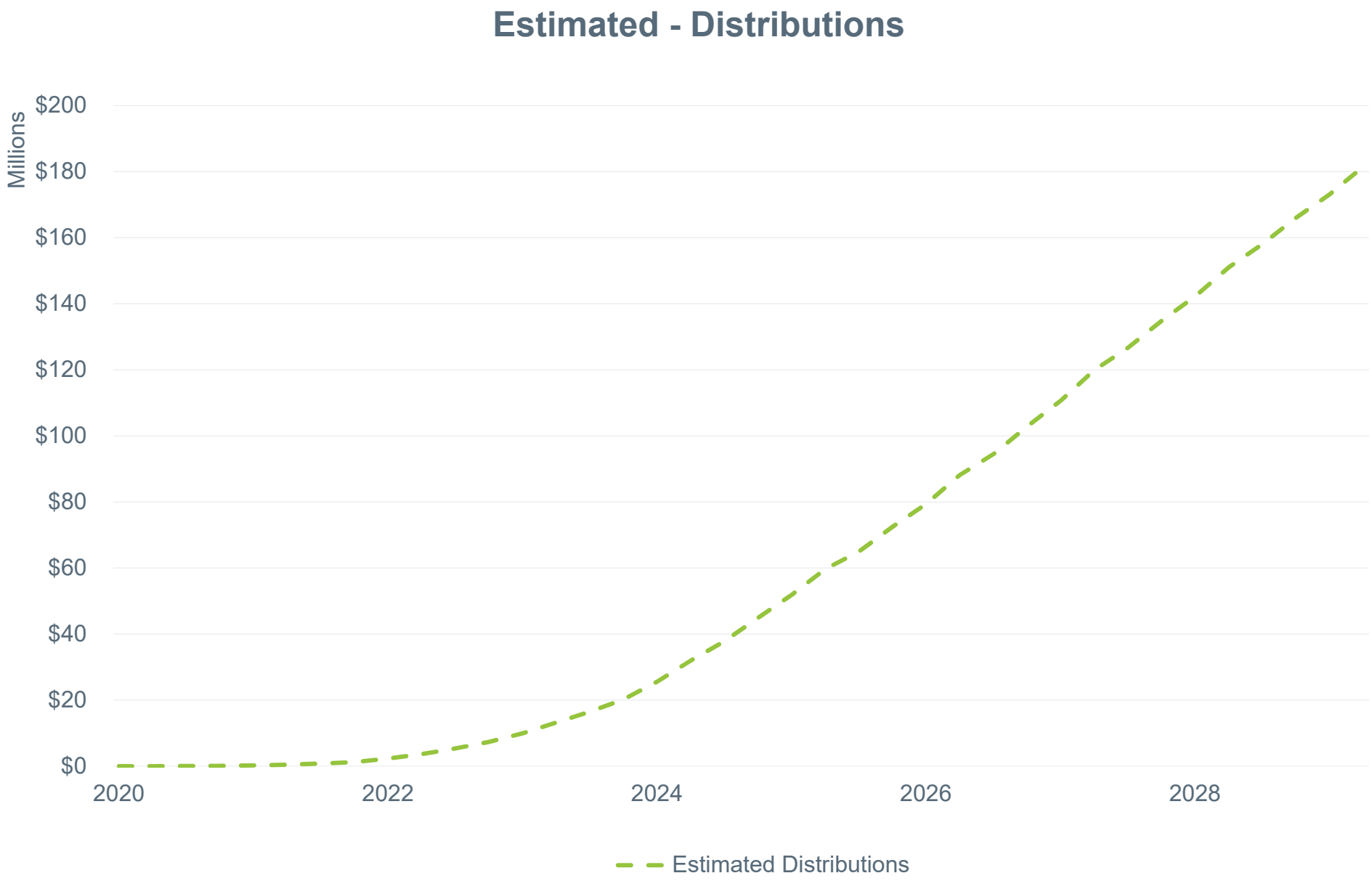


Appendix: Cash Flows Analysis

Paid-In Capital Analysis



Distribution Analysis



Appendix: Manager Profiles

Harrison Street Core Property Fund

Strategy Overview: The Harrison Street Core Property Fund is an open ended core real estate fund that targets investment opportunities in: (i) Student Housing, both on and off campus, and other education related real estate investments; (ii) Senior Housing, including, but not limited to, independent living facilities, assisted living facilities, and memory care facilities; (iii) Medical Office Buildings and other healthcare-related real estate; (iv) storage properties, including, but not limited to Self-Storage, marinas, and boat storage facilities and (v) life sciences buildings. The fund focuses is on primarily stabilized income-producing investments. On a limited basis the Fund may also invest in new development, renovations and expansions of Primary Property Type facilities with the intent of generating consistent income returns.

Product Snapshot

Strategy Type:	Core Real Estate (Niche/Specialty Sectors)
Vehicle:	Open End Fund
Portfolio Approach:	Core Income Producing Assets
Strategy AUM:	$9.3 Bln
Strategy Inception:	November, 2011
Annual Fees (%):	Tiered: 1.15% to 0.85%
Liquidity Terms:	Quarterly
RVK Rank:	Positive

Core Characteristics:

- Primarily invests in Education, Healthcare and Storage sectors
- Modest leverage (30% long-term)
- Strong emphasis on distributable income
- Demographic-driven target sectors

Comparative Gross of Fee Performance

(Period Ending December 31, 2019)

Firm/Product	QTD	YTD	1-Year	3-Year	5-Year	7-Year
HSRE Total	**2.5**	**7.9**	**7.9**	**9.1**	**9.6**	**9.9**
NFI-ODCE	**1.5**	**5.3**	**5.3**	**7.1**	**9.0**	**10.2**
Difference	**1.0**	**2.6**	**2.6**	**2.0**	**0.6**	**(0.6)**
HSRE (Inc.)	1.3	5.1	5.1	5.5	5.6	5.7
NFI-ODCE (Inc.)	1.0	4.2	4.2	4.2	4.4	4.6
HSRE (Appr.)	1.3	2.7	2.7	3.4	3.8	4.0
NFI-ODCE (Appr.)	0.5	1.1	1.1	2.8	4.4	5.4

The sum of income and appreciation returns may not equal total return due to rounding and/or the compounding of individual component returns to each other.

PGIM Real Estate PRISA II

Strategy Overview: PGIM PRISA II is a broadly diversified core-plus real estate portfolio that seeks to outperform the NCREIF ODCE Index by 100 basis points over a complete market cycle by structuring investments to enhance risk-adjusted returns. Investments may be made through direct property ownership or indirectly through such vehicles as joint ventures, general or limited partnerships, limited liability companies, mortgage loans and other loan types, including mezzanine debt, and debt secured by an interest in the borrowing entity or interests in companies or entities that directly or indirectly hold real estate or real estate interests. PRISA II's strategy provides for investing up to 35% of its gross assets in non-core assets.

Product Snapshot

Strategy Type:	Core Plus RE
Vehicle:	Open End Fund Commingled Structure
Portfolio Approach:	Core and Value-add assets with income focus
Strategy AUM:	$13.4 Bln
Strategy Inception:	July, 1980 (Oldest Active Core Plus Fund)
Annual Fees (%):	1.20%
Liquidity Terms:	Quarterly, 90 day notice
RVK Rank:	Positive

Core Plus Characteristics:

- Moderate leverage, target 30-35% with max of 40%
- Non-core exposure capability, max of 35%
- Large dedicated allocation to self-storage
- Focused on coastal markets

Comparative Gross of Fee Performance

(Period Ending December 31, 2019)

Firm/Product	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Prudential PRISA II Total	**2.2**	**7.5**	**7.5**	**8.4**	**10.6**	**14.1**
NFI-ODCE	**1.5**	**5.3**	**5.3**	**7.1**	**9.0**	**11.4**
Difference	**0.7**	**2.2**	**2.2**	**1.3**	**1.6**	**2.7**
Prudential PRISA II (Inc.)	1.0	4.0	4.0	4.1	4.4	4.8
NFI-ODCE (Inc.)	1.0	4.2	4.2	4.2	4.4	5.0
Prudential PRISA II (App.)	1.2	3.4	3.4	4.1	6.1	9.0
NFI-ODCE (App.)	0.5	1.1	1.1	2.8	4.4	6.2

The sum of income and appreciation returns may not equal total return due to rounding and/or the compounding of individual component returns to each other.

Principal US Property Account

Strategy Overview: Principal US Property Account is a diversified open-end commingled real estate fund that is one of the top performing funds in the NFI – ODCE Index. The Fund has a low to moderate risk profile and invests in substantially leased assets across a broad range of Metropolitan Statistical Areas (MSAs) and property types (multifamily, office, retail, and industrial). The Fund places an emphasis on maintaining a high quality diversified portfolio of income producing properties and focuses on the stability and ability to grow the income. In determining the relative sector and geographic weightings, the research team ranks the asset and geographic relative attractiveness to the broader market which helps determine the relative position of each geographic market within each property sector.

Product Snapshot

Strategy Type:	Core Real Estate
Vehicle:	Open End Fund Commingled Structure
Portfolio Approach:	Core Income Producing Assets
Strategy AUM:	$11 Bln
Strategy Inception:	January, 1982
Annual Fees (%):	1.10%
Liquidity Terms:	Quarterly
RVK Rank:	Positive

Core Characteristics:

- Conservative use of leverage, max 33%
- Strong emphasis on income stability and growth
- Research focus for geographic and sector allocation
- Long history of NFI-ODCE outperformance

Comparative Gross of Fee Performance

(Period Ending December 31, 2019)

Firm/Product	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Principal USPA Total	**1.5**	**7.0**	**7.0**	**8.4**	**10.0**	**12.5**
NFI-ODCE	**1.5**	**5.3**	**5.3**	**7.1**	**9.0**	**11.4**
Difference	**0.0**	**1.7**	**1.7**	**1.3**	**1.0**	**1.1**
Principal USPA (Inc.)	1.1	4.3	4.3	4.5	4.7	5.3
NFI-ODCE (Inc.)	1.0	4.2	4.2	4.2	4.4	5.0
Principal USPA (Appr.)	0.5	2.6	2.6	3.8	5.0	6.9
NFI-ODCE (Appr.)	0.5	1.1	1.1	2.8	4.4	6.2

The sum of income and appreciation returns may not equal total return due to rounding and/or the compounding of individual component returns to each other.

UBS Trumbull Property Fund

Strategy Overview: The Trumbull Property Fund is a diversified open-end commingled core real estate fund invested primarily in well-leased, stabilized assets and receives the majority of its return from its income component. The ongoing, long-term strategy of the Fund is to produce attractive risk-adjusted returns by focusing on selective acquisitions, diversification, active portfolio management, and aggressive asset management. Diversification for the Fund is consistently pursued on many levels, including geographic region, property type, and economic sector. The Fund also manages risk across investment structure and life cycle. The Fund's investment strategy is composed of five elements; Income focus, Diversification, Modest use of leverage, Strategic value-add (max 15%), and sustainability.

Product Snapshot

Strategy Type:	Core Real Estate
Vehicle:	Open End Fund Commingled Structure
Portfolio Approach:	Core Income Producing Assets
Strategy AUM:	$20 Bln
Strategy Inception:	1978
Annual Fees (%):	Tiered: 0.52% to 0.955% + incentive fee*
Liquidity Terms:	Quarterly
RVK Rank:	Neutral

Core Characteristics:

- Conservative use of leverage, max 20%
- One of the largest US Core Open Ended Funds
- Typically regarded as the lower levered fund option in ODCE, and will lag in appreciating markets
- Due to fund size, can take advantage of transacting in large premier core properties

Comparative Gross of Fee Performance

(Period Ending December 31, 2019)

Firm/Product	QTD	YTD	1-Year	3-Year	5-Year	10-Year
UBS TPF – Total	**0.1**	**-2.1**	**-2.1**	**3.6**	**6.2**	**9.3**
NFI ODCE – Total	**1.5**	**5.3**	**5.3**	**7.1**	**9.0**	**11.4**
Difference	**-1.4**	**-3.2**	**-3.2**	**-3.5**	**-2.8**	**-2.1**
UBS TPF – Inc.	1.3	4.8	4.8	4.7	4.7	5.2
NFI ODCE – Inc.	1.0	4.2	4.2	4.2	4.4	5.0
UBS TPF – Appr.	-1.2	-6.7	-6.7	-1.0	1.4	3.9
NFI ODCE – Appr.	0.5	1.1	1.1	2.8	4.4	6.2

The sum of income and appreciation returns may not equal total returns due to rounding and/or the compounding linking of quarterly returns.

*Incentive fee is currently not being charged.

RVK

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RVK

COJ Pension Board Meeting
Pension Office Administrative Update

Pension Office Activity

- Pension Office remains fully functional but the office is closed to visitors
- Operating on significantly reduced staff
- Pensioners, employees and others can contact us by phone at 255-7280 and by e-mail at citypension@coj.net
- Standard for responses to inquiries is within 24 business hours. Completion of work items is based on priority.
- GEPP Pensioner COLA processed in April. Processes remain up-to-date.
- Reviewing needed process and technology updates to allow for more effective service delivery without physical in-person contacts. Also reviewing to allow for more effective work-from-home opportunities for staff.

Notarized Forms

- Pension Office recommends suspending the requirement for providing notarized forms effective with the start of the COVID-19 state of emergency in March 2020
- Pension office is requesting an ID or a letter mailed to the pensioner as backup. For direct deposits a voided check or a letter from the financial institution is required. Request for notarized forms should be limited to exceptions as needed for special circumstances.
- Main notarized or in-person verified forms: Annual pensioner affidavit, survivor benefit applications verifications, direct deposit changes
- Pension Office will report back to the PAC (and then the Board) in the first meeting after the state of emergency is lifted to determine ongoing process based on experience.
- PAC approved recommendations 6-0 on April 8, 2020