

## **ADDENDUM NO. 1**

**DATE:** October 26, 2018

**TO:** All Potential Proposers

**FROM:** Penny Owens, Assistant Purchasing Agent, City of Knoxville

**SUBJECT:** Addendum No. 1 to the RFP for Pension Fiduciary Investment Advisory Services

**PROPOSALS TO BE OPENED:** October 30, 2018\*\*\* (See Below) at 11:00:00 a.m. (Eastern Time)

This addendum is being published to respond to question asked by potential proposers about the above referenced RFP and to postpone the proposal submission deadline. This addendum becomes a part of the contract documents and modifies the original specifications as follows:

**Postponement of Proposal Deadline:** To allow additional time for firms to review the responses to questions submitted, the proposal deadline is hereby extended until **November 1, 2018 at 11:00:00 a.m. (Eastern Time)**.

**Question #1:** Please describe the governance and decision-making process for the pension funds. Specifically, how many professional investment staff members are there (non-administrative staff) and what is their role in the manager search and selection process? What delegated authority do they have and what requires approval at the investment committee or Board level? What is the role of the investment committee in manager search and selection? Do they meet with managers during the due diligence process, and if so, how many? What is the role of the Board in manager search and selection?

Response: The Executive Director oversees all the professional relationships for the System and is also responsible for the daily operations of the administration of the System's plans. She has a support staff of three which consists of an accounting manager and two benefit administrators. The Executive Director is the only staff person who handles investment related matters on behalf of the Pension Board with the exception of the accounting records for the investments handled by the accounting manager. The Investment Committee upon recommendation of the Investment Advisor (after the Investment Advisor has performed all of the due diligence and education on the investment space and managers) brings a slate of managers to the investment committee. The Investment Committee discusses the managers and then decides which managers to interview at the next Investment Committee meeting or a special called meeting as time dictates. After the interviews, the Investment Committee decides whether to take a recommendation to the full Board at the next regularly scheduled Pension Board meeting. The recommendation comes to the full Board from Committee and only takes a second from the Board before it goes to discussion and vote. The authority is then given to the Executive Director upon review by the System's legal counsel to contract with the manager once agreed upon contract

terms are negotiated. The Executive Director meets with existing managers on an as needed basis, but does not perform due diligence reviews. Due diligence is the responsibility of the System's Investment Advisor's staff.

**Question #2:** On the City of Knoxville Pension Board website, there is a posting under the "Investment Committee" page stating there is an open meeting today at 3:00PM. However the "Board Meeting and Agenda" page references 2017, but then goes on to state that there is an open meeting scheduled for Thursday, October 11, 2018 at 9:00am. Are these two separate meetings and are both relevant to the Pension Plan that is now under RFP?

Further, under the No Contact policy, would attending this month's meeting cause any concern?

Response: Both meetings are for the Pension System. As stated in the RFP, the Investment Committee meetings are held the 1<sup>st</sup> Tuesday of each month and the Pension Board regular meeting is held the 2<sup>nd</sup> Thursday of each month. These meetings are open to the public and anyone can attend. The Investment Committee meetings are to handle the investment related matters to bring to the full board when necessary. The full Pension Board meetings are to approve the retirements and conduct the business of the administration of the City's pension plans. We will post the agenda for the Pension Board meeting on Thursday October 4<sup>th</sup> once the agenda is finalized. Attendance at these meetings would violate the No Contact policy, as all attendees must sign in and be recorded as being present at the meeting.

**Question #3:** Can you please provide the current annual fee being paid to the incumbent consultant?

Response: Current cost is \$160,000 which is a fixed fee and is all inclusive. (Travel, searches, advising, etc.)

**Question #4:** Can you please indicate when the last Asset-Liability study was conducted?

Response: As of July 1, 2015 and presented at the May of 2016 meeting. Attached as "Knoxville AL Study"

**Question #5:** Can you please provide a copy of the System's Investment Policy Statement?

Response: Attached "Investment Policy Statement Adopted February 3 2015" and "Asset Allocation Page September 2017 – Clean"

**Question #6:** Can you please provide a copy of the System's most recent performance report?

Response: Attached "0818-Flash Report"

**Question #7:** Provide a brief critique of the Plan's present asset allocation (provided as Exhibit A) along with any changes that might be recommended.

Response: Attached "0818-Flash Report"

**Question #8:** How many in-person meetings are expected each year with the Investment Committee?

Response: The investment committee meetings are just required to be by teleconference or videoconference as stated in the minimum qualification requirements section 7.3.

**Question #9:** How many in-person meetings are expected each year with the Pension Board?

Response: As stated in the minimum qualification requirements section 7.3 of the RFP, there are four meetings where the advisor is required to present the quarterly reports. February, May, August, and November on the 2<sup>nd</sup> Thursday of those months.

**Question #10:** Are the individual Pension Plans reported on in aggregate or separately?

Response: Our CAFR is reported in aggregate as well as all of the System's investments.

**Question #11:** When was the last asset-liability study completed?

Response: As of July 1, 2015 and presented at the May of 2016 meeting. Attached as "Knoxville AL Study"

**Question #12:** Given the 5% target allocation to private equity, what is expected with this asset class on an ongoing basis (reporting, searches, etc.)?

Response: The investment advisor will compute the necessary yearly commitment to private equity to increase to and maintain the 5% allocation to PE each year going forward as well as conduct a search for the PE manager based on Investment Strategy. Quarterly reporting will be included in each quarterly review report provided by the Investment Advisor. See page 11 of "0618 Investment Review" attached.

**Question #13:** Is there a limit to the percentage of a portfolio a single investment manager can run?

Response: There are limits within a particular asset allocation. See the "Asset Allocation Page September 2017 – Clean" as well as the IPS.

**Question #14:** Could you provide a copy of the most recent monthly and quarterly reports produced by the incumbent consultant?

Response: See the response to Question #5 above and attached "0618 Investment Review" for the latest quarterly report.

**Question #15:** Is there any flexibility with the in person and teleconference meetings?

Response: The minimum qualification requirements section at 7.3 is pretty clear that the quarterly in person meetings are a requirement so the answer is no.

**Question #16:** Can you please provide the latest asset-liability study?

Response: See attached "Knoxville AL Study"

**Question #17:** Is the Pension Board seeking discretionary or non-discretionary services?

Response: Non-discretionary services. No OCIO!

**Question #18:** Of the Level 3 illiquid assets, what are the liquidity restrictions placed on each investment?

Response: See "Asset Allocation Page September 2017 – Clean" attached.

**Question #19:** Have there been any liability carve outs or pension risk transfers in the last 10 years? Is there any intention to evaluate or engage in a risk transfer for retired or terminated vested participants for any of the closed plans?

Response: No and No.

**END OF ADDENDUM 1**



***Summit Strategies Group***

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**Asset/Liability Study**

**City of Knoxville Employees'  
Pension Plan**

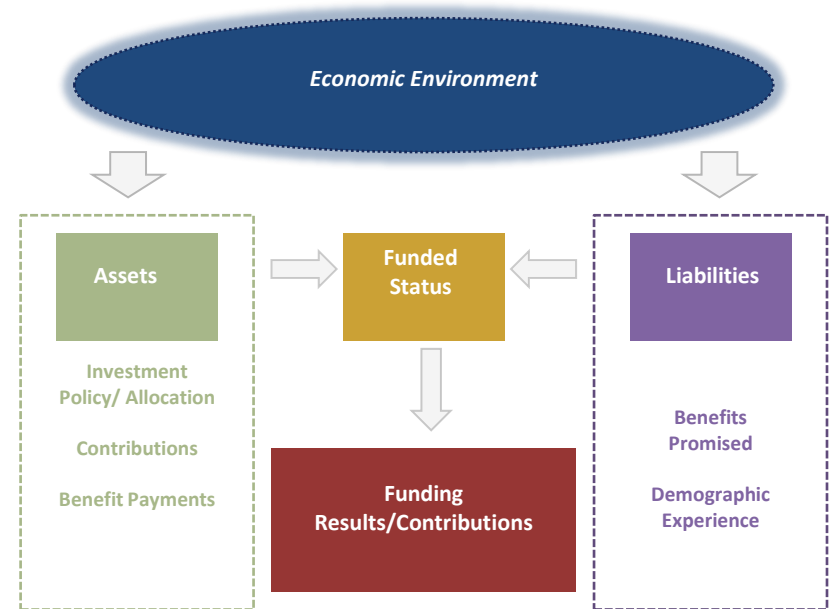
*May, 12 2016*

## AGENDA

- Overview of the Asset/Liability Study
- Summary of Valuation Results
- Baseline Projections
- Asset Allocation Review
- Stochastic Projections
- Peer Comparison

## OVERVIEW OF THE ASSET/LIABILITY STUDY

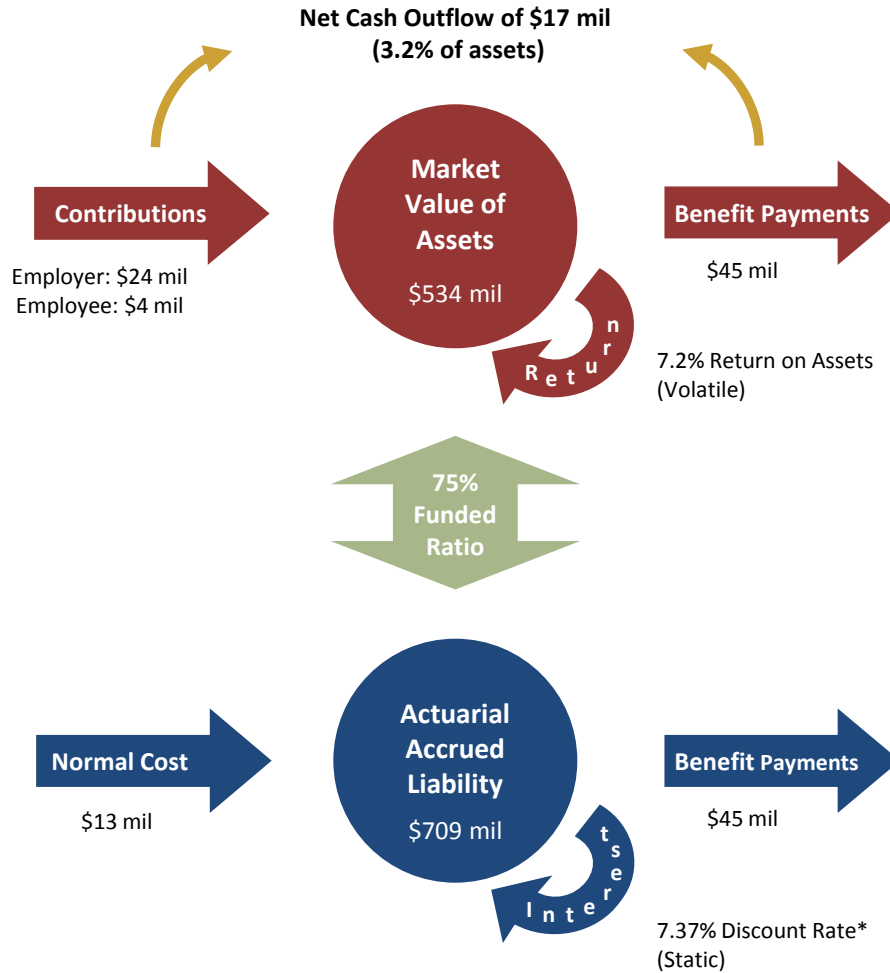
- **Pension Model:**
  - Participant data and valuation results as of July 1, 2015.
  - Funding methods and assumptions as described in the actuarial valuation report.
  - Ten-year projection period beginning July 1, 2015.
  - Active population remains level.
  - First year asset return equal to fiscal year-to-date return of -3.6% through December 31, 2015.
  - Assets and liabilities exclude \$7 million G-1 supplemental account.
- **Baseline Projection:**
  - Deterministic outcomes based on a specific, predetermined set of asset returns for the projection period.
  - Portfolio earns Target Allocation expected return of 7.2% in second and subsequent years.
  - Assessment of impact of various investment returns on funded status and cumulative contributions.
- **Stochastic Analysis:**
  - Incorporates volatile asset returns utilizing Summit's current capital market assumptions.



COMBINED PLAN SUMMARY AS OF JULY 1, 2015

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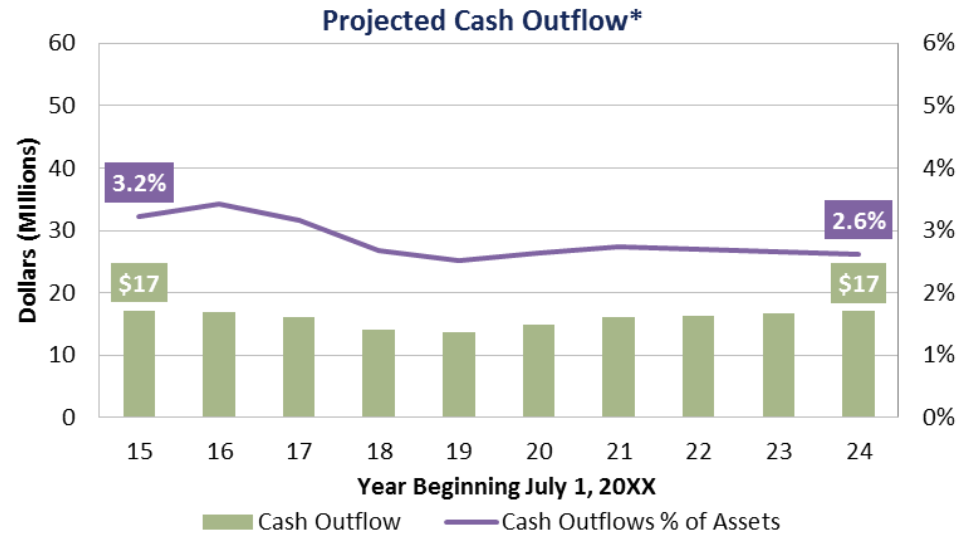
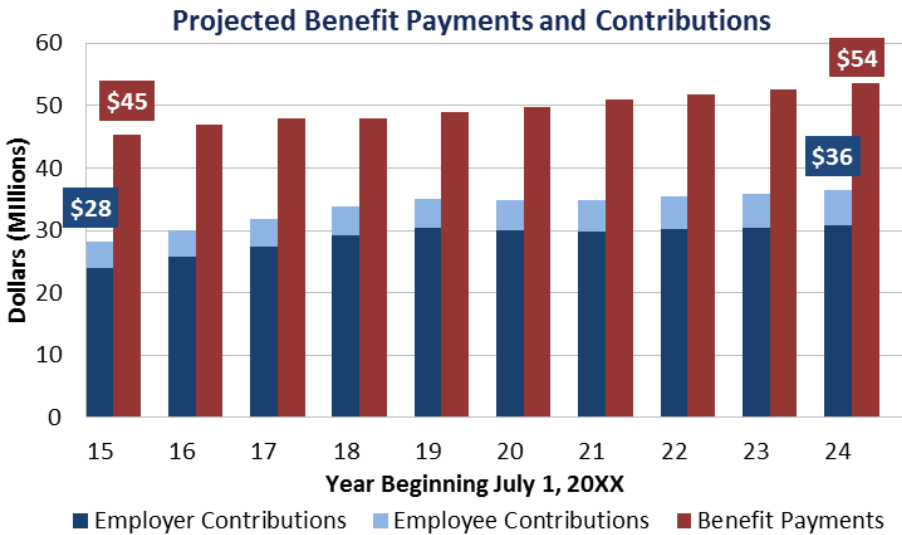


- The illustration to the left shows the status of the combined City of Knoxville Employees' Pension Plan as of July 1, 2015 and expected flows for the plan year.
- Assets decline as benefits are paid or from negative investment returns. Assets increase as contributions are made and from positive investment returns.
- Net cash outflow is the difference between benefit payments and contributions (employer and employee). This amount must be covered by investment earnings or liquidation of assets.
- The actuarial accrued liability declines as benefits are paid and increases as new benefits are earned (normal cost) and over time by the discount rate.

4 \*Discount rates for Non-Division H and Division H are 7.375% and 5.5%, respectively. 7.37% represents the weighted average discount rate.



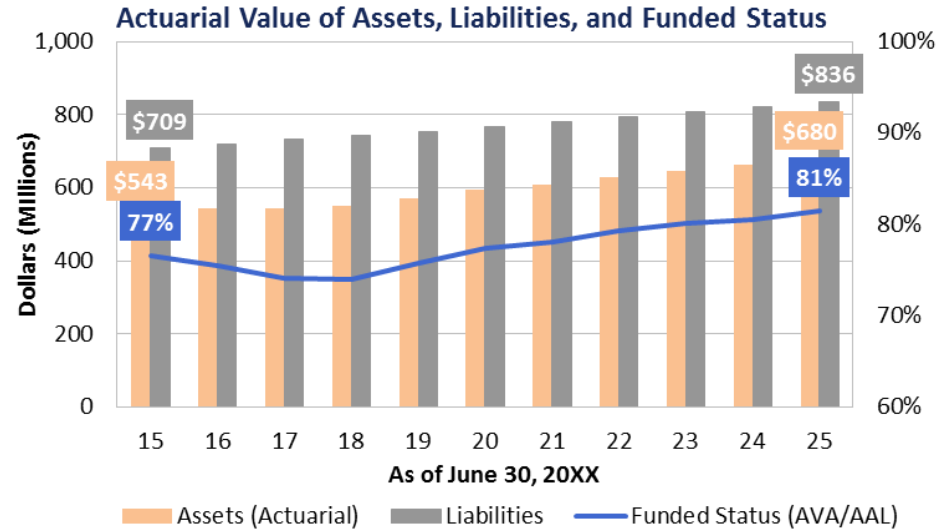
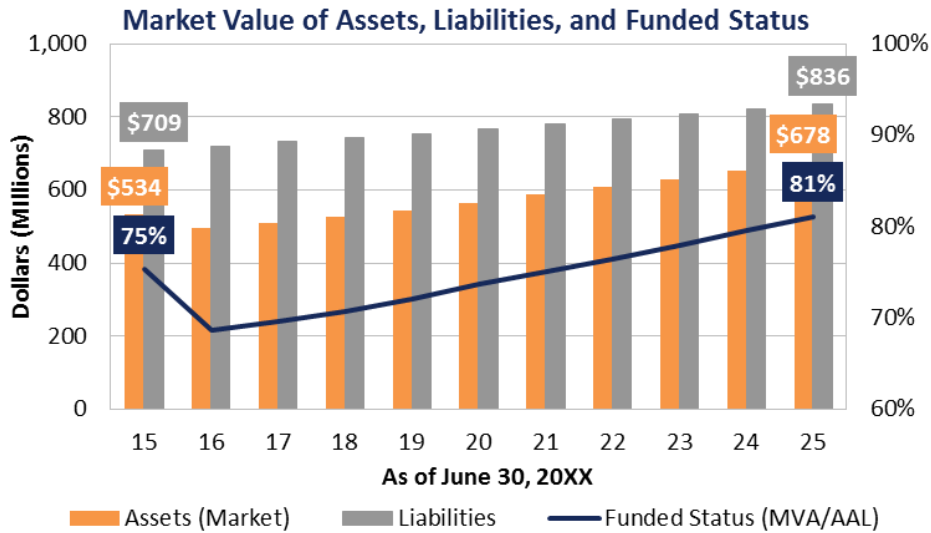
**BASELINE PROJECTION: BENEFIT PAYMENTS, CONTRIBUTIONS, AND CASH OUTFLOW**



- Total projected annual benefit payments grow to \$54 million by the end of the projection period.
- Projected employer and employee contributions rise gradually from \$28 million in 2015 to \$36 million by the end of the projection.
  - Cumulative employer contributions over the projection period are approximately \$288 million.
- Cash outflow as a percentage of assets (market value) is a measure of the liquidity needs of the plan. Net outflows will need to be covered by income generated by the portfolio or liquidation of assets held.
- Cash outflow as percentage of assets falls from 3.2% to 2.6% by the end of the projection period.
  - Cash outflow remains within a reasonable level and is not a concern over the baseline projection.

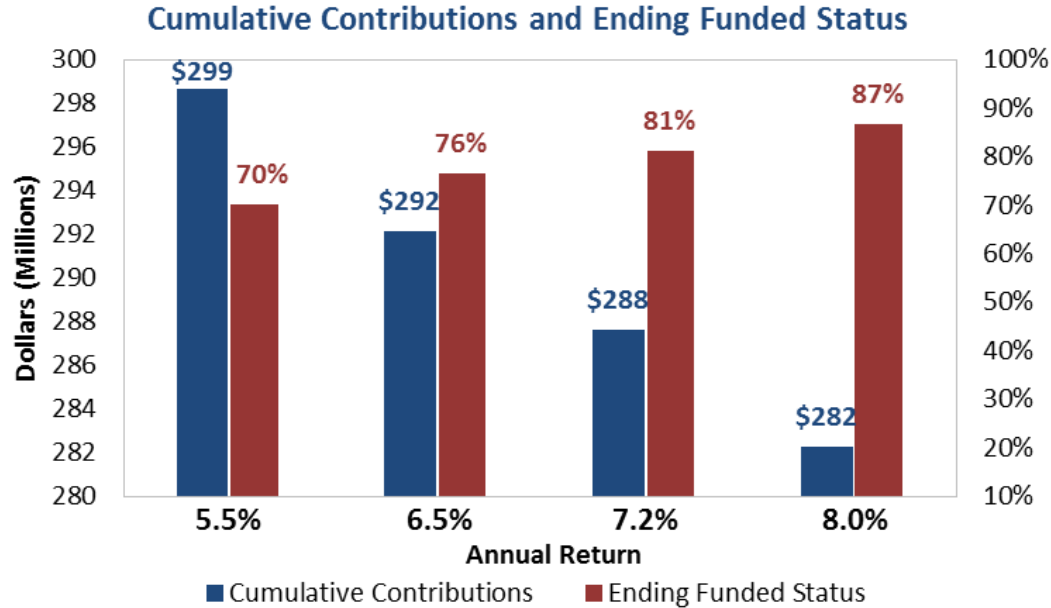
5 \*Cash Outflow is benefit payments less employer and employee contributions.

**BASELINE PROJECTION: ASSETS, LIABILITIES, AND FUNDED STATUS**



- The charts above show projected assets and funded status on both a market-value and an actuarial-value basis.
- Funded status gradually improves to 81% by the end of the projection period. The improvement can be attributed to assets earning a 7.2% annual return and contributions in excess of normal cost (thus sufficient to pay down a portion of the unfunded actuarial accrued liability).

## SENSITIVITY ANALYSIS OF INVESTMENT RETURN



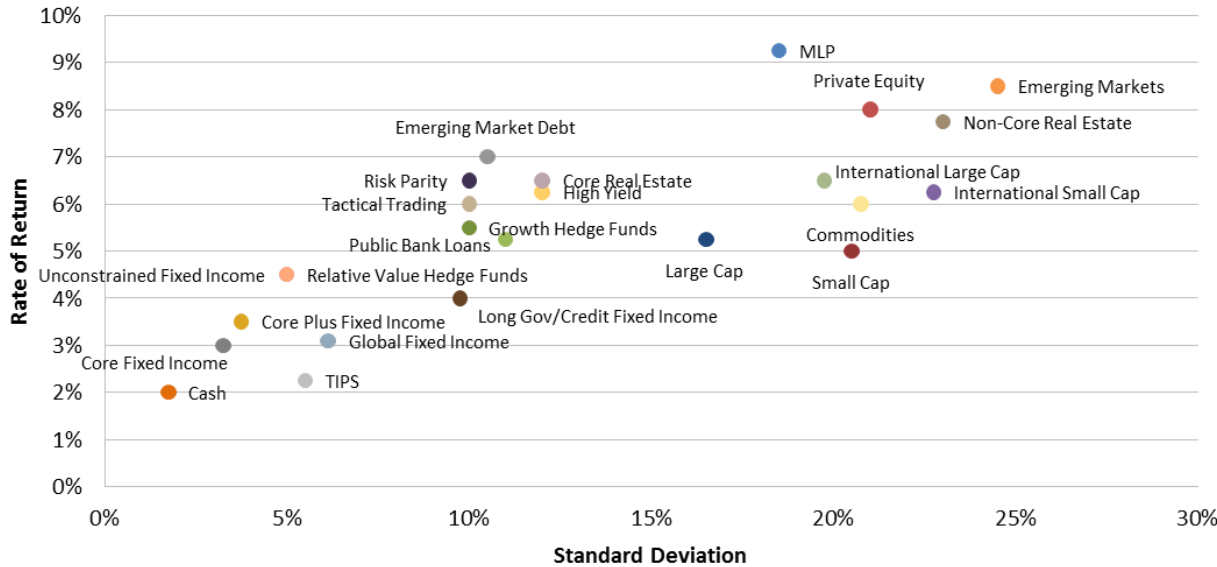
- The chart illustrates the impact of various investment returns on:
  - Cumulative contributions through plan year ending June 30, 2025.
  - Ending funded status (MVA/AAL) as of June 30, 2025.
- Lower investment returns lead to higher cumulative contributions and lower levels of ending funded status. Conversely, higher investment returns lead to lower cumulative contributions and higher levels of ending funded status.

## BASELINE CONCLUSIONS

- As of July 1, 2015, the City of Knoxville Employees' Pension Plan was 75% funded on a market-value-of-assets to actuarial-accrued-liability basis.
  
- Funded status is expected to increase to 81% by the end of the projection period, assuming:
  - The baseline investment return of 7.2% is earned in the second and subsequent years.
  - Projected employer and employee contributions are made.
  
- Lower investment returns lead to higher contributions and lower funded status. Conversely, higher investment returns lead to lower contributions and higher funded status.
  
- Cash outflows are stable over the projection period.
  - Liquidity needs of the combined City of Knoxville Employees' Pension Plan remain in a reasonable range throughout the projection period.

CAPITAL MARKET ASSUMPTIONS – AS OF SEPTEMBER 30, 2015

Total Return vs. Risk



- Summit's capital market assumptions are illustrated to the left.
- Asset class assumptions are geometric (shown net of volatility), use a 10-year investment time horizon, and are net of fees.
- Expected return in the chart to the right and the table below does not include alpha. Alpha is included in the modeling results presented in the following pages.

Asset Class	Expected Return	Expected Alpha	Standard Deviation	Comments Regarding Return Assumptions
Large Cap	5.3%	0.5%	16.5%	Long-term Expected, Fundamental Components
Small Cap	5.0%	0.8%	20.5%	Long-term Expected, Fundamental Components
International Large Cap	6.5%	0.8%	19.8%	Long-term Expected, Fundamental Components
International Small Cap	6.3%	1.0%	22.8%	Long-term Expected, Fundamental Components
Emerging Markets	8.5%	1.0%	24.5%	Long-term Expected, Fundamental Components
Emerging Market Debt	7.0%	0.8%	10.5%	Current Yield Curve + Sovereign Default Discount
High Yield	6.3%	0.5%	12.0%	Current Yield Curve + Default Discount
Non-Core Real Estate	7.8%	1.0%	23.0%	Current Cap Rate + NOI Growth + Liquidity Premium + Leverage Adj
MLP	9.3%	1.0%	18.5%	Distribution Yield + NOI Growth
Private Equity	8.0%	1.0%	21.0%	Base Return (Small Cap) + Liquidity Premium + Leverage Adj
Growth Hedge Funds	5.5%	0.8%	10.0%	Cash + Volatility Adjusted Net Alpha
Risk Parity	6.5%	n/a	10.0%	Cash + Diversified Risk Premium
Cash	2.0%	n/a	1.8%	Current Yield Curve
Core Fixed Income	3.0%	0.3%	3.3%	Current Yield Curve
Core Plus Fixed Income	3.5%	0.5%	3.8%	Current Yield Curve
Long Gov/Credit Fixed Income	4.0%	0.3%	9.8%	Current Yield Curve
Global Fixed Income	3.1%	0.5%	6.1%	Current Yield Curve
Core Real Estate	6.5%	0.3%	12.0%	Current Cap Rate + NOI Growth + Leverage Adj
Public Bank Loans	5.3%	0.5%	11.0%	Base Return (High Yield)
Relative Value Hedge Funds	4.5%	0.5%	5.0%	Cash + Volatility Adjusted Net Alpha
Unconstrained Fixed Income	4.5%	n/a	5.0%	Cash + Diversified Risk Premium
TIPS	2.3%	n/a	5.5%	Real Yield + Inflation Expectation
Commodities	6.0%	1.0%	20.8%	Collateral Yield + Inflation + Inflation Utility
Tactical Trading	6.0%	0.5%	10.0%	Cash + Volatility Adjusted Net Alpha

**TARGET ASSET ALLOCATION**

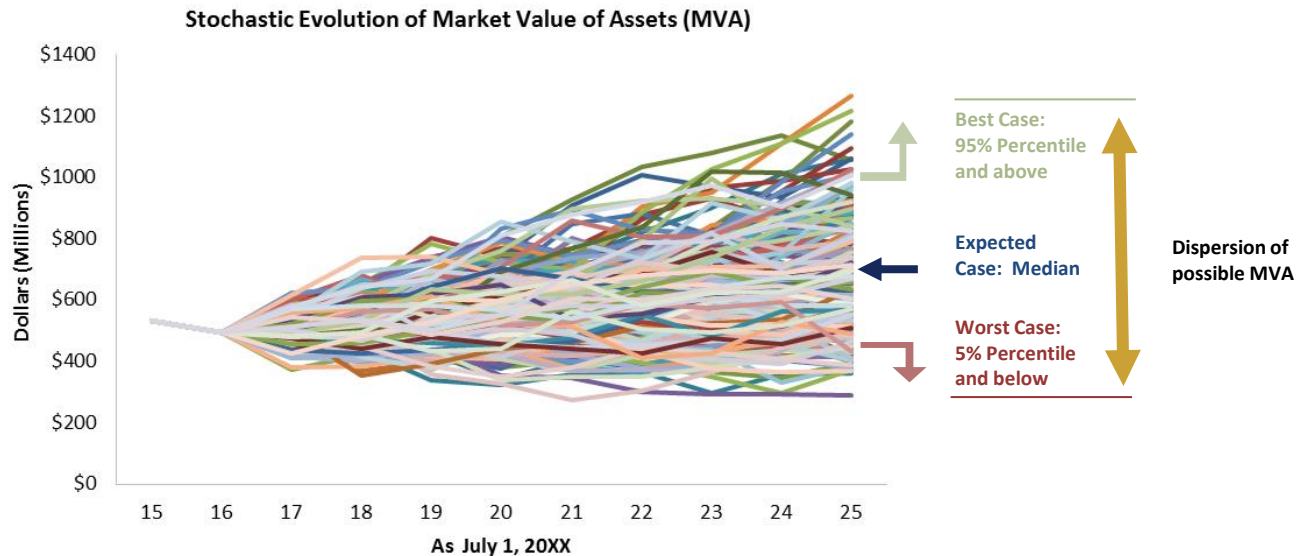
Asset class	Target Allocation	GID	GID Aggressive	Prior Target Allocation
<b>Growth:</b>	<b>75.0%</b>	<b>60.0%</b>	<b>75.0%</b>	<b>80.0%</b>
Large Cap	14.5%	12.9%	16.1%	19.0%
Small Cap	3.5%	1.1%	1.4%	4.5%
International Large Cap	12.5%	8.5%	10.6%	16.0%
International Small Cap	0.0%	1.3%	1.6%	0.0%
Emerging Markets	6.0%	6.2%	7.8%	7.0%
Emerging Market Debt	5.0%	4.2%	5.3%	5.0%
High Yield	6.0%	0.0%	0.0%	6.0%
Non-Core Real Estate	5.0%	0.0%	0.0%	5.0%
MLP	5.0%	6.0%	7.5%	7.5%
Private Equity	7.5%	9.6%	12.0%	5.0%
Growth Hedge Funds	5.0%	5.4%	6.8%	5.0%
Risk Parity	5.0%	4.8%	6.0%	0.0%
<b>Income:</b>	<b>23.0%</b>	<b>30.0%</b>	<b>20.0%</b>	<b>18.0%</b>
Cash	1.0%	0.0%	0.0%	1.0%
Core Fixed Income	6.0%	0.0%	0.0%	6.0%
Core Plus Fixed Income	0.0%	14.0%	9.3%	0.0%
Long Gov/Credit Fixed Income	6.0%	0.0%	0.0%	6.0%
Global Fixed Income	5.0%	0.0%	0.0%	0.0%
Core Real Estate	5.0%	0.0%	0.0%	5.0%
Public Bank Loans	0.0%	4.5%	3.0%	0.0%
Relative Value Hedge Funds	0.0%	4.5%	3.0%	0.0%
Unconstrained Fixed Income	0.0%	7.0%	4.7%	0.0%
<b>Diversification:</b>	<b>2.0%</b>	<b>10.0%</b>	<b>5.0%</b>	<b>2.0%</b>
TIPS	2.0%	3.0%	1.5%	2.0%
Commodities	0.0%	3.0%	1.5%	0.0%
Tactical Trading	0.0%	4.0%	2.0%	0.0%

10-year beta expected return	6.6%	6.4%	6.8%	6.8%
10-year alpha expected return	0.6%	0.6%	0.6%	0.6%
10-year total expected return	7.2%	7.0%	7.4%	7.4%
Standard deviation	9.9%	9.5%	11.2%	11.1%
Return/risk	0.73	0.73	0.66	0.67

- The table to the left summarizes the Target Allocation, GID portfolio, GID Aggressive portfolio, and the Prior Target Allocation (before the addition of Risk Parity and Global Fixed Income).
- Using Summit's Capital Market Assumptions, the Target Asset Allocation has a 10-year expected return of 7.2% with an 9.9% standard deviation.

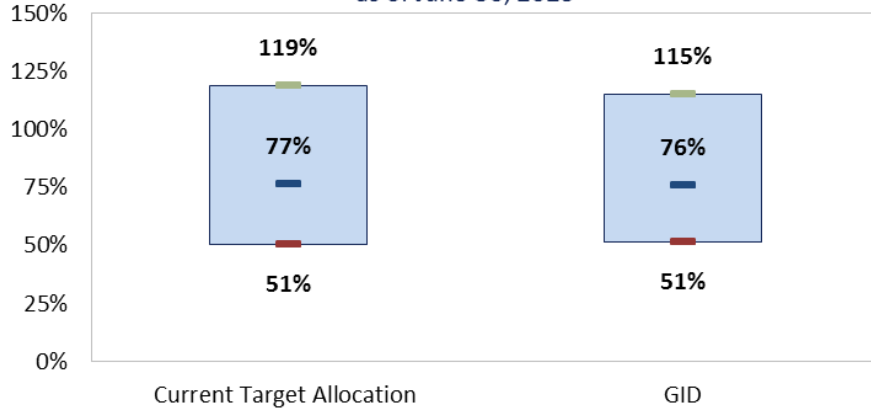
## STOCHASTIC ANALYSIS

- Stochastic analysis also called a Monte Carlo simulation, is the process of analyzing financial outcomes across thousands of possible scenarios. The distribution of results helps to define the likelihood and magnitude of possible outcomes: expected, best, and worst cases.
- This approach is effective in conducting an asset allocation study for a pension plan because it captures the return volatility of the portfolio and its impact on the plan's critical metrics, such as market value of assets, funded status, and contribution requirements.
- In our analysis, 10,000 possible market conditions were simulated over the projection period. In each scenario, the asset volatility was combined with the actuarial assumptions and liability projections, which allowed the plan to evolve through the projection period. The chart below illustrates how the Plan's asset value evolves through time for each trial.

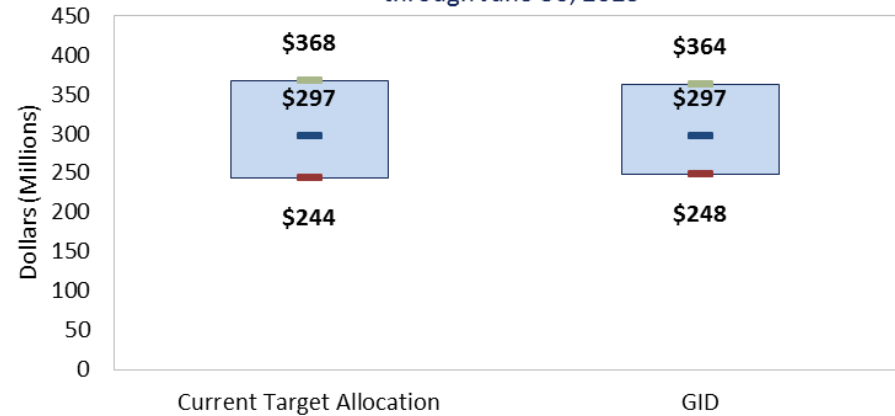


**STOCHASTIC RESULTS**

**Ending Funded Status**  
as of June 30, 2025



**Cumulative Contributions**  
through June 30, 2025



- The chart on the left shows projected funded status (MVA/AAL) as of June 30, 2025, and the chart on the right shows the cumulative contributions over the projection period.
- Expected ending funded status for the two portfolios varies slightly, reflecting differences in expected return. The ending funded status downside for the two portfolios is similar because contributions increase to offset negative asset performance.
- Cumulative contributions are similar for the two portfolios. Regardless of asset allocation, contributions are similar in the early years of the projection due to the beginning funded status.



PEER COMPARISON

Asset Allocation vs. Peer Universe*						
Asset Class	Target Allocation	GID	GID Aggressive	Prior Target Allocation	U.S. Public Fund Universe	
US Equity	18%	14%	18%	24%	40%	←..... Below Peers
International Equity	19%	16%	20%	23%	20%	
<b>Total Public Equity</b>	<b>37%</b>	<b>30%</b>	<b>38%</b>	<b>47%</b>	<b>60%</b>	
<b>Fixed Income</b>	<b>31%</b>	<b>33%</b>	<b>24%</b>	<b>26%</b>	<b>23%</b>	←..... Above Peers
Real Estate	10%	0%	0%	10%	7%	
Hedge Funds	10%	19%	18%	5%	3%	
Private Equity	8%	10%	12%	5%	3%	
Other†	5%	9%	9%	8%	4%	
<b>Total Alternatives</b>	<b>33%</b>	<b>37%</b>	<b>39%</b>	<b>28%</b>	<b>17%</b>	←..... Above Peers
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	

\*Source: Greenwich Associates, Market Trends 2014. Peer universe U.S. public pension plans with \$501M-\$1B in assets.

13 †For purpose of comparison: Other includes MLPs., multi-asset, commodities/MLP, and money market.

**APPENDIX: ASSET CLASS ASSUMPTIONS**

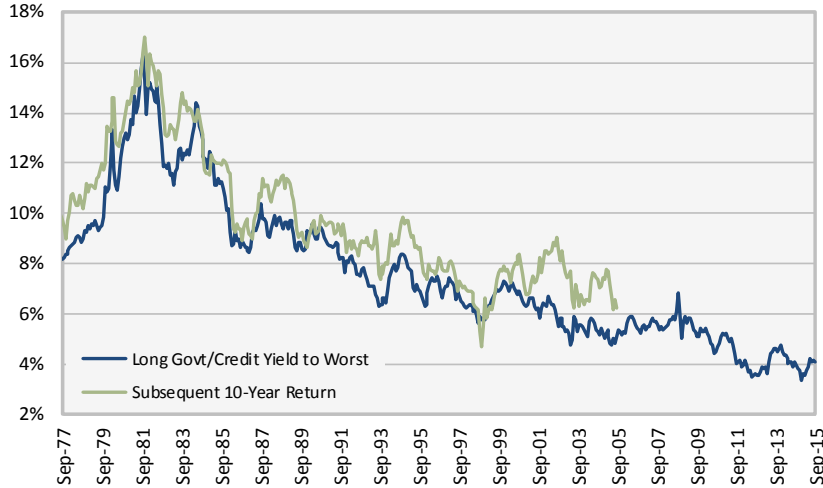
**SUMMARY**

- The capital market assumptions section summarizes changes to Summit's long-term strategic capital market assumptions (Summit's full assumptions document is updated annually).
- While these assumptions are long-term by definition (one would not expect them to change frequently), there are times when market fundamentals move dramatically, thereby altering the long-term expected performance for certain asset classes.
- The pages that follow provide brief supporting documentation for each of the asset classes in the table. For a complete rationale (for all assumptions) please refer to Summit's annual "Capital Market Assumption" publication (available at [www.summitstrategies.com](http://www.summitstrategies.com)).

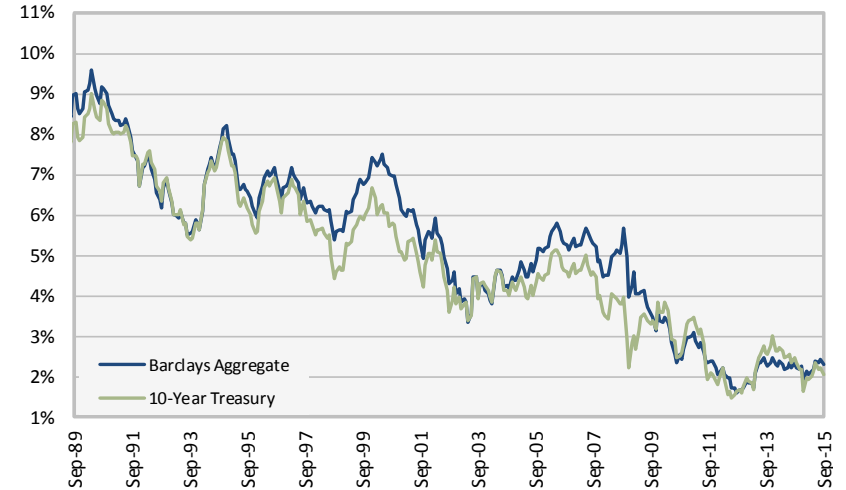
Asset Class Returns and Standard Deviations					
Asset Class	Current Estimates		Previous Quarter		Alpha Assumptions
	Expected Return	Standard Deviation	Expected Return	Standard Deviation	
Inflation (CPI)	1.75%	1.75%	1.75%	1.75%	
<b>GROWTH:</b>					
Large Cap	5.25%	16.50%	5.00%	16.50%	0.50%
Small Cap	5.00%	20.50%	4.75%	20.50%	0.75%
International Large Cap	6.50%	19.75%	6.25%	19.75%	0.75%
International Small Cap	6.25%	22.75%	6.00%	22.75%	1.00%
Emerging Markets	8.50%	24.50%	8.25%	24.50%	1.00%
Master Limited Partnerships (MLP)	9.25%	18.50%	8.25%	18.50%	1.00%
Private Equity	8.00%	21.00%	7.75%	21.00%	1.00%
Growth Hedge Funds	5.50%	10.00%	5.50%	10.00%	0.75%
High Yield Bonds	6.25%	12.00%	5.00%	12.00%	0.50%
Emerging Market Debt	7.00%	10.50%	6.75%	10.50%	0.75%
Convertibles	4.75%	13.75%	4.25%	13.75%	0.50%
Private Debt	8.00%	15.00%	7.50%	15.00%	0.75%
Non-Core Real Estate	7.75%	23.00%	7.75%	23.00%	1.00%
Public Real Estate (REITs)	5.75%	15.00%	5.75%	15.00%	0.50%
Risk Parity	6.50%	10.00%	6.50%	10.00%	0.00%
<b>INCOME:</b>					
Governments	2.25%	4.50%	2.25%	4.50%	
Corporates	4.00%	6.00%	3.75%	6.00%	0.50%
Mortgages (Agency)	2.50%	3.00%	2.50%	3.00%	0.25%
Intermediate Fixed Income	2.75%	3.25%	2.75%	3.25%	0.25%
Core Fixed Income	3.00%	3.25%	2.75%	3.25%	0.25%
Core Plus Fixed Income	3.50%	3.75%	3.25%	3.75%	0.50%
Long Gov/Credit Fixed Income	4.00%	9.75%	3.50%	9.75%	0.25%
International Fixed Income	2.75%	8.25%	2.75%	8.25%	0.50%
Public Bank Loans	5.25%	11.00%	5.00%	11.00%	0.50%
Private Bank Loans	6.50%	13.00%	6.25%	13.00%	0.75%
Relative Value Hedge Funds	4.50%	5.00%	4.50%	5.00%	0.50%
Core Real Estate	6.50%	12.00%	6.50%	12.00%	0.25%
<b>DIVERSIFICATION:</b>					
Cash	2.00%	1.75%	2.00%	1.75%	
TIPS	2.25%	5.50%	2.25%	5.50%	0.00%
Long Treasuries	2.50%	13.25%	2.50%	13.25%	0.00%
Commodities	6.00%	20.75%	4.75%	20.75%	1.00%
Tactical Trading	6.00%	10.00%	6.00%	10.00%	0.50%
Diversified Hedge Funds	5.00%	6.00%	5.00%	6.00%	0.75%

## RETURN ASSUMPTIONS – FIXED INCOME

Yield as an Estimate of Fixed Income Returns



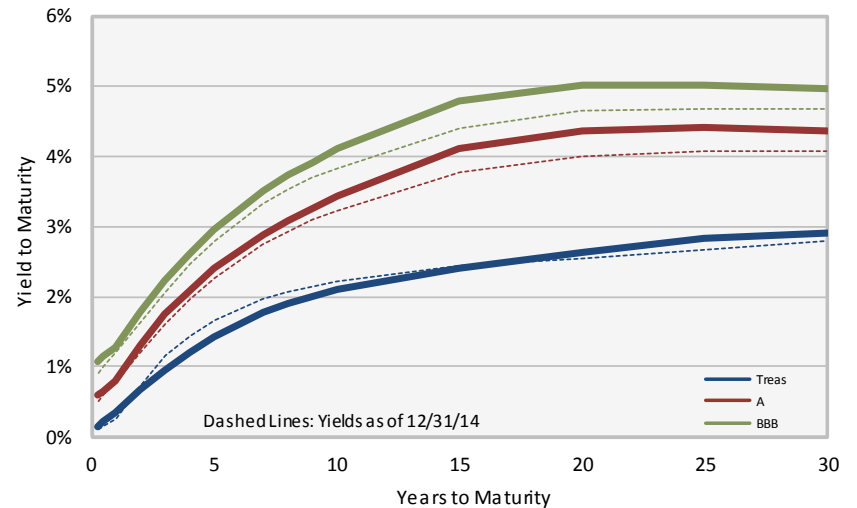
Historical Yields



Expected Return      Option-Adjusted Spread

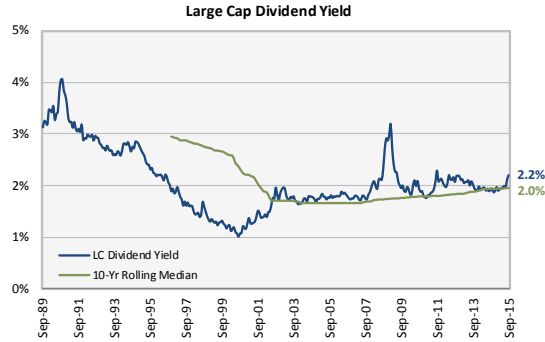
Asset Class	Expected Return		Option-Adjusted Spread	
	Current	Previous	Current	Previous
CPI	1.75%	1.75%	n/a	n/a
High Yield Bonds	6.25%	5.00%	630	466
Emerging Market Debt	7.00%	6.75%	n/a	n/a
Convertibles	4.75%	4.25%	n/a	n/a
Governments	2.25%	2.25%	1	2
Corporates	4.00%	3.75%	169	129
Mortgages (Agency)	2.50%	2.50%	31	20
Intermediate Fixed Income	2.75%	2.75%	50	37
Core Fixed Income	3.00%	2.75%	59	46
Core Plus Fixed Income	3.50%	3.25%	119	95
Long Gov/Credit Fixed Income	4.00%	3.50%	143	118
International Fixed Income	2.75%	2.75%	42	33
Cash	2.00%	2.00%	n/a	n/a
TIPS	2.25%	2.25%	n/a	n/a

Yield Curves

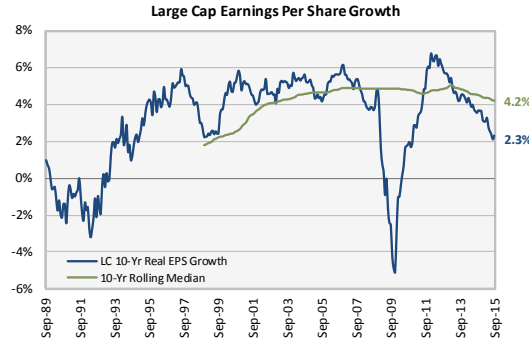


RETURN ASSUMPTIONS – DOMESTIC EQUITY

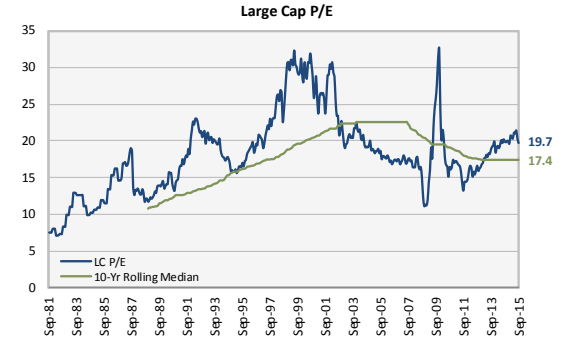
Large Cap Equity



Dividend Yield: 2.00%



EPS Growth: 1.75%

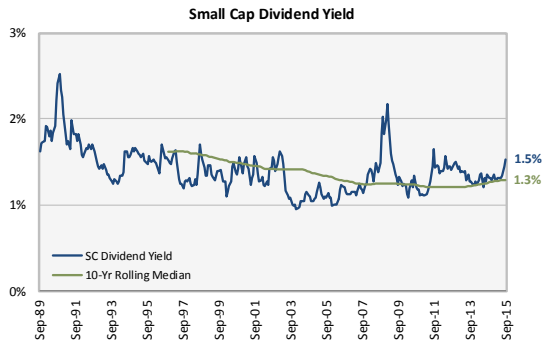


Change in P/E: -0.25%

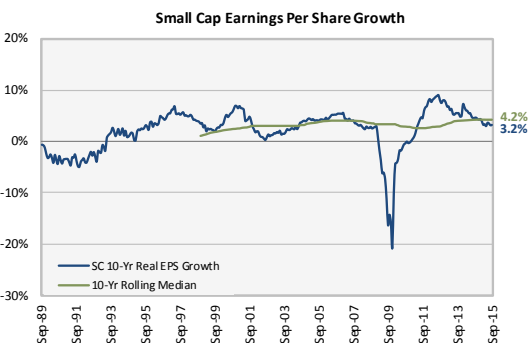
Inflation

1.75%  
5.25%

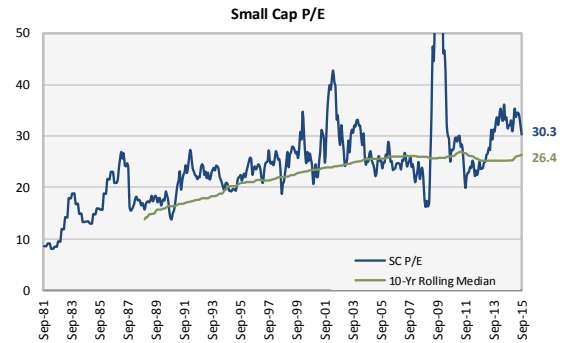
Small Cap Equity



Dividend Yield: 1.25%



EPS Growth: 2.25%



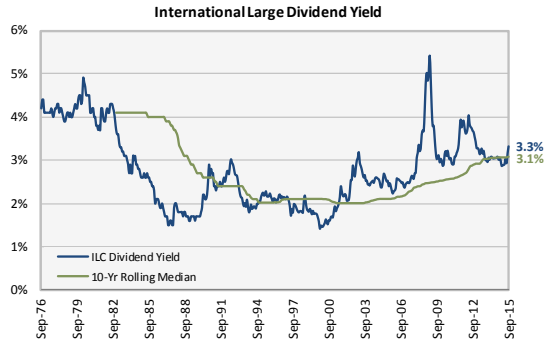
Change in P/E: -0.25%

Inflation

1.75%  
5.00%

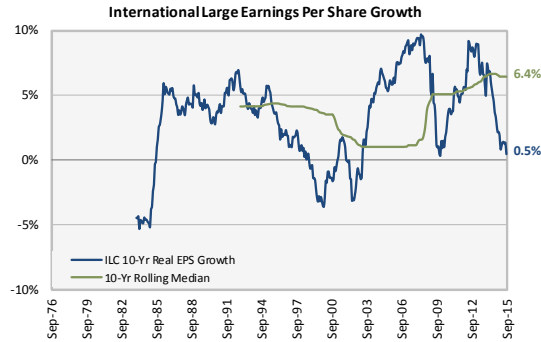
## RETURN ASSUMPTIONS – DEVELOPED INTERNATIONAL EQUITY

### International Large Cap Equity



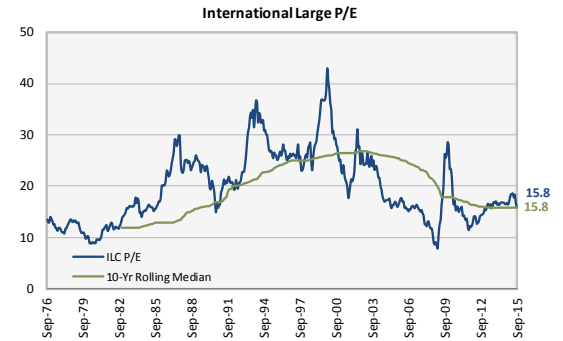
Dividend Yield: 3.25%

+



EPS Growth: 1.50%

+



Change in P/E: 0.00%

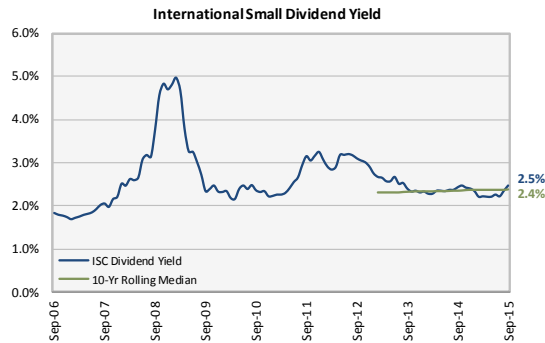
+

1.75%

6.50%

Inflation

### International Small Cap Equity



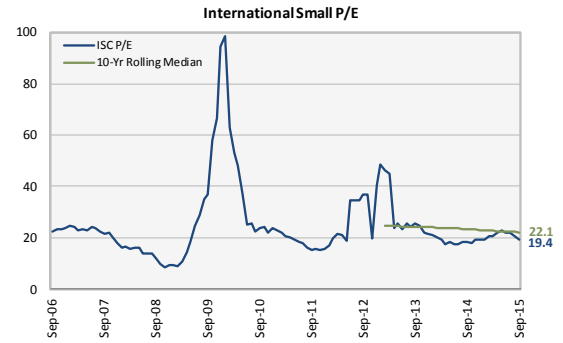
Dividend Yield: 2.50%

+



EPS Growth: 2.00%

+



Change in P/E: 0.00%

+

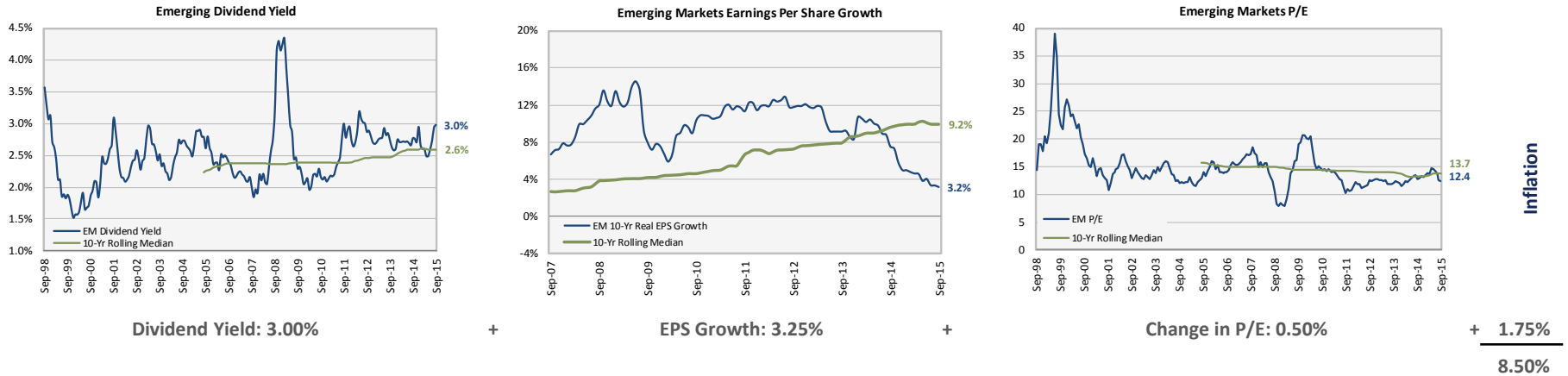
1.75%

6.25%

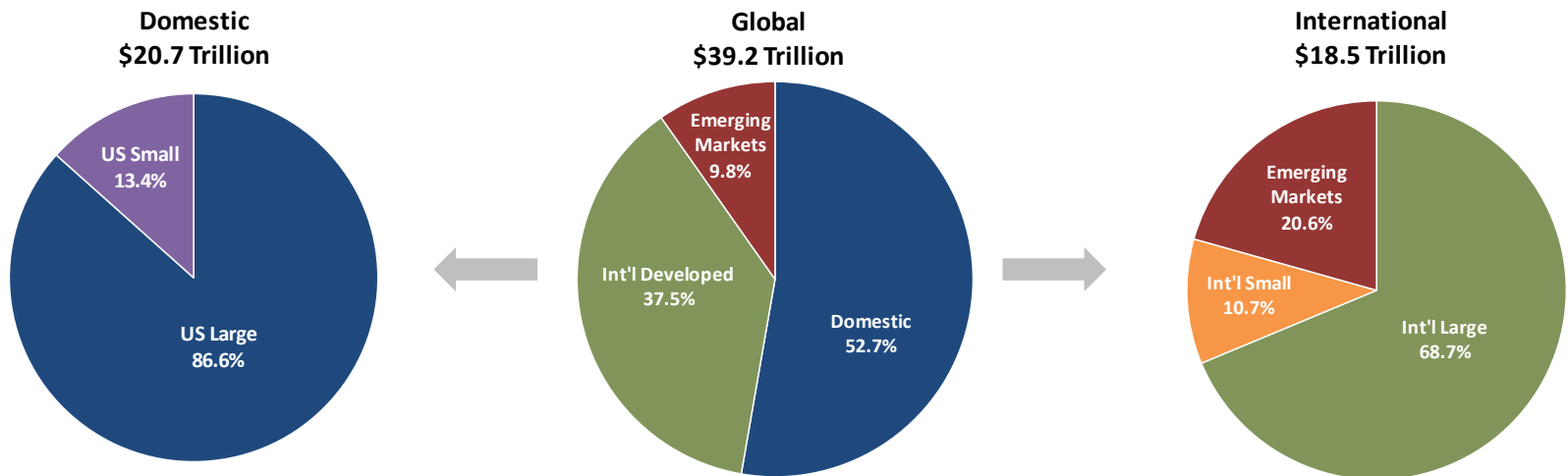
Inflation

## RETURN ASSUMPTIONS – INTERNATIONAL EQUITY

### Emerging Markets Equity



### Global Market Capitalization



**RETURN ASSUMPTIONS – ALTERNATIVE ASSETS**

<b>GROWTH</b>						
Private Equity					<i>Small Cap</i> 5.00%	+ <i>Return Premium</i> 3.00% = <i>Expected</i> 8.00%
Growth Hedge Funds	<i>Expected Sharpe Ratio</i> 0.35				<i>Cash</i> 2.00%	+ <i>Vol-Adj Excess Returns</i> 3.50% = 5.50%
Private Debt					<i>High Yield</i> 6.25%	+ <i>Return Premium</i> 2.00% = 8.25%
Master Limited Partnerships			<i>Distribution Yield</i> 8.25%		<i>Distribution Growth</i> 1.00%	+ <i>Valuation</i> 0.00% = 9.25%
Non-Core Real Estate	<i>Current Cap Rate</i> 5.50%		<i>Growth</i> 1.00%		<i>Liquidity Premium</i> 1.25%	+ <i>Leverage Adjustment</i> 0.00% = 7.75%
Public Real Estate (REITs)	<i>Current Yield</i> 4.00%		<i>Growth</i> 1.00%		<i>Valuation</i> 0.00%	+ <i>Leverage Adjustment</i> 0.75% = 5.75%
Risk Parity	<i>Expected Sharpe Ratio</i> 0.45				<i>Cash</i> 2.00%	+ <i>Risk-Adj Beta Exposure</i> 4.50% = 6.50%
<b>INCOME</b>						
Private Bank Loans					<i>Public Bank Loans</i> 5.25%	+ <i>Return Premium</i> 1.25% = 6.50%
Relative Value Hedge Funds	<i>Expected Sharpe Ratio</i> 0.50				<i>Cash</i> 2.00%	+ <i>Vol-Adj Excess Returns</i> 2.50% = 4.50%
Core Real Estate	<i>Current Cap Rate</i> 5.50%		<i>Growth</i> 1.00%		<i>Valuation</i> 0.00%	+ <i>Leverage Adjustment</i> 0.00% = 6.50%
<b>DIVERSIFICATION</b>						
Commodities					<i>Cash</i> 2.00%	+ <i>Return Premium</i> 4.00% = 6.00%
Tactical Trading	<i>Expected Sharpe Ratio</i> 0.40				<i>Cash</i> 2.00%	+ <i>Vol-Adj Excess Returns</i> 4.00% = 6.00%
Diversified Hedge Funds	<i>Expected Sharpe Ratio</i> 0.50				<i>Cash</i> 2.00%	+ <i>Vol-Adj Excess Returns</i> 3.00% = 5.00%



**Disclaimer:** Although Summit Strategies Group (Summit) believes the modeling contained in this document to be reliable, the modeling of complex financial transactions has inherent limitations. Summit does not guarantee the results to be obtained by the use of this model. This model is developed by Summit based on information obtained from sources which Summit believes are reliable, but Summit does not warrant or guarantee the accuracy, completeness, or reliability of such information. Any information contained in or provided in connection with the model is for information purposes only, for the exclusive use by the client for which it was prepared, and is not intended and should not be construed to be an offer to buy or sell any securities, investment consulting or investment management services. No model can, in and of itself, be used to determine which securities or investments to buy or sell. All forward-looking projections are based on assumptions that Summit believes may be reasonable, but are subject to a wide range of risks, uncertainties and the possibility of loss. Accordingly, there is no assurance that any estimated performance projections of any model will occur in the amounts and during the periods indicated, or at all. Actual results and performance will differ from those expressed or implied by such forward-looking projections. Any decision to use or not use the model and any information accompanying or produced with the model remains solely with the client.



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**City of Knoxville Employees' Pension Plan**

Investment Performance Review

June 30, 2018

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## Executive Summary

## Economic & Capital Market Highlights

June 30, 2018

### Economy

Economic reports from the second quarter indicate the global expansion remains intact, with growth accelerating over the course of the quarter. Trade tensions continued to make headlines, with the US announcing tariffs on \$50B of Chinese goods and China retaliating in-kind. While the tariffs currently implemented make up a small percentage of US imports and GDP, financial markets have been focused on trade developments and appear to be pricing a continuation of tensions. The Federal Reserve mostly dismissed trade concerns while raising interest rates by 25 bps at the June meeting of the Federal Open Market Committee (FOMC). At the end of June the Federal Reserve was targeting a short-term interest rate of 1.75% to 2.00%, the highest level of short-term rates since 2008.

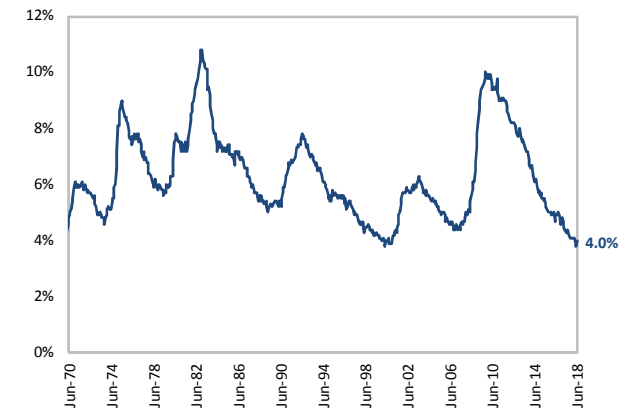
### Capital Markets

Trade news was the primary source of equity market fluctuations during the quarter. Following 2017, which saw global equities gain each month amid record low volatility, market swings have returned toward more normal levels in 2018. MSCI ACWI IMI gained modestly during the quarter, with the 0.7% quarterly return bringing the year-to-date gain for the Index to -0.2%. US large cap growth and small cap stocks were notable outperformers for the quarter, while international equities underperformed as the dollar strengthened against foreign currencies. Fixed income markets generally declined as yields rose across the curve; the 10-year Treasury yield ended the quarter at 2.86%, up 12 bps from March.

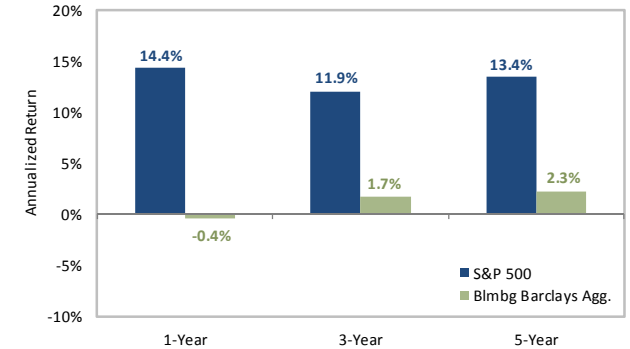
### Market Performance (Returns in USD)

		Quarter	1 Year	3 Year	5 Year
MSCI ACWI IMI	Global Equity	0.7%	11.1%	8.3%	9.6%
Russell 3000	US Equity	3.9%	14.8%	11.6%	13.3%
S&P 500	US Large Cap Equity	3.4%	14.4%	11.9%	13.4%
Russell 1000	US Large Cap Equity	3.6%	14.5%	11.6%	13.4%
Russell 1000 Value	US Large Cap Value Equity	1.2%	6.8%	8.3%	10.3%
Russell 1000 Growth	US Large Cap Growth Equity	5.8%	22.5%	15.0%	16.4%
Russell 2000	US Small Cap Core Equity	7.8%	17.6%	11.0%	12.5%
Russell 2000 Value	US Small Cap Value Equity	8.3%	13.1%	11.2%	11.2%
Russell 2000 Growth	US Small Cap Growth Equity	7.2%	21.9%	10.6%	13.7%
MSCI EAFE	Int'l Developed Large Cap Equity	-1.2%	6.8%	4.9%	6.4%
MSCI EAFE Small Cap	Int'l Developed Small Cap Equity	-1.6%	12.5%	10.1%	11.3%
MSCI Emerging Markets	Emerging Market Equity	-8.0%	8.2%	5.6%	5.0%
Alerian MLP	Master Limited Partnerships	11.8%	-4.6%	-5.9%	-4.1%
Blmbg Barc. US Aggregate	US Core Fixed Income	-0.2%	-0.4%	1.7%	2.3%
Blmbg Barc. US Treasury	US Treasuries	0.1%	-0.7%	1.0%	1.5%
Blmbg Barc. US Credit	US Corporate Bonds	-0.9%	-0.7%	2.9%	3.4%
Blmbg Barc. US MBS	US Mortgage Backed Securities	0.2%	0.2%	1.5%	2.3%
Blmbg Barc. High Yield	US High Yield Bonds	1.0%	2.6%	5.5%	5.5%

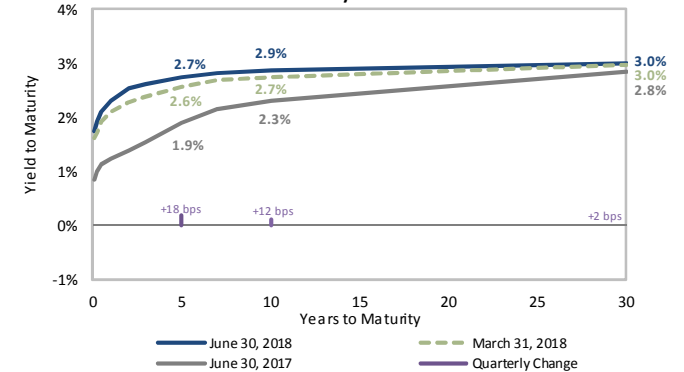
Unemployment Rate



Stocks vs. Bonds  
Recent Historical Performance



Treasury Yield Curve



# Relative Performance

June 30, 2018

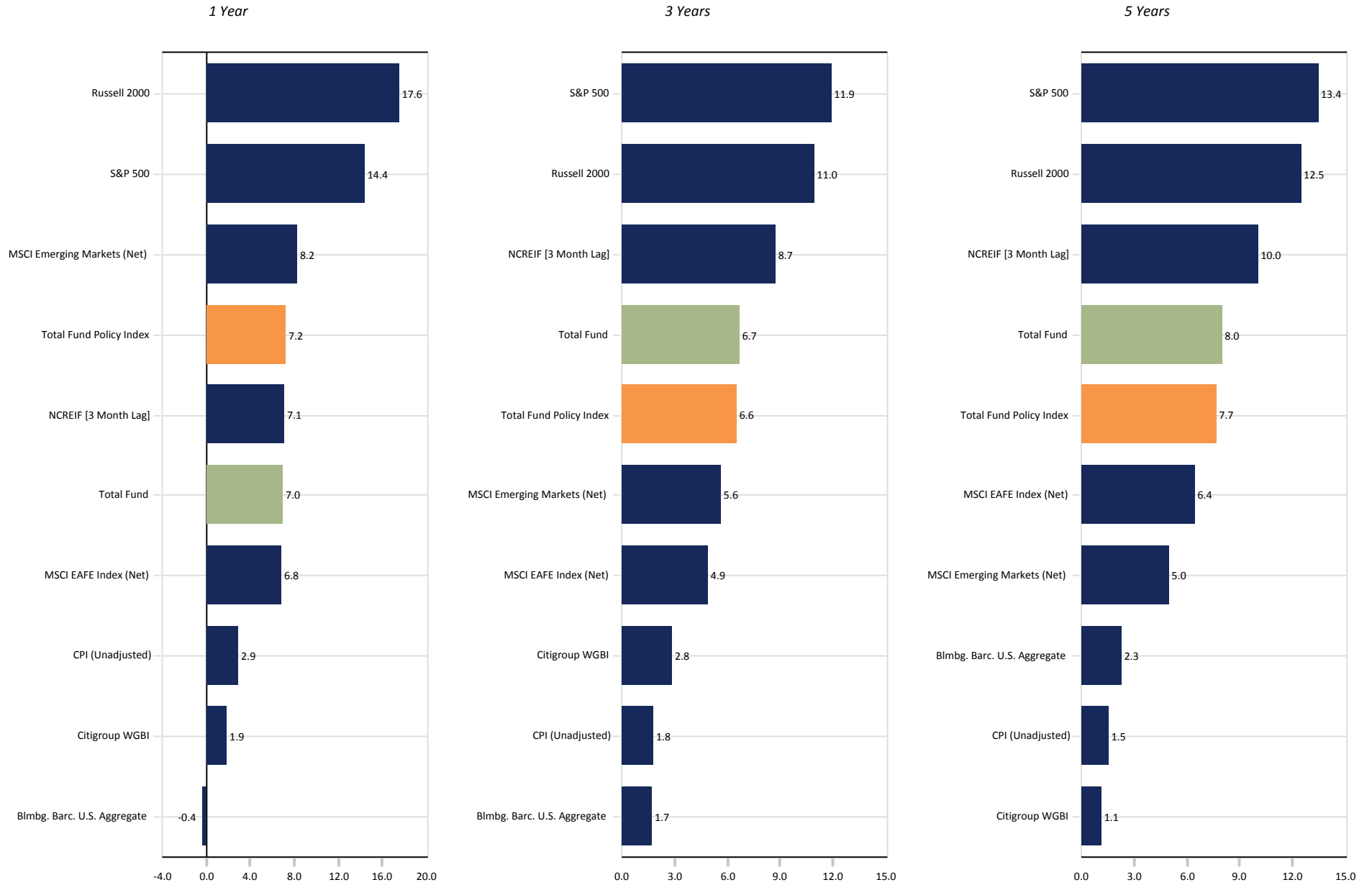
## STYLE PERFORMANCE RANKING: ONE-YEAR TIME PERIODS

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Q2 2018	10 Yr ROR	20 Yr ROR
Best Performing	EM 74.8%	EAFE 8.1%	Large Value 38.4%	Large Growth 23.1%	Large Value 35.2%	Large Growth 38.7%	EM 66.4%	Small Value 22.8%	Small Value 14.0%	Core Bonds 10.3%	EM 55.8%	EM 25.6%	EM 34.1%	EM 32.2%	EM 39.4%	Int. Treas. 11.4%	EM 78.5%	Small Growth 29.1%	Core Bonds 7.8%	EM 18.2%	Small Growth 43.3%	S&P 500 13.7%	Large Growth 5.7%	Small Value 31.7%	EM 37.3%	Small Growth 9.7%	Small Value 8.3%	Large Growth 11.8%	Small Value 8.7%
	EAFE 32.9%	Large Growth 2.7%	S&P 500 37.6%	S&P 500 23.0%	S&P 500 33.4%	S&P 500 28.6%	Small Growth 43.1%	Core Bonds 11.6%	Core Bonds 8.4%	Int. Treas. 9.6%	Small Growth 48.5%	Small Value 22.3%	EAFE 14.0%	EAFE 26.9%	Large Growth 11.8%	Core Bonds 5.2%	HY Bonds 58.2%	Small Cap 26.9%	Int. Treas. 6.6%	Small Value 18.1%	Small Cap 38.8%	Large Value 13.5%	S&P 500 1.4%	Small Cap 21.3%	Large Growth 30.2%	Small Cap 7.7%	Small Cap 7.8%	Small Growth 11.2%	EM 8.5%
	Small Value 23.8%	S&P 500 1.3%	Large Growth 37.2%	Large Value 21.6%	Small Value 31.8%	EAFE 20.3%	Large Growth 33.2%	Int. Treas. 10.3%	Int. Treas. 8.2%	HY Bonds -1.4%	Small Cap 47.3%	EAFE 20.7%	Large Value 7.1%	Small Value 23.5%	EAFE 11.6%	HY Bonds -26.2%	Large Growth 37.2%	Small Value 24.5%	HY Bonds 5.0%	Large Value 17.5%	Small Value 34.5%	Large Growth 13.1%	Int. Treas. 1.2%	Large Value 17.3%	EAFE 25.0%	Large Growth 7.3%	Small Growth 7.2%	Small Cap 10.6%	Small Cap 8.0%
	Small Cap 18.9%	HY Bonds -1.0%	Small Growth 31.0%	Small Value 21.4%	Small Growth 30.5%	Large Growth 15.6%	EAFE 27.3%	Large Value 7.0%	HY Bonds 5.3%	EM -6.0%	Small Value 46.0%	Small Cap 18.3%	Large Growth 5.3%	Large Value 22.2%	Int. Treas. 8.8%	Small Value -28.9%	Small Growth 34.5%	EM 18.9%	Large Growth 2.6%	EAFE 17.3%	Large Growth 33.5%	Core Bonds 6.0%	Core Bonds 0.6%	HY Bonds 17.1%	Small Growth 22.2%	Small Value 5.4%	Large Growth 5.8%	S&P 500 10.2%	Small Growth 6.9%
	Large Value 18.1%	Small Value -1.5%	Small Cap 28.4%	Small Cap 16.5%	Small Cap 22.4%	Core Bonds 8.7%	Small Cap 21.3%	Small Cap -3.0%	Small Cap 2.5%	Small Value -11.4%	EAFE 39.2%	Large Value 16.5%	S&P 500 4.9%	Small Cap 18.4%	Small Growth 7.1%	Small Cap -33.8%	EAFE 31.9%	Large Growth 16.7%	S&P 500 2.1%	Small Cap 16.3%	Large Value 32.5%	Small Growth 5.6%	EAFE -0.8%	S&P 500 12.0%	S&P 500 21.8%	S&P 500 2.6%	S&P 500 3.4%	Small Value 9.9%	Large Value 6.7%
	HY Bonds 17.1%	Small Cap -1.8%	Small Value 25.8%	HY Bonds 11.4%	Small Growth 12.9%	Int. Treas. 8.6%	S&P 500 21.0%	HY Bonds -5.9%	EM -2.4%	Large Value -15.5%	Large Value 30.0%	Small Growth 14.3%	Small Value 4.7%	S&P 500 15.8%	Core Bonds 7.0%	Large Value -36.9%	Small Cap 27.2%	Large Value 15.5%	Large Value 0.4%	S&P 500 16.0%	S&P 500 32.4%	Small Cap 4.9%	Small Growth -1.4%	Small Growth 11.3%	Small Cap 14.6%	HY Bonds 0.2%	Large Value 1.2%	Large Value 8.5%	HY Bonds 6.5%
	Small Growth 13.4%	Int. Treas. -1.8%	HY Bonds 19.2%	Small Growth 11.3%	HY Bonds 12.7%	HY Bonds 1.9%	Large Value 7.4%	S&P 500 -9.1%	Large Value -5.6%	EAFE -15.7%	Large Growth 29.8%	HY Bonds 11.1%	Small Cap 4.6%	Small Growth 13.4%	S&P 500 5.5%	S&P 500 -37.0%	S&P 500 26.5%	HY Bonds 15.1%	Small Growth -2.9%	HY Bonds 15.8%	EAFE 22.8%	Small Value 4.2%	Large Value -3.8%	EM 11.2%	Large Value 13.7%	Int. Treas. -0.7%	HY Bonds 1.0%	HY Bonds 8.2%	S&P 500 6.5%
	S&P 500 10.1%	Large Value -2.0%	Core Bonds 18.5%	EAFE 6.4%	Core Bonds 9.7%	Small Growth 1.2%	HY Bonds 2.4%	EAFE -14.0%	Small Growth -9.2%	Small Cap -20.5%	HY Bonds 29.0%	S&P 500 10.9%	Small Growth 4.1%	HY Bonds 11.9%	HY Bonds 1.9%	Large Growth -38.4%	Small Value 20.6%	S&P 500 15.1%	Small Cap -4.2%	Large Growth 15.3%	HY Bonds 7.4%	Int. Treas. 2.6%	Small Cap -4.4%	Large Growth 7.1%	Small Value 7.8%	Core Bonds -1.6%	Int. Treas. 0.1%	Core Bonds 3.7%	Large Growth 6.3%
	Core Bonds 9.8%	Small Growth -2.4%	Int. Treas. 14.4%	EM 6.0%	Int. Treas. 7.7%	Small Cap -2.5%	Int. Treas. 0.4%	Large Growth -22.4%	S&P 500 -11.9%	S&P 500 -22.1%	S&P 500 28.7%	Large Growth 6.3%	HY Bonds 2.7%	Large Growth 9.1%	Large Value -0.2%	Small Growth -38.5%	Large Value 19.7%	EAFE 7.8%	Small Value -5.5%	Small Growth 14.6%	Int. Treas. -1.3%	HY Bonds 2.5%	HY Bonds -4.5%	Core Bonds 2.7%	HY Bonds 7.5%	Large Value -1.7%	Core Bonds -0.2%	EAFE 2.8%	Core Bonds 4.7%
	Int. Treas. 8.2%	Core Bonds -2.9%	EAFE 11.6%	Int. Treas. 4.0%	EAFE 2.1%	Small Value -6.5%	Core Bonds -0.8%	Small Growth -22.4%	Large Growth -20.4%	Large Growth -27.9%	Core Bonds 4.1%	Core Bonds 4.3%	Core Bonds 2.4%	Core Bonds 4.3%	Small Cap -1.6%	EAFE -43.4%	Core Bonds 5.9%	Core Bonds 6.5%	EAFE -12.1%	Core Bonds 4.2%	Core Bonds -2.0%	EM -2.2%	Small Value -7.5%	Int. Treas. 1.1%	Core Bonds 3.5%	EAFE -2.7%	EAFE -1.2%	Int. Treas. 2.4%	EAFE 4.3%
Large Growth 2.9%	EM -7.3%	EM -5.2%	Core Bonds 3.6%	EM -11.6%	EM -25.3%	Small Value -1.5%	EM -30.6%	EAFE -21.2%	Small Growth -30.3%	Int. Treas. 2.1%	Int. Treas. 2.0%	Int. Treas. 1.6%	Int. Treas. 3.5%	Small Value -9.8%	EM -53.3%	Int. Treas. -1.4%	Int. Treas. 5.3%	EM -18.4%	Int. Treas. 1.7%	EM -2.6%	EAFE -4.9%	EM -14.9%	EAFE 1.0%	Int. Treas. 1.1%	EM -6.7%	EM -8.0%	EM 2.3%	Int. Treas. 3.9%	

# City of Knoxville Employees' Pension Plan

## Market Environment

June 30, 2018



# City of Knoxville Employees' Pension Plan

## Composite Asset Allocation & Performance | gross of fees

June 30, 2018

	Asset \$	Asset %	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year
<b>Total Fund</b>	<b>590,209,745</b>	<b>100.00</b>	<b>0.26 (92)</b>	<b>-0.40 (93)</b>	<b>7.00 (84)</b>	<b>7.00 (84)</b>	<b>6.69 (60)</b>	<b>7.98 (59)</b>	<b>7.04 (44)</b>
<i>Total Fund Policy Index</i>			0.35	0.34	7.25	7.25	6.55	7.66	5.66
Excess Return			-0.09	-0.74	-0.25	-0.25	0.14	0.32	1.38
<i>Total Fund Allocation Index</i>			0.65	-0.49	7.00	7.00	5.82	6.92	5.63
Total Equity	294,414,672	49.88	-0.08	0.05	12.14	12.14	9.82	11.00	8.94
US Equity	144,900,156	24.55	4.23 (23)	4.07 (23)	15.56 (23)	15.56 (23)	12.15 (23)	13.60 (22)	10.51 (26)
<i>Russell 3000 Index</i>			3.89	3.22	14.78	14.78	11.58	13.29	10.23
Excess Return			0.34	0.85	0.78	0.78	0.57	0.31	0.28
International Equity	125,493,122	21.26	-5.37 (96)	-5.09 (95)	7.54 (54)	7.54 (54)	7.42 (14)	8.36 (20)	7.43 (4)
<i>International Equity Policy Index</i>			-2.61	-3.77	7.28	7.28	5.07	5.99	2.37
Excess Return			-2.76	-1.32	0.26	0.26	2.35	2.37	5.06
Private Equity Composite*	24,021,394	4.07							
Total Fixed Income	146,945,682	24.90	-1.79 (94)	-2.95 (79)	-0.20 (71)	-0.20 (71)	3.17 (35)	3.50 (39)	5.47 (34)
<i>Blmbg. Barc. U.S. Aggregate</i>			-0.16	-1.62	-0.40	-0.40	1.72	2.27	3.72
Excess Return			-1.63	-1.33	0.20	0.20	1.45	1.23	1.75
Real Assets Composite*	90,485,105	15.33	5.08	2.49	3.81	3.81	4.63	7.15	3.84
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			2.05	4.30	8.44	8.44	9.37	11.04	5.29
Excess Return			3.03	-1.81	-4.63	-4.63	-4.74	-3.89	-1.45
<i>NCREIF Property Index</i>			1.81	3.54	7.19	7.19	8.25	9.77	6.22
Hedge Funds	14,342,023	2.43	0.86	1.84	5.31	5.31	3.75	4.95	2.53
<i>HFRI Fund of Funds Composite Index</i>			0.40	0.67	5.12	5.12	1.93	3.45	1.40
Excess Return			0.46	1.17	0.19	0.19	1.82	1.50	1.13
Risk Parity Composite	38,950,837	6.60	0.02	-1.57	5.81	5.81	6.68	-	-
<i>60% MSCI World/40% Citigroup WGBI</i>			-0.20	0.14	7.77	7.77	6.71	-	-
Excess Return			0.22	-1.71	-1.96	-1.96	-0.03	-	-
<i>90 Day Libor + 4</i>			1.58	3.07	5.85	5.85	5.13	4.78	4.74
Cash	5,071,427	0.86	0.47	0.85	1.70	1.70	1.02	0.71	0.61

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.



# City of Knoxville Employees' Pension Plan

## Manager Asset Allocation & Performance | gross of fees

June 30, 2018

	Asset \$	Asset %	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
<b>US Equity</b>											
Eagle Capital Management	47,256,998	8.01	3.24 (17)	3.45 (6)	14.82 (9)	14.82 (9)	12.47 (7)	14.45 (2)	-	16.42 (4)	Sep-2010
<i>Russell 1000 Value Index</i>			1.18	-1.69	6.77	6.77	8.26	10.34	-	13.33	
Excess Return			2.06	5.14	8.05	8.05	4.21	4.11	-	3.09	
NT Russell 1000 Growth Index Fund	46,664,826	7.91	5.74 (42)	7.31 (51)	22.55 (42)	22.55 (42)	14.97 (27)	-	-	13.99 (36)	May-2015
<i>Russell 1000 Growth Index</i>			5.76	7.25	22.51	22.51	14.98	-	-	14.00	
Excess Return			-0.02	0.06	0.04	0.04	-0.01	-	-	-0.01	
William Blair Small Cap Value	14,973,672	2.54	5.95 (43)	1.85 (78)	11.04 (74)	11.04 (74)	10.27 (58)	11.45 (65)	-	12.37 (55)	May-2013
<i>Russell 2000 Value Index</i>			8.30	5.44	13.10	13.10	11.22	11.18	-	11.35	
Excess Return			-2.35	-3.59	-2.06	-2.06	-0.95	0.27	-	1.02	
Pinnacle Associates	10,746,940	1.82	2.28 (96)	1.94 (97)	10.76 (99)	10.76 (99)	8.55 (90)	12.42 (73)	11.77 (51)	9.84 (63)	Sep-2007
<i>Russell 2500 Growth Index</i>			5.53	8.04	21.53	21.53	10.86	13.87	11.38	9.76	
Excess Return			-3.25	-6.10	-10.77	-10.77	-2.31	-1.45	0.39	0.08	
Parametric	25,257,721	4.28	3.20 (40)	1.29 (71)	-	-	-	-	-	6.08 (93)	Aug-2017
<i>S&amp;P 500</i>			3.43	2.65	-	-	-	-	-	12.07	
Excess Return			-0.23	-1.36	-	-	-	-	-	-5.99	
<b>International Equity</b>											
Silchester International Investors	70,548,785	11.95	-3.17 (70)	-4.00 (55)	7.40 (33)	7.40 (33)	7.63 (19)	9.75 (10)	9.22 (3)	11.86 (4)	Nov-2001
<i>MSCI EAFE Value Index (Net)</i>			-2.64	-4.61	4.25	4.25	3.30	5.37	2.17	5.97	
Excess Return			-0.53	0.61	3.15	3.15	4.33	4.38	7.05	5.89	
Gryphon	19,545,254	3.31	-1.68 (67)	-1.69 (62)	13.05 (30)	13.05 (30)	9.11 (31)	9.34 (31)	6.53 (15)	7.08 (60)	Aug-2005
<i>MSCI EAFE Growth Index (Net)</i>			0.11	-0.93	9.41	9.41	6.41	7.43	3.45	5.73	
Excess Return			-1.79	-0.76	3.64	3.64	2.70	1.91	3.08	1.35	
Acadian Emerging Markets	35,399,083	6.00	-11.24 (94)	-8.98 (85)	4.81 (69)	4.81 (69)	5.58 (64)	5.07 (65)	-	5.74 (34)	Jan-2010
<i>MSCI Emerging Markets (Net)</i>			-7.96	-6.66	8.20	8.20	5.60	5.01	-	3.36	
Excess Return			-3.28	-2.32	-3.39	-3.39	-0.02	0.06	-	2.38	
<b>Private Equity</b>											
Adams Street*	3,269,983	0.55									
Neuberger Berman*	2,697,171	0.46									
Neuberger Berman Crossroads XXI*	2,786,991	0.47									

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.

\*\*Not priced monthly.

# City of Knoxville Employees' Pension Plan

## Manager Asset Allocation & Performance | gross of fees

June 30, 2018

	Asset \$	Asset %	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Top Tier Venture Velocity Fd*	4,942,344	0.84									
Fort Washington Private Equity Fund III*	4,618,511	0.78									
Fort Washington Private Equity Fund IX*	1,470,196	0.25									
57 Stars Global Opportunity Fund 4*	2,916,198	0.49									
Aberdeen Private Equity VII*	1,320,000	0.22									
<b>Fixed Income</b>											
IR+M Core Fixed	46,455,109	7.87	-0.09 (48)	-1.46 (54)	-0.11 (55)	-0.11 (55)	2.13 (47)	2.82 (34)	-	3.37 (28)	Jul-2011
<i>Blmbg. Barc. U.S. Aggregate</i>			-0.16	-1.62	-0.40	-0.40	1.72	2.27	-	2.57	
Excess Return			0.07	0.16	0.29	0.29	0.41	0.55	-	0.80	
STW Fixed	59,749,153	10.12	-1.28 (30)	-4.78 (24)	-0.74 (62)	-0.74 (62)	4.71 (47)	6.40 (9)	8.40 (27)	8.73 (-)	Sep-1991
<i>Blmbg. Barc. U.S. Long Government/Credit</i>			-1.45	-4.98	-0.78	-0.78	4.34	5.10	6.79	7.62	
Excess Return			0.17	0.20	0.04	0.04	0.37	1.30	1.61	1.11	
IR+M TIPS	19,323,226	3.27	0.59 (90)	0.23 (23)	1.38 (93)	1.38 (93)	1.49 (90)	1.25 (88)	-	2.13 (83)	Jul-2010
<i>Blmbg. Barc. U.S. TIPS 1-10 Year</i>			0.61	0.21	1.45	1.45	1.50	1.21	-	2.03	
Excess Return			-0.02	0.02	-0.07	-0.07	-0.01	0.04	-	0.10	
NT Aggregate Bond Fund	21,406,352	3.63	-	-	-	-	-	-	-	0.34	Jun-2018
<b>Real Assets</b>											
Principal Global Investors	20,986,404	3.56	2.21 (48)	4.15 (79)	8.23 (75)	8.23 (75)	9.67 (66)	10.83 (72)	4.82 (85)	6.99 (-)	Mar-2005
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			2.05	4.30	8.44	8.44	9.37	11.04	5.29	8.00	
Excess Return			0.16	-0.15	-0.21	-0.21	0.30	-0.21	-0.47	-1.01	
<i>NCREIF Property Index</i>			1.81	3.54	7.19	7.19	8.25	9.77	6.22	8.67	Mar-2005
RREEF America II**	27,023,175	4.58	1.92 (78)	4.34 (61)	8.57 (61)	8.57 (61)	9.71 (63)	11.66 (51)	5.55 (62)	8.08 (-)	Mar-2004
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			2.05	4.30	8.44	8.44	9.37	11.04	5.29	8.34	
Excess Return			-0.13	0.04	0.13	0.13	0.34	0.62	0.26	-0.26	
<i>NCREIF Property Index</i>			1.81	3.54	7.19	7.19	8.25	9.77	6.22	9.07	Mar-2004
Tortoise	31,643,205	5.36	11.89 (68)	1.18 (39)	-1.27 (62)	-1.27 (62)	-3.66 (12)	1.36 (30)	-	7.90 (40)	Dec-2010
<i>S&amp;P MLP Index</i>			13.15	1.01	-1.76	-1.76	-6.32	-3.03	-	3.38	
Excess Return			-1.26	0.17	0.49	0.49	2.66	4.39	-	4.52	
Aether Real Assets I*	5,187,328	0.88									

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.

\*\*Not priced monthly.

# City of Knoxville Employees' Pension Plan

## Manager Asset Allocation & Performance | gross of fees

June 30, 2018

	Asset \$	Asset %	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Aether Real Assets II*	5,644,992	0.96									
<b>Hedge Fund</b>											
Blackstone	14,342,023	2.43	0.86	1.84	5.31	5.31	4.05	5.05	-	4.91	Dec-2010
<i>HFRI Fund of Funds Composite Index</i>			0.40	0.67	5.12	5.12	1.93	3.45	-	2.84	
Excess Return			0.46	1.17	0.19	0.19	2.12	1.60	-	2.07	
<b>Risk Parity</b>											
PanAgora Diversified Risk	38,950,837	6.60	0.02	-1.57	5.81	5.81	6.68	-	-	6.52	Nov-2014
<i>60% MSCI World/40% Citigroup WGBI</i>			-0.20	0.14	7.77	7.77	6.71	-	-	5.45	
Excess Return			0.22	-1.71	-1.96	-1.96	-0.03	-	-	1.07	
<b>Cash</b>											
Cash	5,071,427	0.86	0.47	0.85	1.70	1.70	1.02	0.71	0.61	3.15	Oct-1991

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.

\*\*Not priced monthly.

## City of Knoxville Employees' Pension Plan

### Private Equity and Real Assets Partnerships\*

June 30, 2018

Partnerships	Vintage Year	Investment Strategy	Capital Commitment (\$)	Drawn Down (\$)	Distributed (\$)	Market Value (\$)	IRR (%) (1)	TVPI Multiple (2)	Valuation Date
<b>Private Equity</b>									
Adams Street 2009 US	2009	Diversified (FOF)	2,000,000	1,112,153	585,087	1,663,845	12.96	2.02	06/30/2018
Adams Street 2009 Non-US Developed	2009	Diversified (FOF)	1,200,000	765,999	349,807	870,228	10.41	1.59	06/30/2018
Adams Street 2009 Non-US Emerging	2009	Diversified (FOF)	400,000	309,649	66,188	431,221	9.57	1.61	06/30/2018
Adams Street 2009 Direct	2009	Venture Capital (COI)	400,000	371,983	387,721	304,689	13.33	1.86	06/30/2018
Neuberger Berman Crossroads 2010	2010	Special Situations (FOF)	5,000,000	3,525,000	2,411,101	2,697,171	8.47	1.45	06/30/2018
Fort Washington Private Equity Fund III	2014	Secondaries (FOF)	5,000,000	3,655,000	863,257	4,618,511	23.47	1.50	06/30/2018
Top Tier Venture Velocity Fd	2014	Secondaries (FOF)	5,000,000	4,366,642	1,158,891	4,942,344	14.30	1.40	06/30/2018
57 Stars Global Opportunity Fund 4	2015	Diversified (FOF)	5,000,000	2,906,073	102,430	2,916,198	2.98	1.04	06/30/2018
Neuberger Berman Crossroads XXI	2016	Special Situations (FOF)	5,000,000	2,750,000	250,016	2,786,991	9.12	1.10	06/30/2018
Fort Washington Private Equity Fund IX	2016	Diversified (FOF)	6,000,000	1,488,226	-	1,470,196	-1.48	0.99	06/30/2018
Aberdeen Private Equity VII	2017	Buyout - Small (FOF)	6,000,000	1,320,000	-	1,320,000	0.00	1.00	06/30/2018
<b>Total Private Equity</b>			<b>41,000,000</b>	<b>22,570,725</b>	<b>6,174,498</b>	<b>24,021,394</b>	<b>11.67</b>	<b>1.34</b>	<b>06/30/2018</b>
<b>Private Real Assets</b>									
Aether Real Assets I	2009	Natural Resources - Diversified (FOF)	11,000,000	9,547,599	4,598,936	5,187,328	0.57	1.03	06/30/2018
Aether Real Assets II	2012	Natural Resources - Diversified (FOF)	7,500,000	6,281,797	1,548,197	5,644,992	3.78	1.15	06/30/2018
<b>Total Private Real Assets</b>			<b>18,500,000</b>	<b>15,829,396</b>	<b>6,147,133</b>	<b>10,832,320</b>	<b>1.73</b>	<b>1.07</b>	<b>06/30/2018</b>

\* Please note, data being used in report is being derived using custodial values, which are lagged.

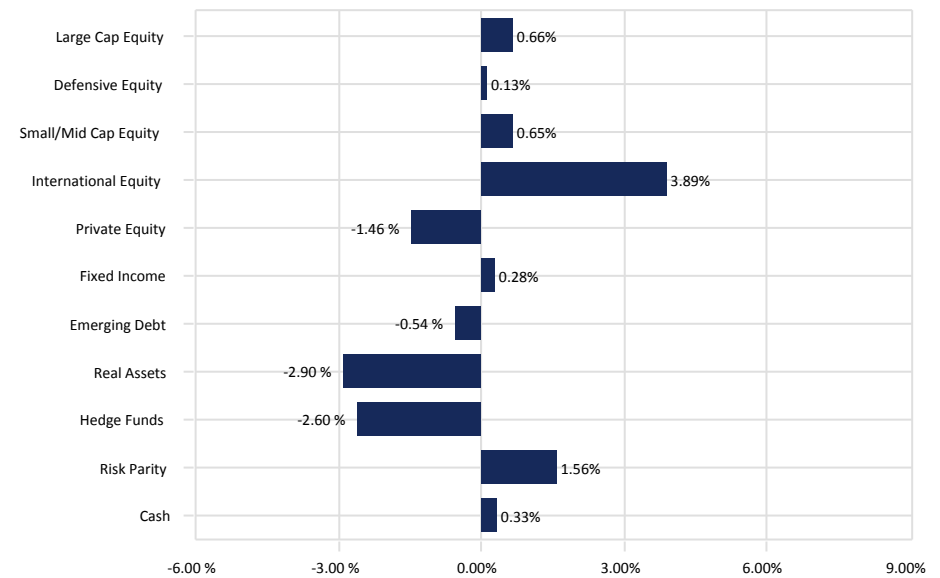
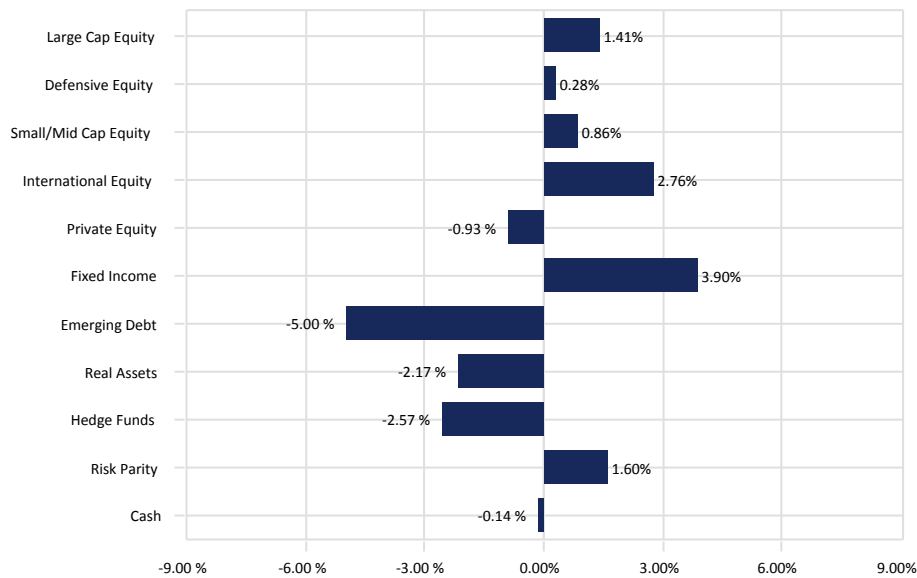
1. In the beginning life of a fund, fees and expenses are disproportionately large compared to investments (aka "J-Curve"); therefore performance is considered not meaningful.
2. Total Value to Paid In (TVPI) reflects total realized and unrealized performance.

**Total Fund**

# City of Knoxville Employees' Pension Plan

## Asset Allocation vs. Target Allocation

June 30, 2018



### June 30, 2018

	<u>Market Value</u> (\$)	<u>Allocation</u> (%)	<u>Target</u> (%)
Large Cap Equity	93,921,824	15.91	14.50
Defensive Equity	25,257,721	4.28	4.00
Small/Mid Cap Equity	25,720,612	4.36	3.50
International Equity	125,493,122	21.26	18.50
Private Equity	24,021,394	4.07	5.00
Fixed Income	146,933,839	24.90	21.00
Emerging Debt	11,843	0.00	5.00
Real Assets	90,485,105	15.33	17.50
Hedge Funds	14,342,023	2.43	5.00
Risk Parity	38,950,837	6.60	5.00
Cash	5,071,427	0.86	1.00
<b>Total Fund</b>	<b>590,209,745</b>	<b>100.00</b>	<b>100.00</b>

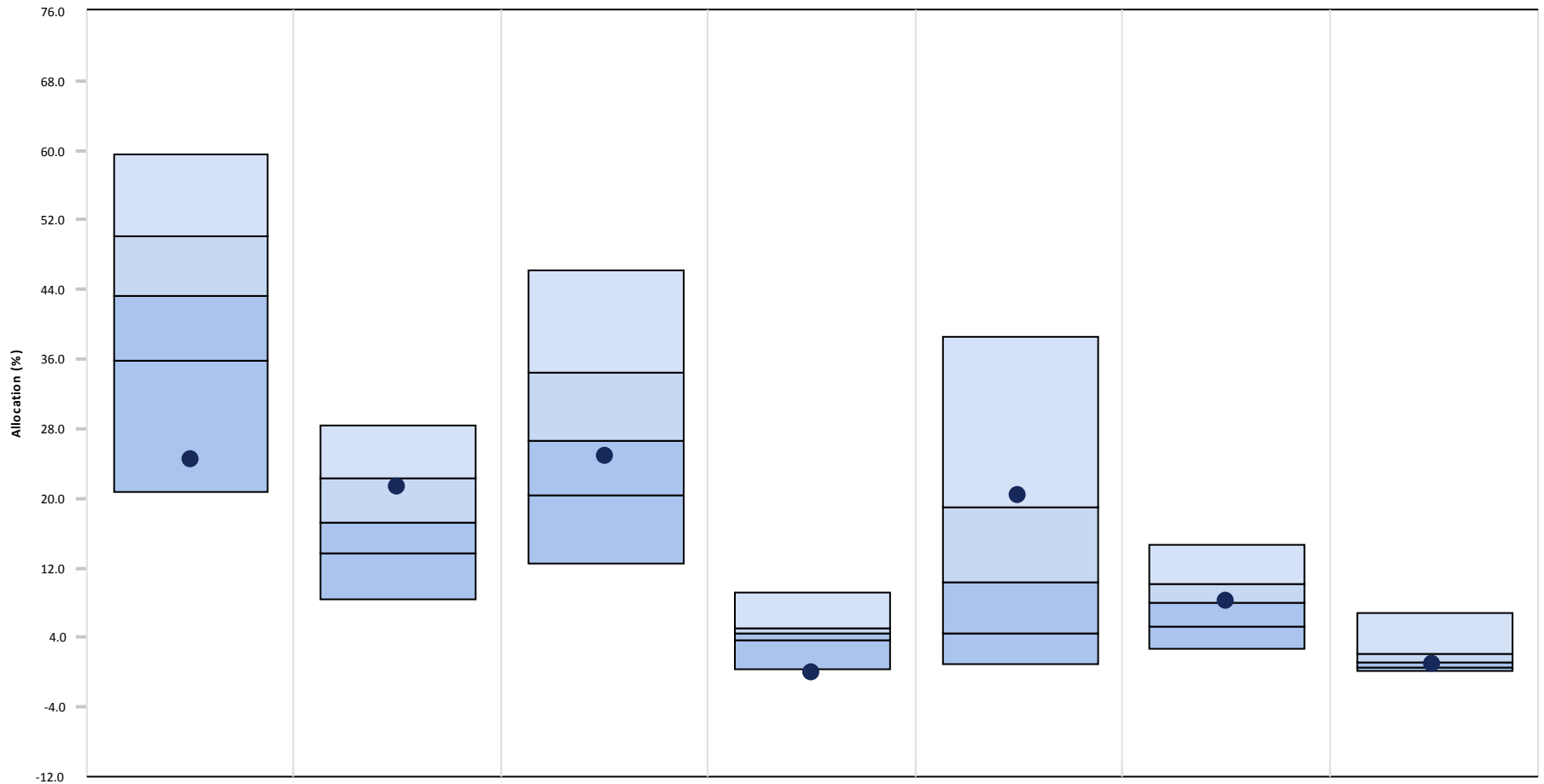
### March 31, 2018

	<u>Market Value</u> (\$)	<u>Allocation</u> (%)	<u>Target</u> (%)
Large Cap Equity	89,905,119	15.16	14.50
Defensive Equity	24,500,742	4.13	4.00
Small/Mid Cap Equity	24,640,900	4.15	3.50
International Equity	132,796,526	22.39	18.50
Private Equity	21,001,513	3.54	5.00
Fixed Income	126,230,981	21.28	21.00
Emerging Debt	26,471,212	4.46	5.00
Real Assets	86,622,037	14.60	17.50
Hedge Funds	14,219,590	2.40	5.00
Risk Parity	38,944,397	6.56	5.00
Cash	7,887,166	1.33	1.00
<b>Total Fund</b>	<b>593,220,182</b>	<b>100.00</b>	<b>100.00</b>

# City of Knoxville Employees' Pension Plan

Plan Sponsor TF Asset Allocation - All Public Plans

June 30, 2018



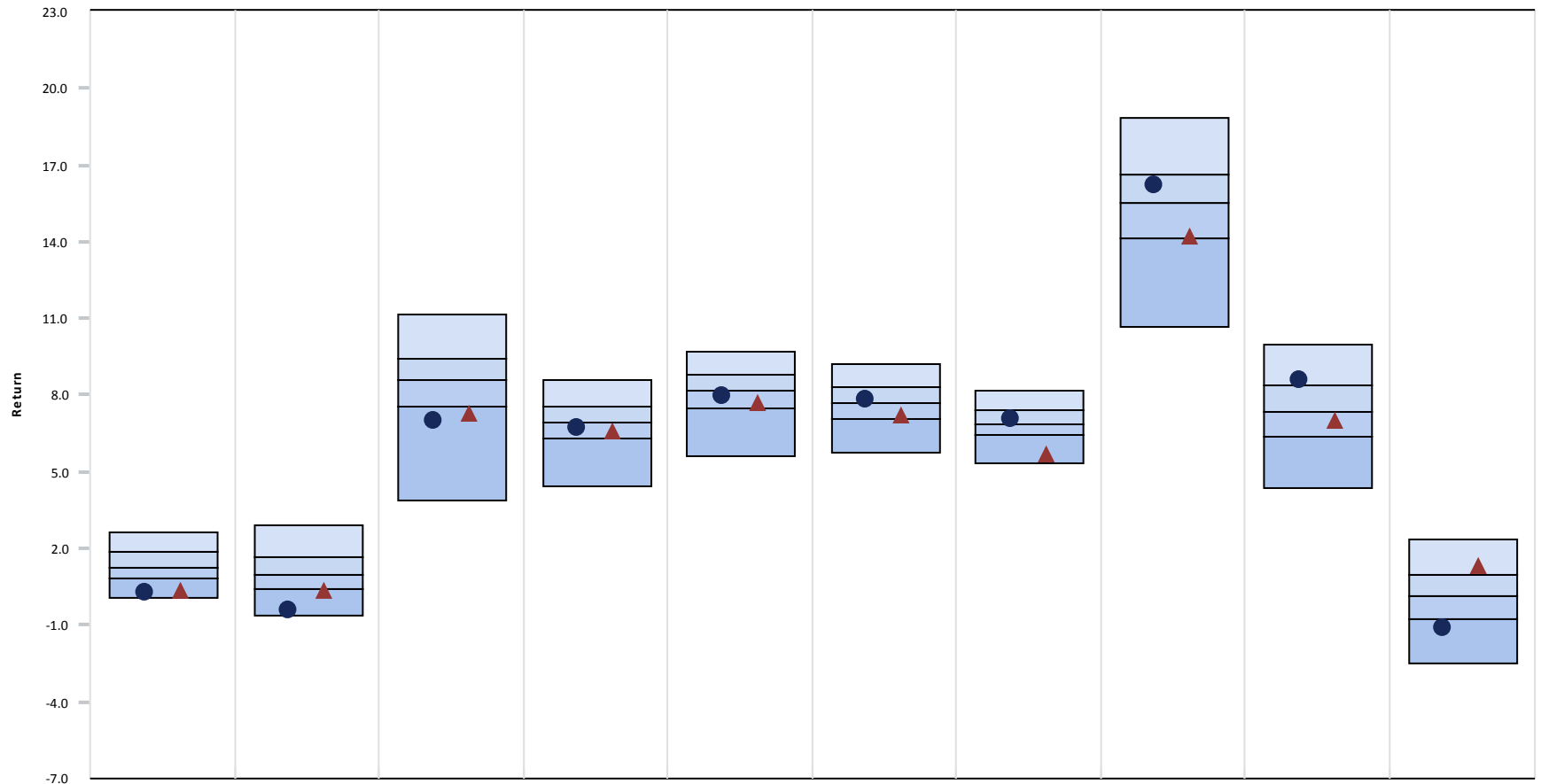
	<u>US Equity</u>	<u>Intl. Equity</u>	<u>US Fixed Income</u>	<u>Intl. Fixed Income</u>	<u>Alternative Inv.</u>	<u>Real Estate</u>	<u>Cash</u>
● Total Fund	24.55 (92)	21.26 (33)	24.90 (58)	0.00 (100)	20.30 (23)	8.13 (49)	0.86 (60)
5th Percentile	59.51	28.33	46.22	9.24	38.63	14.69	6.87
1st Quartile	50.19	22.28	34.52	5.00	18.92	10.17	2.13
<b>Median</b>	<b>43.24</b>	<b>17.24</b>	<b>26.70</b>	<b>4.52</b>	<b>10.30</b>	<b>8.02</b>	<b>1.11</b>
3rd Quartile	35.78	13.73	20.31	3.61	4.40	5.18	0.52
95th Percentile	20.71	8.36	12.44	0.31	0.94	2.63	0.07
Population	479	460	482	163	178	295	411

Parentheses contain percentile rankings.

# City of Knoxville Employees' Pension Plan

All Public Plans - Total Fund Peer Group Return

June 30, 2018



	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● Total Fund	0.26 (92)	-0.40 (93)	7.00 (84)	6.69 (60)	7.98 (59)	7.80 (46)	7.04 (44)	16.21 (37)	8.61 (21)	-1.13 (82)
▲ Total Fund Policy Index	0.35 (90)	0.34 (77)	7.25 (81)	6.55 (67)	7.66 (71)	7.19 (72)	5.66 (92)	14.20 (74)	6.99 (59)	1.28 (18)
5th Percentile	2.61	2.94	11.16	8.60	9.67	9.22	8.15	18.86	9.94	2.34
1st Quartile	1.84	1.68	9.44	7.53	8.79	8.31	7.38	16.64	8.41	0.96
<b>Median</b>	<b>1.26</b>	<b>0.99</b>	<b>8.56</b>	<b>6.93</b>	<b>8.18</b>	<b>7.70</b>	<b>6.87</b>	<b>15.49</b>	<b>7.34</b>	<b>0.15</b>
3rd Quartile	0.86	0.41	7.55	6.34	7.51	7.09	6.45	14.11	6.38	-0.79
95th Percentile	0.09	-0.62	3.85	4.46	5.61	5.74	5.32	10.64	4.36	-2.50
Population	459	459	456	405	386	369	335	641	643	584

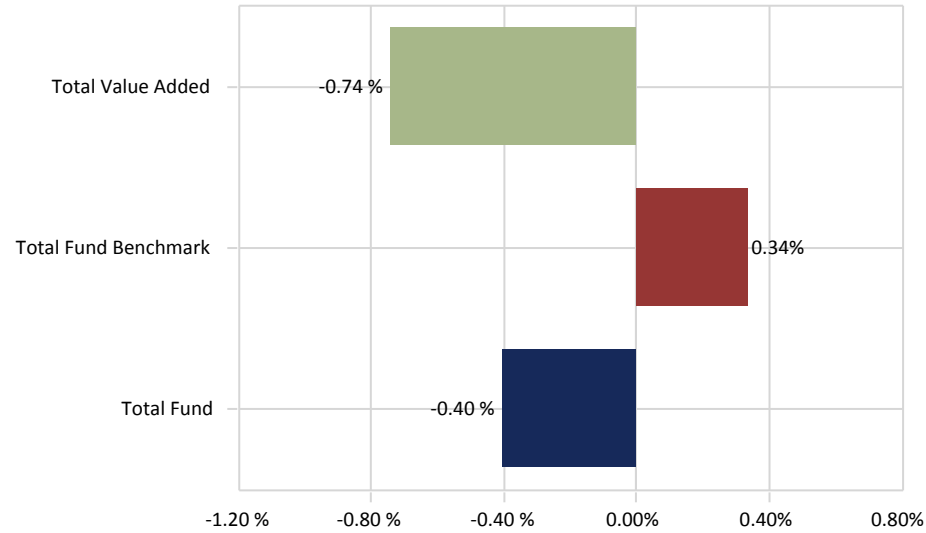


# City of Knoxville Employees' Pension Plan

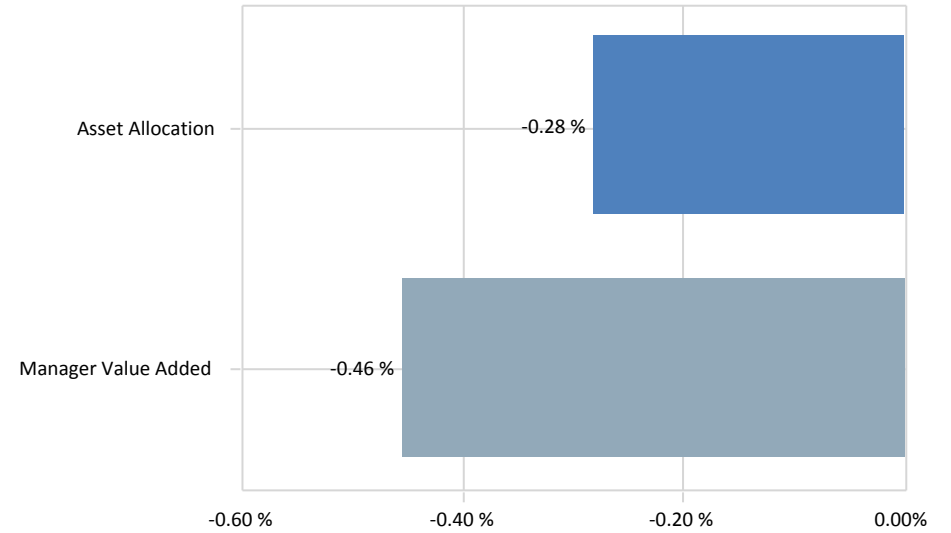
Total Fund Attribution

Year To Date Ending June 30, 2018

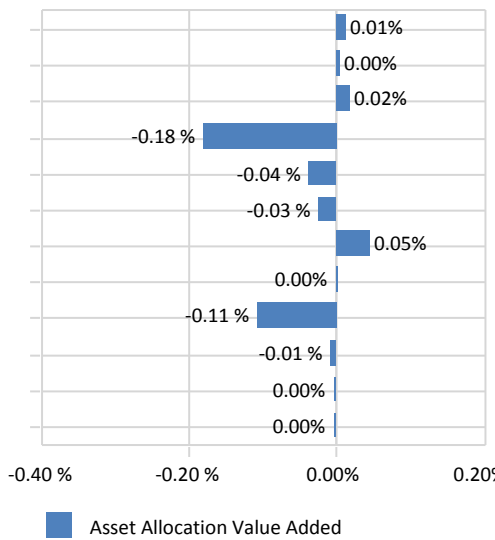
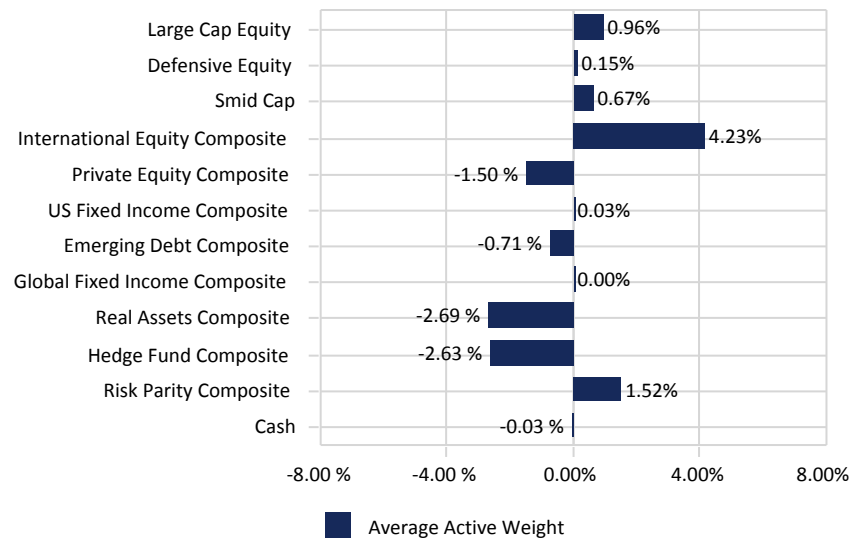
## Total Fund Performance



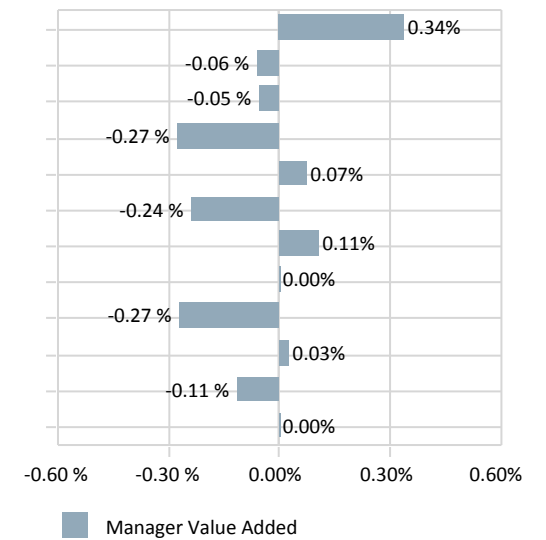
## Total Value Added:-0.74 %



## Total Asset Allocation:-0.28 %



## Total Manager Value Added:-0.46 %

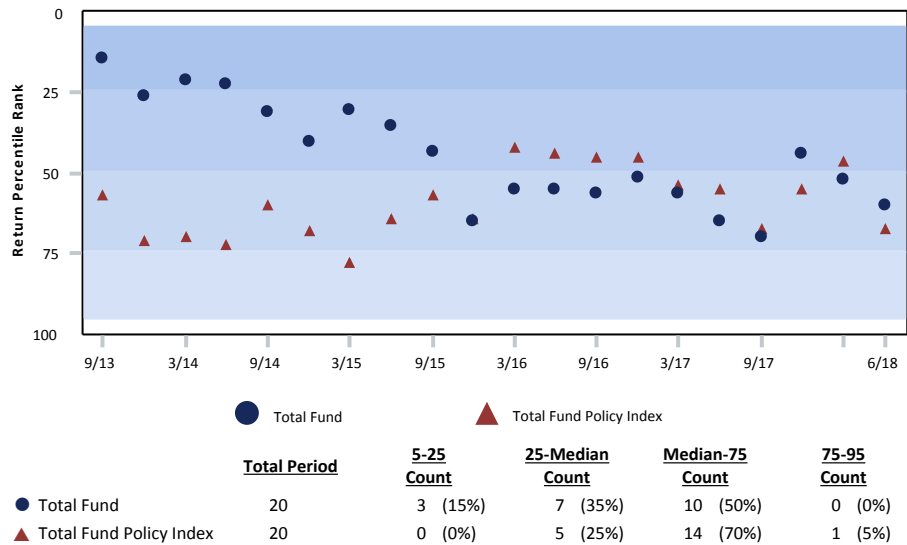


# City of Knoxville Employees' Pension Plan

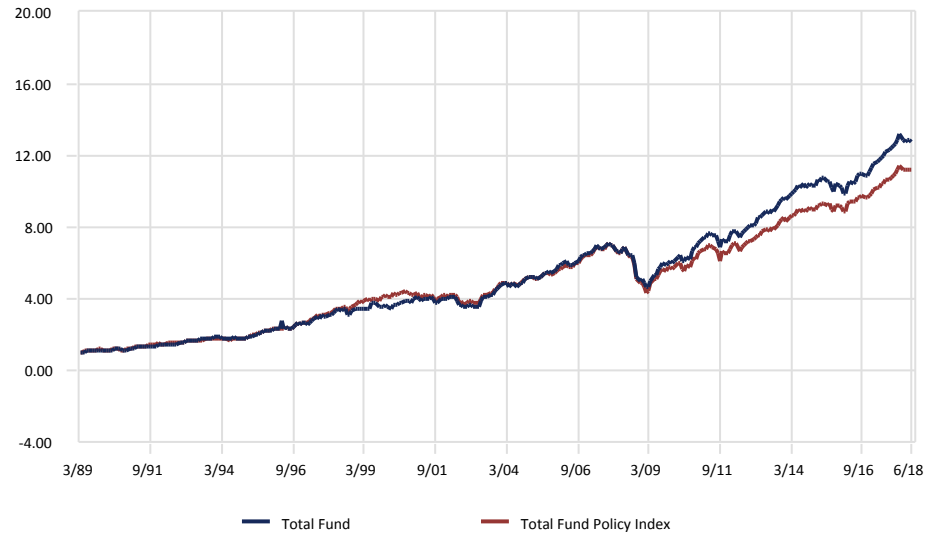
Total Fund

June 30, 2018

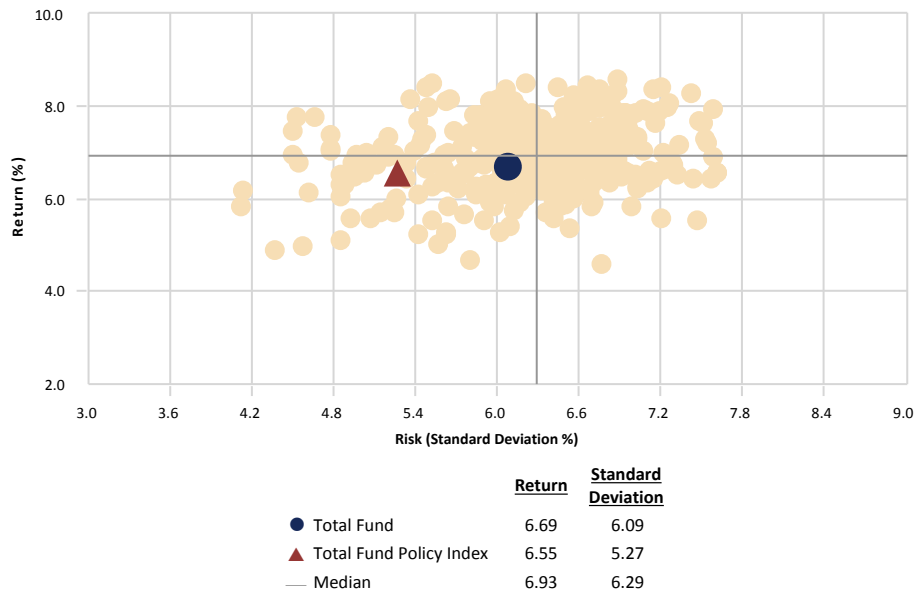
## 3 Year Rolling Return Rank



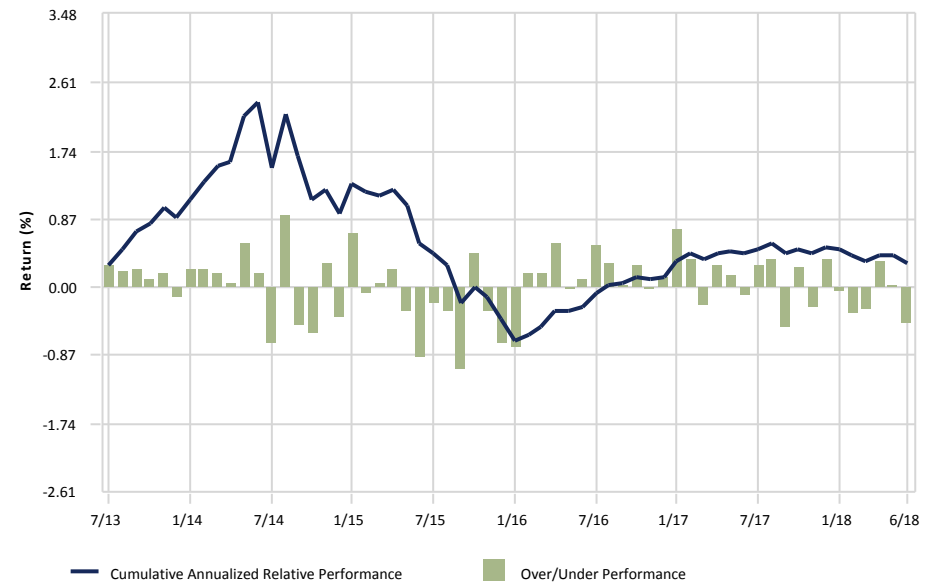
## Growth of \$1 - Since Inception (04/01/89)



## Risk vs. Return (07/01/15 - 06/30/18)



## Relative Performance vs. Total Fund Policy Index



## US Equity

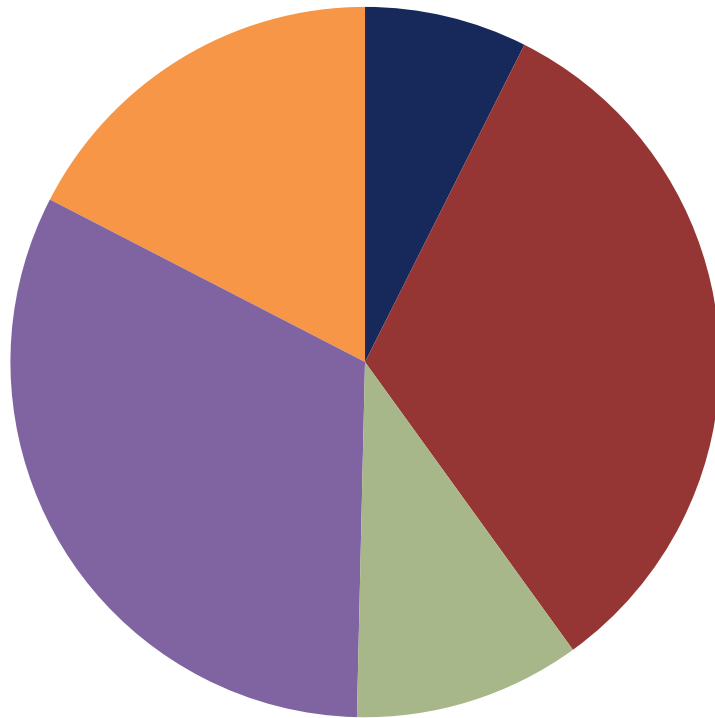
# City of Knoxville Employees' Pension Plan

US Equity vs. Russell 3000 Index

June 30, 2018

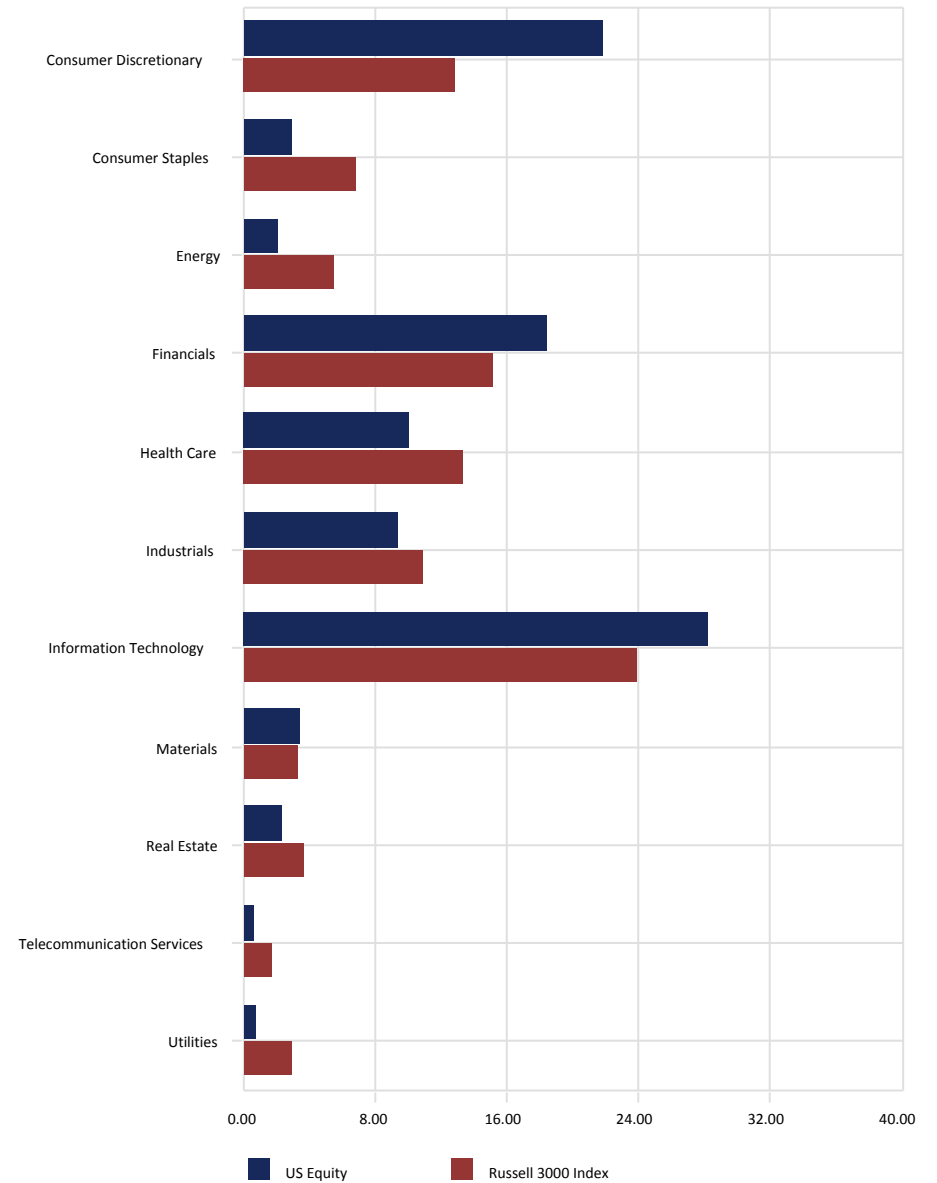
## Manager Allocation

June 30, 2018 : \$144,900,156



	Market Value (\$)	Allocation (%)
Pinnacle Associates	10,746,940	7.42
Eagle Capital Management	47,256,998	32.61
William Blair Small Cap Value	14,973,672	10.33
NT Russell 1000 Growth Index Fd	46,664,826	32.20
Parametric	25,257,721	17.43

## Sector Allocation - Holdings Based

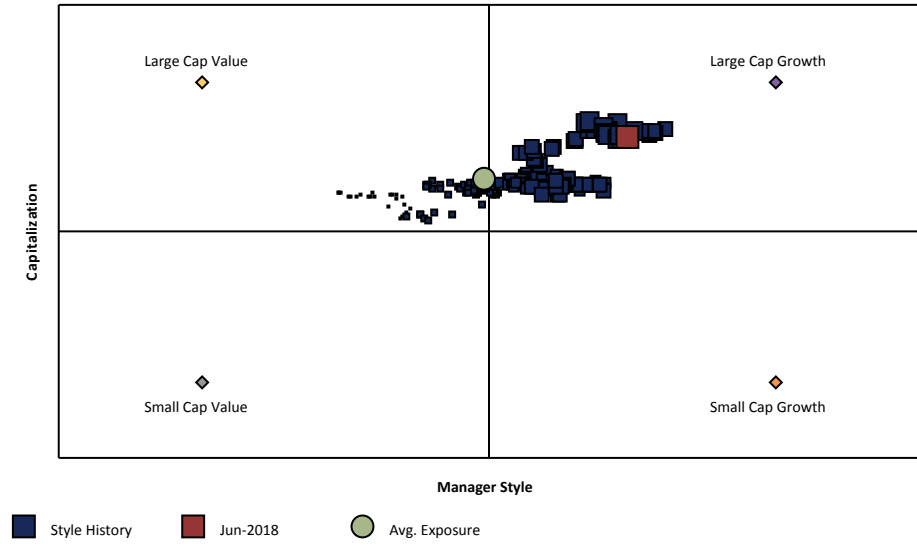


# City of Knoxville Employees' Pension Plan

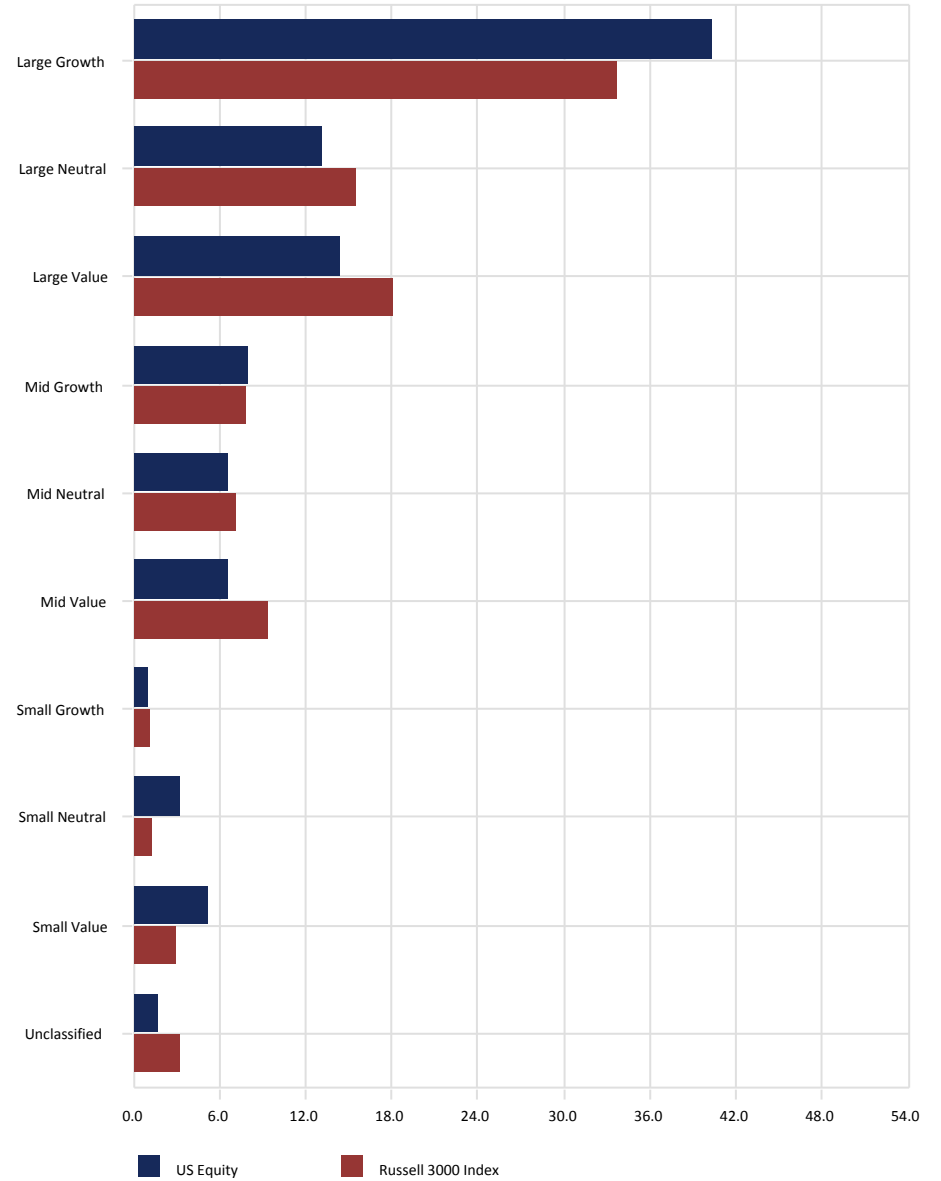
US Equity vs. Russell 3000 Index

June 30, 2018

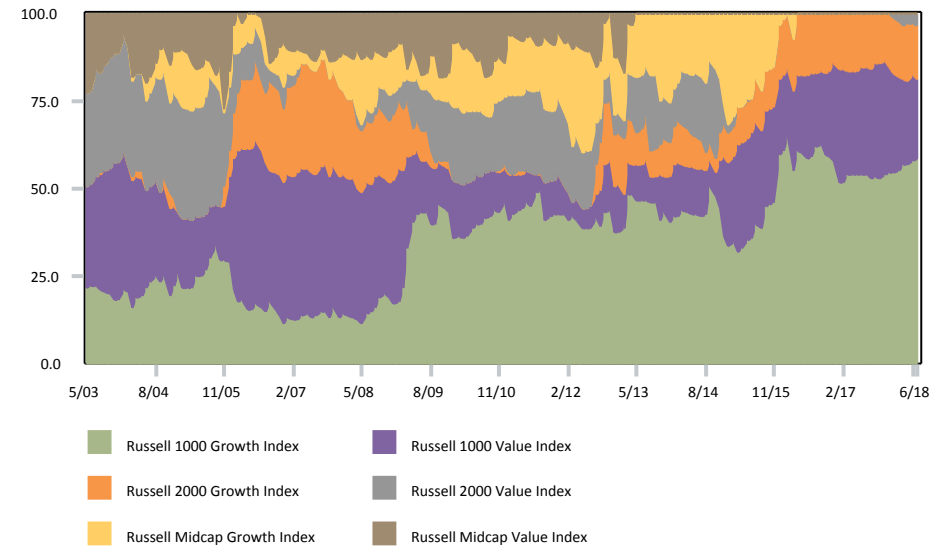
## Style Analysis - Returns Based



## Style Analysis - Holdings Based



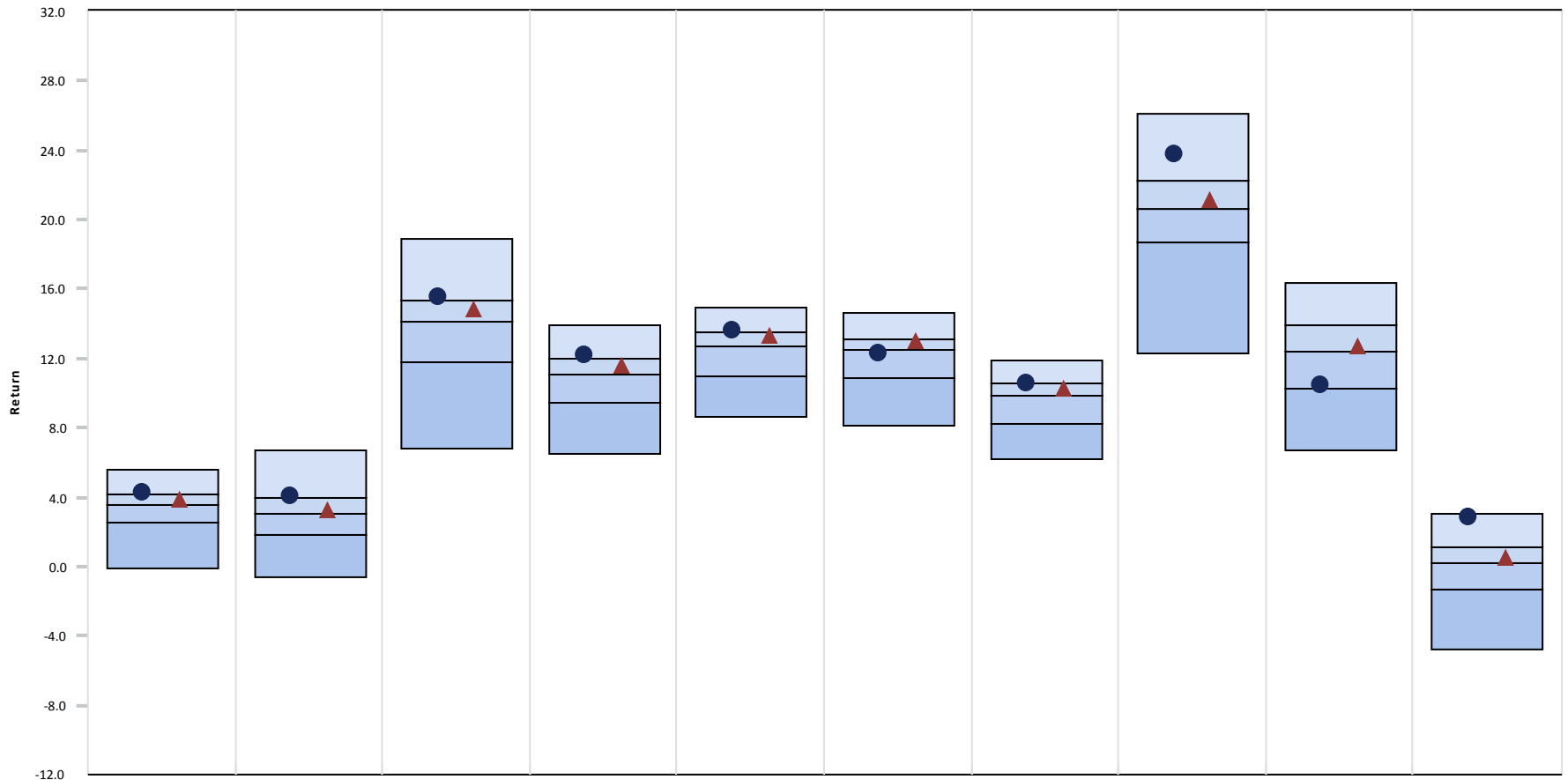
## 3 Year Style Analysis



# City of Knoxville Employees' Pension Plan

All Master Trust - US Equity Segment Peer Group Return

June 30, 2018



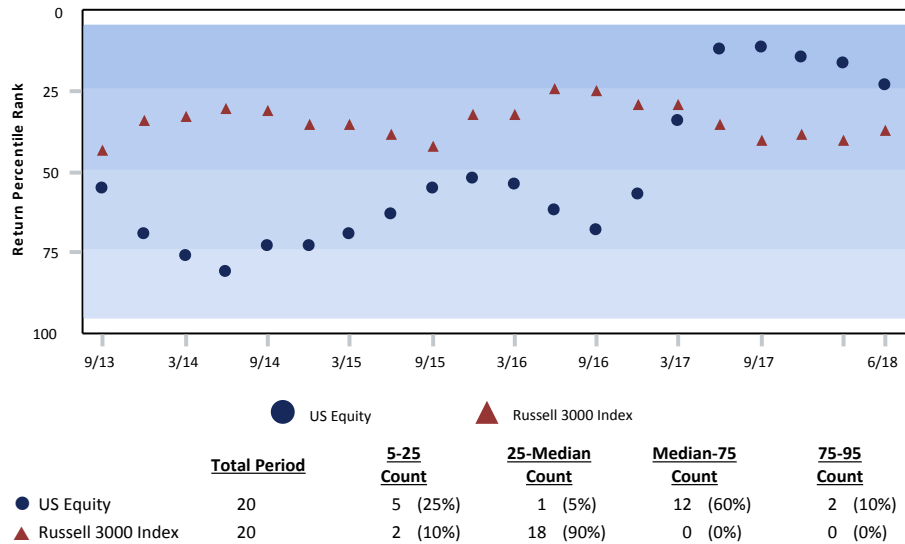
	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● US Equity	4.23 (23)	4.07 (23)	15.56 (23)	12.15 (23)	13.60 (22)	12.32 (55)	10.51 (26)	23.78 (15)	10.45 (74)	2.88 (6)
▲ Russell 3000 Index	3.89 (36)	3.22 (46)	14.78 (37)	11.58 (37)	13.29 (34)	13.01 (29)	10.23 (37)	21.13 (42)	12.74 (44)	0.48 (41)
5th Percentile	5.63	6.70	18.85	13.90	14.93	14.60	11.87	26.14	16.38	3.03
1st Quartile	4.12	3.91	15.35	11.96	13.48	13.14	10.51	22.25	13.93	1.07
<b>Median</b>	<b>3.51</b>	<b>3.01</b>	<b>14.10</b>	<b>11.10</b>	<b>12.71</b>	<b>12.48</b>	<b>9.89</b>	<b>20.63</b>	<b>12.43</b>	<b>0.23</b>
3rd Quartile	2.55	1.87	11.81	9.42	10.98	10.89	8.20	18.71	10.25	-1.31
95th Percentile	-0.14	-0.63	6.84	6.51	8.59	8.10	6.16	12.30	6.70	-4.77
Population	293	288	280	268	237	209	122	360	393	337

# City of Knoxville Employees' Pension Plan

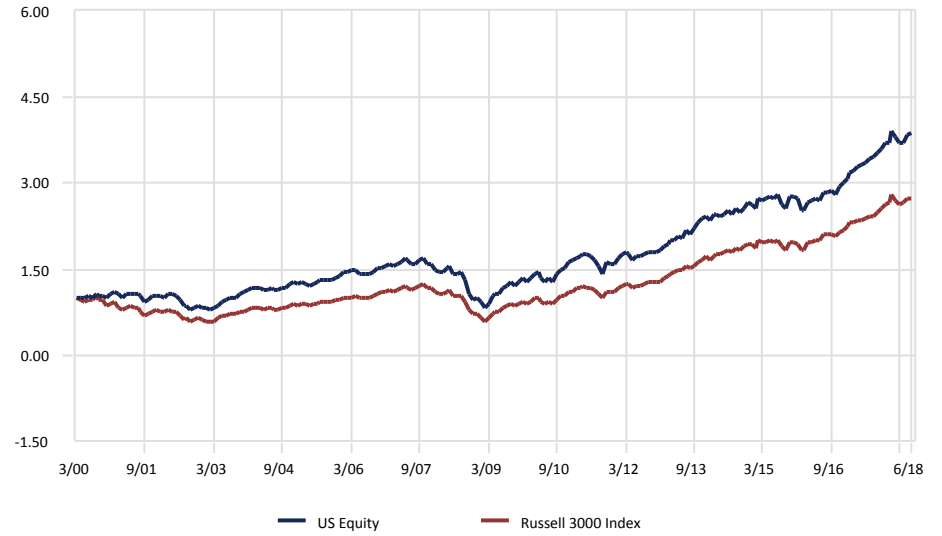
US Equity

June 30, 2018

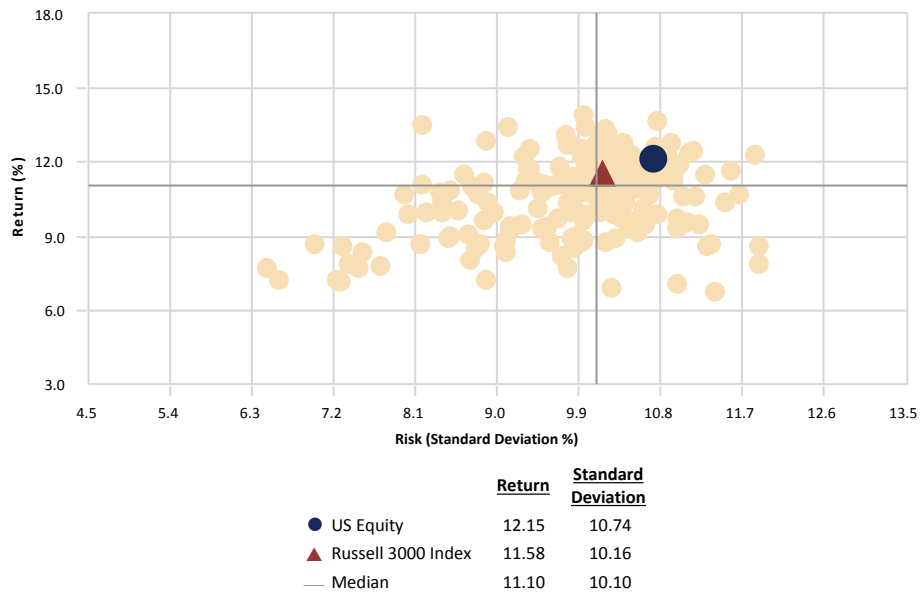
## 3 Year Rolling Return Rank



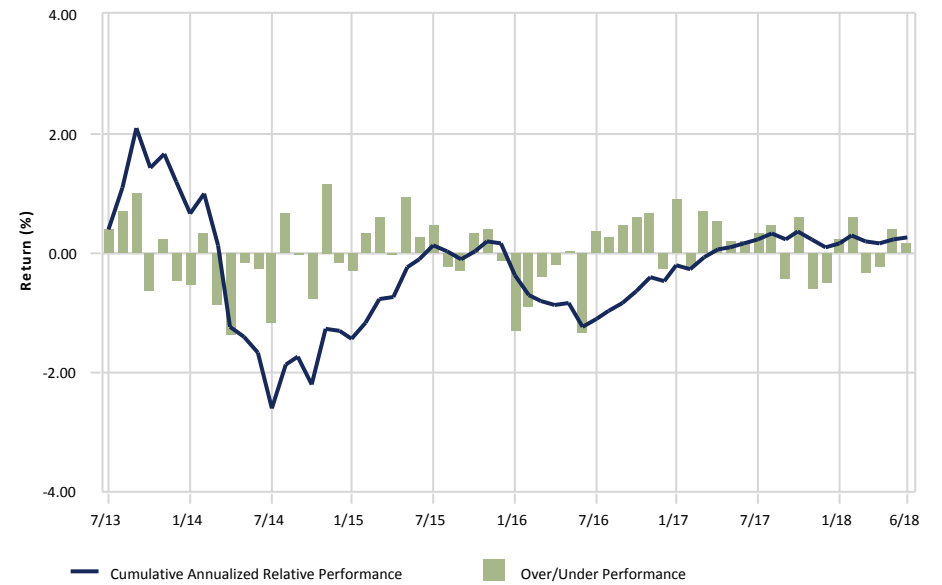
## Growth of \$1 - Since Inception (04/01/00)



## Risk vs. Return (07/01/15 - 06/30/18)



## Relative Performance vs. Russell 3000 Index

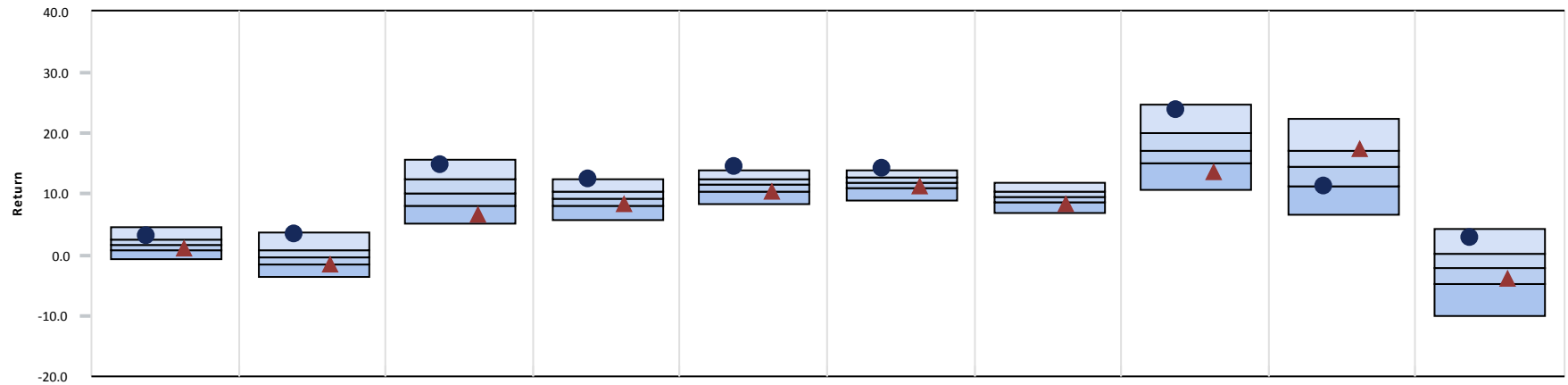


# City of Knoxville Employees' Pension Plan

Eagle Capital Management

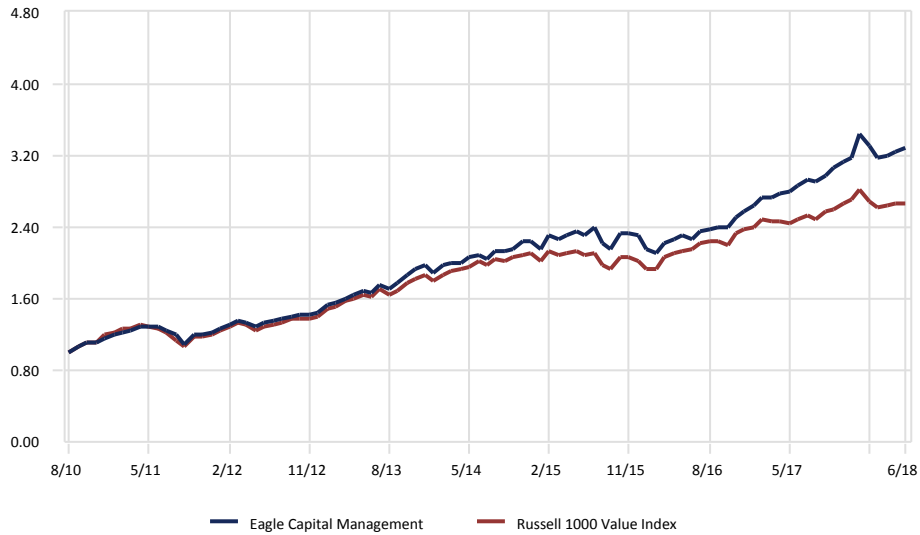
June 30, 2018

## Peer Group Analysis - IM U.S. Large Cap Value Equity (SA+CF)

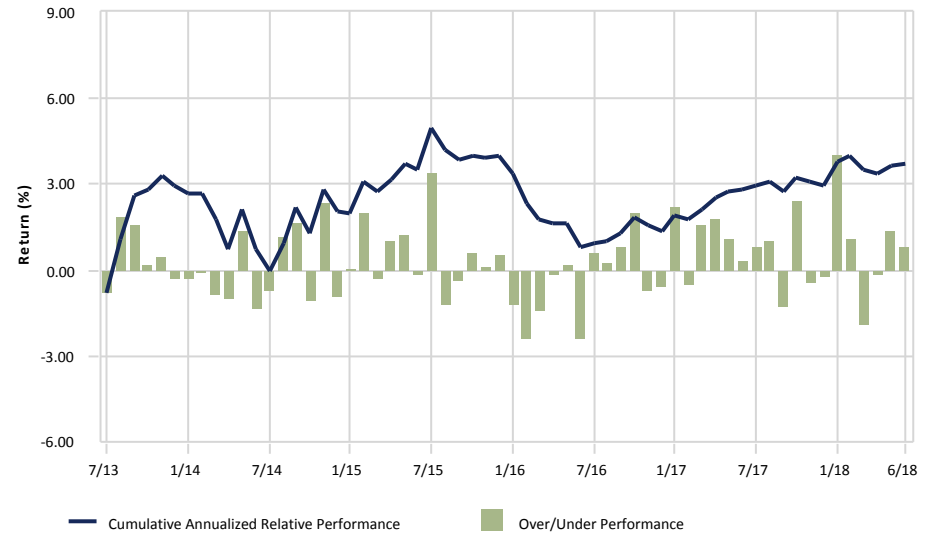


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● Eagle Capital Management	3.24 (17)	3.45 (6)	14.82 (9)	12.47 (7)	14.45 (2)	14.36 (3)	-	23.79 (8)	11.40 (74)	2.92 (8)
▲ Russell 1000 Value Index	1.18 (65)	-1.69 (76)	6.77 (87)	8.26 (72)	10.34 (75)	11.27 (68)	8.49 (79)	13.66 (89)	17.34 (25)	-3.83 (69)
<b>Median</b>	<b>1.69</b>	<b>-0.47</b>	<b>10.29</b>	<b>9.33</b>	<b>11.50</b>	<b>11.98</b>	<b>9.57</b>	<b>17.22</b>	<b>14.51</b>	<b>-2.25</b>

## Growth of \$1 - Since Inception (09/01/10)



## Relative Performance vs. Russell 1000 Value Index



gross of fees



# City of Knoxville Employees' Pension Plan

## Eagle Capital Management vs. Russell 1000 Value Index

June 30, 2018

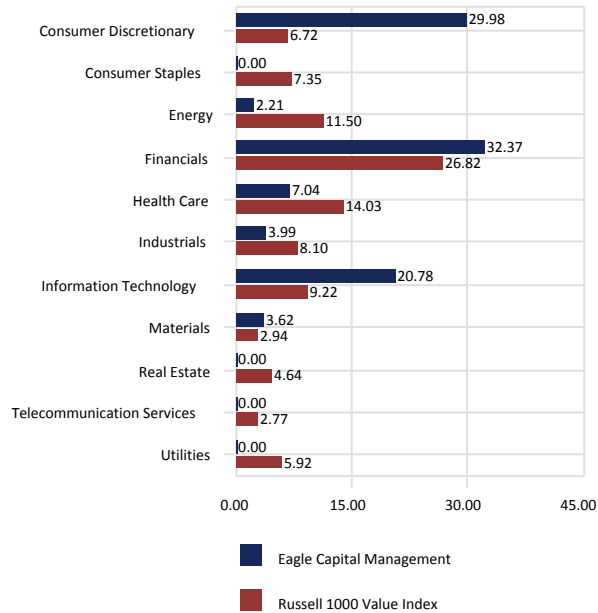
### Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Liberty TripAdvisor Holdings Inc	0.35	0.00	0.35	49.77
TripAdvisor Inc	2.42	0.00	2.42	36.24
Twenty-First Century Fox Inc	5.14	0.18	4.96	35.47
Anadarko Petroleum Corp	1.00	0.19	0.81	21.68
Amazon.com Inc	5.78	0.00	5.78	17.44
Noble Energy Inc	1.34	0.13	1.21	16.83
Unitedhealth Group Inc	4.00	0.00	4.00	15.05
General Motors Co	3.33	0.40	2.93	9.36
Alphabet Inc Class A	1.01	0.00	1.01	8.87
Microsoft Corp	7.51	0.30	7.21	8.51
% of Portfolio	31.88	1.20	30.68	

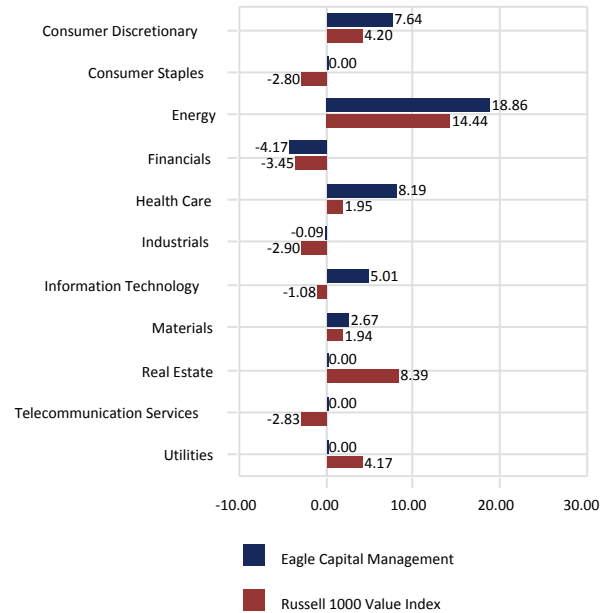
### Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Barclays PLC	1.67	0.00	1.67	-15.14
Liberty Global Plc	3.95	0.00	3.95	-12.55
Goldman Sachs Group Inc (The)	2.54	0.60	1.94	-12.12
Morgan Stanley	0.96	0.45	0.51	-11.73
Liberty Broadband Corp	2.61	0.06	2.55	-11.64
DISH Network Corp	2.56	0.06	2.50	-11.30
Mohawk Industries Inc.	1.04	0.10	0.94	-7.73
Marriott International Inc.	2.78	0.00	2.78	-6.62
Berkshire Hathaway Inc	6.46	2.43	4.03	-6.43
Charter Communications Inc	0.58	0.12	0.46	-5.79
% of Portfolio	25.15	3.82	21.33	

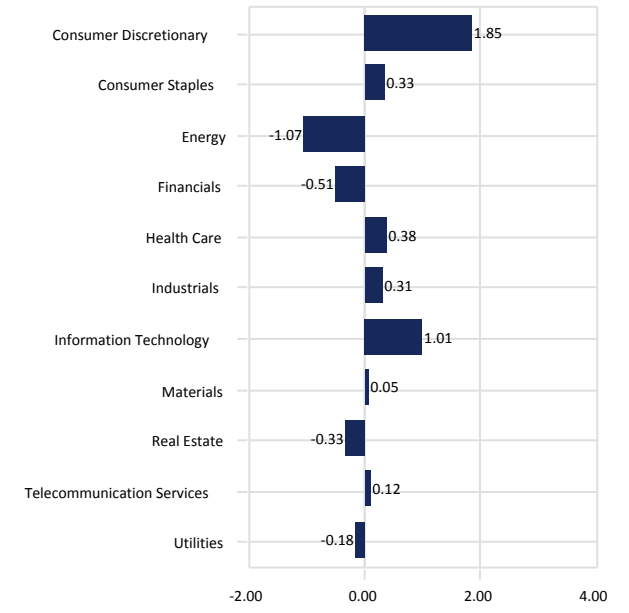
### Sector Allocation



### Sector Performance



### Total Sector Attribution



# City of Knoxville Employees' Pension Plan

Eagle Capital Management vs. Russell 1000 Value Index

June 30, 2018

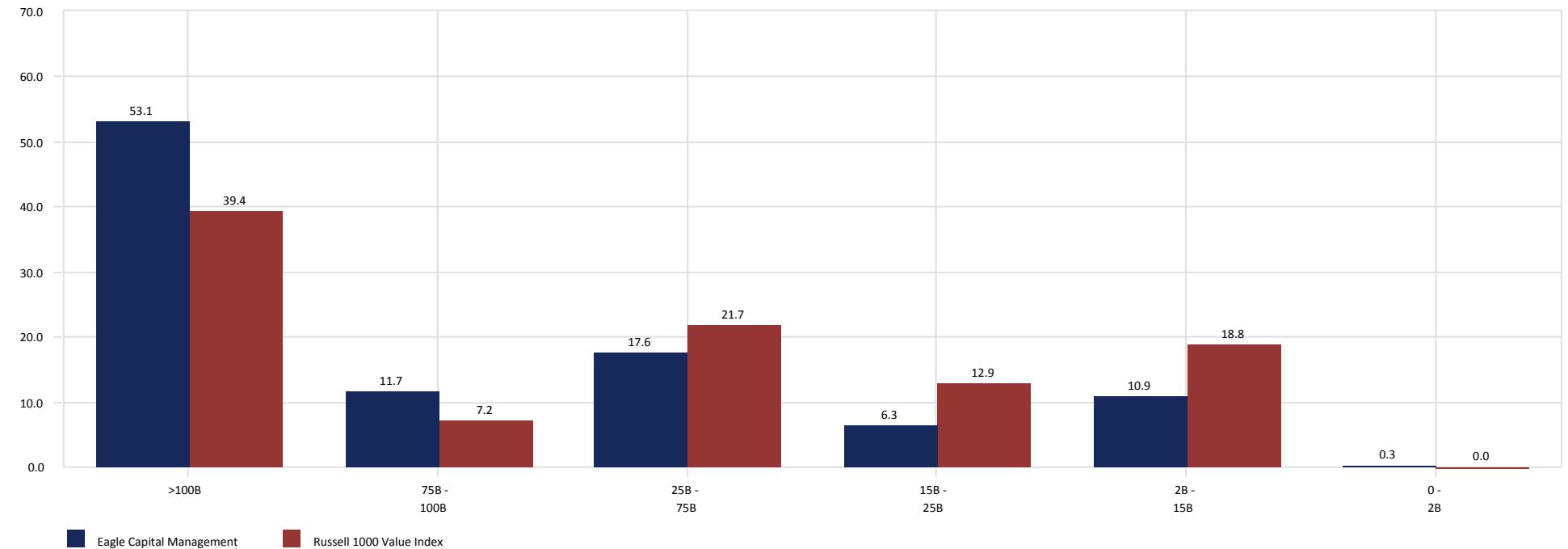
## Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	267,634,379	117,081,350
Median Mkt. Cap (\$000)	71,439,243	9,900,412
Price/Earnings ratio	18.74	16.10
Price/Book ratio	2.77	2.15
5 Yr. EPS Growth Rate (%)	10.77	8.54
Current Yield (%)	1.15	2.53
Beta (5 Years, Monthly)	1.00	1.00
Number of Stocks	34	729

## Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Microsoft Corp	7.51	0.30	7.21	8.51
Alphabet Inc	6.59	0.00	6.59	8.13
Berkshire Hathaway Inc	6.46	2.43	4.03	-6.43
Amazon.com Inc	5.78	0.00	5.78	17.44
Twenty-First Century Fox Inc	5.14	0.18	4.96	35.47
Citigroup Inc	5.04	1.31	3.73	-0.39
Oracle Corp	4.73	0.88	3.85	-3.30
Comcast Corp	4.20	1.15	3.05	-3.43
Wells Fargo & Co	4.11	1.87	2.24	6.58
Unitedhealth Group Inc	4.00	0.00	4.00	15.05
% of Portfolio	53.56	8.12	45.44	

## Distribution of Market Capitalization (%)

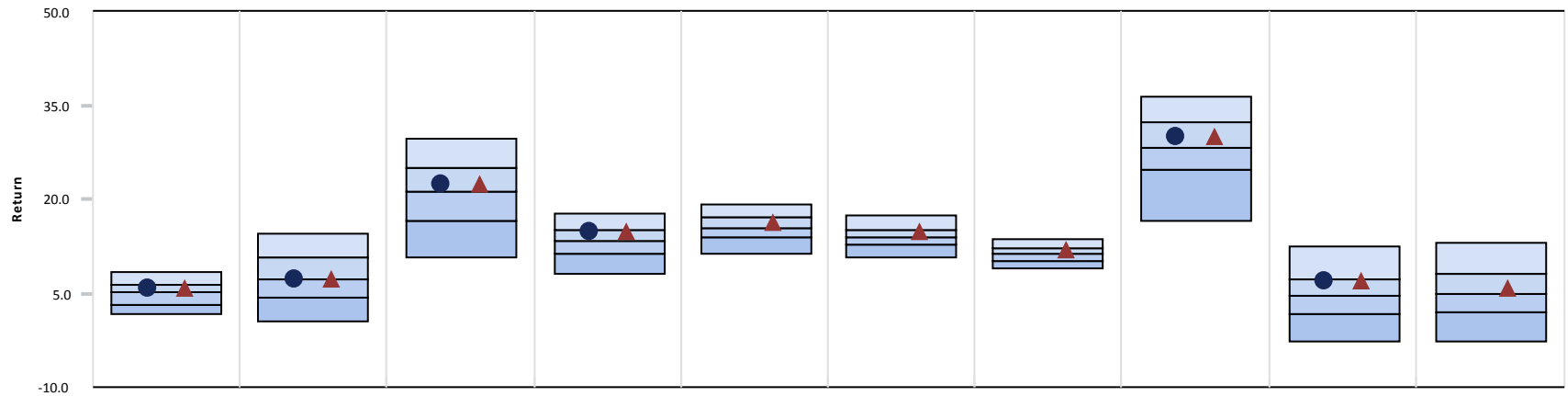


# City of Knoxville Employees' Pension Plan

NT Russell 1000 Growth Index Fd

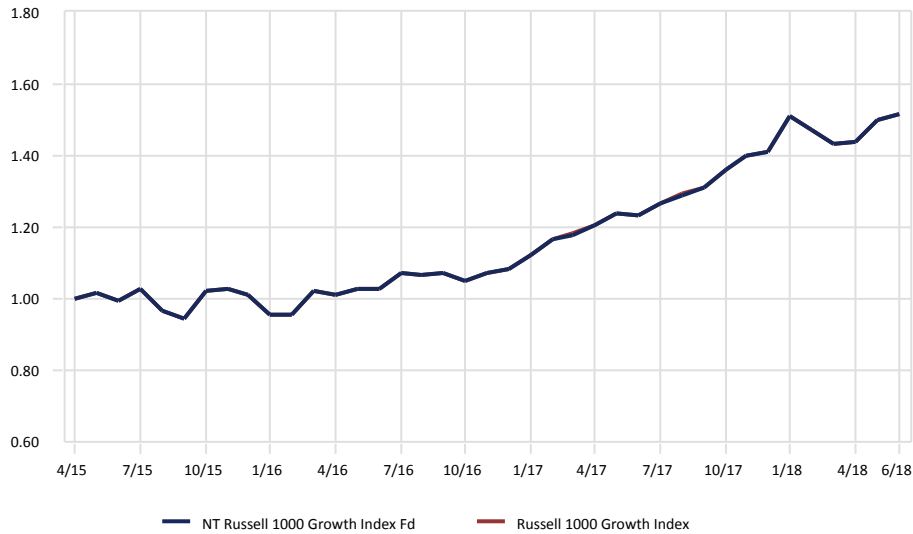
June 30, 2018

## Peer Group Analysis - IM U.S. Large Cap Growth Equity (SA+CF)

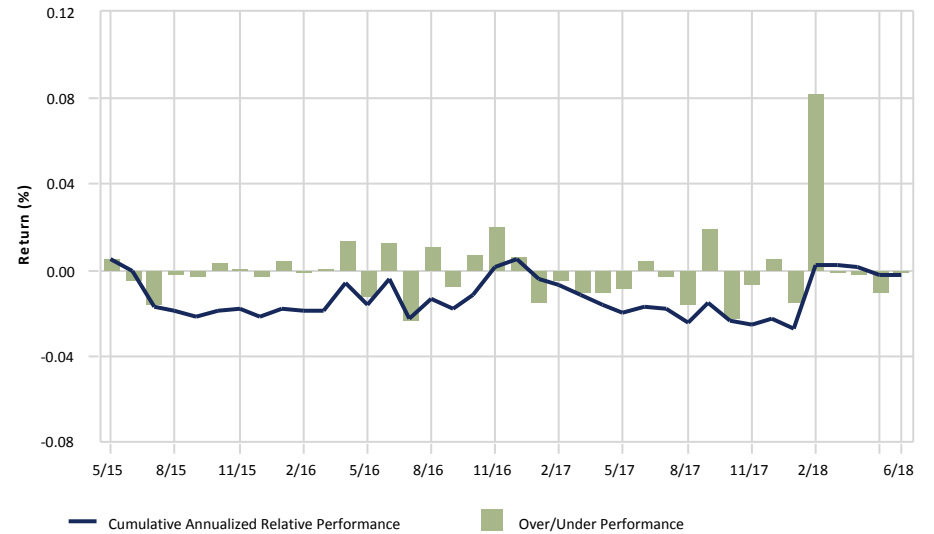


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● NT Russell 1000 Growth Index Fd	5.74 (42)	7.31 (51)	22.55 (42)	14.97 (27)	-	-	-	30.12 (39)	7.11 (27)	-
▲ Russell 1000 Growth Index	5.76 (41)	7.25 (51)	22.51 (42)	14.98 (27)	16.36 (40)	14.88 (32)	11.83 (36)	30.21 (38)	7.08 (27)	5.67 (46)
<b>Median</b>	<b>5.22</b>	<b>7.36</b>	<b>21.27</b>	<b>13.42</b>	<b>15.61</b>	<b>14.07</b>	<b>11.35</b>	<b>28.26</b>	<b>4.66</b>	<b>5.07</b>

## Growth of \$1 - Since Inception (05/01/15)



## Relative Performance vs. Russell 1000 Growth Index



gross of fees

# City of Knoxville Employees' Pension Plan

NT Russell 1000 Growth Index Fd vs. Russell 1000 Growth Index

June 30, 2018

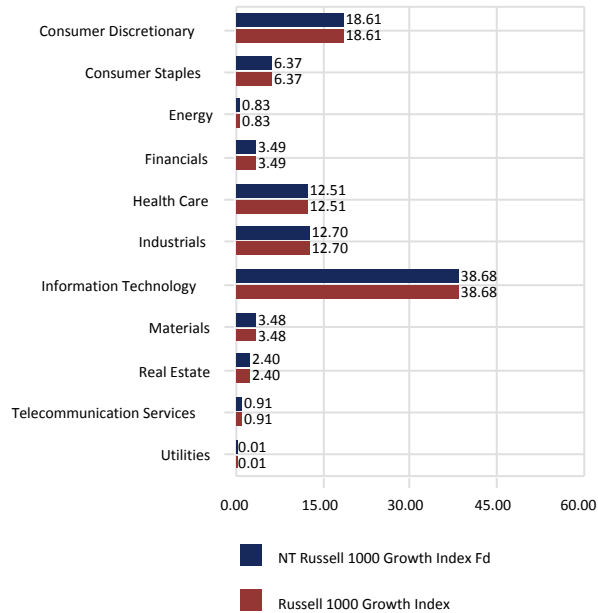
## Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Sarepta Therapeutics Inc	0.06	0.06	0.00	78.41
Wayfair Inc	0.05	0.05	0.00	75.86
Twitter Inc	0.24	0.24	0.00	50.53
Advanced Micro Devices Inc	0.11	0.11	0.00	49.15
EXACT Sciences Corp	0.06	0.06	0.00	48.25
Under Armour Inc	0.02	0.02	0.00	46.90
Twilio Inc	0.03	0.03	0.00	46.73
ABIOMED Inc	0.13	0.13	0.00	40.57
lululemon athletica inc	0.10	0.10	0.00	40.09
Under Armour Inc	0.02	0.02	0.00	37.49
% of Portfolio	0.82	0.82	0.00	

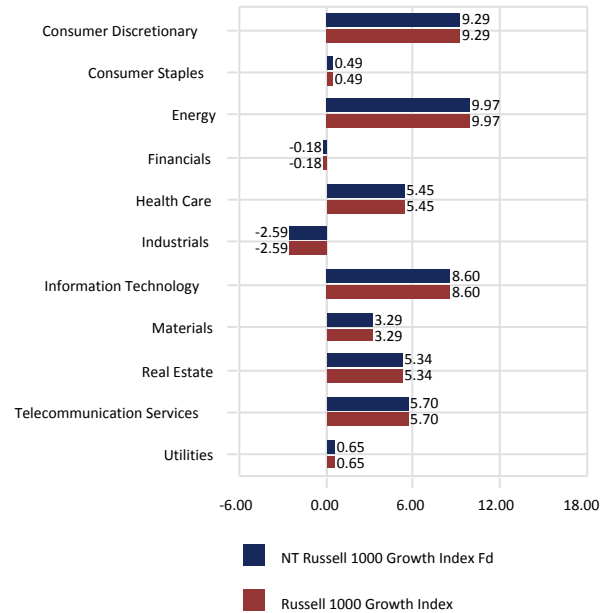
## Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Nektar Therapeutics	0.06	0.06	0.00	-54.05
Alkermes Plc	0.05	0.05	0.00	-28.99
Switch Inc	0.00	0.00	0.00	-23.34
Skechers U.S.A. Inc	0.01	0.01	0.00	-22.83
TESARO Inc	0.01	0.01	0.00	-22.17
Incyte Corp	0.09	0.09	0.00	-19.60
Hilton Grand Vacations Inc	0.03	0.03	0.00	-19.34
Virtu Financial Inc	0.01	0.01	0.00	-18.92
RPC Inc.	0.00	0.00	0.00	-18.76
Cummins Inc.	0.06	0.06	0.00	-17.34
% of Portfolio	0.32	0.32	0.00	

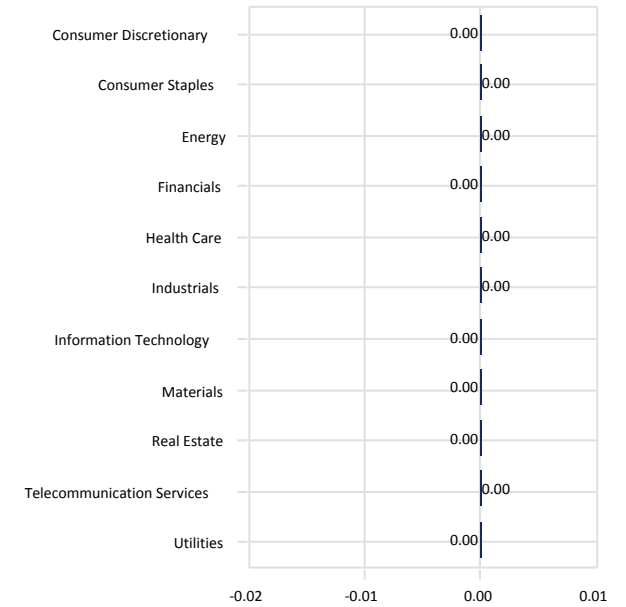
## Sector Allocation



## Sector Performance



## Total Sector Attribution



# City of Knoxville Employees' Pension Plan

NT Russell 1000 Growth Index Fd vs. Russell 1000 Growth Index

June 30, 2018

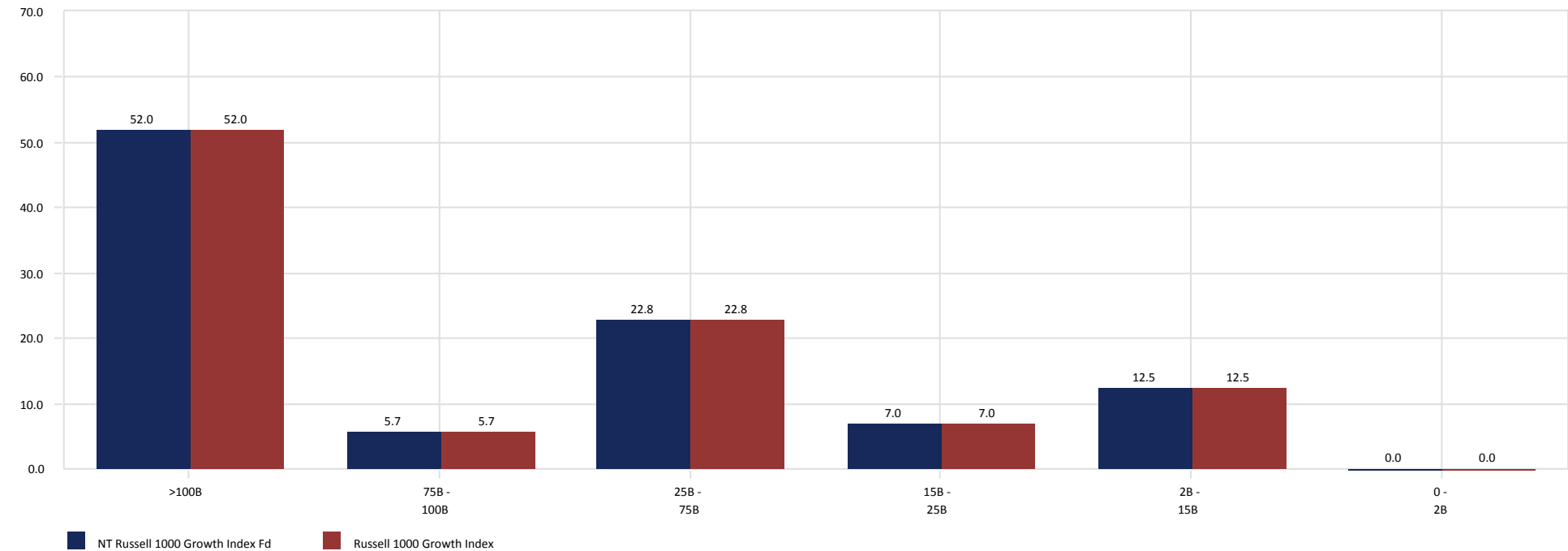
## Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	267,911,294	267,911,294
Median Mkt. Cap (\$000)	12,043,105	12,043,105
Price/Earnings ratio	28.75	28.75
Price/Book ratio	7.16	7.16
5 Yr. EPS Growth Rate (%)	21.26	21.26
Current Yield (%)	1.25	1.25
Beta (3 Years, Monthly)	1.00	1.00
Number of Stocks	542	542

## Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	7.12	7.12	0.00	10.76
Microsoft Corp	5.53	5.53	0.00	8.51
Amazon.com Inc	5.40	5.40	0.00	17.44
Facebook Inc	3.61	3.61	0.00	21.61
Alphabet Inc	2.65	2.65	0.00	8.13
Alphabet Inc Class A	2.64	2.64	0.00	8.87
Visa Inc	1.85	1.85	0.00	10.90
Unitedhealth Group Inc	1.83	1.83	0.00	15.05
Home Depot Inc. (The)	1.76	1.76	0.00	10.06
Boeing Co	1.44	1.44	0.00	2.84
% of Portfolio	33.83	33.83	0.00	

## Distribution of Market Capitalization (%)

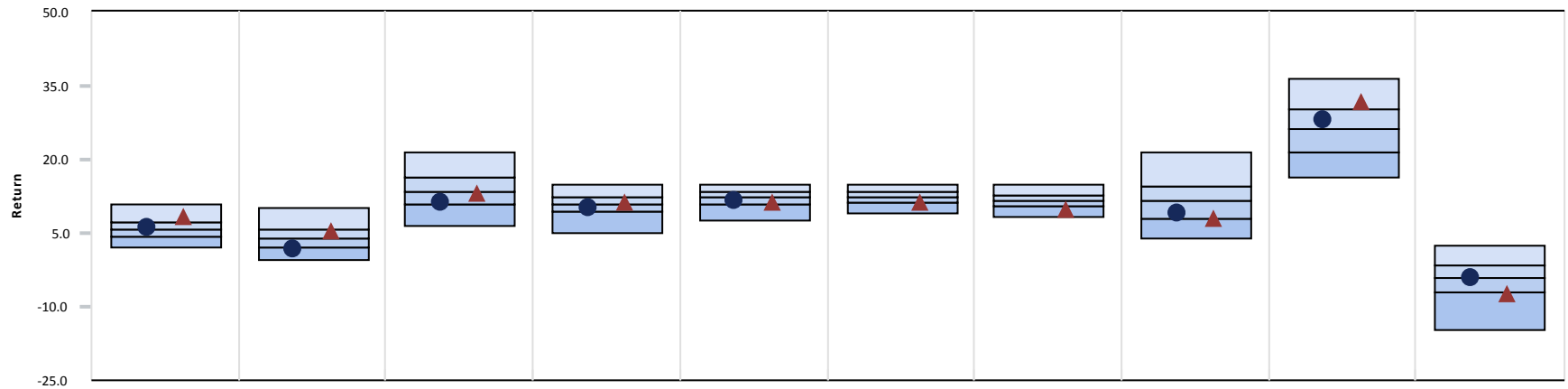


# City of Knoxville Employees' Pension Plan

William Blair Small Cap Value

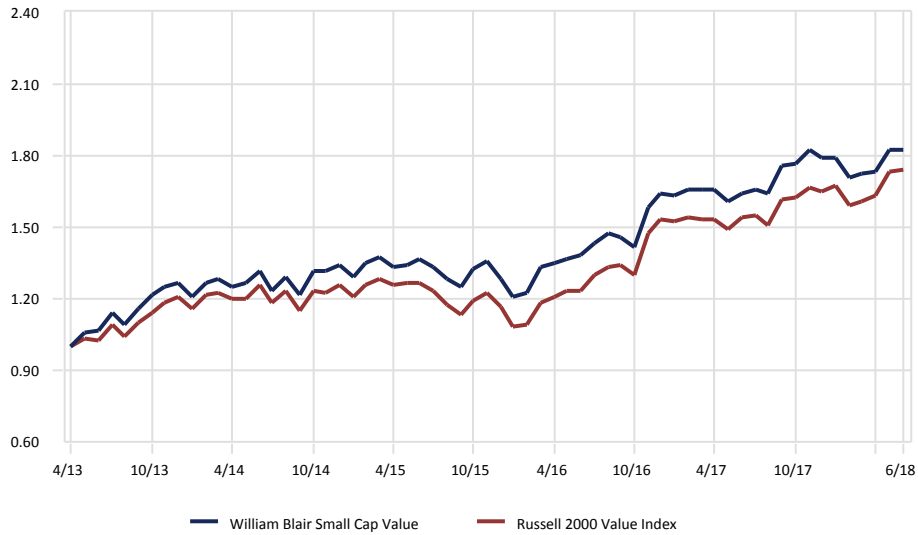
June 30, 2018

## Peer Group Analysis - IM U.S. Small Cap Value Equity (SA+CF)

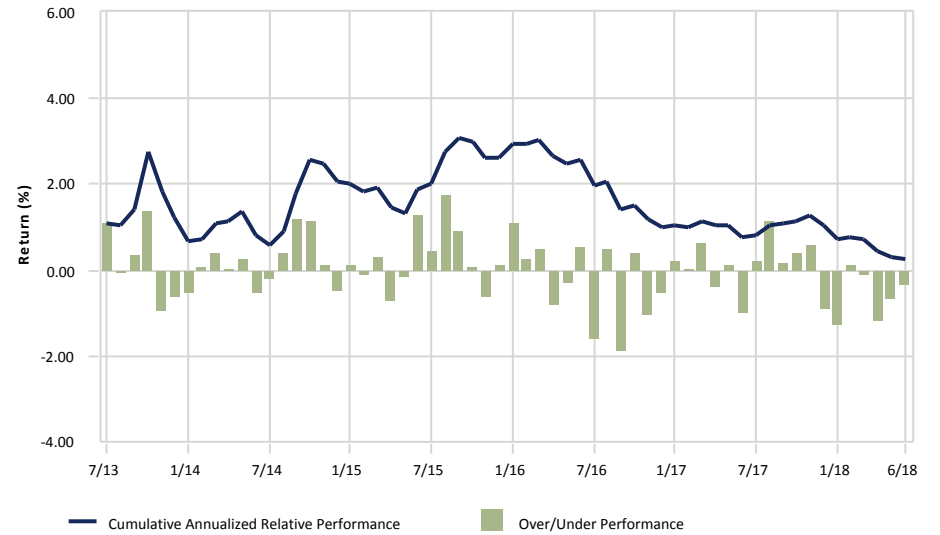


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● William Blair Small Cap Value	5.95 (43)	1.85 (78)	11.04 (74)	10.27 (58)	11.45 (65)	-	-	9.18 (67)	27.87 (39)	-4.29 (50)
▲ Russell 2000 Value Index	8.30 (16)	5.44 (30)	13.10 (52)	11.22 (44)	11.18 (70)	11.10 (75)	9.88 (84)	7.84 (75)	31.74 (17)	-7.47 (78)
<b>Median</b>	<b>5.62</b>	<b>3.99</b>	<b>13.30</b>	<b>10.67</b>	<b>12.21</b>	<b>12.18</b>	<b>11.60</b>	<b>11.59</b>	<b>26.17</b>	<b>-4.29</b>

## Growth of \$1 - Since Inception (05/01/13)



## Relative Performance vs. Russell 2000 Value Index



gross of fees

# City of Knoxville Employees' Pension Plan

William Blair Small Cap Value vs. Russell 2000 Value Index

June 30, 2018

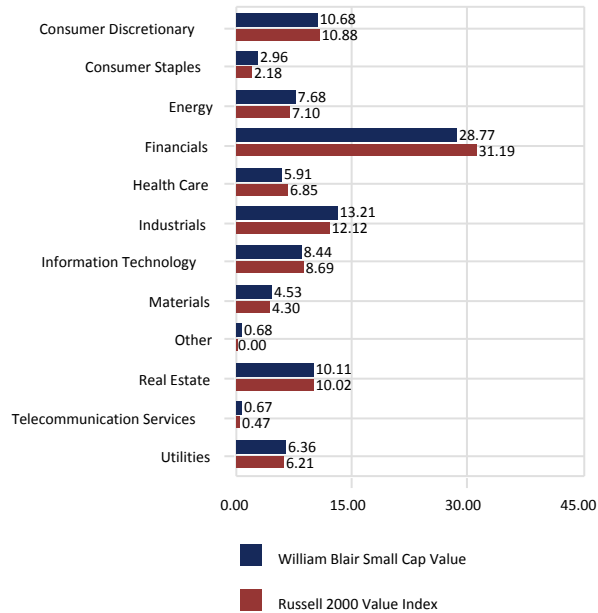
## Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
SpartanNash Co	0.76	0.08	0.68	49.32
NutriSystem Inc	0.89	0.00	0.89	43.99
Archrock Inc	0.99	0.14	0.85	38.66
Matson Inc	0.80	0.08	0.72	34.83
Newpark Resources Inc.	0.81	0.09	0.72	33.95
Axiom Corp	1.13	0.11	1.02	31.88
MRC Global Inc	0.54	0.08	0.46	31.81
Education Realty Trust Inc	1.38	0.29	1.09	28.24
Penn National Gaming Inc	1.07	0.23	0.84	27.91
PDC Energy Inc	1.25	0.37	0.88	23.29
% of Portfolio	9.62	1.47	8.15	

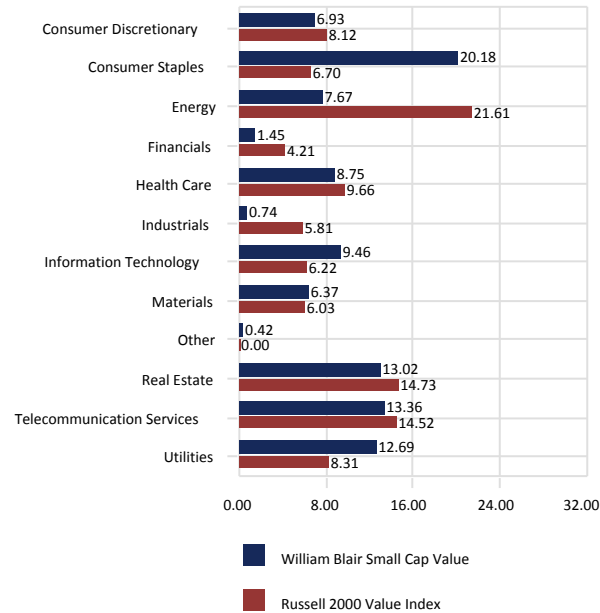
## Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Dana Inc	0.84	0.02	0.82	-21.30
Callon Petroleum Co/DE	1.23	0.22	1.01	-18.88
Acuity Brands Inc.	0.74	0.00	0.74	-16.67
Radian Group Inc.	1.32	0.32	1.00	-14.80
Solaris Oilfield Infrastructure Inc	0.73	0.00	0.73	-13.71
CNO Financial Group Inc	0.77	0.29	0.48	-11.69
Belden Inc	1.34	0.23	1.11	-11.27
Magellan Health Inc	1.11	0.22	0.89	-10.41
Halcon Resources Corp	0.63	0.05	0.58	-9.86
Hancock Whitney Corp	1.11	0.36	0.75	-9.35
% of Portfolio	9.82	1.71	8.11	

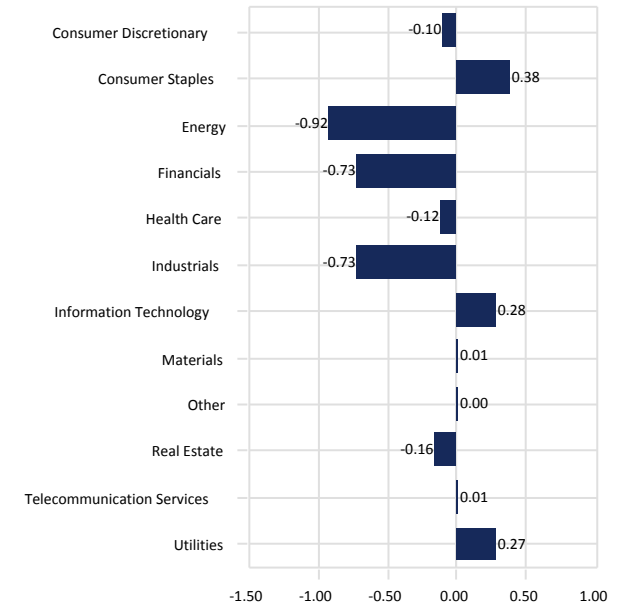
## Sector Allocation



## Sector Performance



## Total Sector Attribution



# City of Knoxville Employees' Pension Plan

William Blair Small Cap Value vs. Russell 2000 Value Index

June 30, 2018

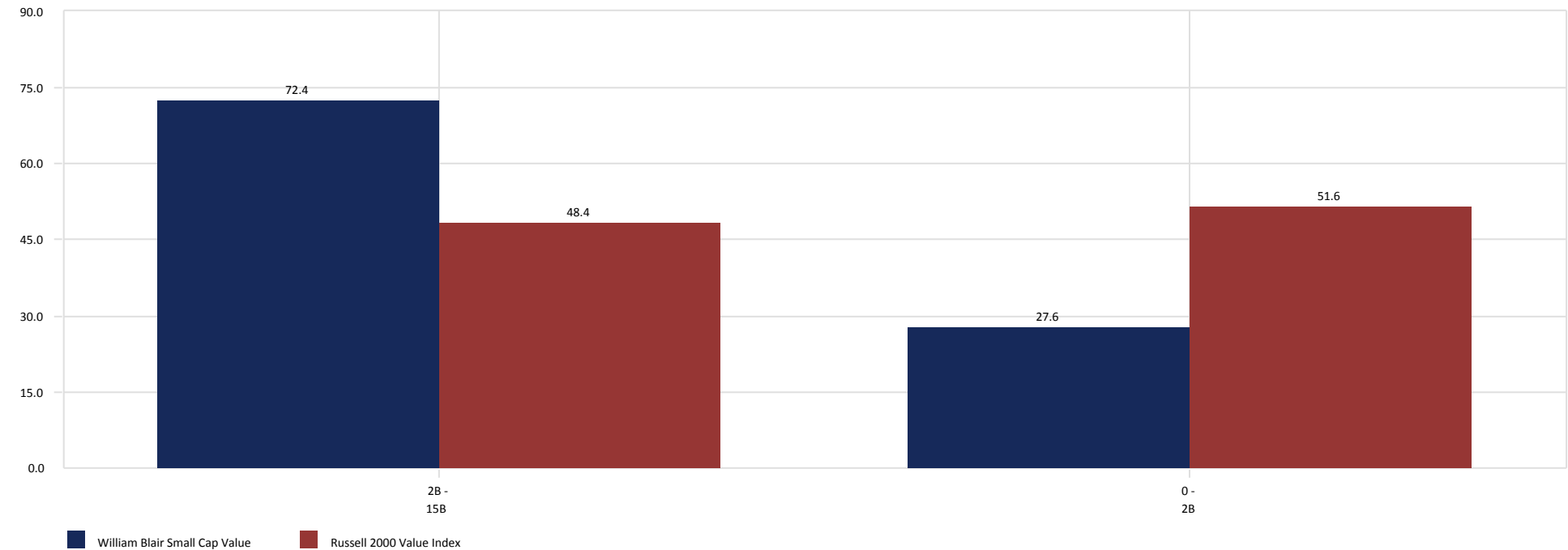
## Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	3,002,895	2,081,335
Median Mkt. Cap (\$000)	2,787,059	827,105
Price/Earnings ratio	21.29	15.70
Price/Book ratio	2.03	1.66
5 Yr. EPS Growth Rate (%)	14.98	7.41
Current Yield (%)	1.52	2.00
Beta (5 Years, Monthly)	0.95	1.00
Number of Stocks	97	1,364

## Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Integer Holdings Corp	1.61	0.05	1.56	14.32
Encompass Health Corp	1.60	0.00	1.60	18.89
Sterling Bancorp	1.56	0.00	1.56	4.51
CONMED Corp	1.55	0.11	1.44	15.90
WSFS Financial Corp	1.47	0.11	1.36	11.51
Selective Insurance Group Inc	1.46	0.29	1.17	-9.09
CoBiz Financial Inc	1.43	0.00	1.43	10.13
j2 Global Inc	1.41	0.00	1.41	10.27
Wolverine World Wide Inc.	1.39	0.00	1.39	20.59
Hanover Insurance Group Inc (The)	1.39	0.00	1.39	1.86
% of Portfolio	14.87	0.56	14.31	

## Distribution of Market Capitalization (%)



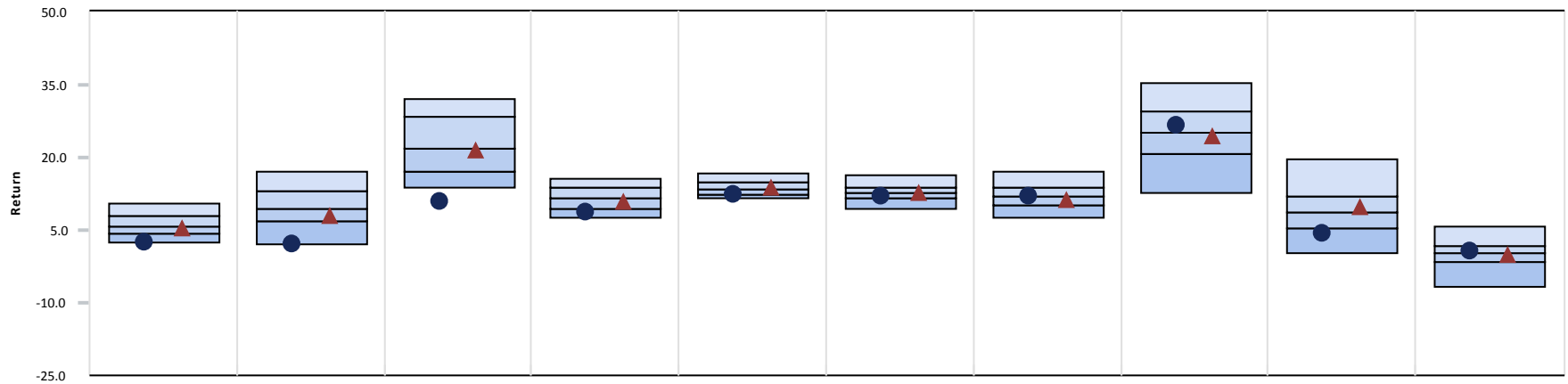


# City of Knoxville Employees' Pension Plan

Pinnacle Associates

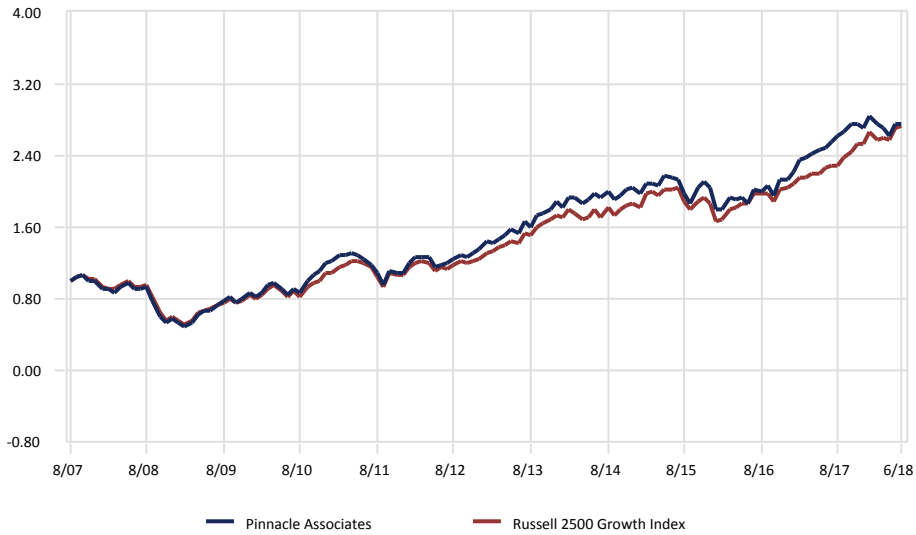
June 30, 2018

## Peer Group Analysis - IM U.S. SMID Cap Growth Equity (SA+CF)

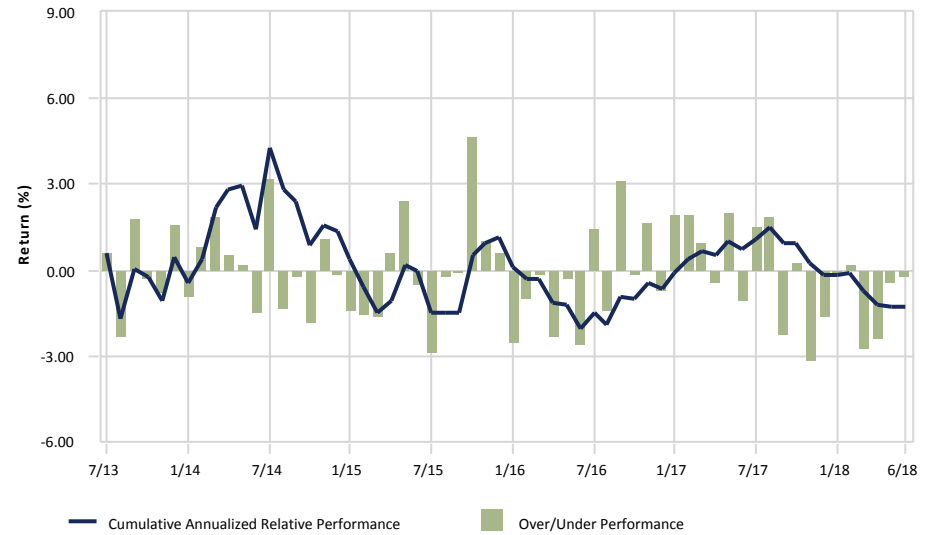


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● Pinnacle Associates	2.28 (96)	1.94 (97)	10.76 (99)	8.55 (90)	12.42 (73)	12.01 (69)	11.77 (51)	26.61 (42)	4.22 (86)	0.62 (39)
▲ Russell 2500 Growth Index	5.53 (57)	8.04 (66)	21.53 (51)	10.86 (62)	13.87 (42)	12.63 (50)	11.38 (62)	24.46 (53)	9.73 (33)	-0.19 (53)
<b>Median</b>	<b>5.80</b>	<b>9.36</b>	<b>21.91</b>	<b>11.53</b>	<b>13.48</b>	<b>12.61</b>	<b>11.89</b>	<b>24.95</b>	<b>8.49</b>	<b>0.11</b>

## Growth of \$1 - Since Inception (09/01/07)



## Relative Performance vs. Russell 2500 Growth Index



gross of fees

# City of Knoxville Employees' Pension Plan

Pinnacle Associates vs. Russell 2500 Growth Index

June 30, 2018

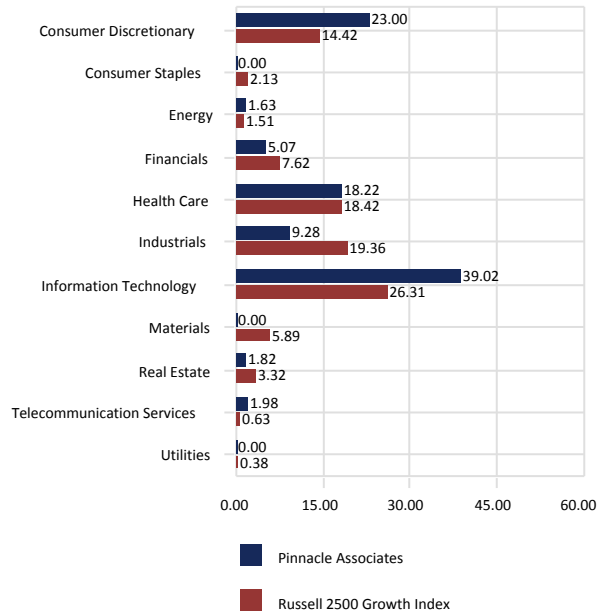
## Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
World Wrestling Entertainment Inc.	2.31	0.14	2.17	102.61
Sarepta Therapeutics Inc	1.48	0.38	1.10	78.41
AeroVironment Inc	0.61	0.07	0.54	56.95
SeaWorld Entertainment Inc	0.79	0.06	0.73	47.13
Iridium Communications Inc	1.68	0.00	1.68	43.11
Lexicon Pharmaceuticals Inc	0.37	0.02	0.35	40.02
Intercept Pharmaceuticals Inc	0.71	0.08	0.63	36.39
FibroGen Inc	1.17	0.22	0.95	35.50
Discovery Inc	1.88	0.00	1.88	30.64
Seattle Genetics Inc	1.92	0.33	1.59	26.84
% of Portfolio	12.92	1.30	11.62	

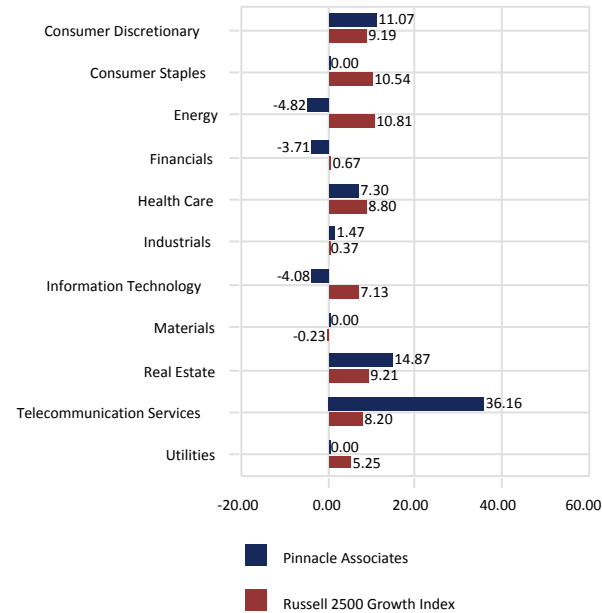
## Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Prothena Corp Plc	0.16	0.00	0.16	-60.28
Esperion Therapeutics Inc	0.40	0.04	0.36	-45.82
Ambarella Inc	1.55	0.02	1.53	-21.19
MacroGenics Inc	0.58	0.04	0.54	-17.93
Cummins Inc.	1.49	0.00	1.49	-17.34
Lam Research Corp	3.97	0.00	3.97	-14.46
Cognex Corp	3.00	0.34	2.66	-14.11
Ultra Clean Holdings Inc	0.39	0.00	0.39	-13.77
UNIFI INC.	0.73	0.00	0.73	-12.55
Royal Caribbean Cruises Ltd	3.82	0.00	3.82	-11.51
% of Portfolio	16.09	0.44	15.65	

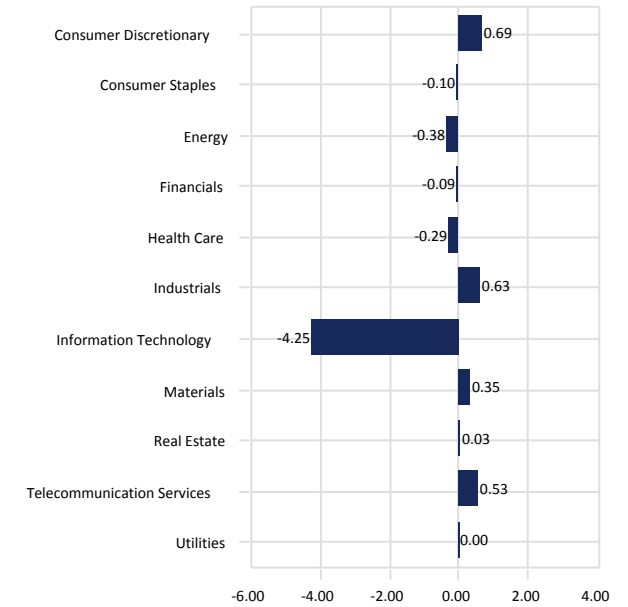
## Sector Allocation



## Sector Performance



## Total Sector Attribution



# City of Knoxville Employees' Pension Plan

Pinnacle Associates vs. Russell 2500 Growth Index

June 30, 2018

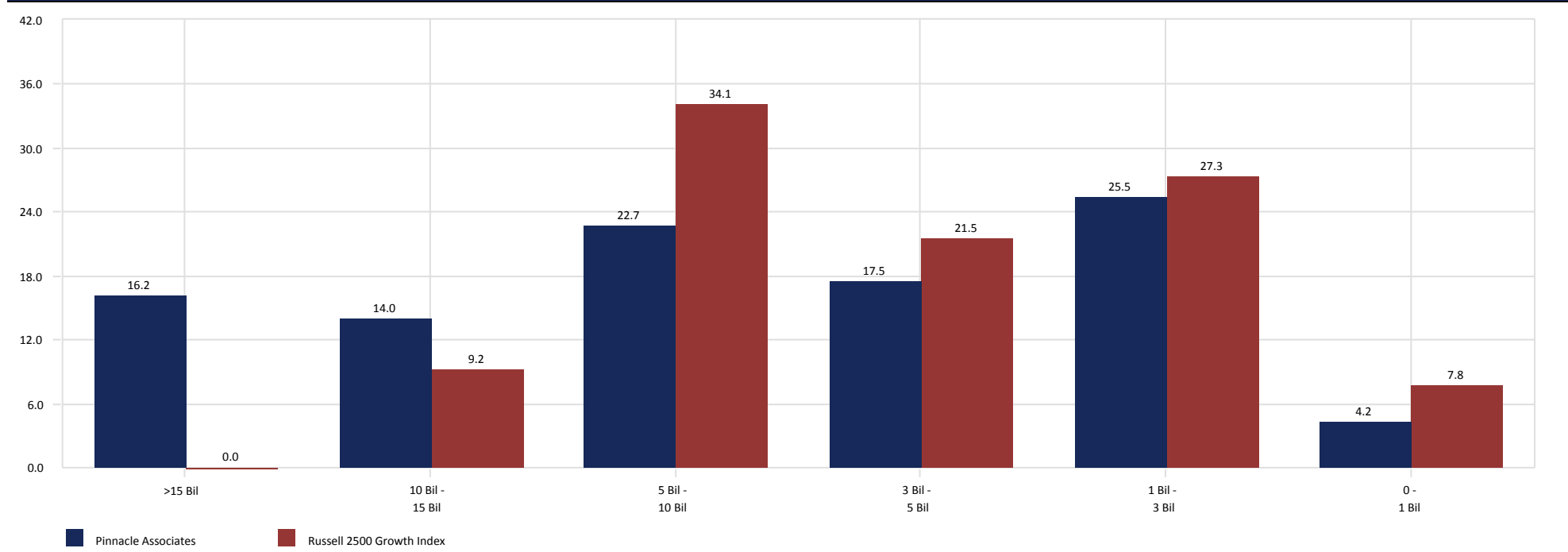
## Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	9,410,103	4,900,886
Median Mkt. Cap (\$000)	3,009,462	1,311,430
Price/Earnings ratio	19.14	26.43
Price/Book ratio	3.05	4.95
5 Yr. EPS Growth Rate (%)	25.36	17.70
Current Yield (%)	0.90	0.72
Beta (5 Years, Monthly)	1.05	1.00
Number of Stocks	74	1,473

## Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Qorvo Inc	4.47	0.00	4.47	13.80
Lam Research Corp	3.97	0.00	3.97	-14.46
Royal Caribbean Cruises Ltd	3.82	0.00	3.82	-11.51
InterXion Holding NV	3.15	0.00	3.15	0.50
Lumentum Holdings Inc	3.13	0.17	2.96	-9.25
Cognex Corp	3.00	0.34	2.66	-14.11
Las Vegas Sands Corp	2.64	0.00	2.64	7.21
Trimble Inc	2.39	0.00	2.39	-8.47
World Wrestling Entertainment Inc.	2.31	0.14	2.17	102.61
IAC/InterActiveCorp	2.28	0.00	2.28	-2.49
% of Portfolio	31.16	0.65	30.51	

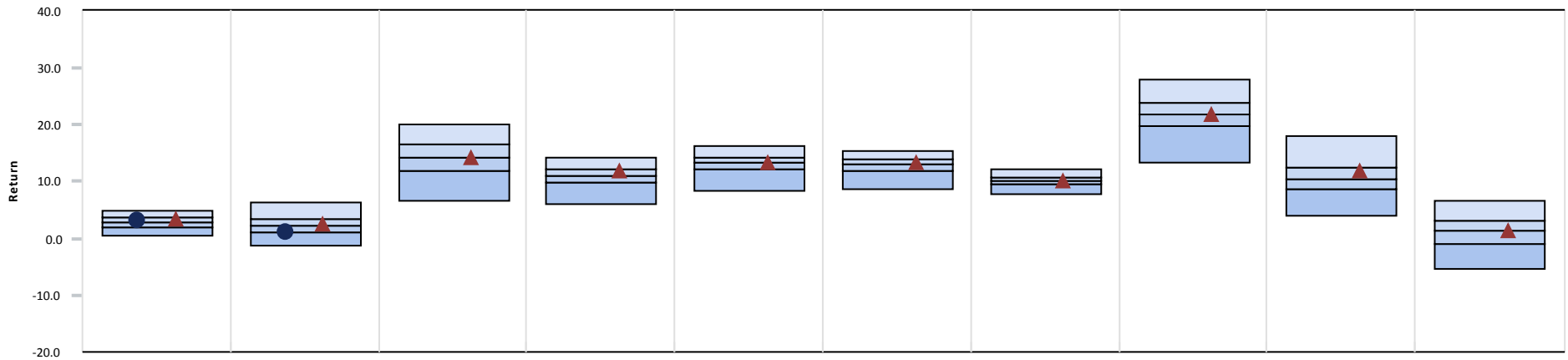
## Distribution of Market Capitalization (%)



# City of Knoxville Employees' Pension Plan

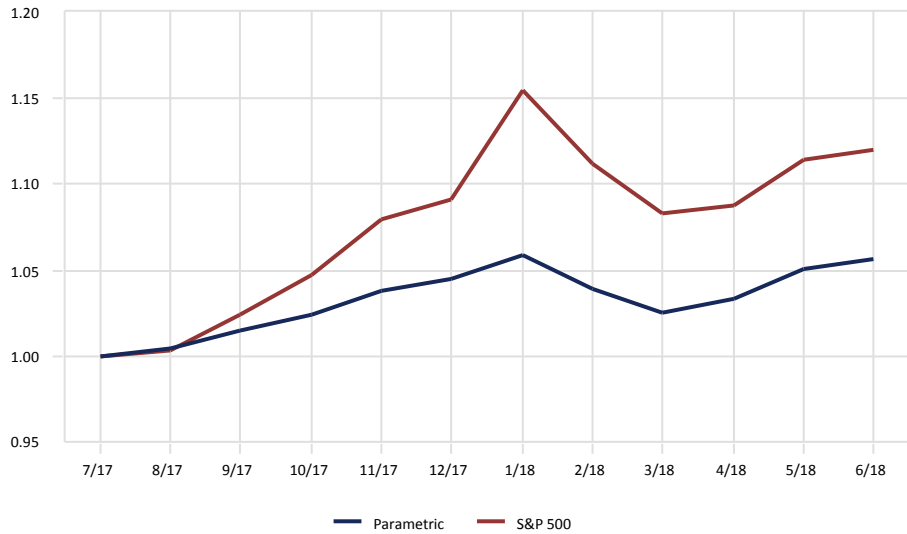
Parametric  
June 30, 2018

## Peer Group Analysis - IM U.S. Large Cap Core Equity (SA+CF)

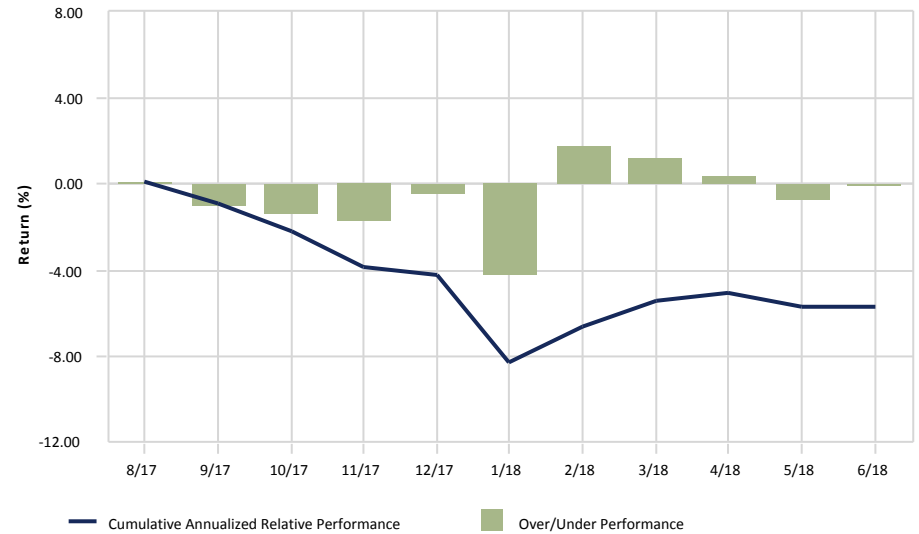


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● Parametric	3.09 (43)	1.07 (76)	-	-	-	-	-	-	-	-
▲ S&P 500	3.43 (33)	2.65 (45)	14.37 (48)	11.93 (33)	13.42 (48)	13.23 (48)	10.17 (51)	21.83 (50)	11.96 (33)	1.38 (51)
<b>Median</b>	<b>2.89</b>	<b>2.38</b>	<b>14.24</b>	<b>11.12</b>	<b>13.35</b>	<b>13.12</b>	<b>10.18</b>	<b>21.82</b>	<b>10.51</b>	<b>1.39</b>

## Growth of \$1 - Since Inception (08/01/17)



## Relative Performance vs. S&P 500



net of fees

## International Equity

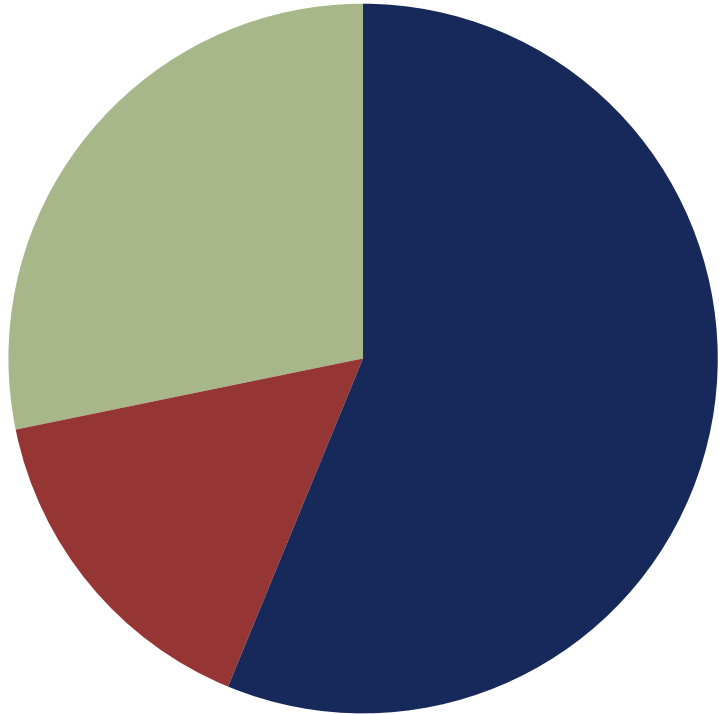
# City of Knoxville Employees' Pension Plan

International Equity vs. MSCI AC World ex USA (Net)

June 30, 2018

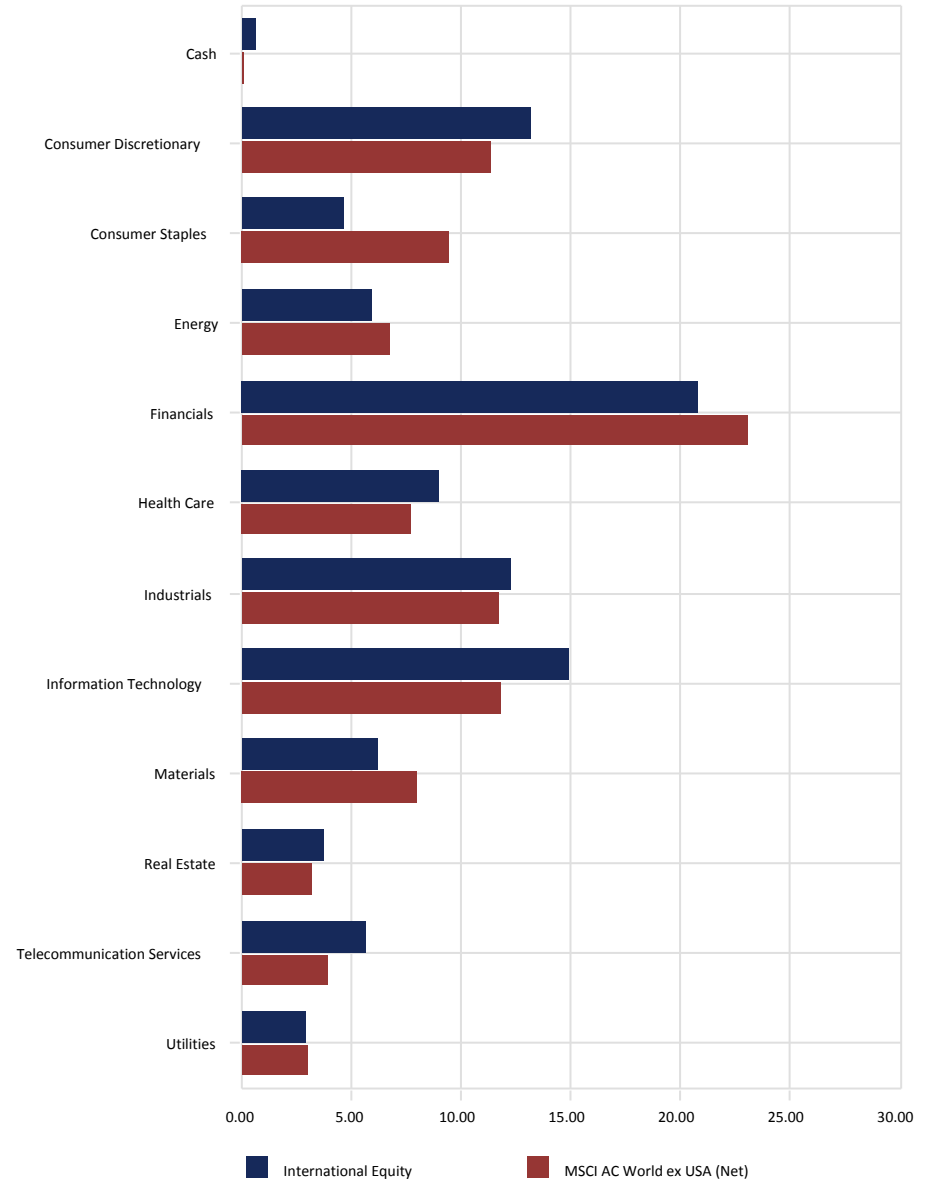
## Manager Allocation

June 30, 2018 : \$125,493,122



	Market Value (\$)	Allocation (%)
■ Silchester International Investors	70,548,785	56.22
■ Gryphon	19,545,254	15.57
■ Acadian Emerging Markets	35,399,083	28.21

## Sector Allocation - Holdings Based

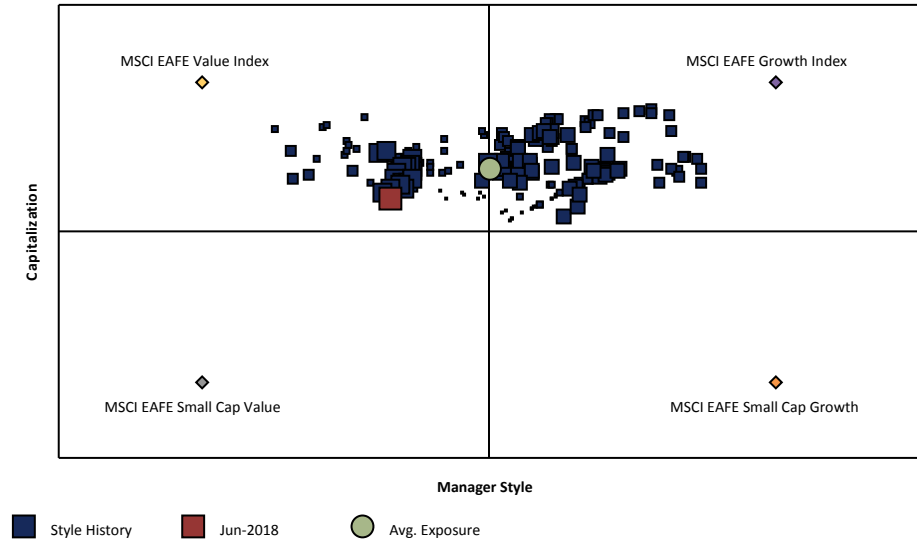


# City of Knoxville Employees' Pension Plan

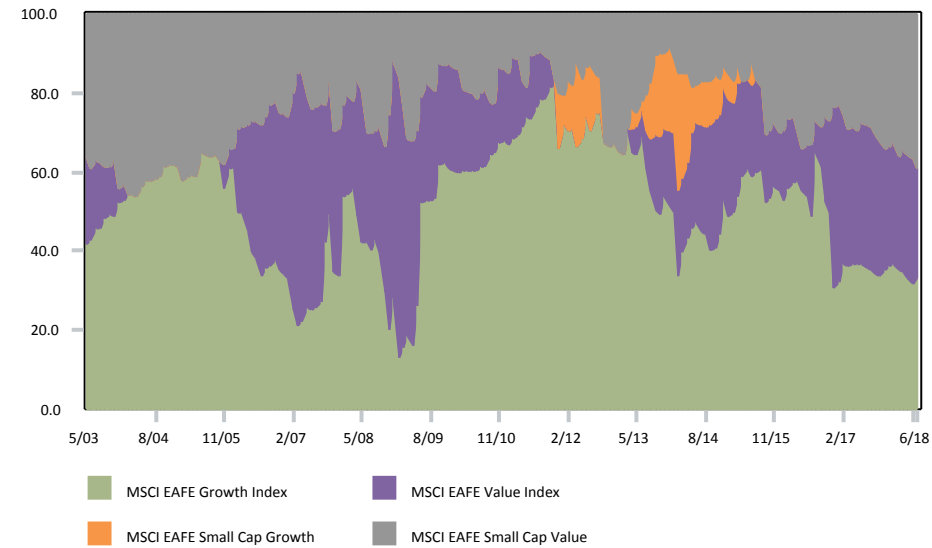
## International Equity vs. MSCI AC World ex USA (Net)

June 30, 2018

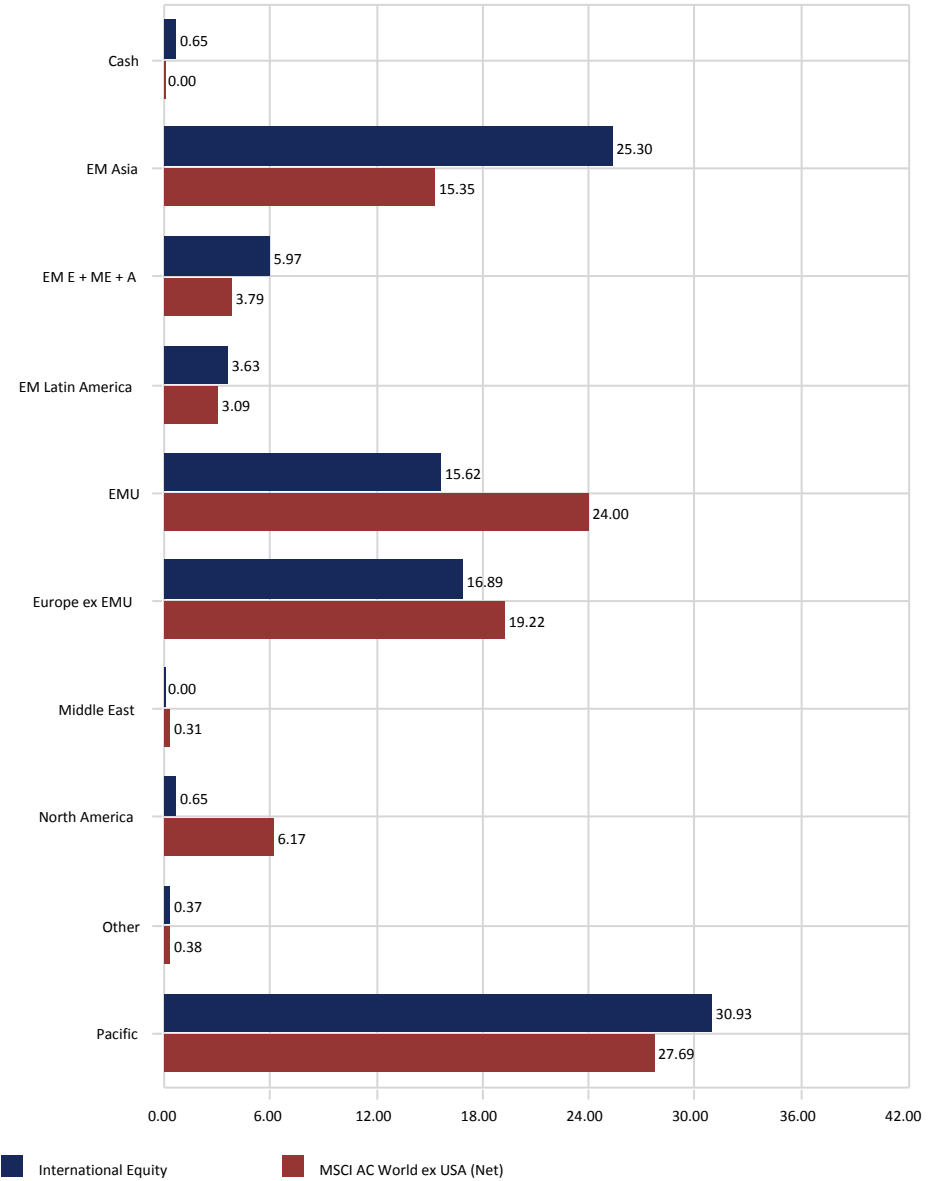
### Style Analysis - Returns Based



### 3 Year Style Analysis



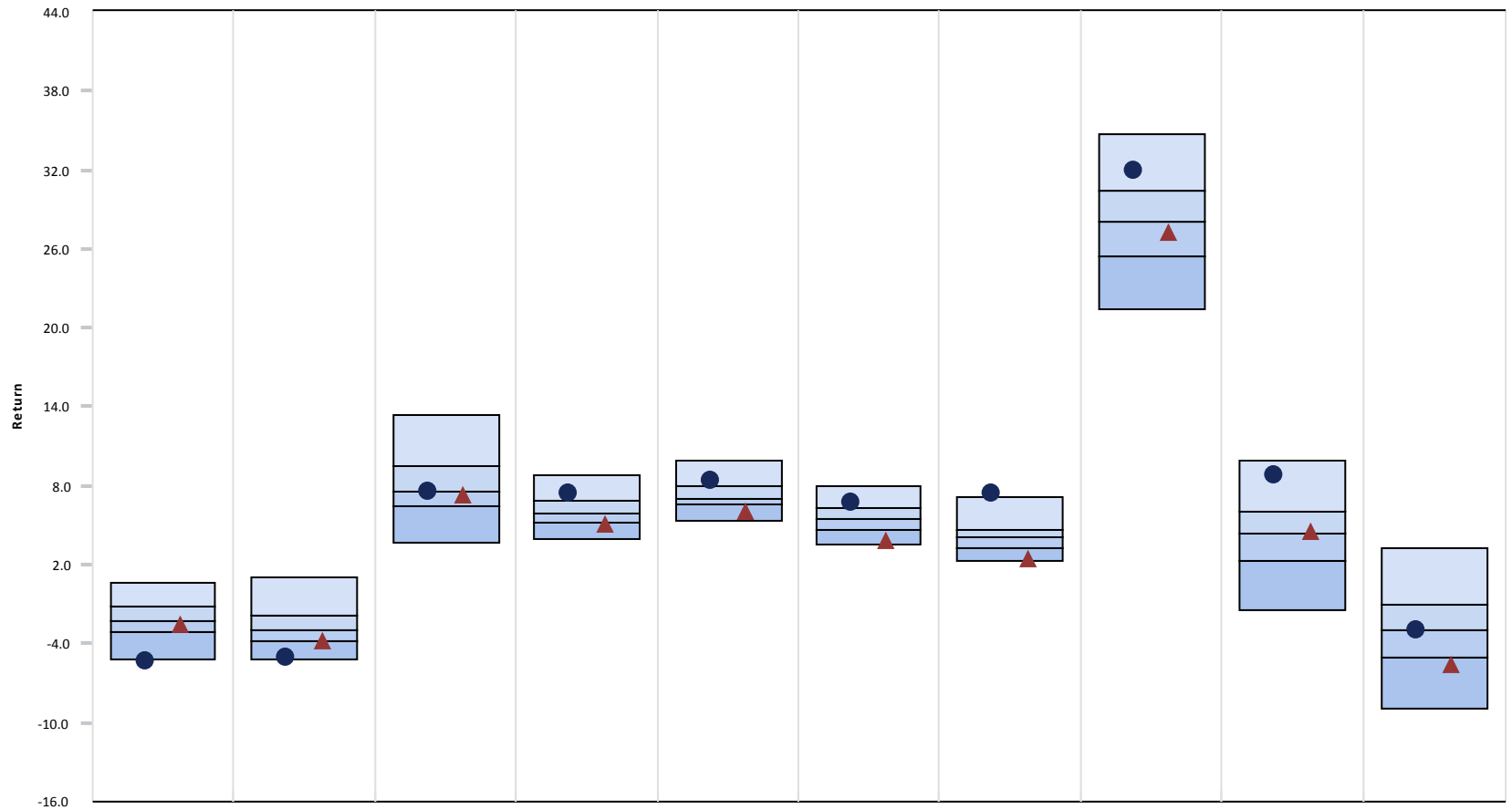
### Region Allocation - Holdings Based



# City of Knoxville Employees' Pension Plan

All Master Trust-Intl. Equity Segment Peer Group Return

June 30, 2018



	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● International Equity	-5.37 (96)	-5.09 (95)	7.54 (54)	7.42 (14)	8.36 (20)	6.75 (17)	7.43 (4)	31.94 (15)	8.84 (10)	-2.91 (50)
▲ International Equity Policy Index	-2.61 (60)	-3.77 (74)	7.28 (64)	5.07 (79)	5.99 (89)	3.81 (92)	2.37 (95)	27.19 (62)	4.50 (47)	-5.66 (83)
5th Percentile	0.61	1.07	13.32	8.85	9.89	8.03	7.15	34.76	9.93	3.31
1st Quartile	-1.13	-1.83	9.50	6.86	7.91	6.30	4.58	30.37	6.08	-1.02
<b>Median</b>	<b>-2.31</b>	<b>-2.95</b>	<b>7.60</b>	<b>5.92</b>	<b>7.07</b>	<b>5.47</b>	<b>4.13</b>	<b>28.09</b>	<b>4.35</b>	<b>-2.94</b>
3rd Quartile	-3.16	-3.81	6.44	5.18	6.52	4.66	3.23	25.36	2.35	-5.02
95th Percentile	-5.18	-5.20	3.66	3.89	5.29	3.54	2.36	21.36	-1.51	-8.94
Population	279	275	262	245	209	171	104	323	343	291

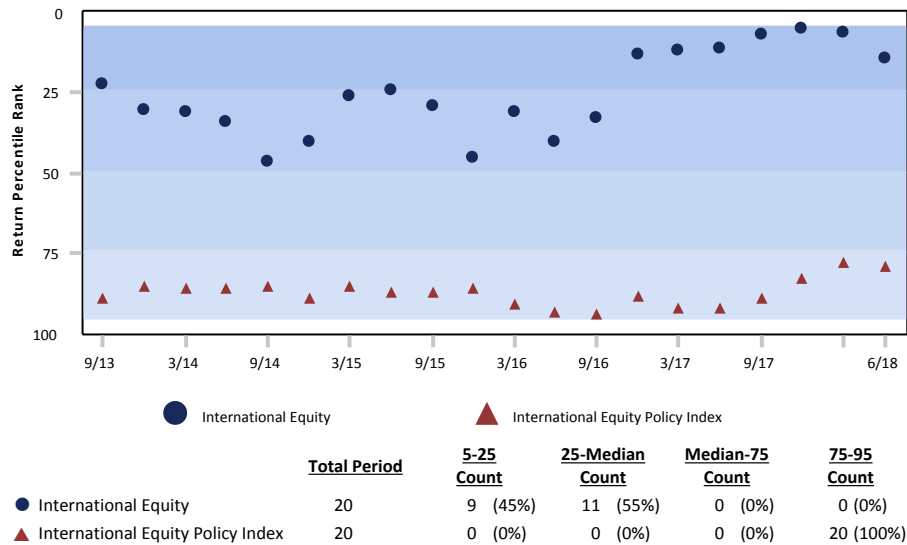


# City of Knoxville Employees' Pension Plan

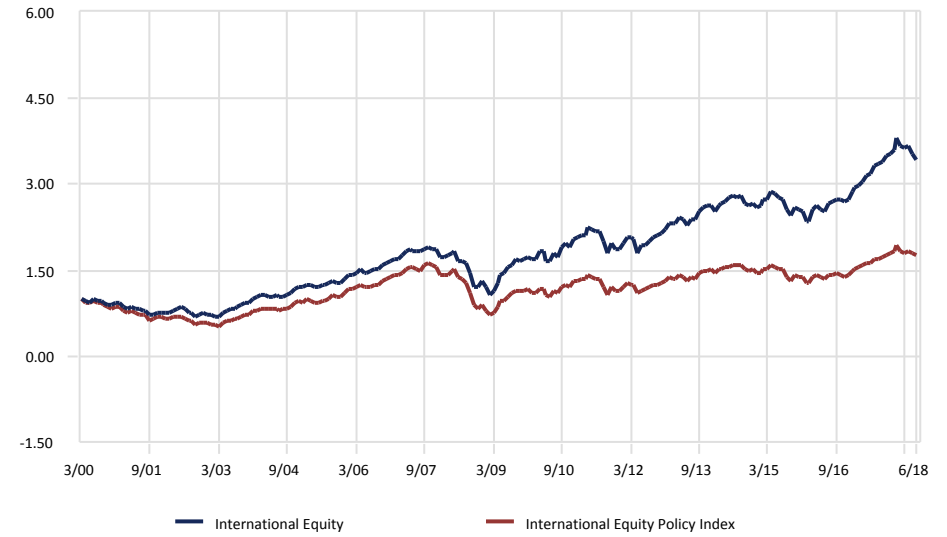
International Equity

June 30, 2018

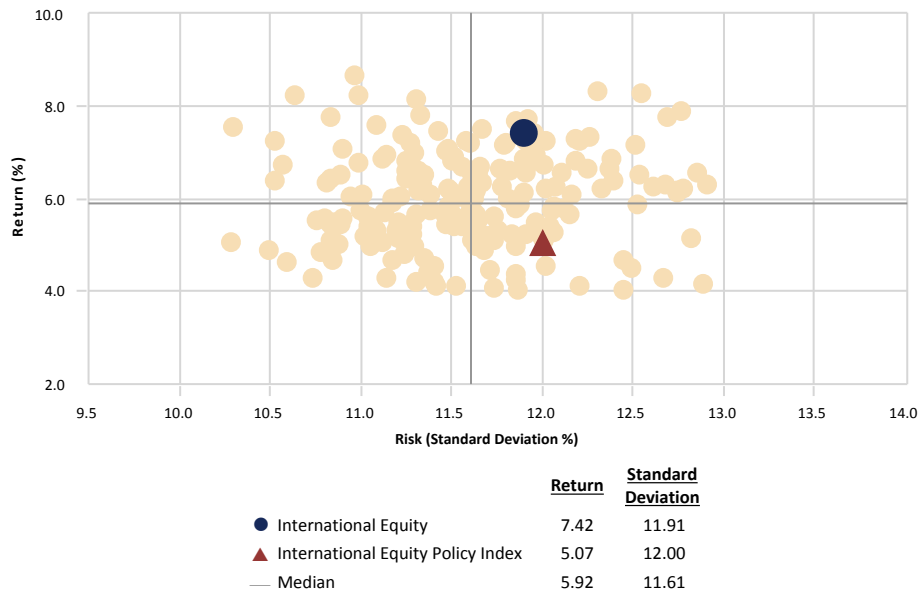
## 3 Year Rolling Return Rank



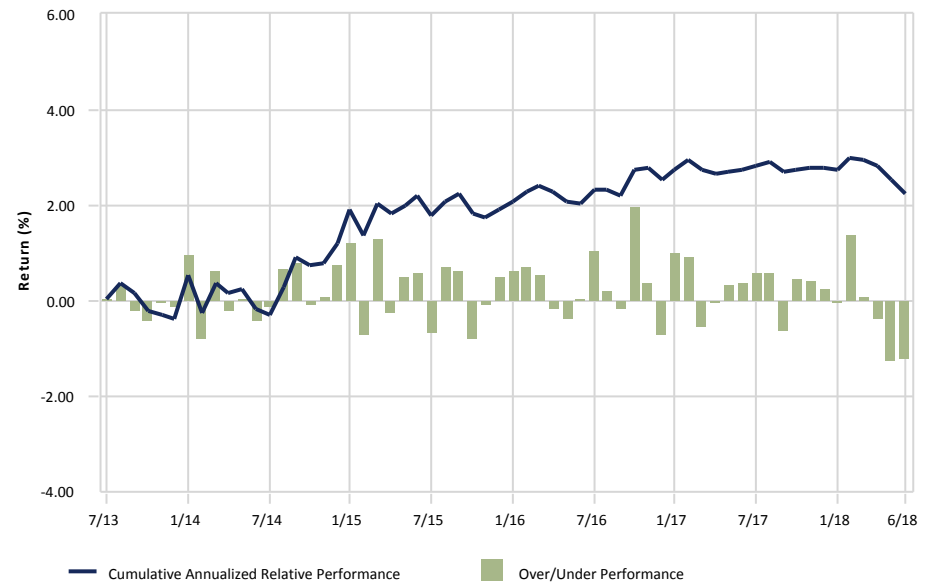
## Growth of \$1 - Since Inception (04/01/00)



## Risk vs. Return (07/01/15 - 06/30/18)



## Relative Performance vs. International Equity Policy Index

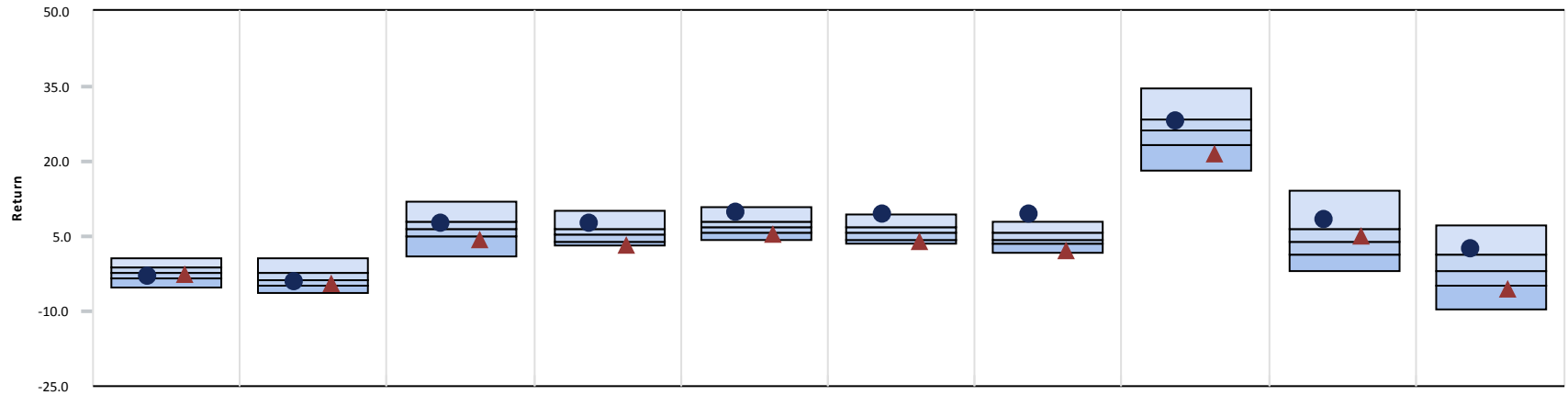


# City of Knoxville Employees' Pension Plan

Silchester International Investors

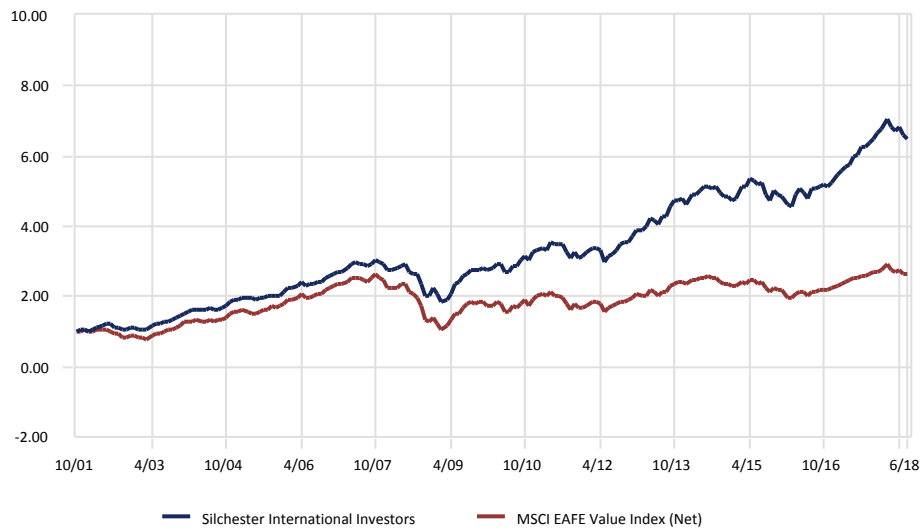
June 30, 2018

## Peer Group Analysis - IM International Large Cap Value Equity (SA+CF)

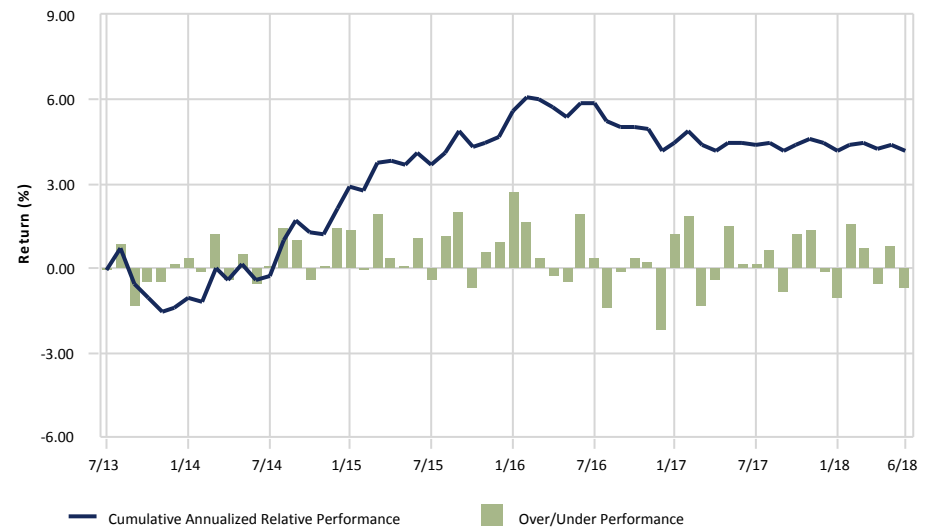


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● Silchester International Investors	-3.17 (70)	-4.00 (55)	7.40 (33)	7.63 (19)	9.75 (10)	9.29 (7)	9.22 (3)	28.03 (31)	8.20 (19)	2.42 (21)
▲ MSCI EAFE Value Index (Net)	-2.64 (60)	-4.61 (69)	4.25 (84)	3.30 (95)	5.37 (85)	3.90 (86)	2.17 (93)	21.44 (91)	5.02 (37)	-5.68 (83)
<b>Median</b>	<b>-2.18</b>	<b>-3.79</b>	<b>6.29</b>	<b>5.19</b>	<b>6.86</b>	<b>5.63</b>	<b>4.37</b>	<b>26.13</b>	<b>3.92</b>	<b>-1.91</b>

## Growth of \$1 - Since Inception (11/01/01)



## Relative Performance vs. MSCI EAFE Value Index (Net)



gross of fees

# City of Knoxville Employees' Pension Plan

Silchester International Investors vs. MSCI EAFE Value Index (Net)

June 30, 2018

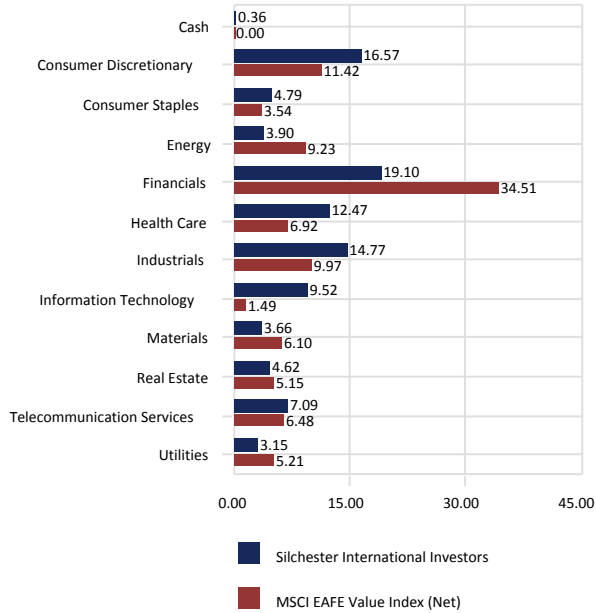
## Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Qinetiq Group	0.25	0.00	0.25	22.89
Mizuno Corp	0.10	0.00	0.10	22.81
Telefonaktiebolaget LM Ericsson	0.97	0.12	0.85	21.78
Electrocomponents PLC	0.52	0.00	0.52	19.99
Toda Corp	0.68	0.00	0.68	19.80
C&C Group PLC	0.18	0.00	0.18	19.03
Tesco PLC	0.90	0.00	0.90	18.14
Wm. Morrison Supermarkets Plc	1.06	0.11	0.95	14.77
Luk Fook Holdings (International) Ltd	0.66	0.00	0.66	13.89
Pearson PLC	2.10	0.13	1.97	12.89
% of Portfolio	7.42	0.36	7.06	

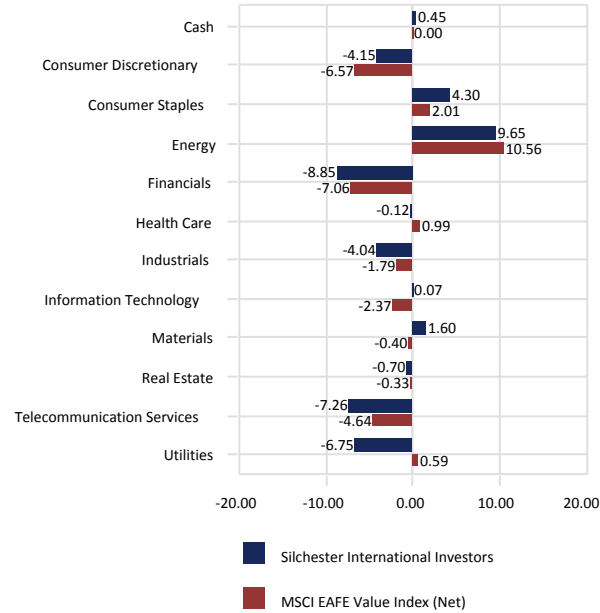
## Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Connect Group PLC	0.02	0.00	0.02	-45.07
BEC World Pcl	0.00	0.00	0.00	-43.02
Public Power Corp S.A.	0.16	0.00	0.16	-32.19
Turkcell Iletisim Hizmet AS	1.09	0.00	1.09	-28.99
Arnoldo Mondadori Editore SPA, Milano	0.12	0.00	0.12	-27.43
Yue Yuen Industrial (Holdings) Ltd	0.14	0.03	0.11	-25.49
WestJet Airlines Ltd	0.65	0.00	0.65	-24.45
Genomma Lab Internacional SAB	0.19	0.00	0.19	-22.03
Nippo Corp	0.54	0.00	0.54	-21.55
M6 Metropole Television SA	0.39	0.00	0.39	-18.62
% of Portfolio	3.30	0.03	3.27	

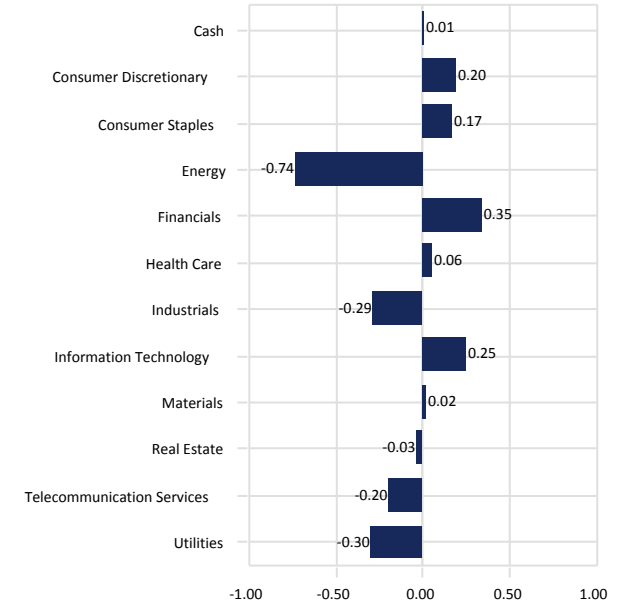
## Sector Allocation



## Sector Performance



## Total Sector Attribution



# City of Knoxville Employees' Pension Plan

Silchester International Investors vs. MSCI EAFE Value Index (Net)

June 30, 2018

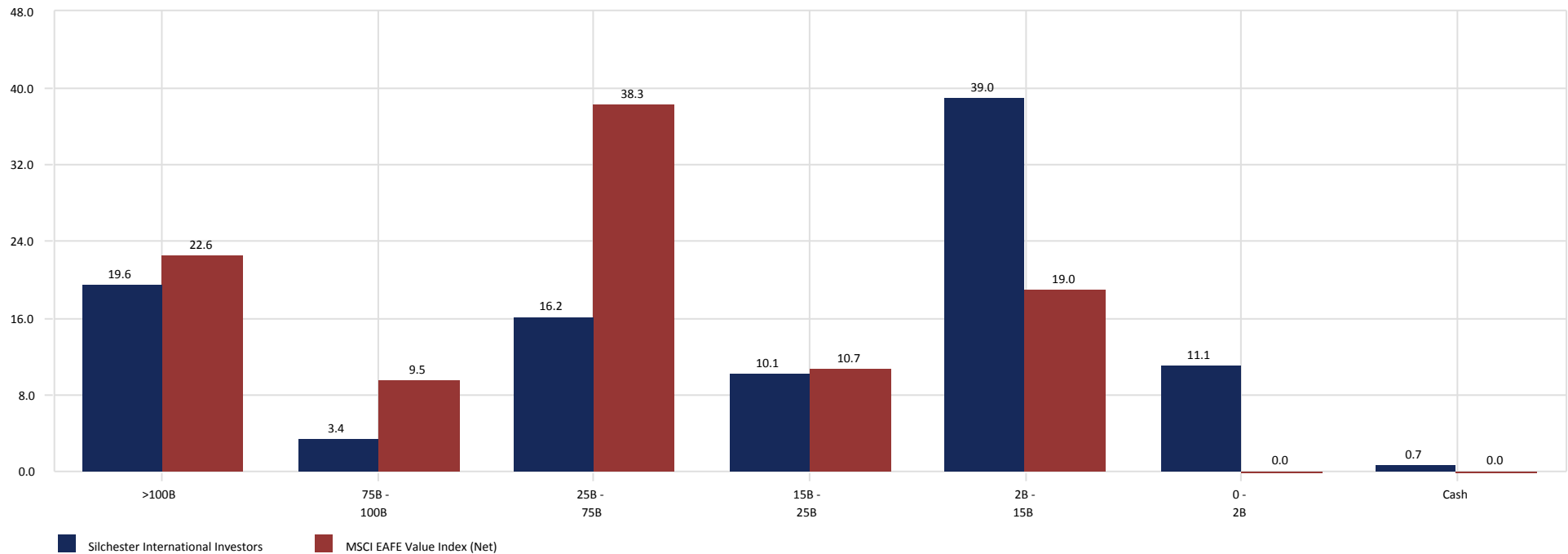
## Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	41,455,089	72,201,536
Median Mkt. Cap (\$000)	3,743,342	11,371,757
Price/Earnings ratio	12.83	11.16
Price/Book ratio	1.58	1.53
5 Yr. EPS Growth Rate (%)	7.39	7.59
Current Yield (%)	3.77	4.40
Beta (5 Years, Monthly)	0.83	1.00
Number of Stocks	148	459

## Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Sanofi	3.57	1.29	2.28	4.23
Novartis AG	2.78	2.40	0.38	-6.50
Glaxosmithkline PLC	2.70	1.43	1.27	4.49
Honda Motor Co Ltd	2.68	0.68	2.00	-14.13
Credit Suisse Group	2.40	0.27	2.13	-8.92
Roche Holding AG	2.22	0.00	2.22	-3.41
Pearson PLC	2.10	0.13	1.97	12.89
Toyota Motor Corp	2.10	2.11	-0.01	0.66
Royal Dutch Shell PLC	1.89	2.27	-0.38	10.77
China Mobile Ltd	1.83	0.00	1.83	-0.99
% of Portfolio	24.27	10.58	13.69	

## Distribution of Market Capitalization (%)

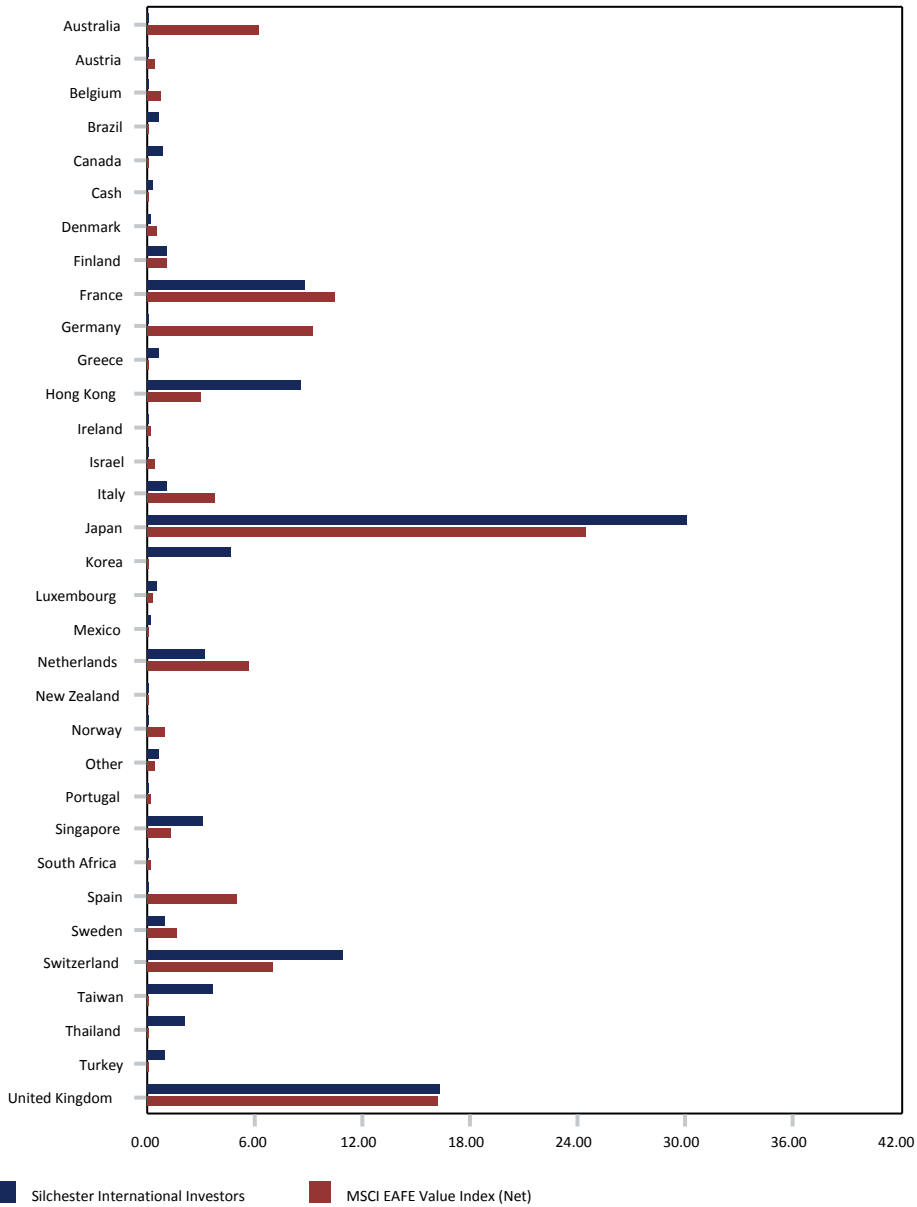


# City of Knoxville Employees' Pension Plan

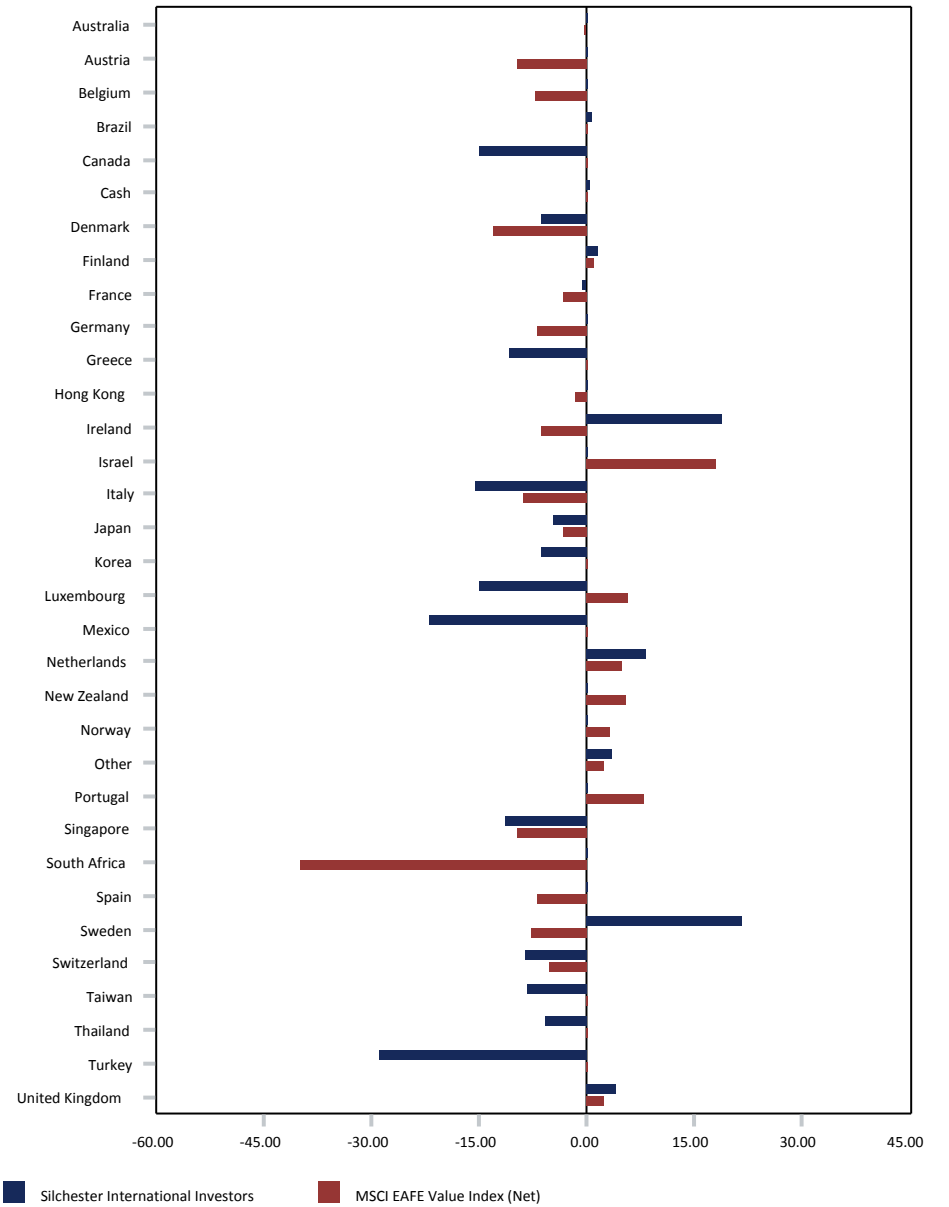
Silchester International Investors vs. MSCI EAFE Value Index (Net)

June 30, 2018

## Country Allocation



## Country Performance

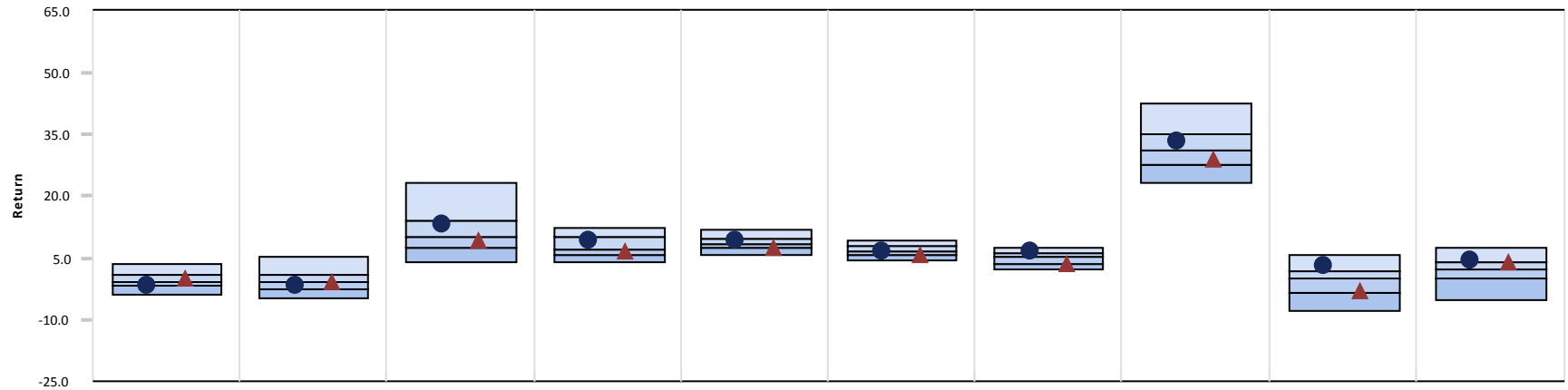


# City of Knoxville Employees' Pension Plan

Gryphon

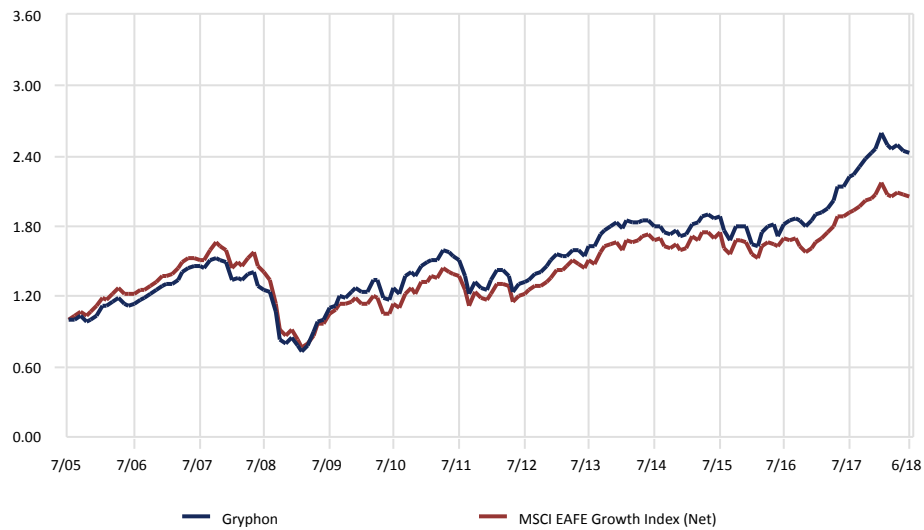
June 30, 2018

## Peer Group Analysis - IM International Large Cap Growth Equity (SA+CF)

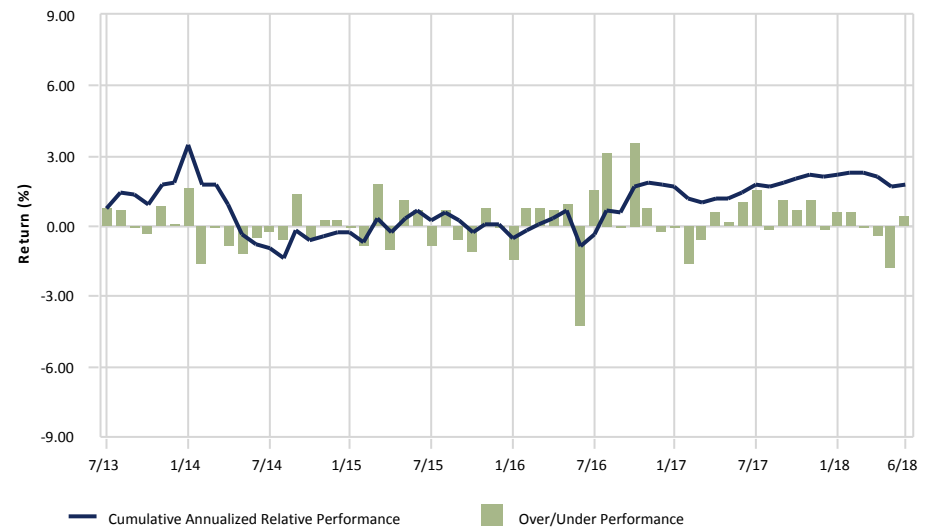


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● Gryphon	-1.68 (67)	-1.69 (62)	13.05 (30)	9.11 (31)	9.34 (31)	6.61 (52)	6.53 (15)	33.46 (33)	2.91 (19)	4.61 (19)
▲ MSCI EAFE Growth Index (Net)	0.11 (36)	-0.93 (52)	9.41 (58)	6.41 (62)	7.43 (74)	5.81 (76)	3.45 (77)	28.86 (68)	-3.04 (73)	4.09 (26)
<b>Median</b>	<b>-0.80</b>	<b>-0.90</b>	<b>10.24</b>	<b>7.07</b>	<b>8.42</b>	<b>6.75</b>	<b>5.12</b>	<b>31.37</b>	<b>-0.07</b>	<b>2.18</b>

## Growth of \$1 - Since Inception (08/01/05)



## Relative Performance vs. MSCI EAFE Growth Index (Net)



gross of fees

# City of Knoxville Employees' Pension Plan

## Gryphon vs. MSCI EAFE Growth Index (Net)

June 30, 2018

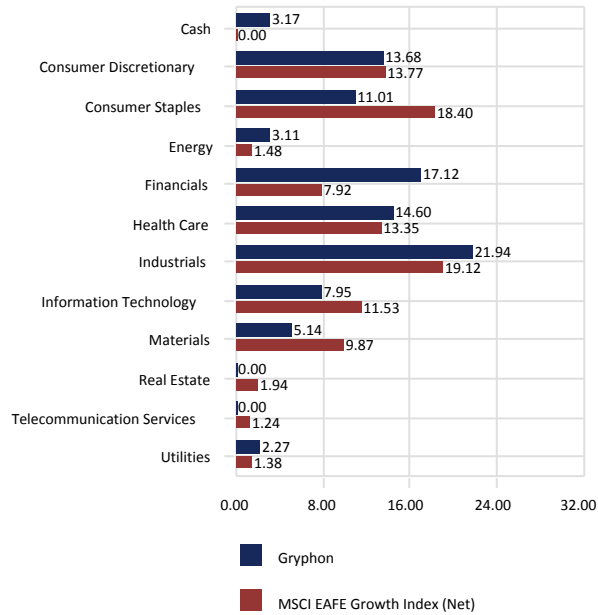
### Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
GN Store Nord A/S	2.32	0.00	2.32	29.08
Shiseido Co Ltd	3.50	0.41	3.09	23.94
Shenzhen Intl Group Holdings Ltd	2.19	0.00	2.19	18.17
Teleperformance	2.34	0.14	2.20	13.70
Hamamatsu Photonics Kk	1.78	0.08	1.70	13.45
Industria De Diseno Textil Inditex SA	3.08	0.51	2.57	10.56
TOTAL SA	3.54	0.00	3.54	8.43
Daikin Industries Ltd	2.81	0.41	2.40	8.35
Shimadzu Corp	3.50	0.09	3.41	7.28
AerCap Holdings NV	2.40	0.03	2.37	6.76
% of Portfolio	27.46	1.67	25.79	

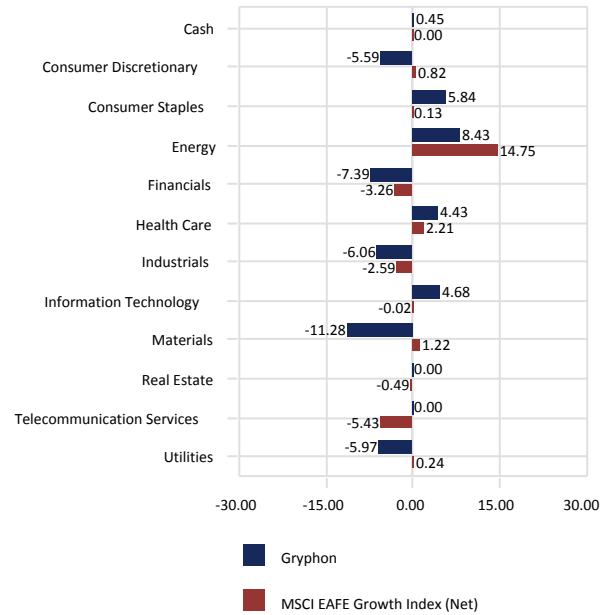
### Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Deutsche Lufthansa AG	3.38	0.04	3.34	-22.32
KION Group Gmbh	2.22	0.07	2.15	-21.87
Porsche Automobil Holding SE	2.64	0.07	2.57	-21.49
Samsonite International SA	2.54	0.00	2.54	-20.66
Nabtesco Corp	1.48	0.05	1.43	-19.56
Toray Industries Inc	1.87	0.15	1.72	-16.80
Ontex Group N.V.	0.92	0.00	0.92	-15.86
Boral Ltd Bld	1.61	0.08	1.53	-15.59
ING Groep NV	3.87	0.00	3.87	-14.79
BNP Paribas	3.00	0.00	3.00	-11.63
% of Portfolio	23.53	0.46	23.07	

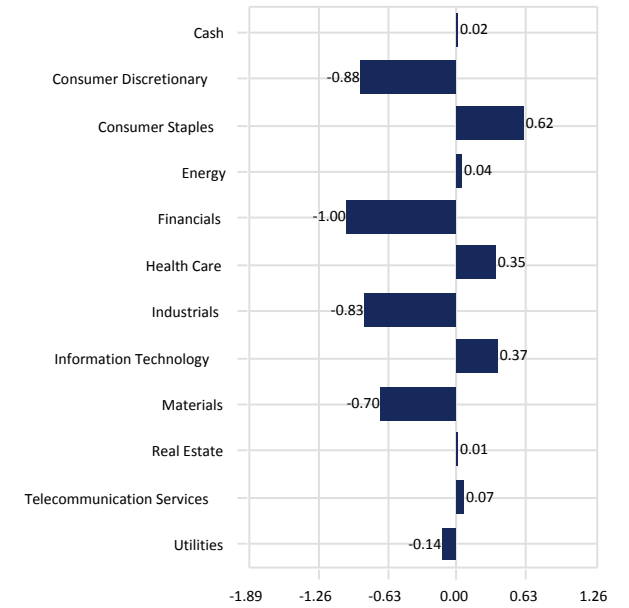
### Sector Allocation



### Sector Performance



### Total Sector Attribution



# City of Knoxville Employees' Pension Plan

Gryphon vs. MSCI EAFE Growth Index (Net)

June 30, 2018

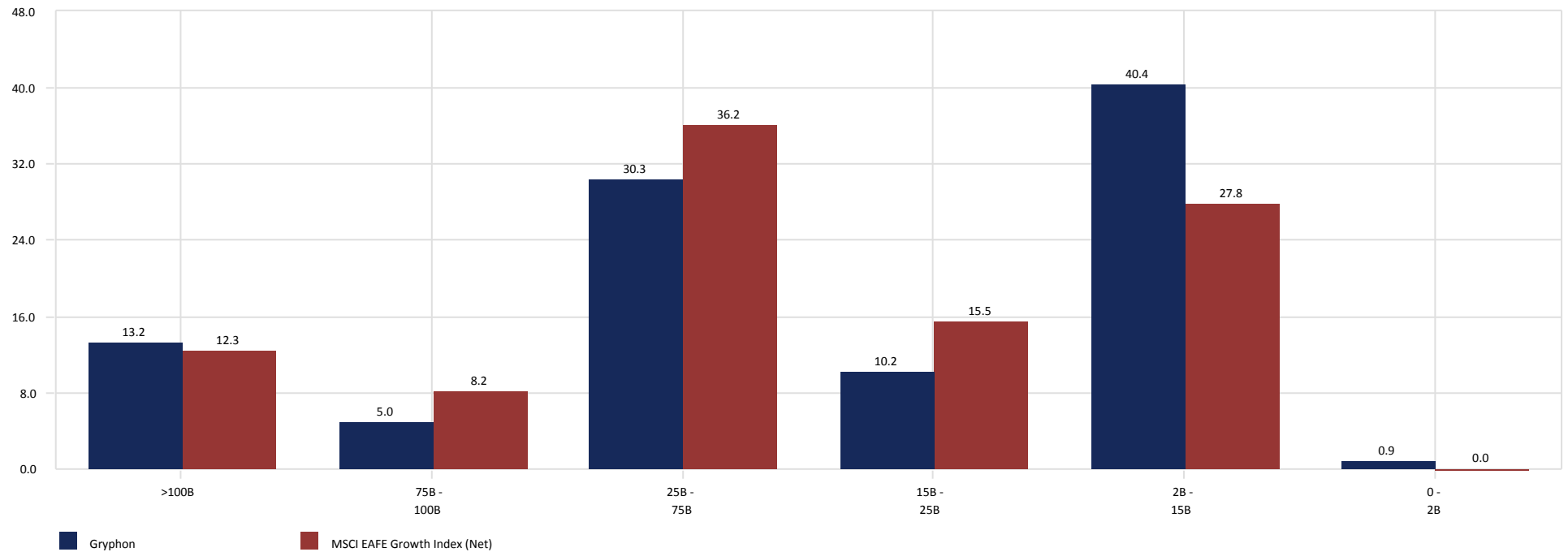
## Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	40,880,543	48,180,750
Median Mkt. Cap (\$000)	14,918,407	11,384,496
Price/Earnings ratio	14.98	19.18
Price/Book ratio	2.45	2.93
5 Yr. EPS Growth Rate (%)	18.71	14.35
Current Yield (%)	2.32	2.21
Beta (5 Years, Monthly)	0.93	1.00
Number of Stocks	41	568

## Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Fresenius SE & Co KGAA	5.24	0.46	4.78	6.13
AIA Group Ltd	4.03	1.45	2.58	4.43
Nidec Corp	3.95	0.46	3.49	-2.81
ING Groep NV	3.87	0.00	3.87	-14.79
Koninklijke Ahold Delhaize NV	3.78	0.41	3.37	4.28
TOTAL SA	3.54	0.00	3.54	8.43
Shiseido Co Ltd	3.50	0.41	3.09	23.94
Shimadzu Corp	3.50	0.09	3.41	7.28
Deutsche Lufthansa AG	3.38	0.04	3.34	-22.32
Industria De Diseno Textil Inditex SA	3.08	0.51	2.57	10.56
% of Portfolio	37.87	3.83	34.04	

## Distribution of Market Capitalization (%)



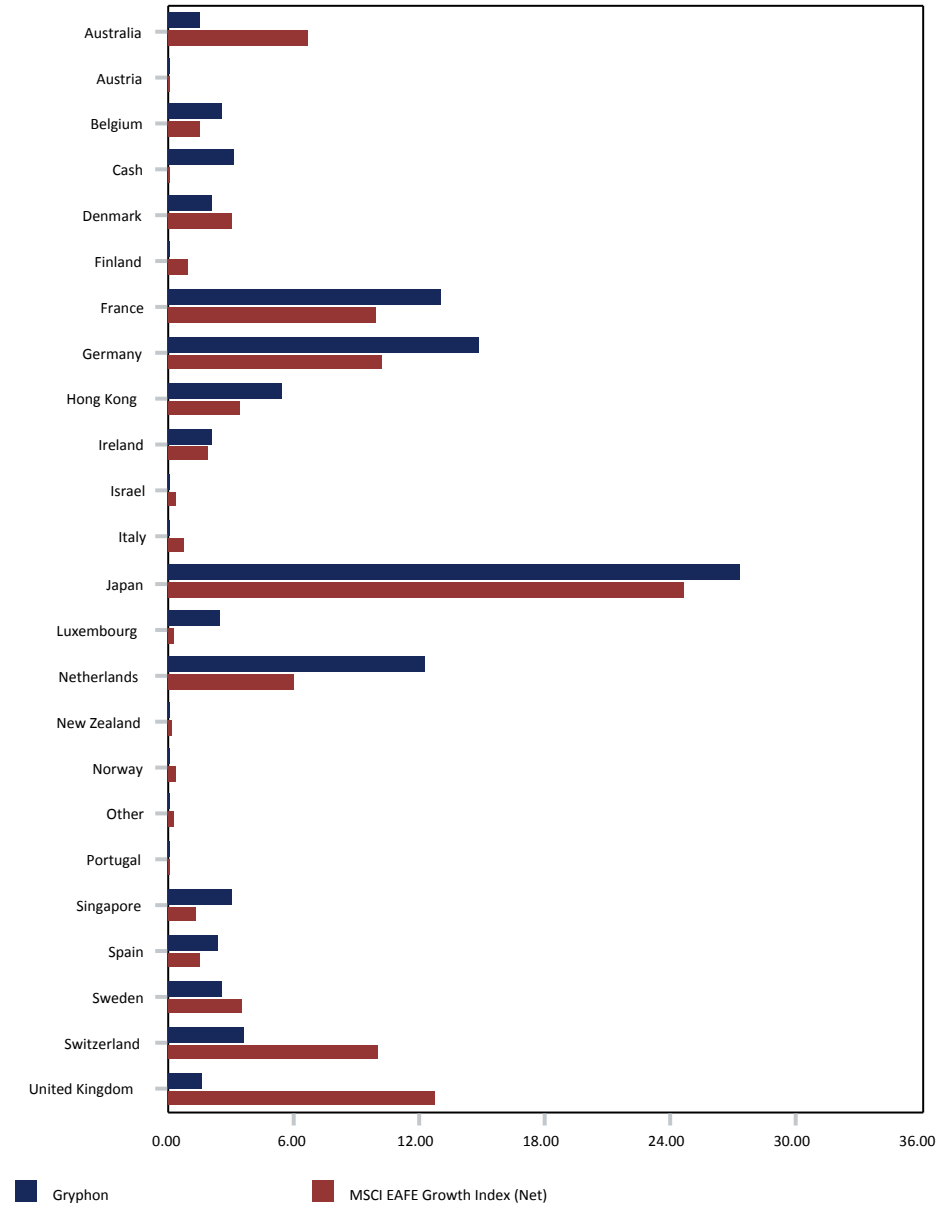


# City of Knoxville Employees' Pension Plan

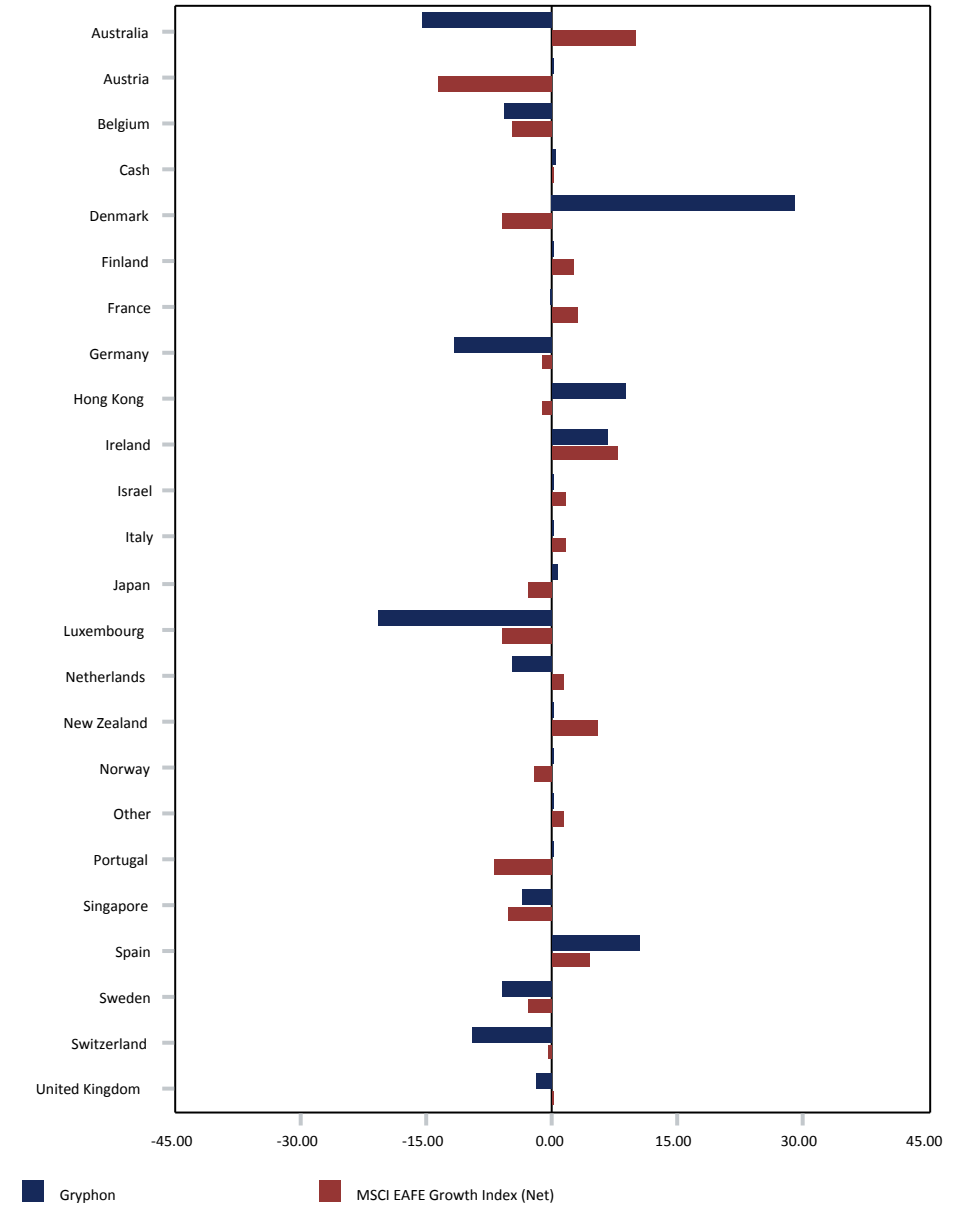
Gryphon vs. MSCI EAFE Growth Index (Net)

June 30, 2018

## Country Allocation



## Country Performance

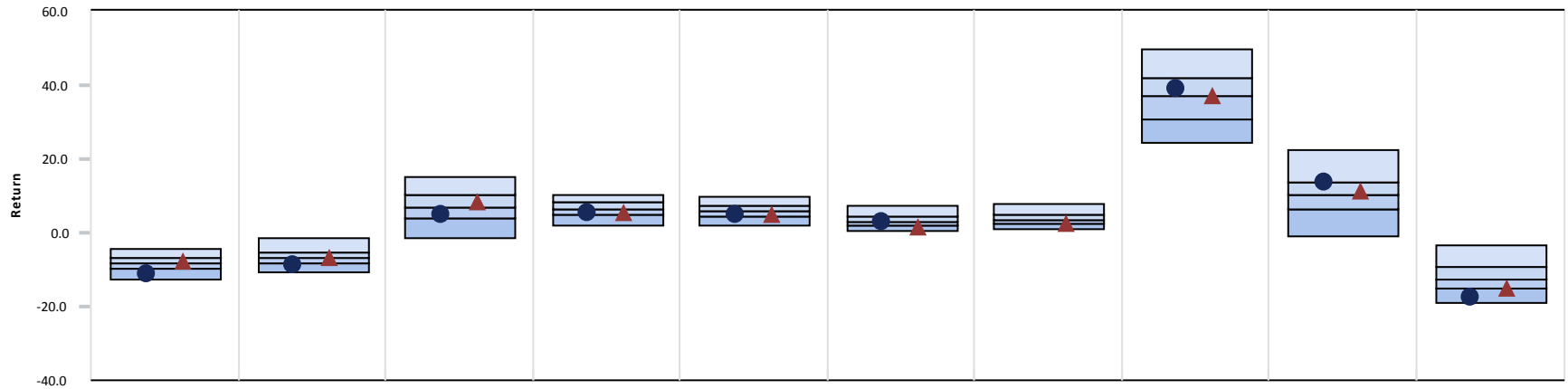


# City of Knoxville Employees' Pension Plan

Acadian Emerging Markets

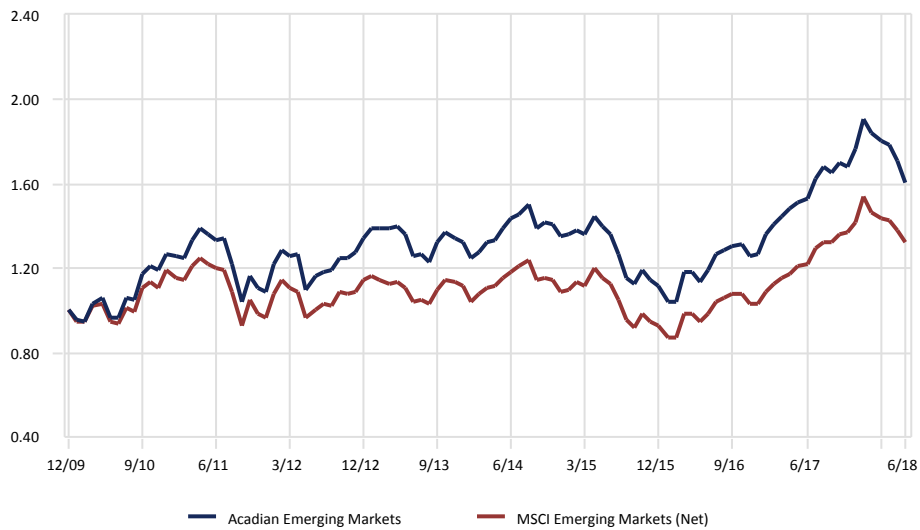
June 30, 2018

## Peer Group Analysis - IM Emerging Markets Equity (SA+CF)

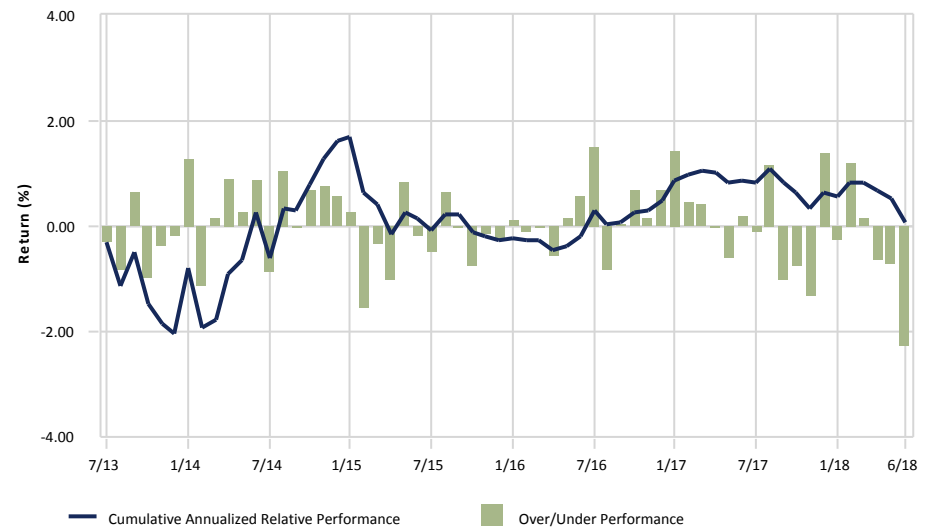


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● Acadian Emerging Markets	-11.24 (94)	-8.98 (85)	4.81 (69)	5.58 (64)	5.07 (65)	2.73 (61)	-	38.86 (37)	13.85 (22)	-17.50 (90)
▲ MSCI Emerging Markets (Net)	-7.96 (44)	-6.66 (49)	8.20 (41)	5.60 (62)	5.01 (66)	1.43 (83)	2.26 (80)	37.28 (47)	11.19 (42)	-14.92 (69)
<b>Median</b>	<b>-8.40</b>	<b>-6.72</b>	<b>7.07</b>	<b>6.18</b>	<b>5.88</b>	<b>3.16</b>	<b>3.56</b>	<b>36.88</b>	<b>10.08</b>	<b>-12.65</b>

## Growth of \$1 - Since Inception (01/01/10)



## Relative Performance vs. MSCI Emerging Markets (Net)



gross of fees

# City of Knoxville Employees' Pension Plan

Acadian Emerging Markets vs. MSCI Emerging Markets (Net)

June 30, 2018

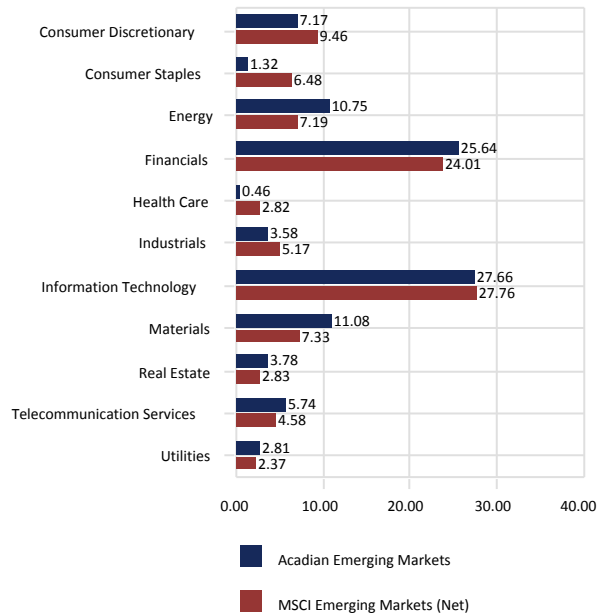
## Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Wiwynn Corporation	0.04	0.00	0.04	174.43
Darfon Electronics Corp	0.04	0.00	0.04	149.27
F & F Co Ltd	0.07	0.00	0.07	91.87
PT Erajaya Swasembada TBK	0.01	0.00	0.01	89.66
Beijing Shunxin Agriculture Co Ltd	0.04	0.00	0.04	75.47
Megastudy Education Co Ltd	0.00	0.00	0.00	72.17
PT Indah Kiat Pulp & Paper TBK	0.14	0.07	0.07	62.76
Supermax Corp Berhad	0.02	0.00	0.02	59.30
Uni-President China Holdings Ltd	0.01	0.03	-0.02	51.55
GS Engineering & Construction Corp	0.04	0.04	0.00	48.36
% of Portfolio	0.41	0.14	0.27	

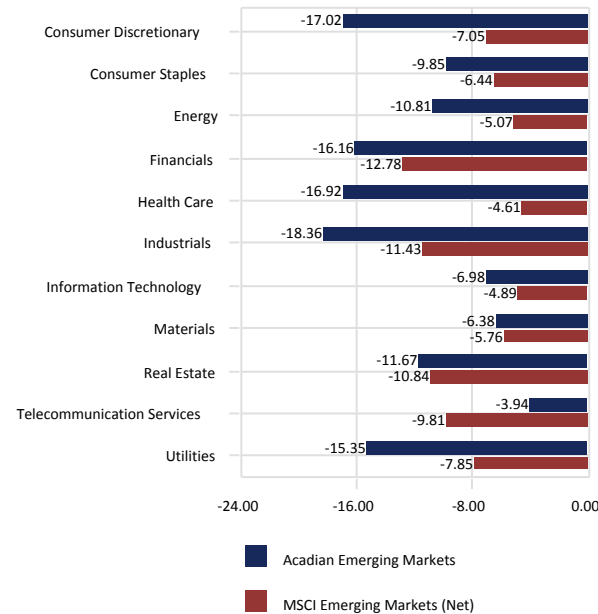
## Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Vakrangee Softwares Ltd	0.02	0.01	0.01	-71.29
Gol Linhas Aereas Inteligentes SA	0.05	0.00	0.05	-57.81
CSU Cardsystem SA	0.01	0.00	0.01	-54.88
Intrasoft Technologies Ltd	0.00	0.00	0.00	-51.14
Rain Industries Ltd	0.06	0.00	0.06	-50.91
Yatak Ve Yorgan Sanayi Ve Ticaret Yatas	0.01	0.00	0.01	-47.65
Guararapes Confecoos SA	0.01	0.00	0.01	-47.32
Via Varejo SA	0.32	0.00	0.32	-46.47
Flat Glass Group Co Ltd	0.00	0.00	0.00	-45.59
Beauty Community PCL	0.02	0.00	0.02	-45.34
% of Portfolio	0.50	0.01	0.49	

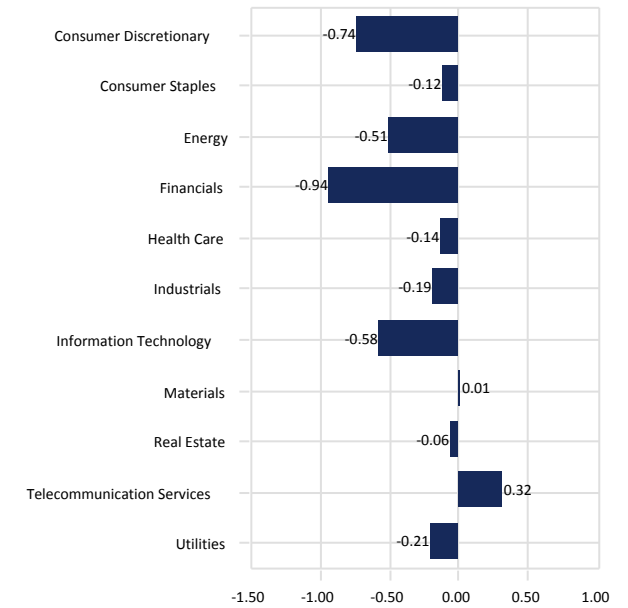
## Sector Allocation



## Sector Performance



## Total Sector Attribution



# City of Knoxville Employees' Pension Plan

## Acadian Emerging Markets vs. MSCI Emerging Markets (Net)

June 30, 2018

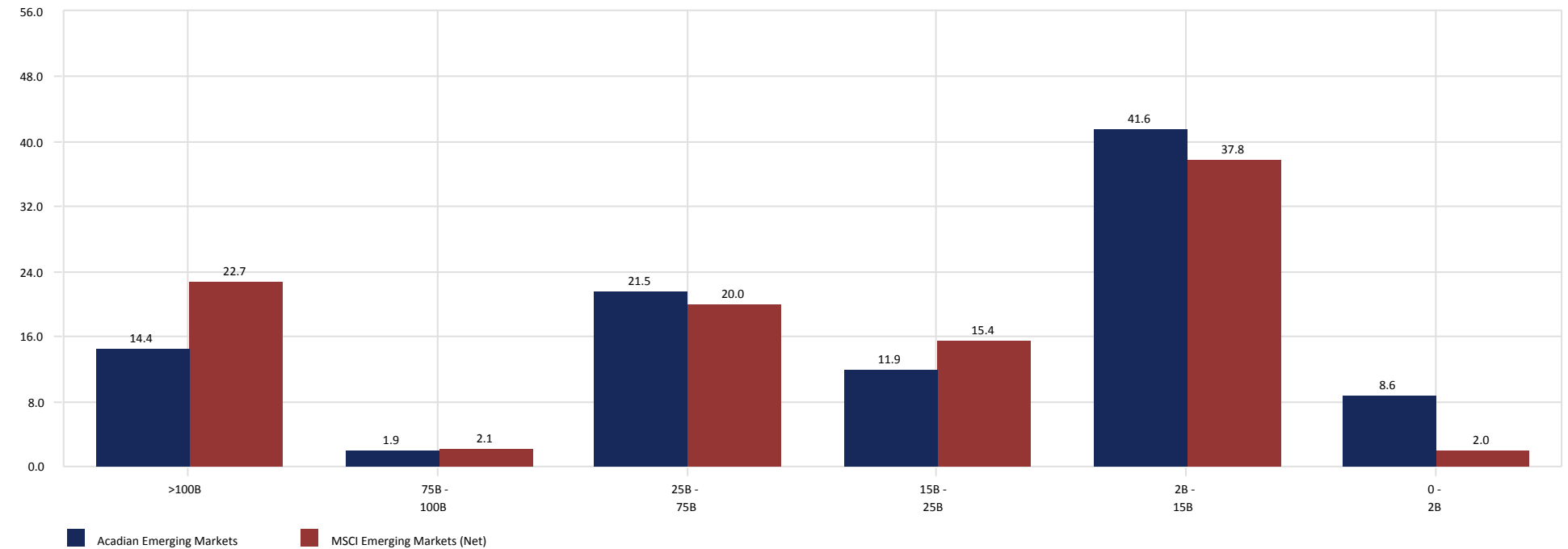
### Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$000)	55,354,014	87,534,290
Median Mkt. Cap (\$000)	1,393,952	5,227,077
Price/Earnings ratio	9.36	13.39
Price/Book ratio	2.12	2.58
5 Yr. EPS Growth Rate (%)	18.90	15.38
Current Yield (%)	3.51	2.65
Beta (5 Years, Monthly)	0.99	1.00
Number of Stocks	752	1,138

### Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Samsung Electronics Co Ltd	6.49	3.85	2.64	-8.83
China Construction Bank Corp	3.30	1.70	1.60	-10.03
Tencent Holdings LTD	2.64	5.46	-2.82	-3.63
SK Hynix Inc	2.60	0.86	1.74	0.63
Industrial & Commercial Bank of China Ltd	2.51	0.99	1.52	-12.75
Bank of China Ltd	2.46	0.75	1.71	-7.79
PTT Public Co Ltd	1.79	0.29	1.50	-17.94
Tenaga Nasional Berhad	1.64	0.22	1.42	-12.43
Sberbank of Russia OJSC	1.61	0.72	0.89	-18.01
Lg Electronics Inc	1.55	0.15	1.40	-27.64
% of Portfolio	26.59	14.99	11.60	

### Distribution of Market Capitalization (%)

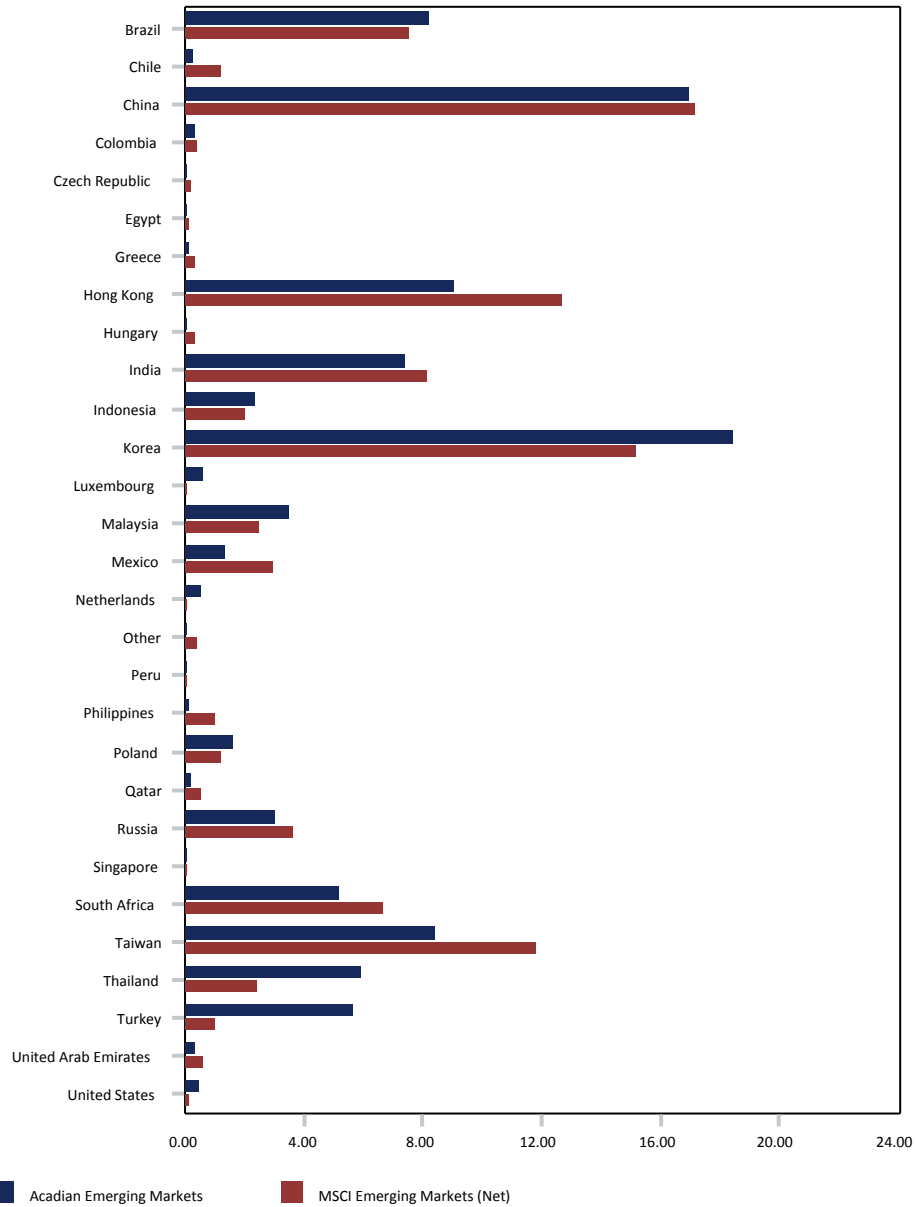


# City of Knoxville Employees' Pension Plan

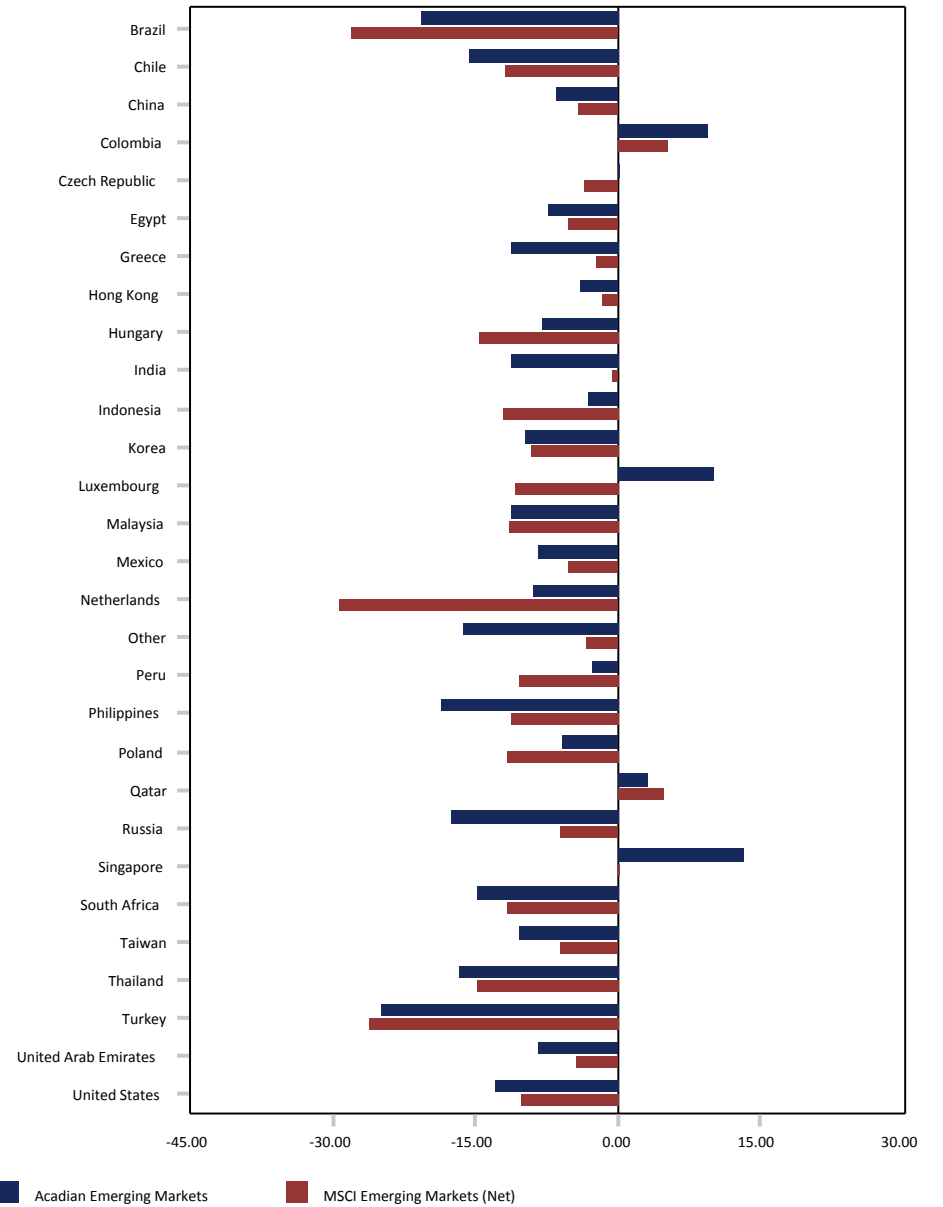
## Acadian Emerging Markets vs. MSCI Emerging Markets (Net)

June 30, 2018

### Country Allocation



### Country Performance



## Fixed Income

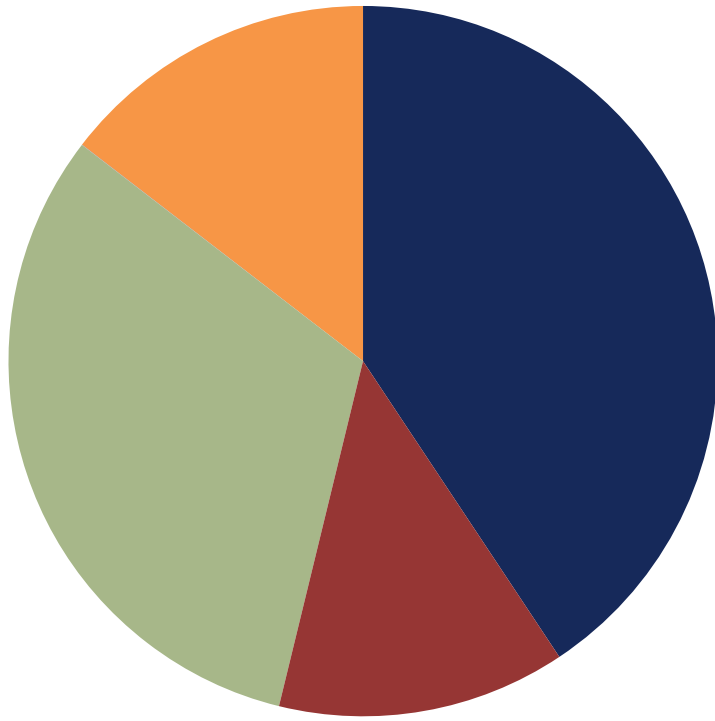
# City of Knoxville Employees' Pension Plan

Total Fixed Income

June 30, 2018

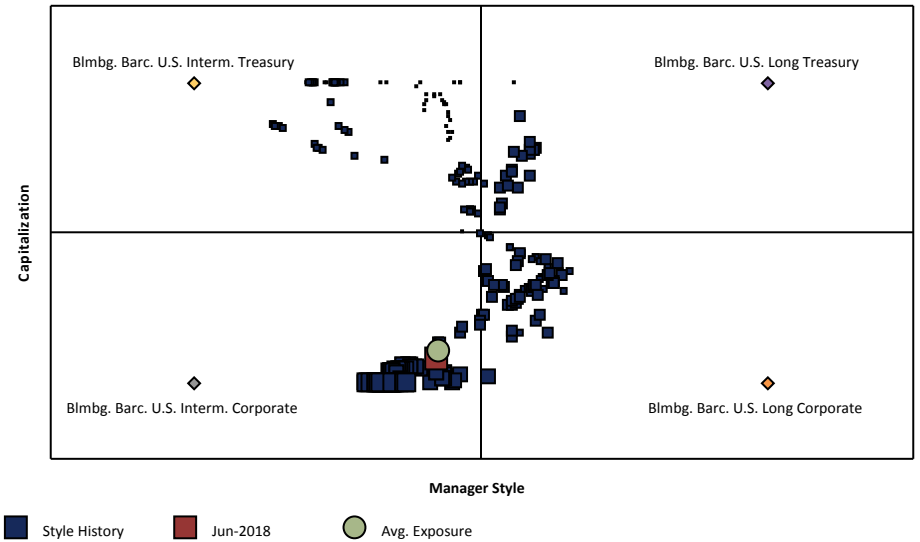
## Manager Allocation

June 30, 2018 : \$146,945,682

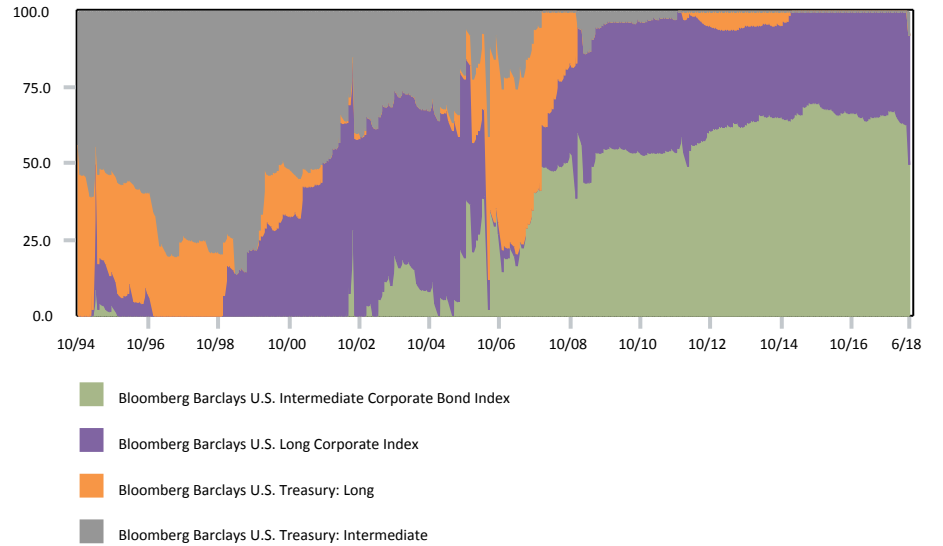


	Market Value (\$)	Allocation (%)
STW Fixed	59,749,153	40.66
IR+M TIPS	19,323,226	13.15
IR+M Core Fixed	46,455,109	31.61
Pictet Emerging Local Currency Debt	11,843	0.01
NT Aggregate Bond Fund	21,406,352	14.57

## Style Analysis - Returns Based



## 3 Year Style Analysis



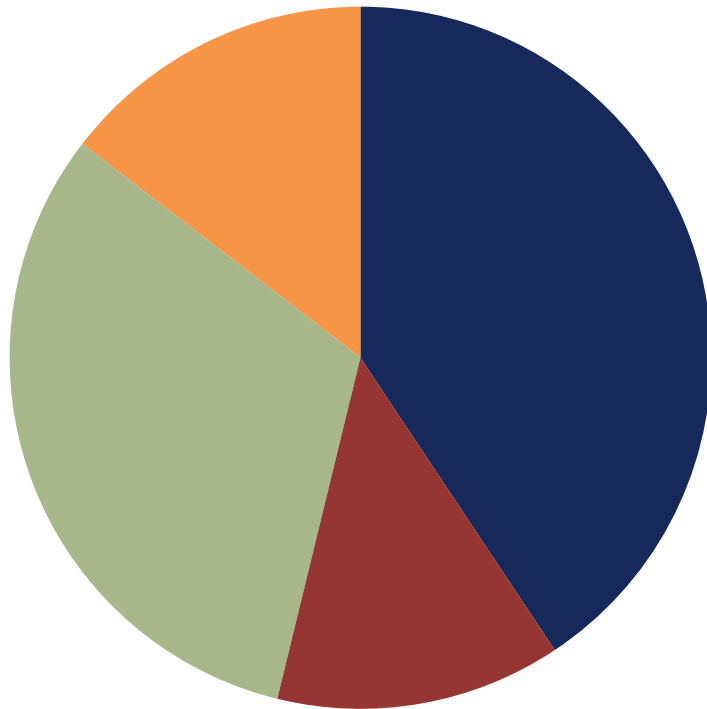
# City of Knoxville Employees' Pension Plan

Total Fixed Income vs. Blmbg. Barc. U.S. Aggregate

June 30, 2018

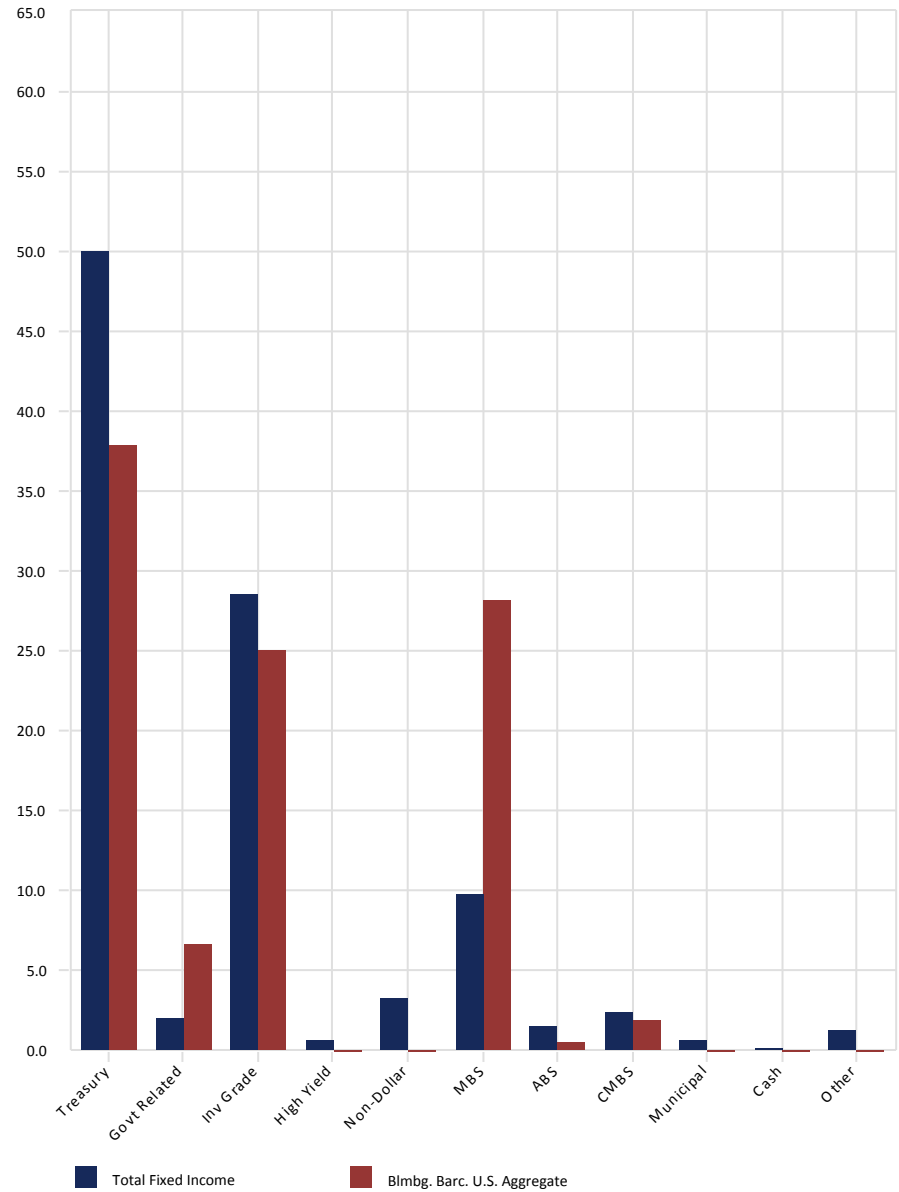
## Manager Allocation

June 30, 2018 : \$146,945,682



Manager	Market Value (\$)	Allocation (%)
STW Fixed	59,749,153	40.66
IR+M TIPS	19,323,226	13.15
IR+M Core Fixed	46,455,109	31.61
Pictet Emerging Local Currency Debt	11,843	0.01
NT Aggregate Bond Fund	21,406,352	14.57

## Sector Distribution (%)

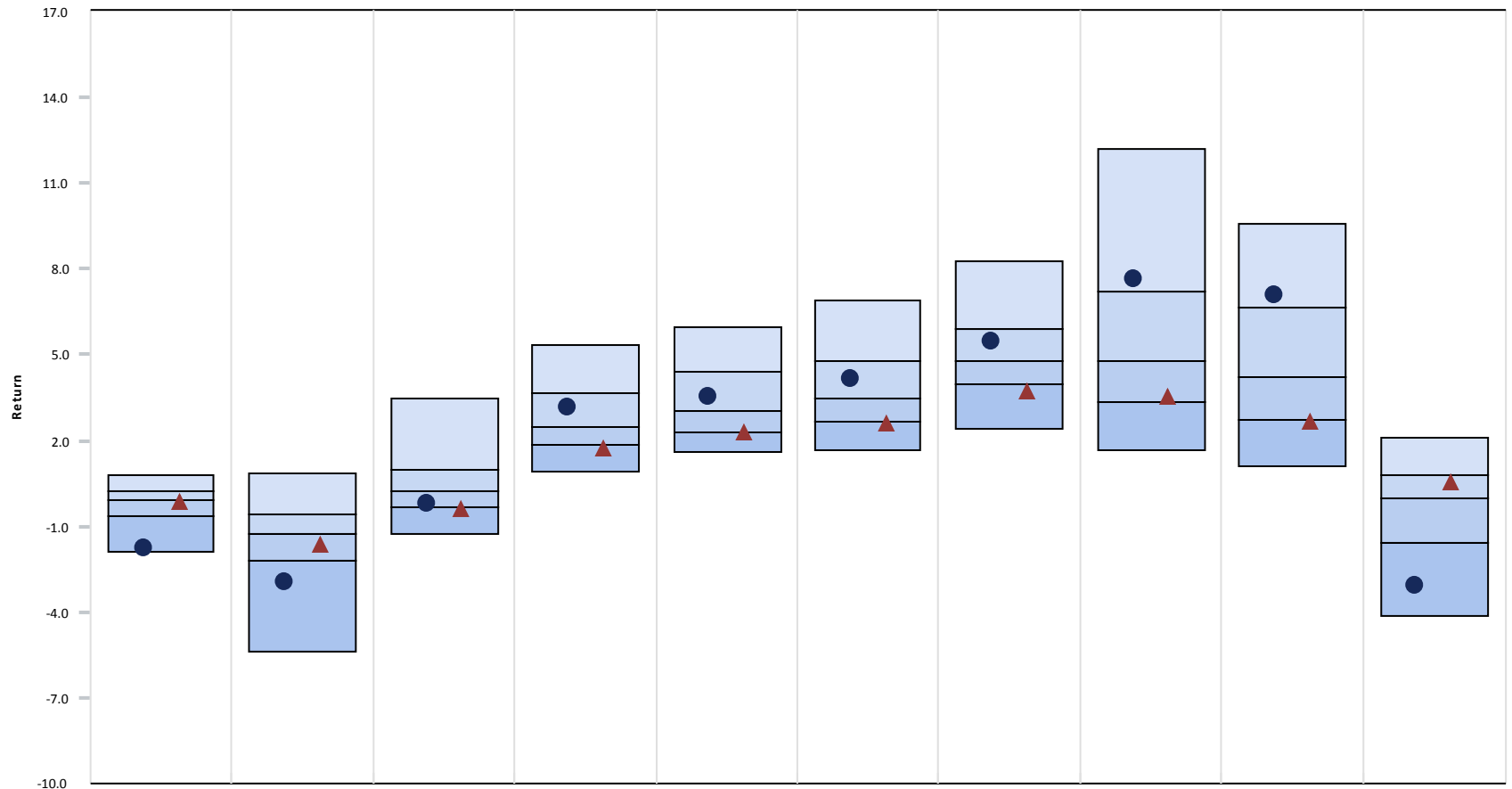




# City of Knoxville Employees' Pension Plan

All Master Trust - US Fixed Income Segment Peer Group Return

June 30, 2018



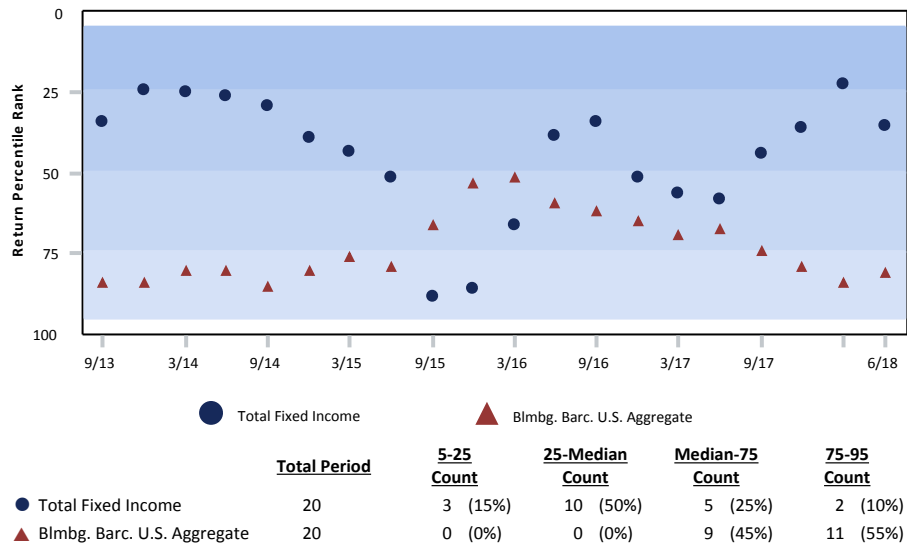
	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● Total Fixed Income	-1.79 (94)	-2.95 (79)	-0.20 (71)	3.17 (35)	3.50 (39)	4.16 (36)	5.47 (34)	7.64 (24)	7.11 (21)	-3.09 (90)
▲ Blmbg. Barc. U.S. Aggregate	-0.16 (54)	-1.62 (63)	-0.40 (78)	1.72 (81)	2.27 (77)	2.57 (79)	3.72 (82)	3.54 (69)	2.65 (77)	0.55 (32)
5th Percentile	0.81	0.85	3.47	5.32	5.96	6.89	8.27	12.20	9.60	2.10
1st Quartile	0.21	-0.60	0.96	3.66	4.38	4.75	5.91	7.21	6.65	0.79
<b>Median</b>	<b>-0.10</b>	<b>-1.28</b>	<b>0.25</b>	<b>2.49</b>	<b>3.05</b>	<b>3.50</b>	<b>4.80</b>	<b>4.78</b>	<b>4.24</b>	<b>-0.01</b>
3rd Quartile	-0.65	-2.23	-0.31	1.84	2.30	2.67	3.96	3.32	2.70	-1.58
95th Percentile	-1.91	-5.37	-1.24	0.93	1.62	1.65	2.43	1.64	1.09	-4.15
Population	296	292	285	265	227	199	121	333	361	311

# City of Knoxville Employees' Pension Plan

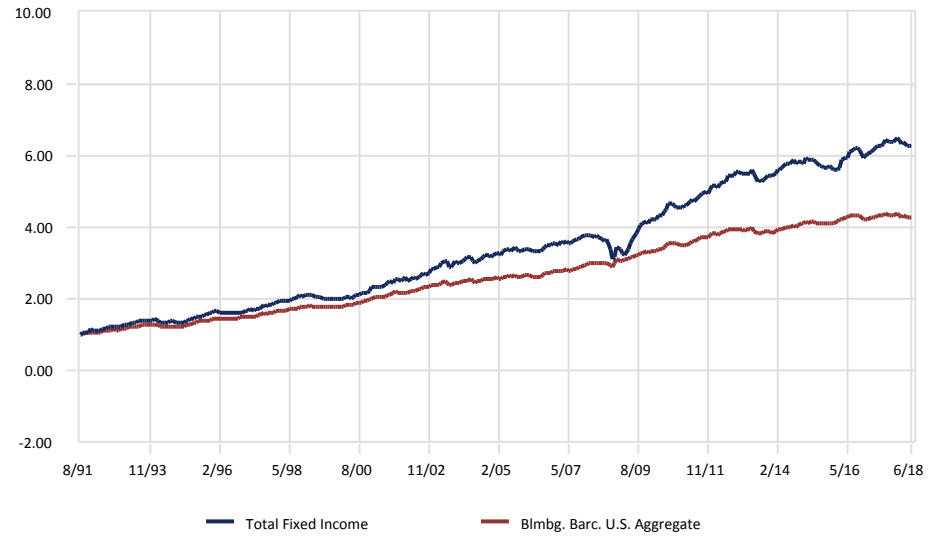
Total Fixed Income

June 30, 2018

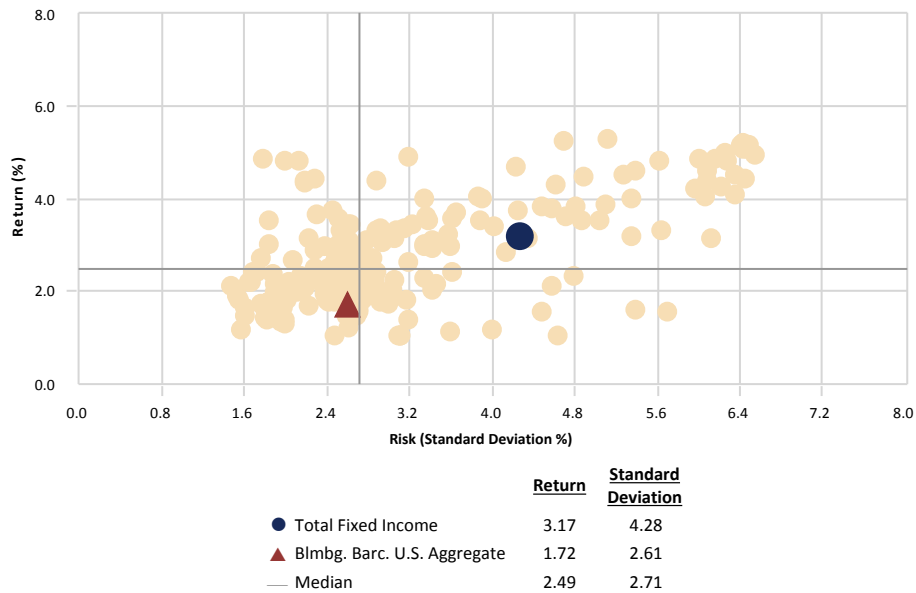
## 3 Year Rolling Return Rank



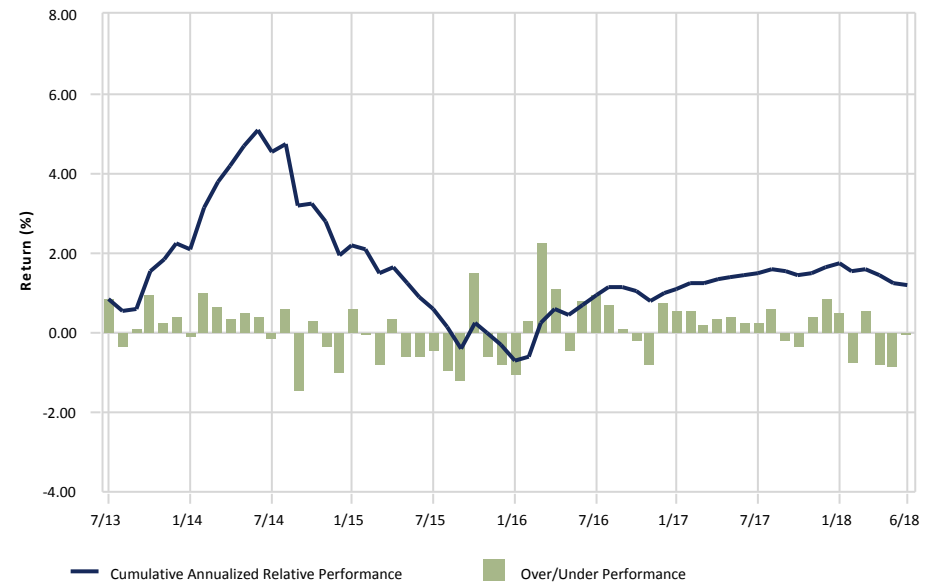
## Growth of \$1 - Since Inception (09/01/91)



## Risk vs. Return (07/01/15 - 06/30/18)



## Relative Performance vs. Blmbg. Barc. U.S. Aggregate

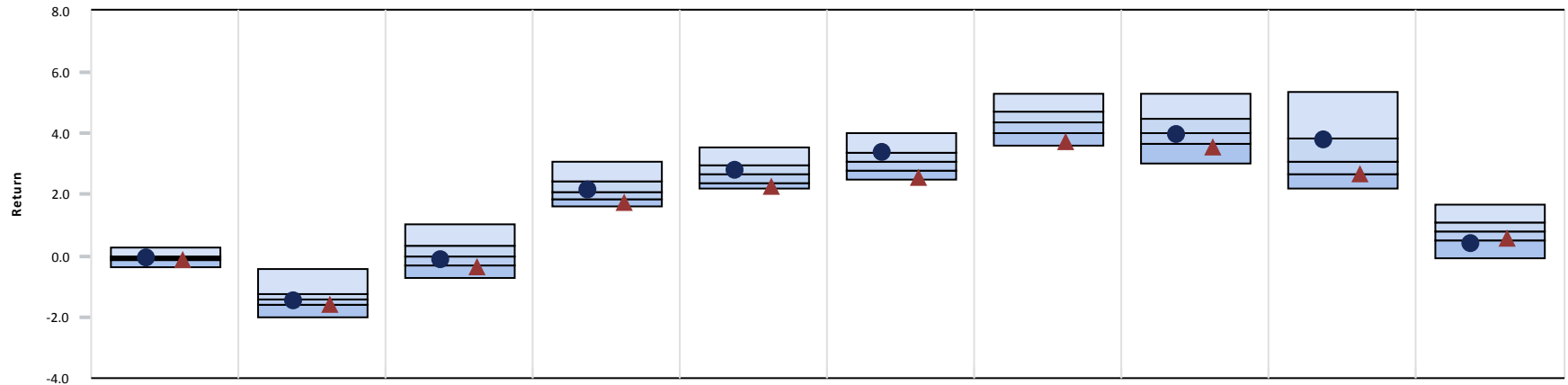


# City of Knoxville Employees' Pension Plan

IR+M Core Fixed

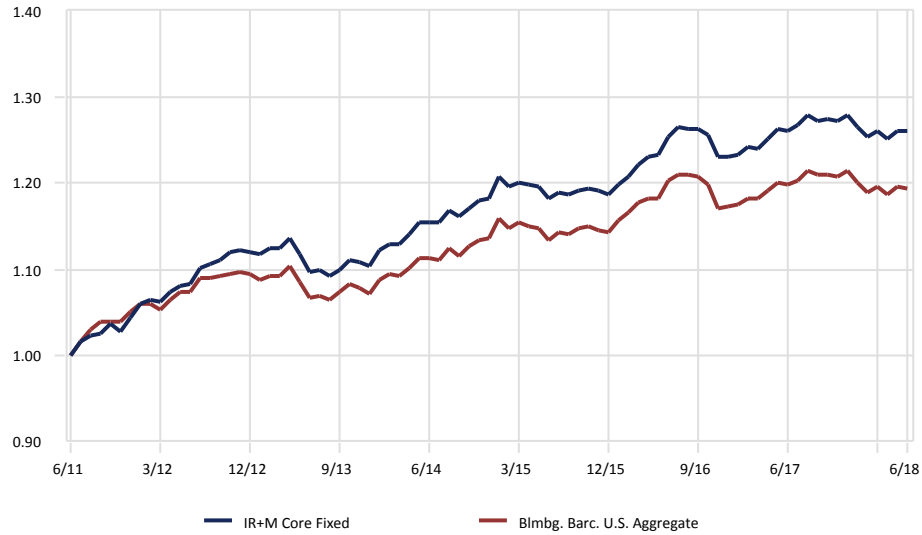
June 30, 2018

## Peer Group Analysis - IM U.S. Broad Market Core Fixed Income (SA+CF)

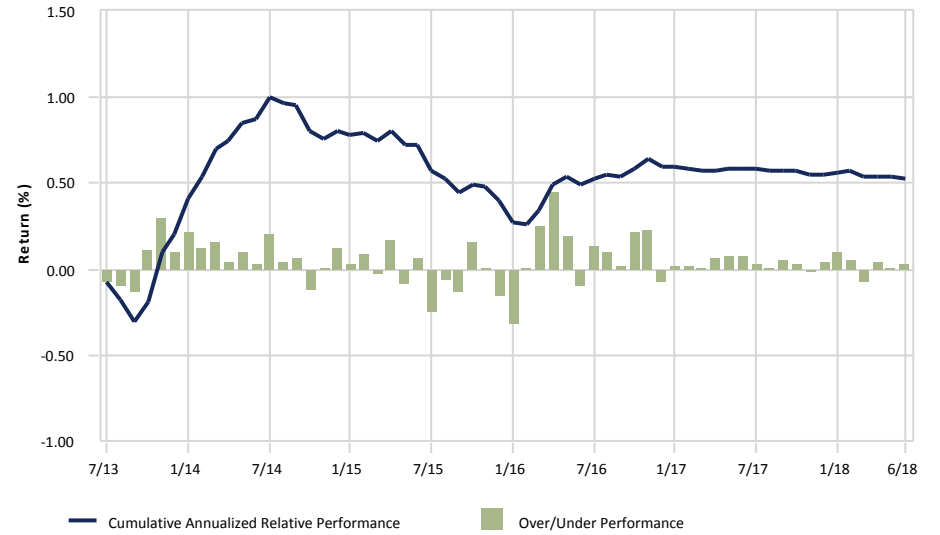


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● IR+M Core Fixed	-0.09 (48)	-1.46 (54)	-0.11 (55)	2.13 (47)	2.82 (34)	3.37 (28)	-	3.94 (57)	3.77 (28)	0.36 (85)
▲ Blmbg. Barc. U.S. Aggregate	-0.16 (73)	-1.62 (74)	-0.40 (83)	1.72 (87)	2.27 (87)	2.57 (92)	3.72 (93)	3.54 (85)	2.65 (77)	0.55 (74)
Median	-0.09	-1.44	0.00	2.09	2.67	3.07	4.39	4.05	3.10	0.82

## Growth of \$1 - Since Inception (07/01/11)



## Relative Performance vs. Blmbg. Barc. U.S. Aggregate



gross of fees

# City of Knoxville Employees' Pension Plan

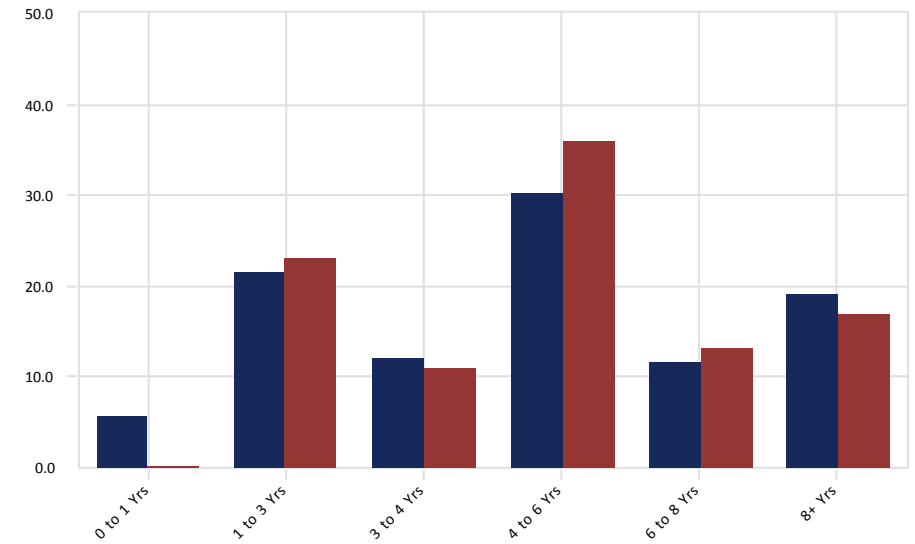
IR+M Core Fixed vs. Blmbg. Barc. U.S. Aggregate

June 30, 2018

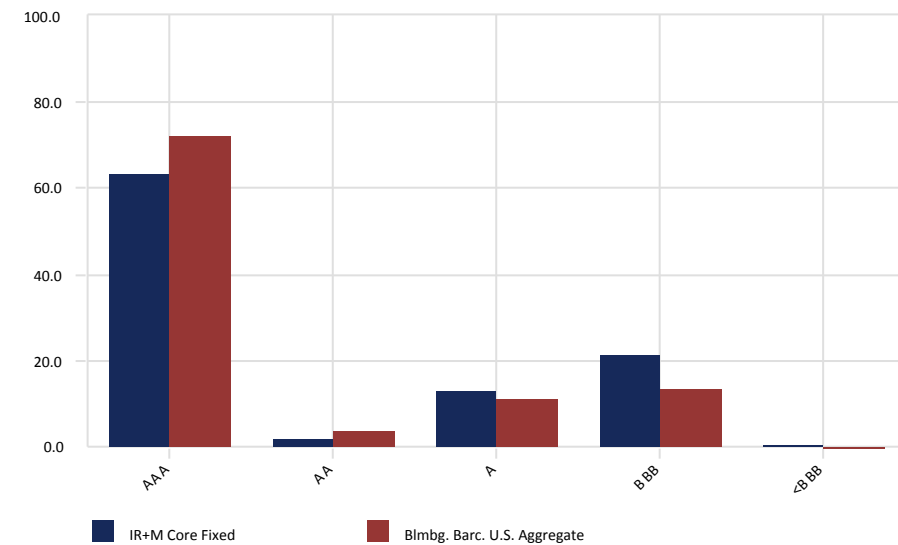
## Portfolio Characteristics

	<u>Portfolio</u>	<u>Benchmark</u>
Avg. Maturity	8.13	8.39
Avg. Quality	Aa2/AA-	AA1/AA2
Yield To Maturity (%)	3.44	3.29
Coupon Rate (%)	3.59	3.11
Modified Duration	5.90	6.01

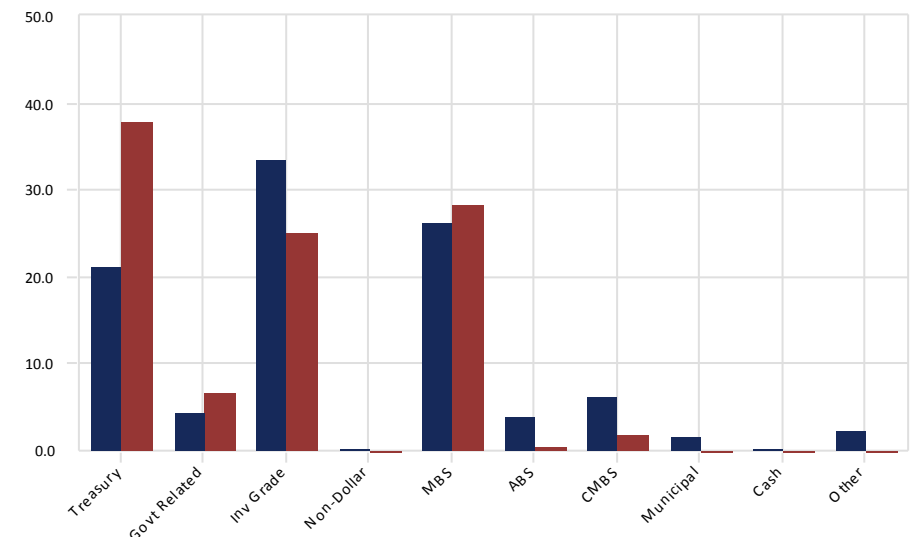
## Duration Distribution (%)



## Credit Quality Distribution (%)



## Sector Distribution (%)

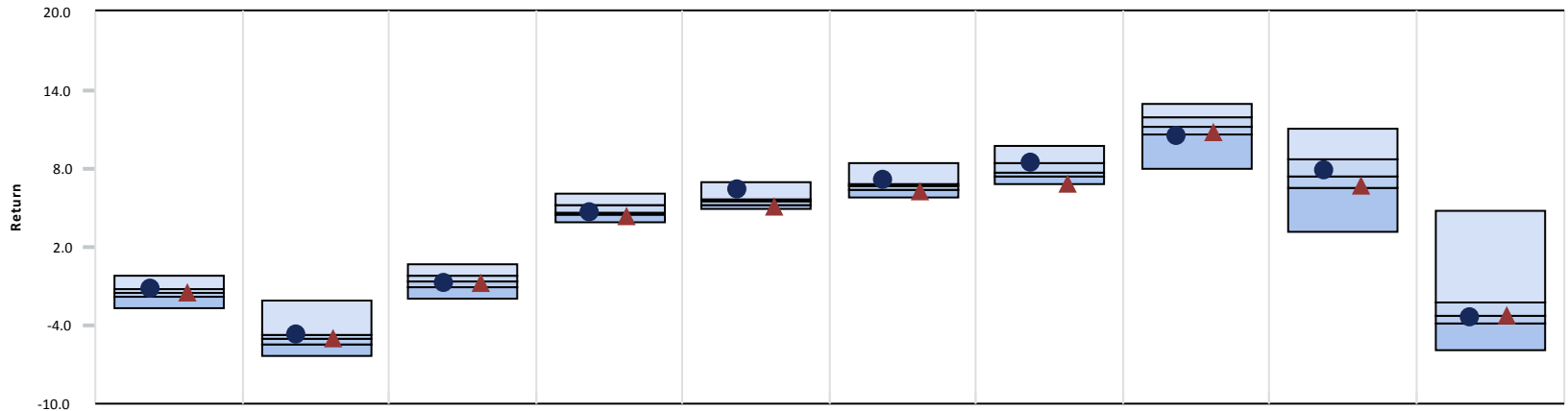


# City of Knoxville Employees' Pension Plan

STW Fixed

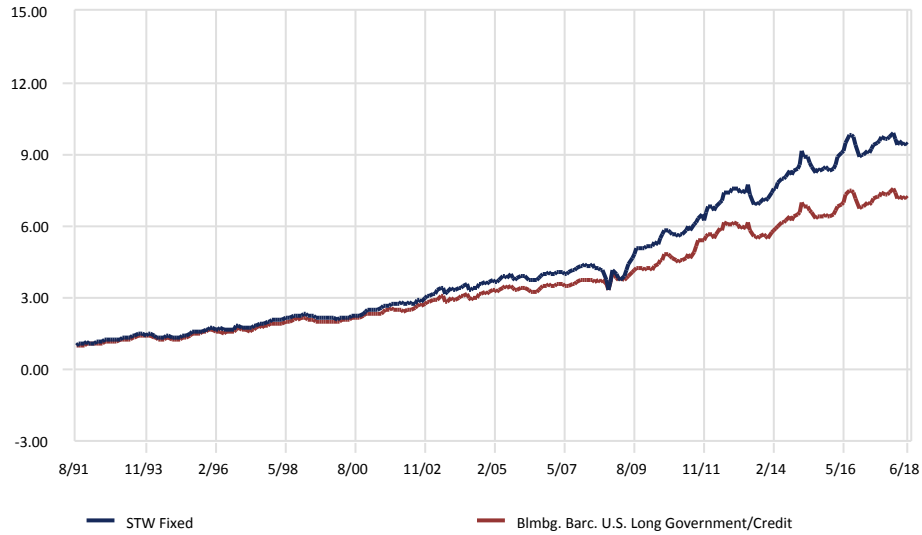
June 30, 2018

## Peer Group Analysis - IM U.S. Long Duration (SA+CF)

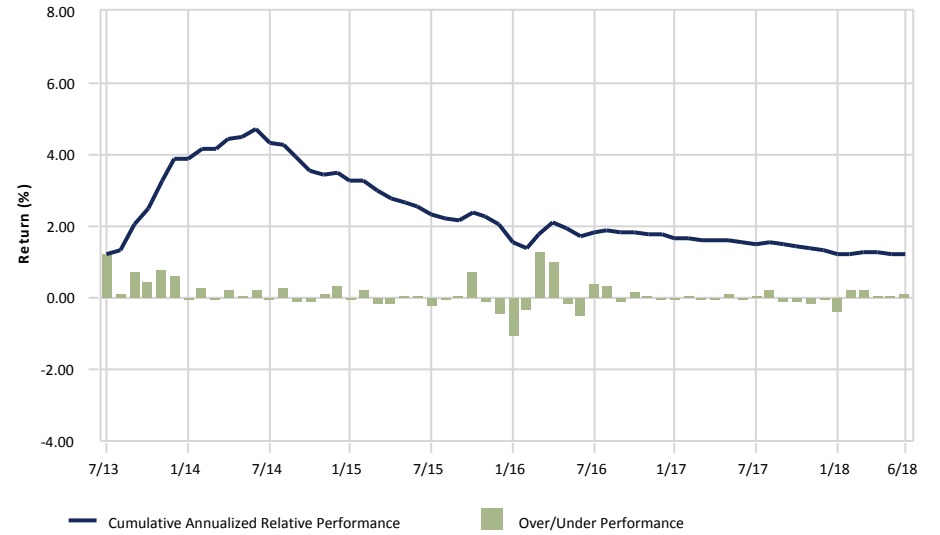


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● STW Fixed	-1.28 (30)	-4.78 (24)	-0.74 (62)	4.71 (47)	6.40 (9)	7.09 (17)	8.40 (27)	10.55 (77)	7.81 (38)	-3.42 (57)
▲ Blmbg. Barc. U.S. Long Government/Credit	-1.45 (48)	-4.98 (44)	-0.78 (65)	4.34 (81)	5.10 (81)	6.19 (84)	6.79 (95)	10.71 (73)	6.67 (71)	-3.30 (49)
<b>Median</b>	<b>-1.47</b>	<b>-5.04</b>	<b>-0.63</b>	<b>4.65</b>	<b>5.49</b>	<b>6.61</b>	<b>7.70</b>	<b>11.23</b>	<b>7.44</b>	<b>-3.33</b>

## Growth of \$1 - Since Inception (09/01/91)



## Relative Performance vs. Blmbg. Barc. U.S. Long Government/Credit



gross of fees

# City of Knoxville Employees' Pension Plan

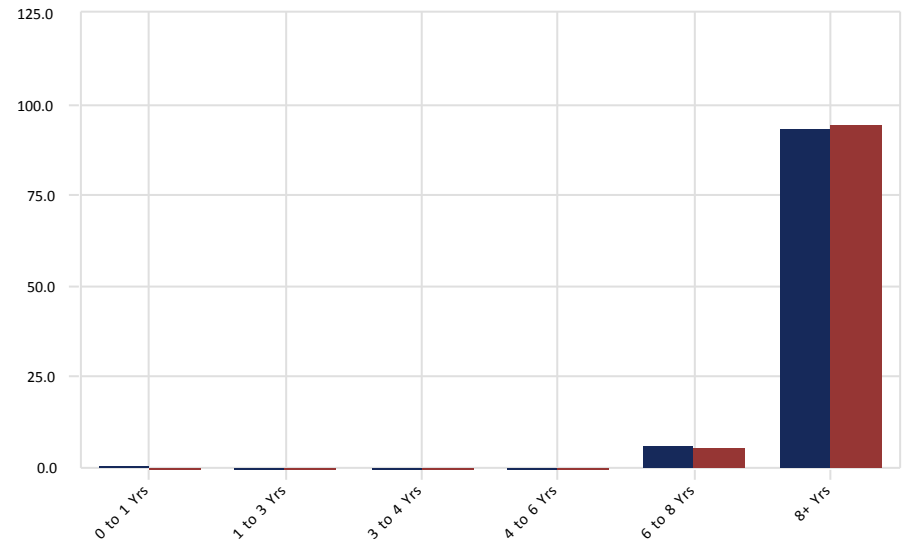
STW Fixed vs. Blmbg. Barc. U.S. Long Government/Credit

June 30, 2018

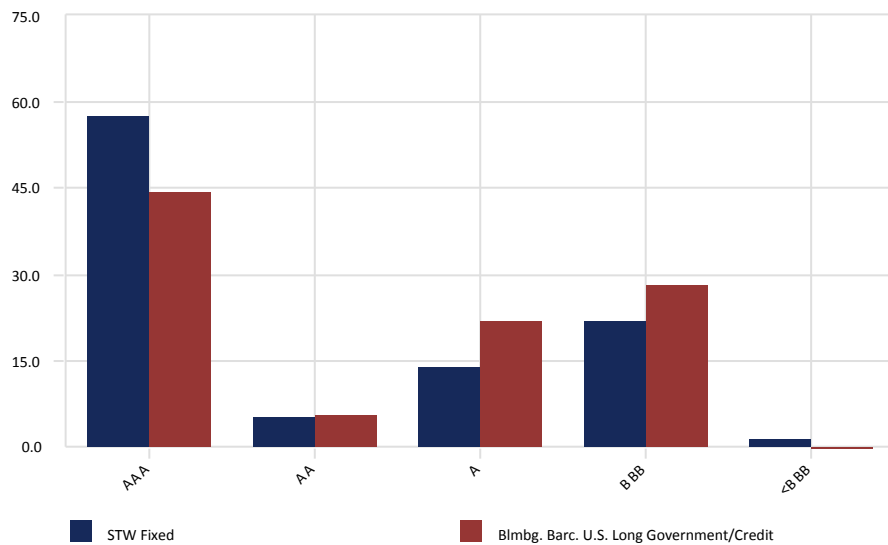
## Portfolio Characteristics

	<u>Portfolio</u>	<u>Benchmark</u>
Avg. Maturity	25.25	24.17
Avg. Quality	AA-	AA3/A1
Yield To Maturity (%)	3.82	3.97
Coupon Rate (%)	4.25	4.41
Modified Duration	14.50	14.91

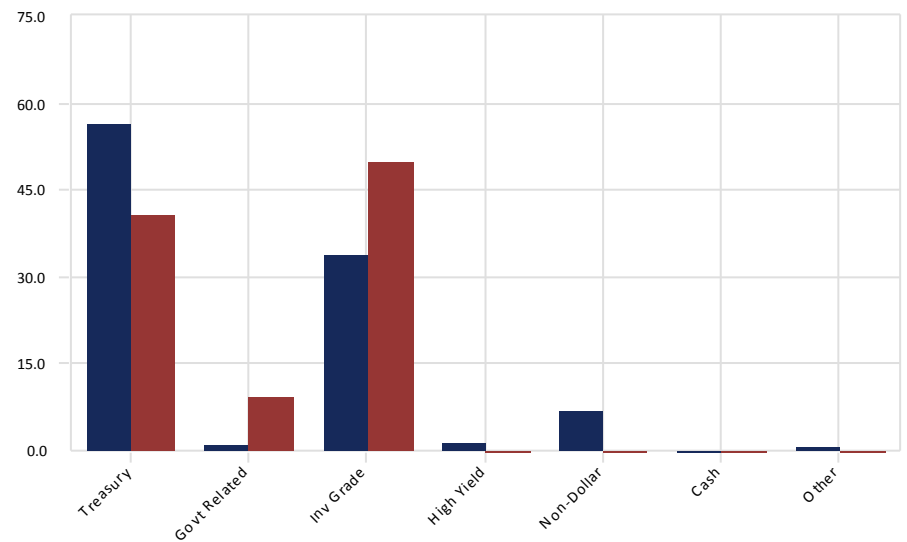
## Duration Distribution (%)



## Credit Quality Distribution (%)



## Sector Distribution (%)

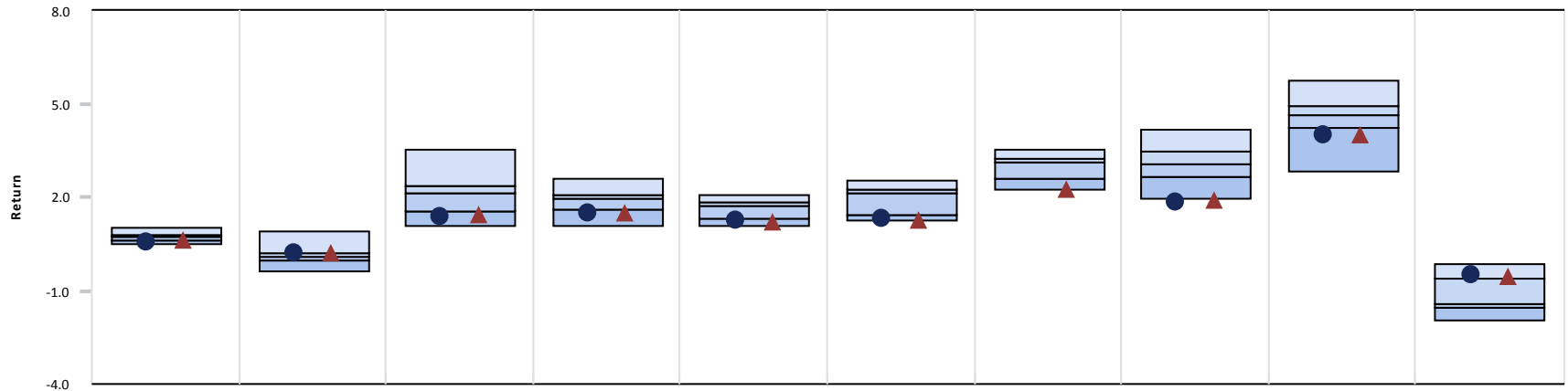


# City of Knoxville Employees' Pension Plan

IR+M TIPS

June 30, 2018

## Peer Group Analysis - IM U.S. TIPS (SA+CF)

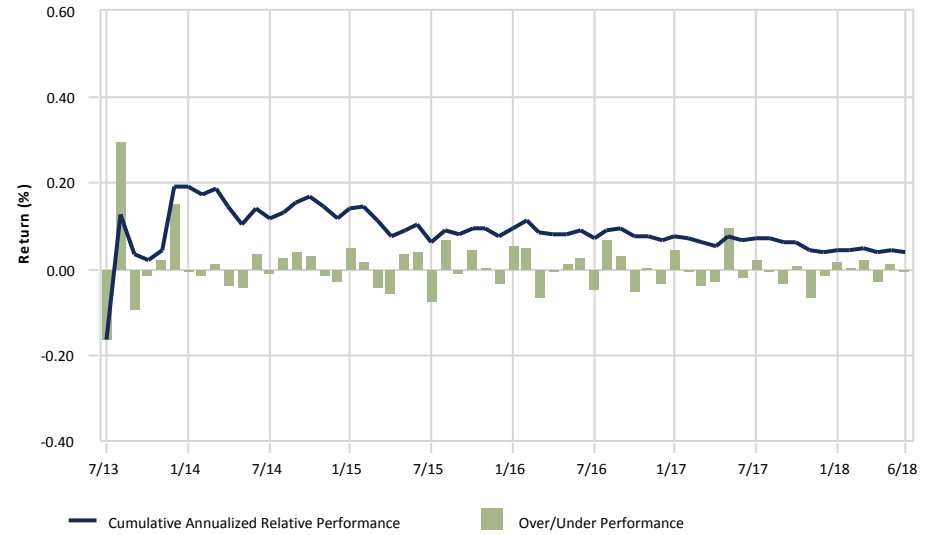


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● IR+M TIPS	0.59 (90)	0.23 (23)	1.38 (93)	1.49 (90)	1.25 (88)	1.34 (86)	-	1.85 (98)	4.05 (84)	-0.50 (19)
▲ Blmbg. Barc. U.S. TIPS 1-10 Year	0.61 (87)	0.21 (26)	1.45 (91)	1.50 (90)	1.21 (93)	1.28 (95)	2.26 (97)	1.90 (98)	4.01 (89)	-0.52 (21)
<b>Median</b>	<b>0.74</b>	<b>0.07</b>	<b>2.14</b>	<b>1.97</b>	<b>1.71</b>	<b>2.15</b>	<b>3.12</b>	<b>3.10</b>	<b>4.66</b>	<b>-1.41</b>

## Growth of \$1 - Since Inception (07/01/10)



## Relative Performance vs. Blmbg. Barc. U.S. TIPS 1-10 Year



gross of fees

# City of Knoxville Employees' Pension Plan

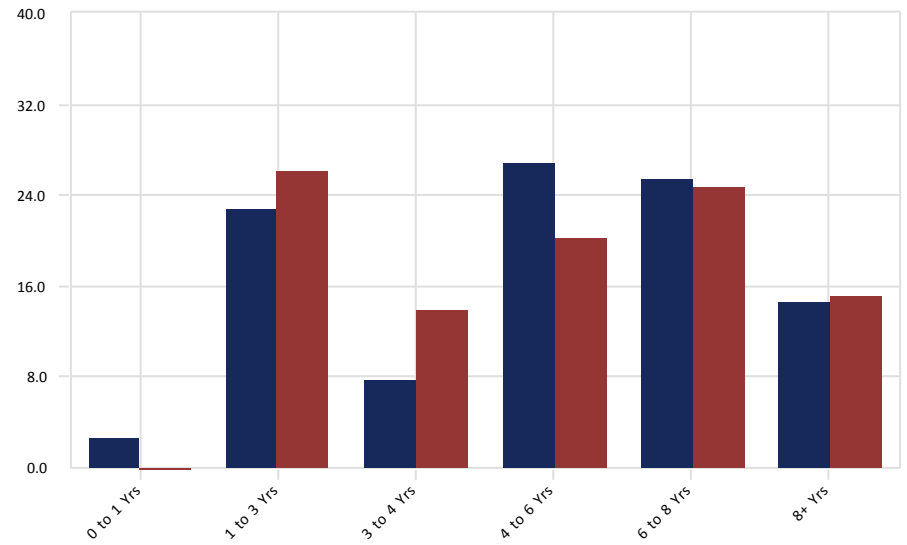
IR+M TIPS vs. Blmbg. Barc. U.S. TIPS 1-10 Year

June 30, 2018

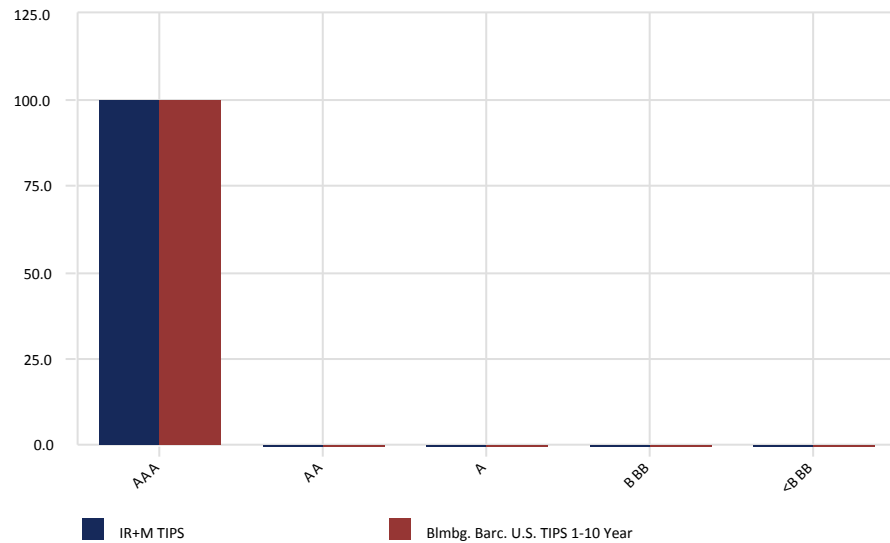
## Portfolio Characteristics

	<u>Portfolio</u>	<u>Benchmark</u>
Avg. Maturity	5.33	5.36
Avg. Quality	Aaa/AA+	AAA/AAA
Yield To Maturity (%)	0.64	2.90
Coupon Rate (%)	0.52	0.63
Modified Duration	5.21	2.95

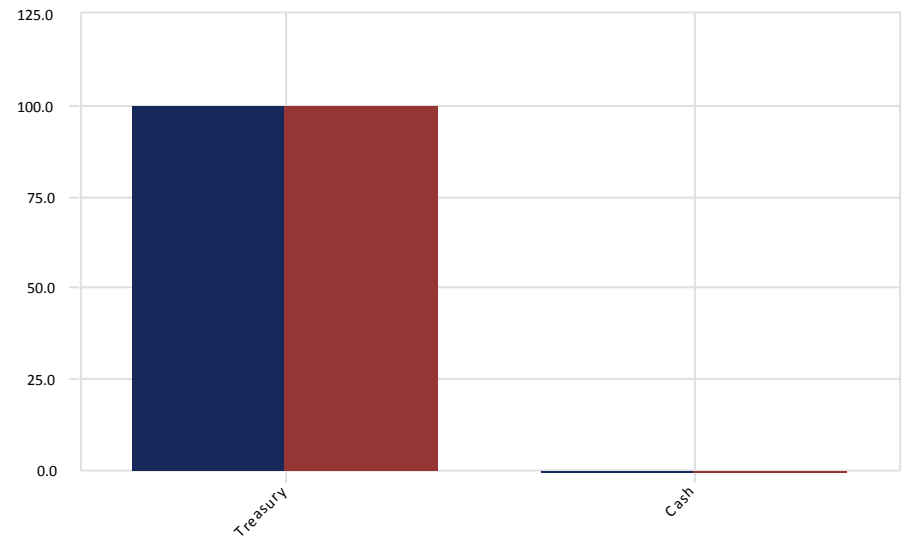
## Duration Distribution (%)



## Credit Quality Distribution (%)



## Sector Distribution (%)





## Real Assets

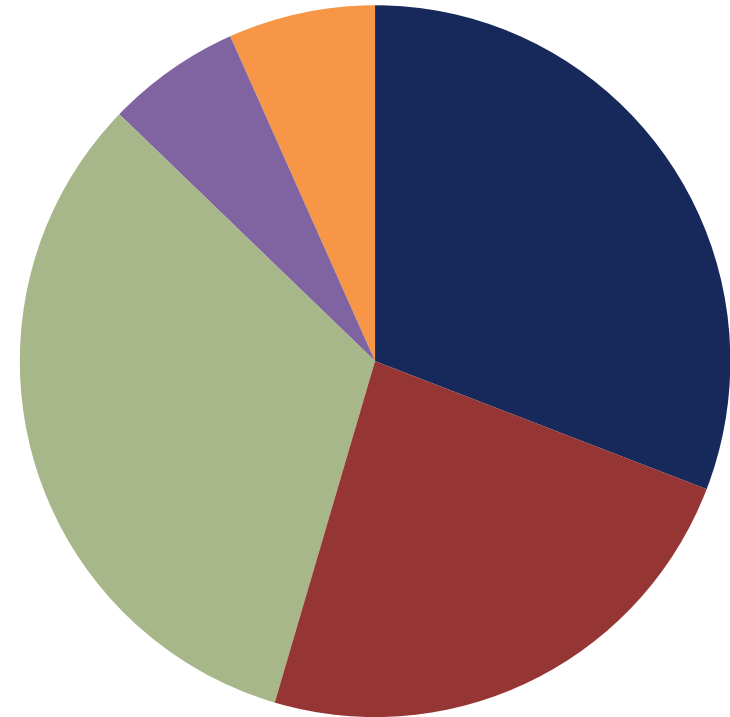
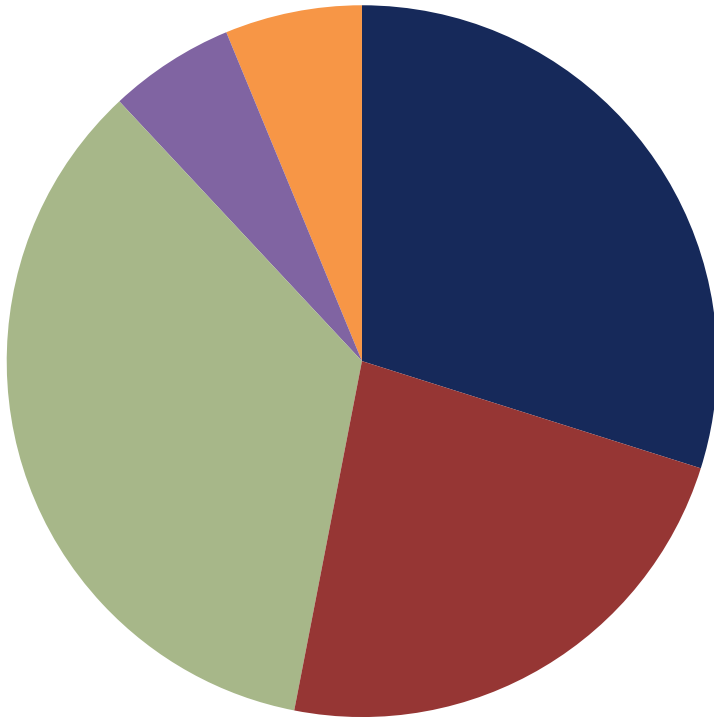
# City of Knoxville Employees' Pension Plan

## Real Assets Manager Allocation Chart

June 30, 2018

June 30, 2018 : \$90,485,105

March 31, 2018 : \$86,622,037



	Market Value (\$)	Allocation (%)
RREEF America II	27,023,175	29.86
Principal Global Investors	20,986,404	23.19
Tortoise	31,643,205	34.97
Aether Real Assets I	5,187,328	5.73
Aether Real Assets II	5,644,992	6.24

	Market Value (\$)	Allocation (%)
RREEF America II	26,726,623	30.85
Principal Global Investors	20,532,116	23.70
Tortoise	28,280,981	32.65
Aether Real Assets I	5,291,467	6.11
Aether Real Assets II	5,790,850	6.69

# City of Knoxville Employees' Pension Plan

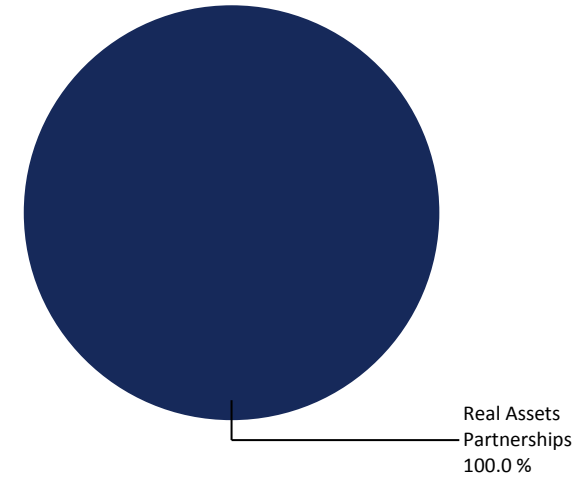
## Real Assets Portfolio Summary\*

June 30, 2018

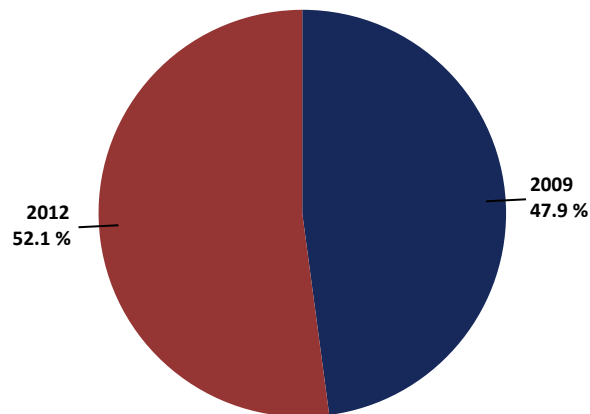
### Cumulative Cash Flow Analysis



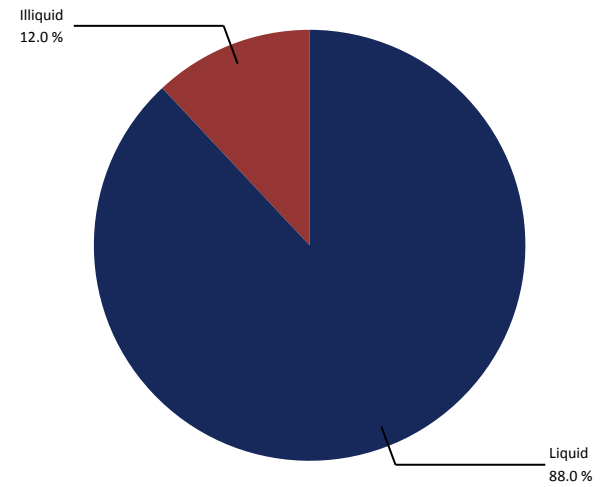
### Asset Class Allocation (% by Market Value)



### Vintage Year (% by Market Value)



### Liquidity Positioning (% by Market Values)



\*Source of performance data is provided by the Custodial Bank.

## City of Knoxville Employees' Pension Plan

### Real Asset Summary\*

June 30, 2018

Partnerships	Vintage Year	Investment Strategy	Capital Commitment (\$)	Drawn Down (\$)	Distributed (\$)	Market Value (1)	IRR (%) (1)	TVPI Multiple (1,2)	Valuation Date (1)
<b>Real Asset Partnerships</b>									
Aether Real Assets I	2009	Natural Resources - Diversified (FOF)	11,000,000	9,547,599	4,598,936	5,187,328	0.57	1.03	06/30/2018
Aether Real Assets II	2012	Natural Resources - Diversified (FOF)	7,500,000	6,281,797	1,548,197	5,644,992	3.78	1.15	06/30/2018
<b>Private Real Assets</b>			<b>18,500,000</b>	<b>15,829,396</b>	<b>6,147,133</b>	<b>10,832,320</b>	<b>1.73</b>	<b>1.07</b>	<b>06/30/2018</b>

1) Valuations are typically reported on one quarter lag. If the valuation date is earlier than the statement's date, the market value and performance are estimated by rolling forward the latest reported balance to include relevant new cash flows.

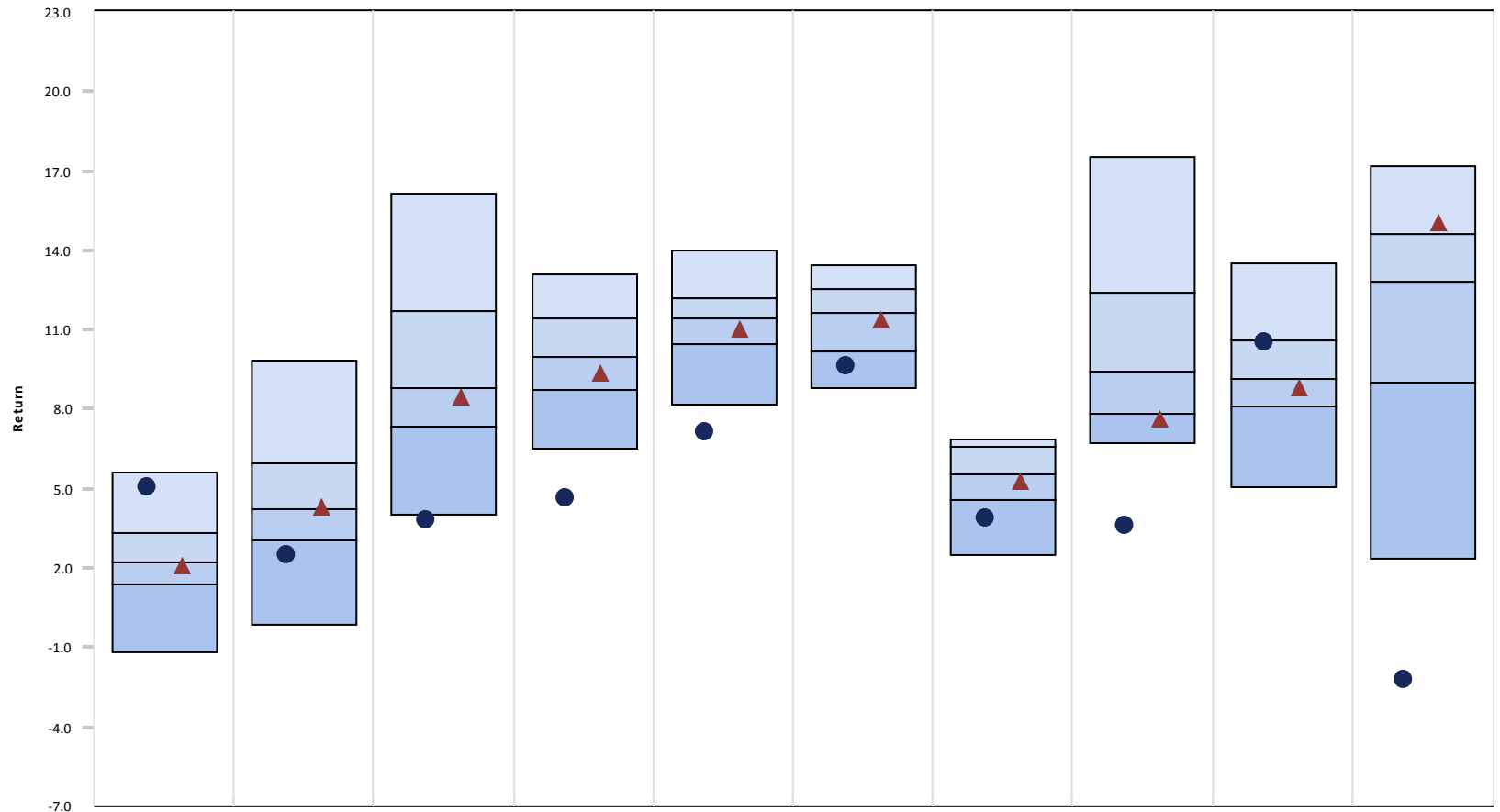
2) Total Value to Paid In (TVPI) reflects total realized and unrealized performance. Distributed to Paid In (DPI) reflects realized performance only.

\*Source of performance data is from the Custodial Bank.

# City of Knoxville Employees' Pension Plan

All Master Trust - Real Estate Segment Peer Group Return

June 30, 2018

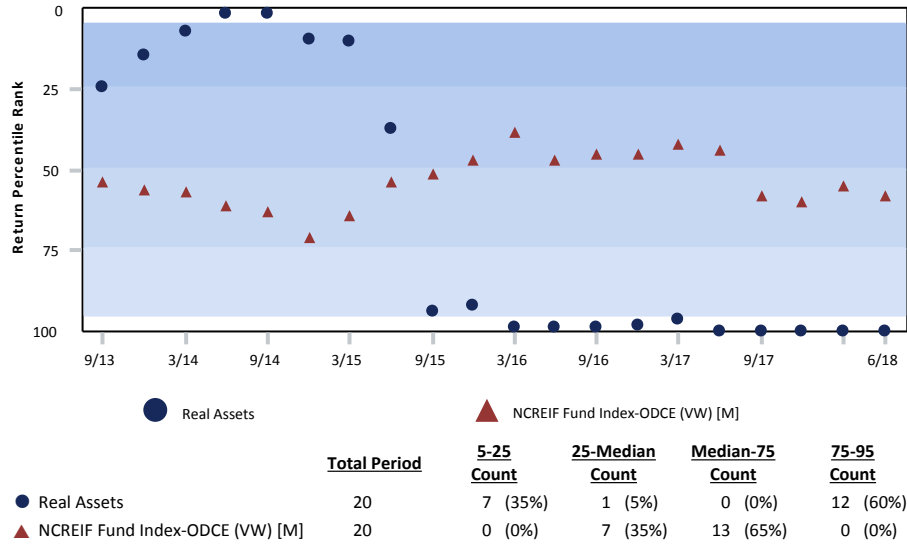


	<u>3 Month</u>	<u>CYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>7 Year</u>	<u>10 Year</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>
● Real Assets	5.08 (8)	2.49 (80)	3.81 (96)	4.63 (100)	7.15 (99)	9.63 (85)	3.84 (86)	3.57 (100)	10.54 (27)	-2.20 (100)
▲ NCREIF Fund Index-ODCE (VW) [M]	2.05 (56)	4.30 (49)	8.44 (55)	9.37 (58)	11.04 (56)	11.39 (66)	5.29 (53)	7.62 (78)	8.77 (55)	15.02 (24)
5th Percentile	5.63	9.81	16.17	13.12	14.02	13.44	6.84	17.52	13.50	17.21
1st Quartile	3.36	5.92	11.69	11.42	12.21	12.56	6.57	12.41	10.58	14.61
<b>Median</b>	<b>2.19</b>	<b>4.26</b>	<b>8.80</b>	<b>9.97</b>	<b>11.42</b>	<b>11.64</b>	<b>5.56</b>	<b>9.44</b>	<b>9.16</b>	<b>12.81</b>
3rd Quartile	1.39	3.02	7.34	8.76	10.48	10.16	4.54	7.84	8.07	9.00
95th Percentile	-1.16	-0.16	3.98	6.52	8.20	8.82	2.49	6.69	5.05	2.36
Population	143	124	107	66	46	33	20	104	92	74

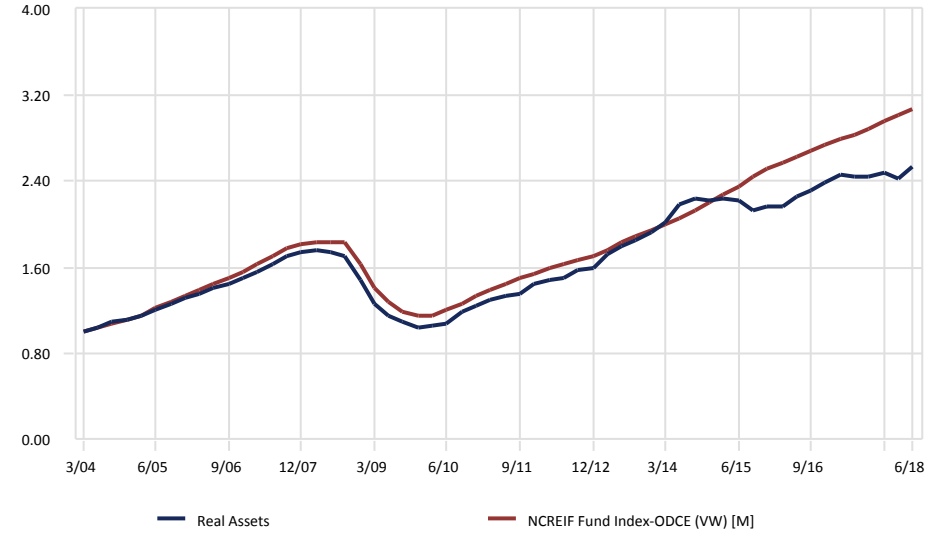
# City of Knoxville Employees' Pension Plan

Real Assets  
June 30, 2018

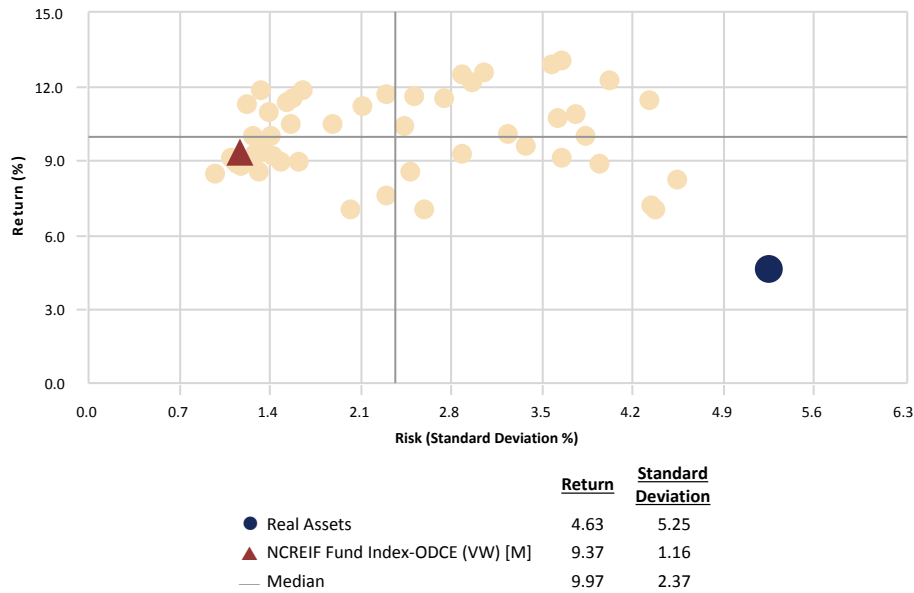
## 3 Year Rolling Return Rank



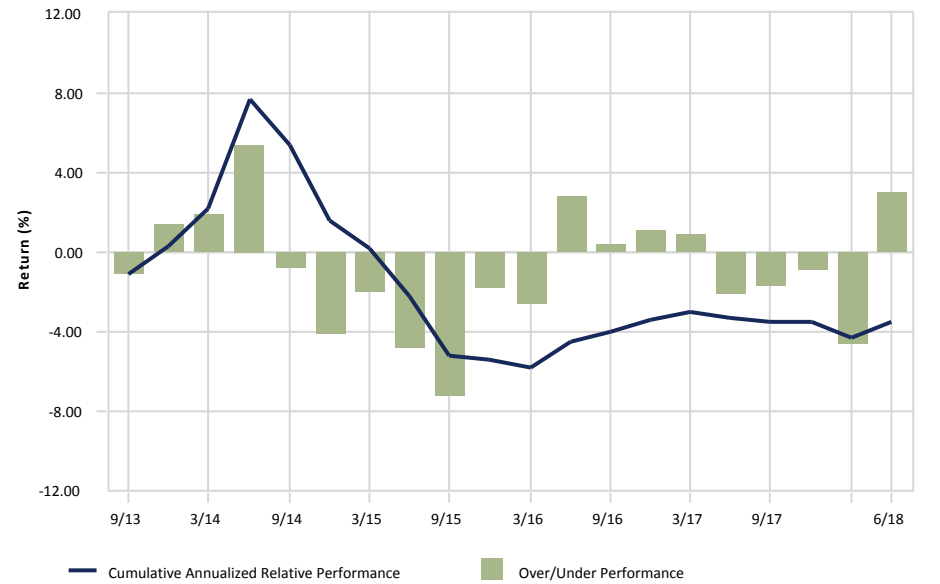
## Growth of \$1 - Since Inception (04/01/04)



## Risk vs. Return (07/01/15 - 06/30/18)



## Relative Performance vs. NCREIF Fund Index-ODCE (VW) [M]

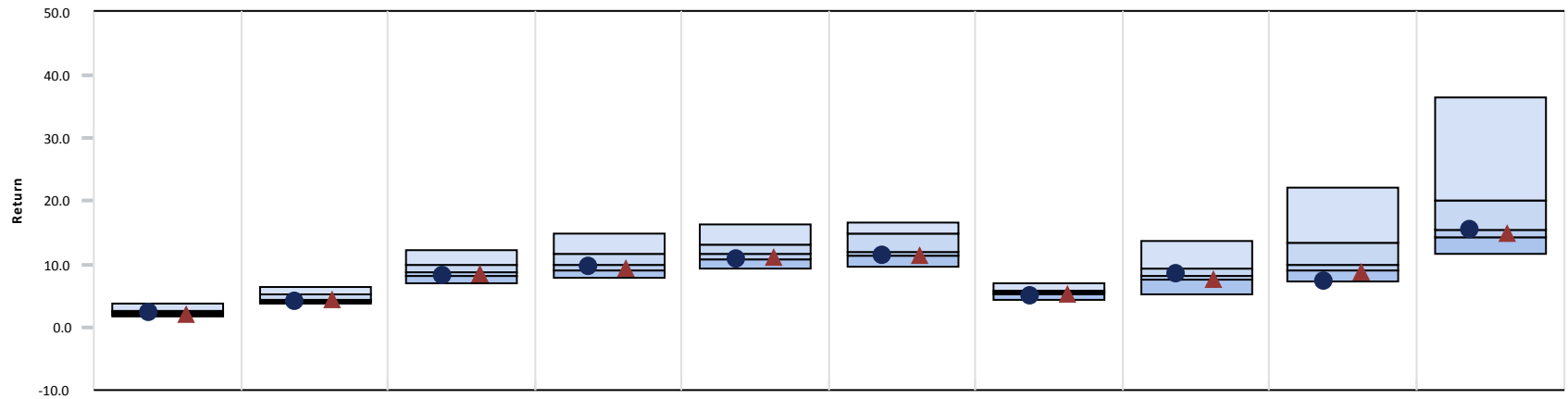


# City of Knoxville Employees' Pension Plan

Principal Global Investors

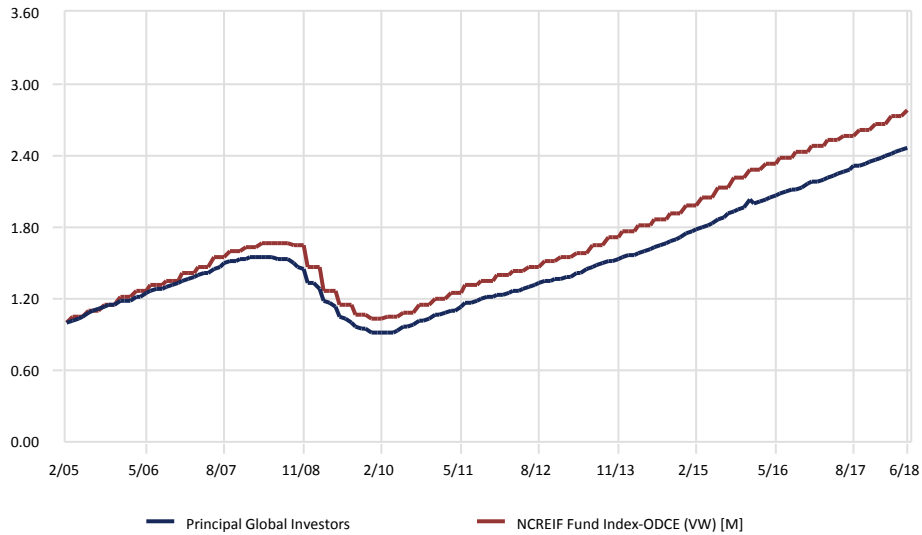
June 30, 2018

## Peer Group Analysis - IM U.S. Private Real Estate (SA+CF)

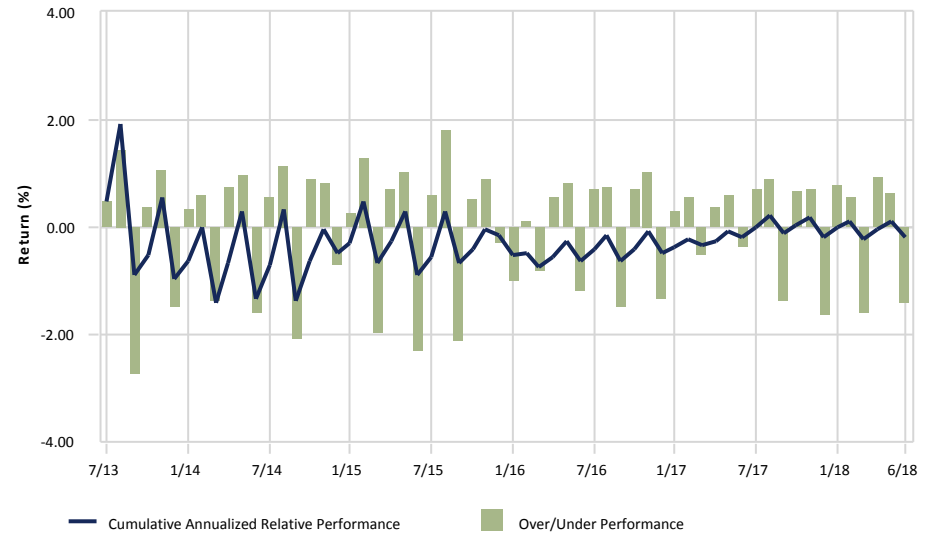


	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● Principal Global Investors	2.21 (48)	4.15 (79)	8.23 (75)	9.67 (66)	10.83 (72)	11.34 (73)	4.82 (85)	8.54 (44)	7.41 (94)	15.44 (47)
▲ NCREIF Fund Index-ODCE (VW) [M]	2.05 (67)	4.30 (63)	8.44 (65)	9.37 (73)	11.04 (64)	11.39 (71)	5.29 (69)	7.62 (64)	8.77 (84)	15.02 (57)
<b>Median</b>	<b>2.20</b>	<b>4.48</b>	<b>8.87</b>	<b>9.83</b>	<b>11.66</b>	<b>11.91</b>	<b>5.61</b>	<b>8.23</b>	<b>10.05</b>	<b>15.35</b>

## Growth of \$1 - Since Inception (03/01/05)



## Relative Performance vs. NCREIF Fund Index-ODCE (VW) [M]



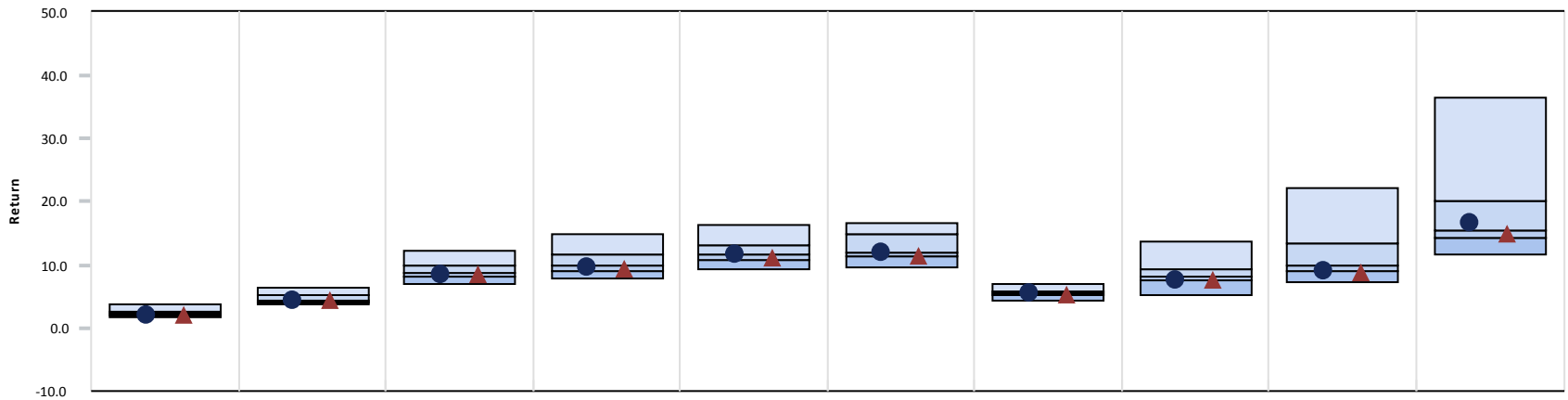
gross of fees

# City of Knoxville Employees' Pension Plan

RREEF America II

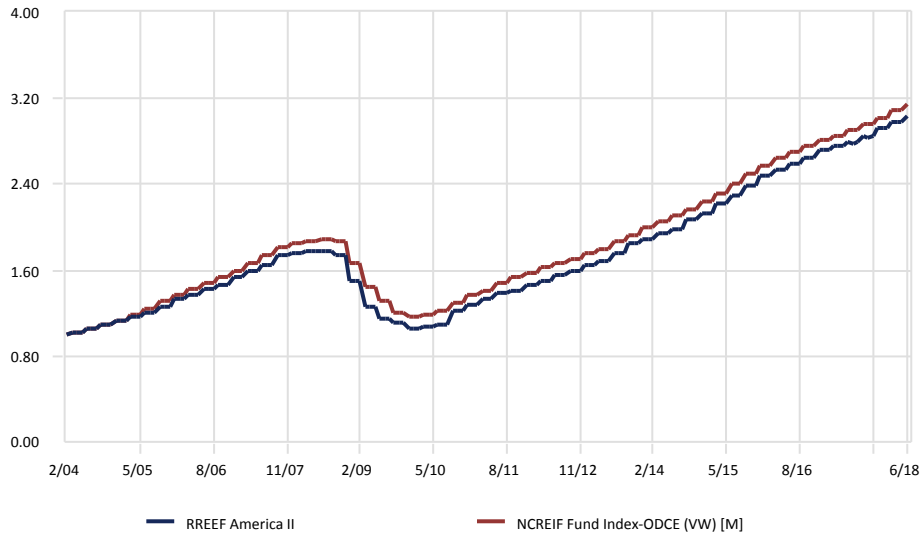
June 30, 2018

## Peer Group Analysis - IM U.S. Private Real Estate (SA+CF)



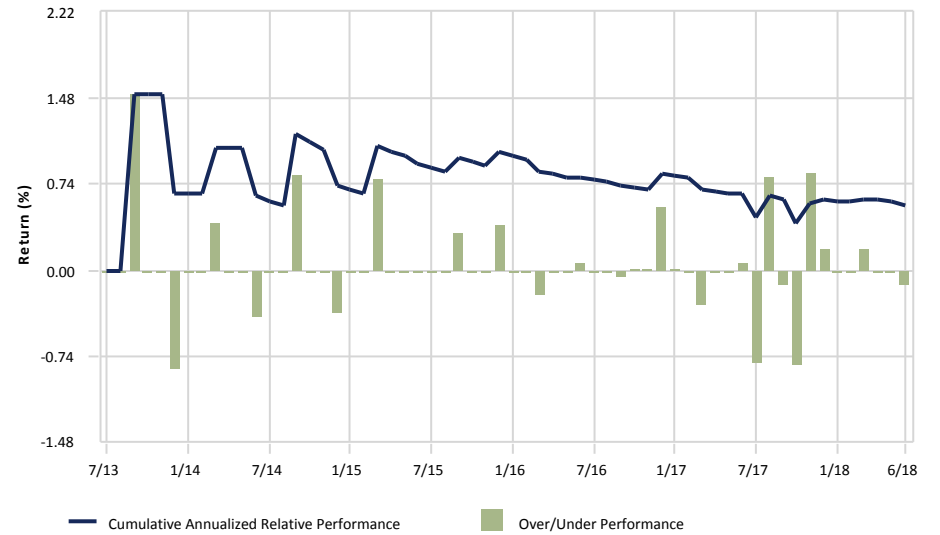
	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2017	2016	2015
● RREEF America II	1.92 (78)	4.34 (61)	8.57 (61)	9.71 (63)	11.66 (51)	11.88 (54)	5.55 (62)	7.46 (70)	9.15 (65)	16.70 (42)
▲ NCREIF Fund Index-ODCE (VW) [M]	2.05 (67)	4.30 (63)	8.44 (65)	9.37 (73)	11.04 (64)	11.39 (71)	5.29 (69)	7.62 (64)	8.77 (84)	15.02 (57)
<b>Median</b>	<b>2.20</b>	<b>4.48</b>	<b>8.87</b>	<b>9.83</b>	<b>11.66</b>	<b>11.91</b>	<b>5.61</b>	<b>8.23</b>	<b>10.05</b>	<b>15.35</b>

## Growth of \$1 - Since Inception (03/01/04)



gross of fees

## Relative Performance vs. NCREIF Fund Index-ODCE (VW) [M]





# City of Knoxville Employees' Pension Plan

Real Estate Managers

June 30, 2018

## PRINCIPAL REAL ESTATE: U.S. Property Account

Quarter Ending: June 30, 2018

### General Fund Information

Structure	Insurance Co. Separate Account
Inception Date	1/31/1982
Termination Date	Infinite Life
L/T Return Objective	Returns = NFI-ODCE Equal Weight
Eligible Property Types	Office, Residential, Industrial, Retail, Hotel, Land
# of Investors	6,723
Maximum Leverage	33%

### Fund Characteristics

# of Investments / Assets	140
Fund NAV (\$)	\$7.8 billion
Fund GAV (\$)	\$10.2 billion
Cash & Equivalents (% of NAV)	4%
Portfolio Leverage (%)	21%
Occupancy %	87%
# of Metro Areas Invested	42
Wtd Avg Cost of Debt	3.8%
% Debt that is Fixed	72%
Net Investor Flows this Qtr (\$)	\$189.5 million
Size of Redemption Queue (\$)	\$0

### Contact Information

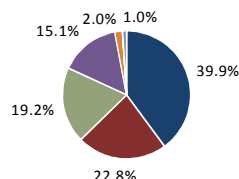
Portfolio Manager	John Berg
PM Tenure	January 1994
Address	801 Grand Avenue Des Moines, IA 50392
Phone	515-248-8261
Email	berg.john@principal.com

### General Firm Information

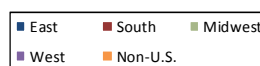
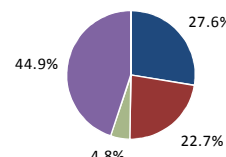
Year Founded	1999
AUM (\$)	\$83.8 billion (Real Estate)

### Fund Diversification

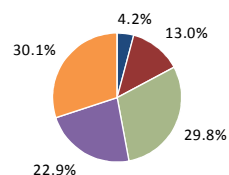
Property Type



Geographic Region



Property Size



### Performance (% gross of fees)

Quarter	Fund			NFI ODCE		
	Income	Apprec	Total	Income	Apprec	Total
Quarter	1.2%	1.3%	2.5%	1.1%	1.0%	2.1%
YTD	2.4%	2.2%	4.7%	2.2%	2.1%	4.4%
1-Year	4.7%	4.5%	9.3%	4.4%	4.0%	8.6%
3-Years	4.9%	5.4%	10.5%	4.6%	4.9%	9.6%
5-Years	5.1%	6.5%	11.8%	4.8%	6.1%	11.1%

### Top Six MSAs

MSA	% of GMV
New York, NY	10.2%
Austin, TX	6.7%
Washington, D.C.	6.6%
Cambridge, MA	6.2%
Seattle, WA	6.1%
Los Angeles, CA	6.1%

### Ten Largest Investments (GMV)

Investment Name	GMV (\$)	MSA	Type	%
Park Place	\$416,025,000	Anaheim, CA	Off./Ret.	4.1%
500 W. Second St.	\$383,000,000	Austin, TX	Office	3.8%
Nine Two Nine	\$361,500,000	Seattle, WA	Office	3.6%
1370 Ave. Americas	\$343,800,000	New York, NY	Office	3.4%
Charles Park	\$323,200,000	Cambridge, MA	Office	3.2%
Watermark E. & W.	\$299,600,000	Cambridge, MA	MF/Ret.	3.0%
Burbank Empire Ctr.	\$257,900,000	Los Angeles, CA	Retail	2.5%
555 City Center	\$234,700,000	Oakland, CA	Office	2.3%
Sonoran Village	\$221,455,000	Phoenix, AZ	MF	2.2%
J.W. Marriott Resort	\$200,970,000	San Antonio, TX	Hotel	2.0%

### Quarterly Fund Activity

Category	Value
Acquisitions	
# of Investments	3
Total GMV (\$)	\$155.0 million
Dispositions	
# of Investments	6
Total GMV (\$)	\$256.0 million
Marked to Market	
# Written Up	87
# Written Down	18

# City of Knoxville Employees' Pension Plan

Real Estate Managers

June 30, 2018

DWS: RREEF America II

Quarter Ending: June 30, 2018

## General Fund Information

Structure	Private REIT
Inception Date	7/28/1998
Termination Date	Infinite Life
L/T Return Objective	Exceed NFI-ODCE
Eligible Property Types	Office, Residential, Industrial, Retail, Land, Other
# of Investors	311
Maximum Leverage	~30%

## Fund Characteristics

# of Investments / Assets	99
Fund NAV (\$)	\$10.6 billion
Fund GAV (\$)	\$12.4 billion
Cash & Equivalents (% of NAV)	2%
Portfolio Leverage (%)	16%
Occupancy %	91%
# of Metro Areas Invested	31
Wtd Avg Cost of Debt	3.6%
% Debt that is Fixed	79%
Net Investor Flows this Qtr (\$)	\$80.7 million
Size of Redemption Queue (\$)	\$0

## Contact Information

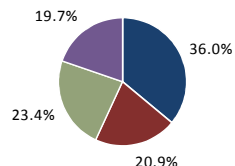
Portfolio Manager	John Ehli
PM Tenure	December 2005
Address	101 California Street, 24th Floor San Francisco, CA 94111
Phone	415-262-7730
Email	john.ehli@dws.com

## General Firm Information

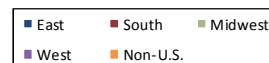
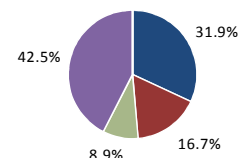
Year Founded	1975
AUM (\$)	\$61.1 billion (1Q18)

## Fund Diversification

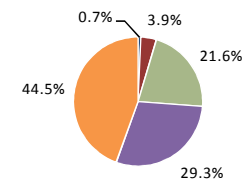
Property Type



Geographic Region



Property Size



## Performance (% gross of fees)

Quarter	Fund			NFI ODCE		
	Income	Apprec	Total	Income	Apprec	Total
Quarter	1.1%	1.1%	<b>2.2%</b>	1.1%	1.0%	<b>2.0%</b>
YTD	2.1%	2.5%	<b>4.6%</b>	2.1%	2.1%	<b>4.3%</b>
1-Year	4.3%	4.4%	<b>8.8%</b>	4.3%	4.0%	<b>8.4%</b>
3-Years	4.4%	5.2%	<b>9.8%</b>	4.4%	4.8%	<b>9.4%</b>
5-Years	4.7%	6.8%	<b>11.7%</b>	4.7%	6.1%	<b>11.0%</b>

## Top Six MSAs

MSA	% of GMV
New York, NY	10.7%
San Francisco, CA	10.4%
Los Angeles, CA	9.8%
Boston, MA	9.2%
Seattle, WA	8.5%
Chicago, IL	7.1%

## Ten Largest Investments (GMV)

Investment Name	GMV (\$)	MSA	Type	%
Riverfront Off. Park	\$759,400,000	Boston, MA	Office	6.1%
222 Broadway	\$581,600,000	New York, NY	Office	4.7%
222 South Riverside	\$434,900,000	Chicago, IL	Office	3.5%
West 8th	\$398,100,000	Seattle, WA	Office	3.2%
Manhattan Village	\$369,900,000	Los Angeles, CA	Retail	3.0%
Villa Marina Mkt.	\$280,700,000	Los Angeles, CA	Retail	2.3%
San Fran. Design Ctr.	\$278,200,000	San Francisco, CA	Retail	2.3%
Las Olas Centre	\$277,600,000	Fort Lauderdale, FL	Office	2.2%
Sharon Green Apt.	\$266,700,000	San Francisco, CA	Apt.	2.2%
505 Montgomery	\$250,400,000	San Francisco, CA	Office	2.0%

## Quarterly Fund Activity

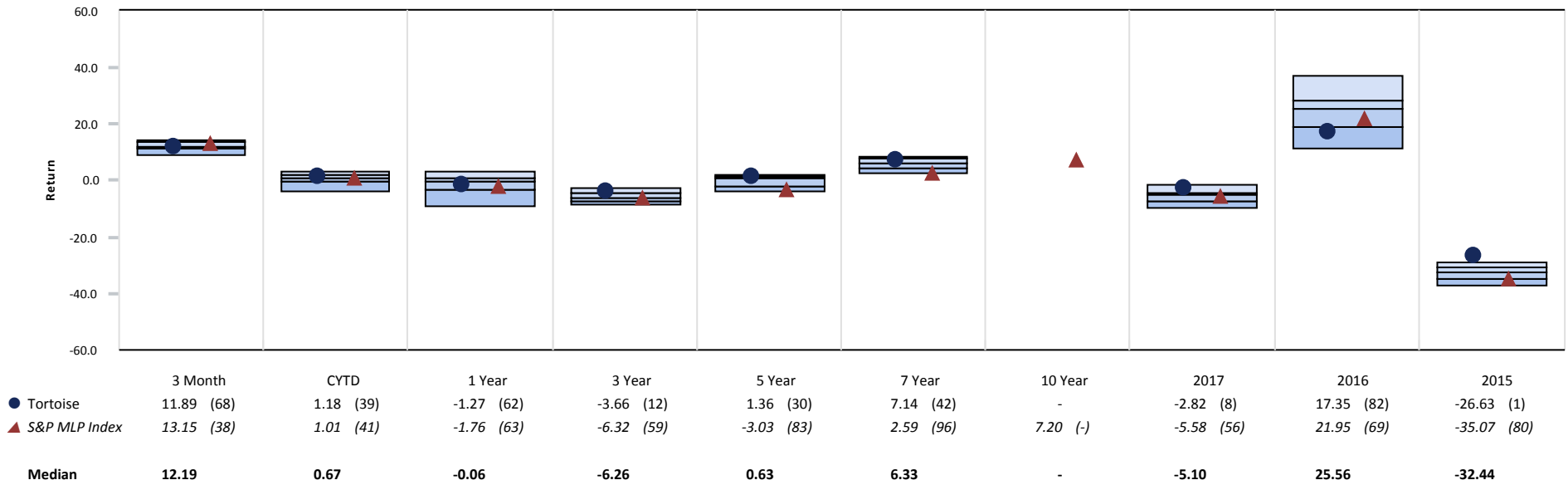
Acquisitions	
# of Investments	4
Total GMV (\$)	\$309.0 million
Dispositions	
# of Investments	2
Total GMV (\$)	\$374.0 million
Marked to Market	
# Written Up	67
# Written Down	28

# City of Knoxville Employees' Pension Plan

Tortoise

June 30, 2018

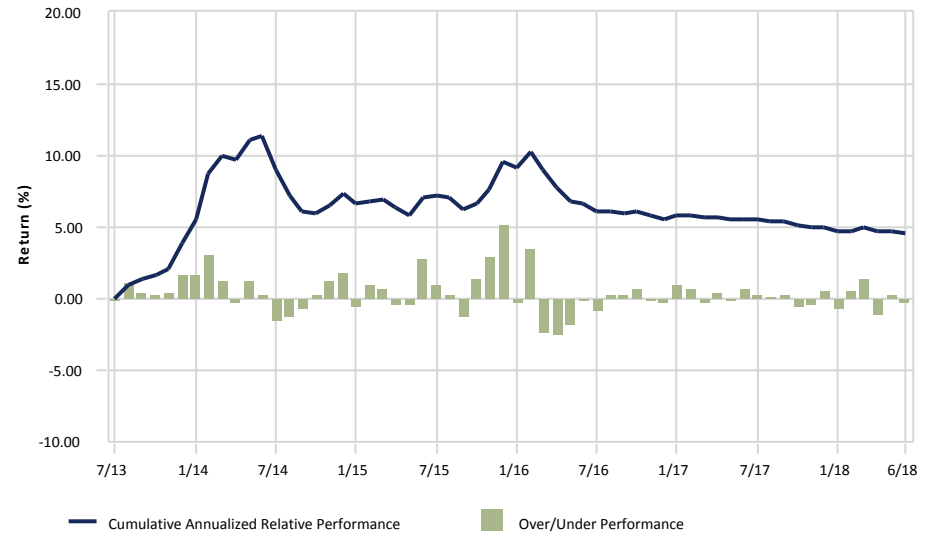
## Peer Group Analysis - Master Limited Partnerships (SA+CF+MF)



## Growth of \$1 - Since Inception (12/01/10)



## Relative Performance vs. S&P MLP Index



gross of fees

## Hedge Funds

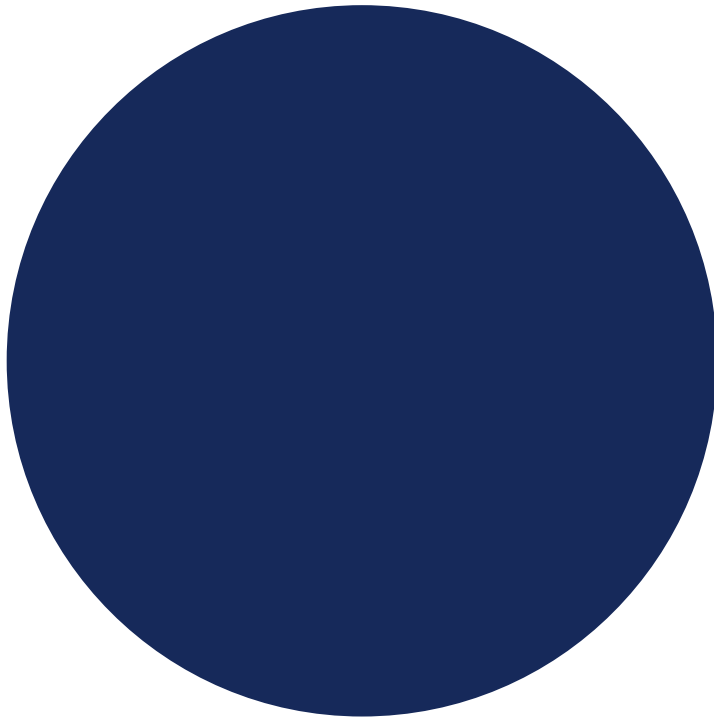
# City of Knoxville Employees' Pension Plan

## Hedge Fund Manager Allocation Chart

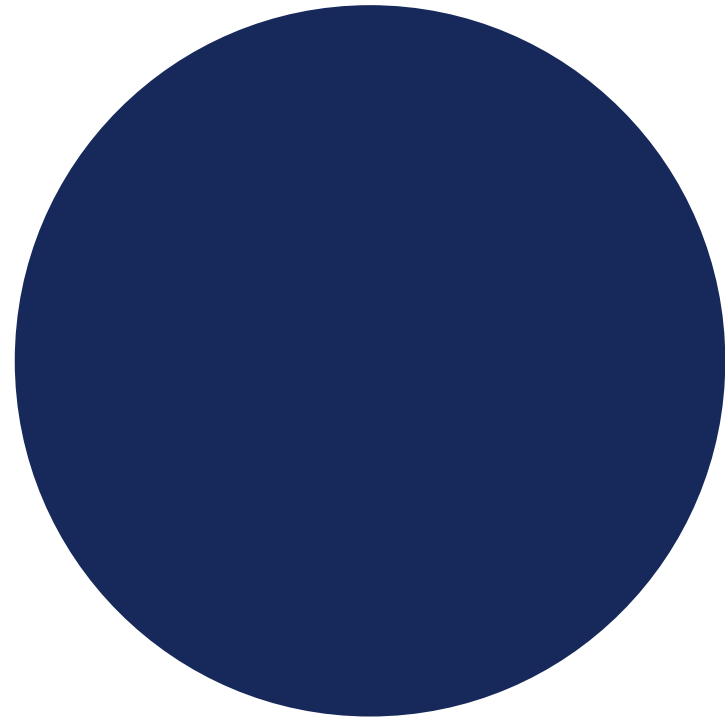
June 30, 2018

June 30, 2018 : \$14,342,023

March 31, 2018 : \$14,219,590



	Market Value (\$)	Allocation (%)
■ Blackstone	14,342,023	100.00



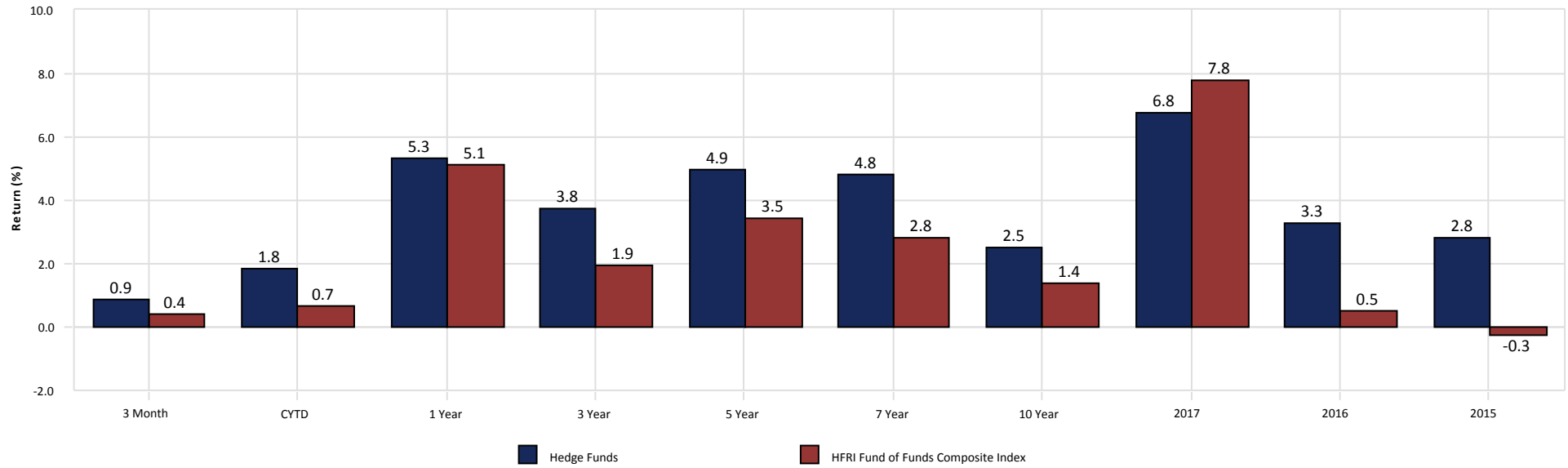
	Market Value (\$)	Allocation (%)
■ Blackstone	14,219,590	100.00

# City of Knoxville Employees' Pension Plan

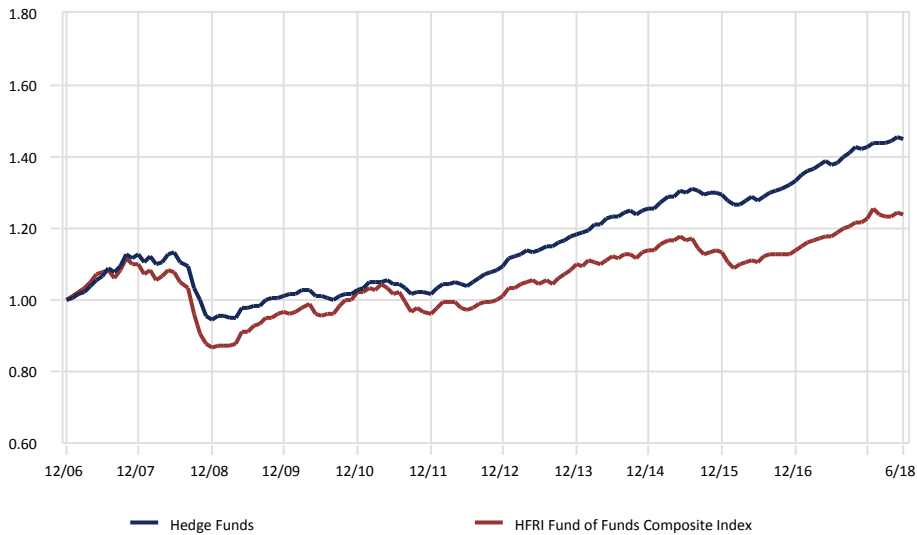
Hedge Funds

June 30, 2018

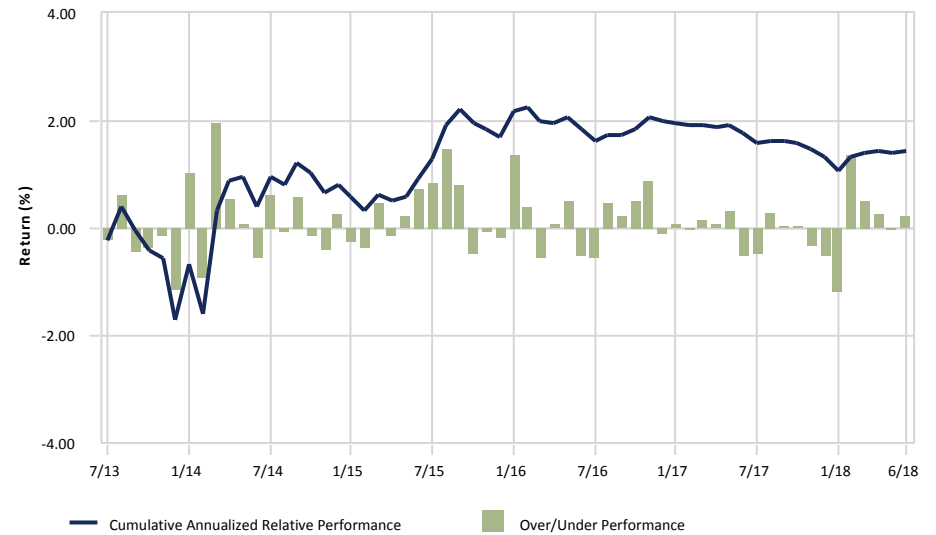
## Comparative Performance



## Growth of \$1 - Since Inception (01/01/07)



## Relative Performance vs. HFRI Fund of Funds Composite Index



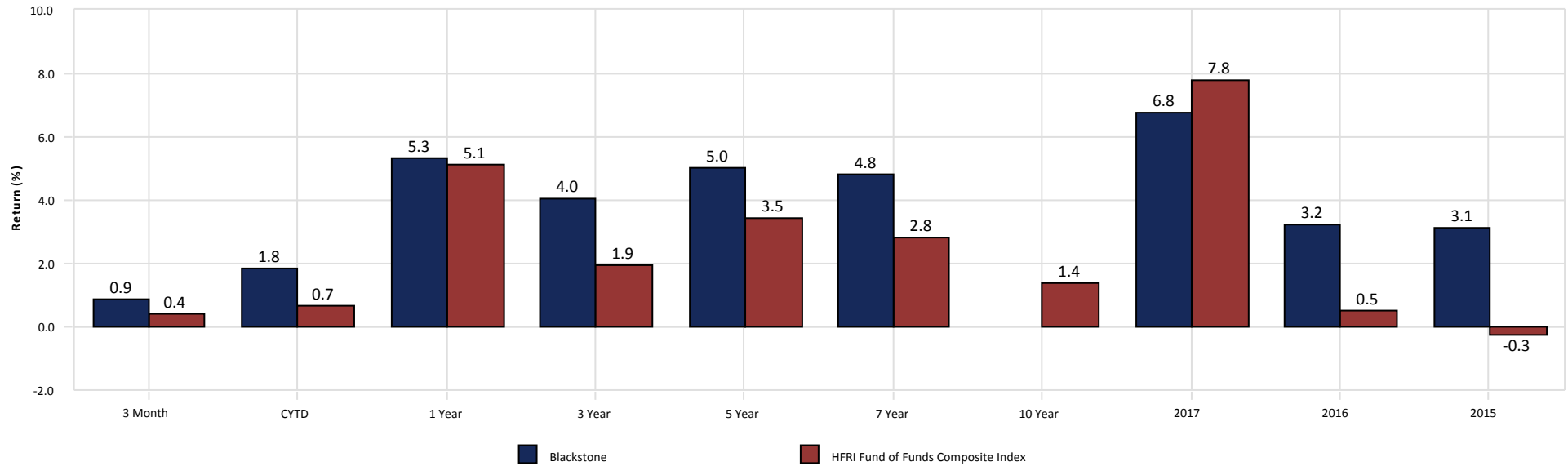
net of fees

# City of Knoxville Employees' Pension Plan

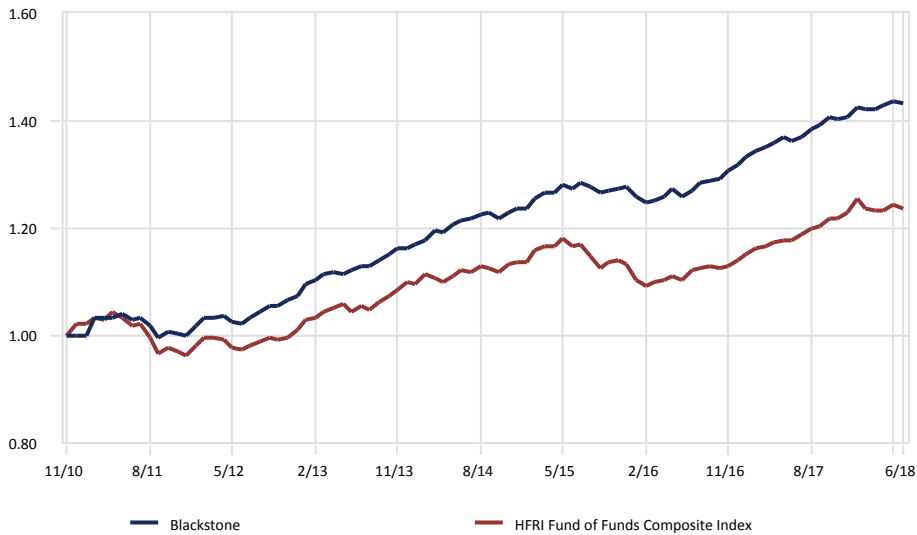
Blackstone

June 30, 2018

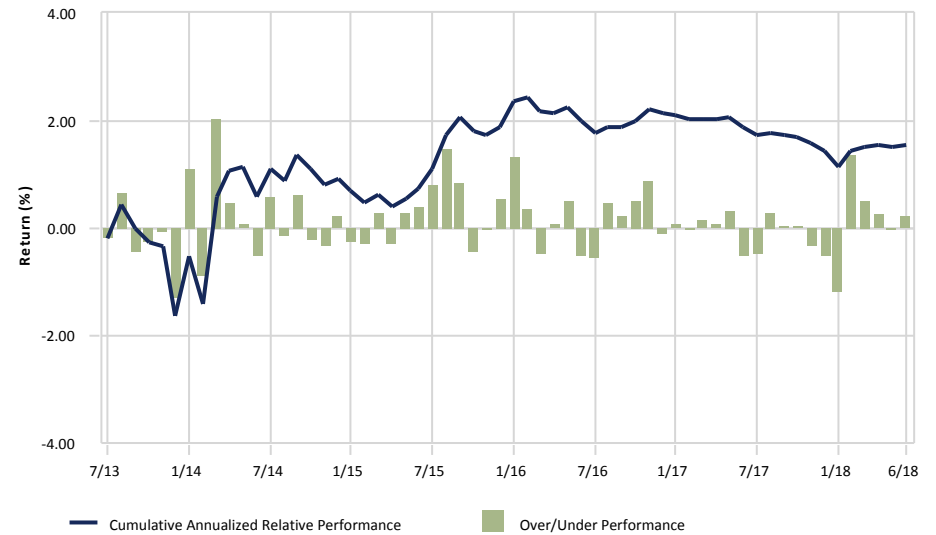
## Comparative Performance



## Growth of \$1 - Since Inception (12/01/10)



## Relative Performance vs. HFRI Fund of Funds Composite Index



net of fees

## Risk Parity

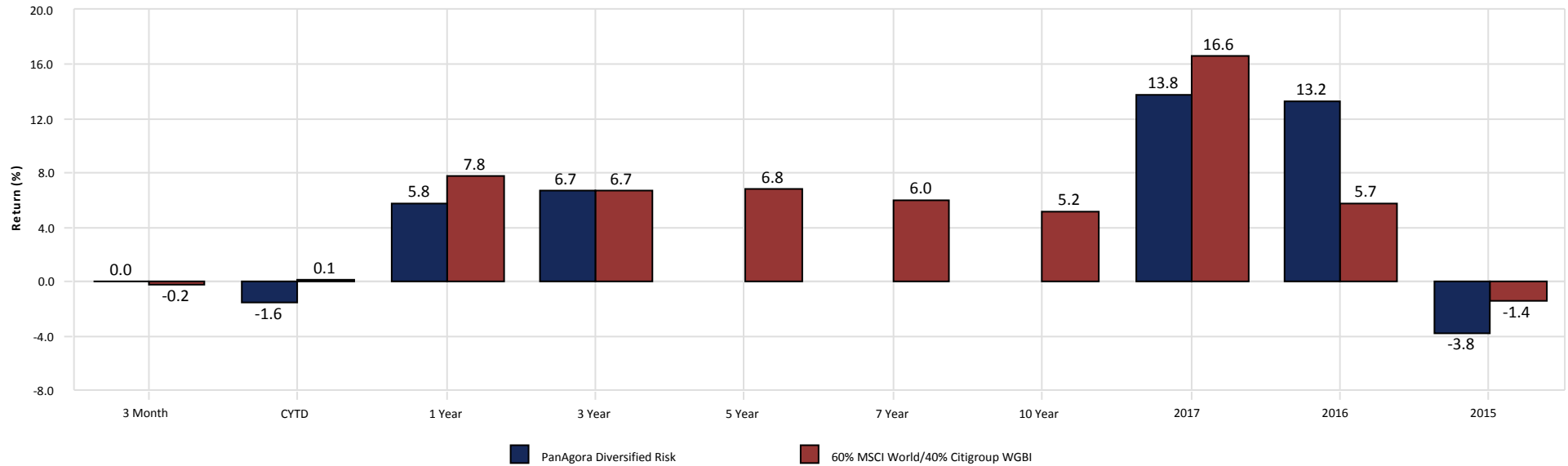


# City of Knoxville Employees' Pension Plan

PanAgora Diversified Risk

June 30, 2018

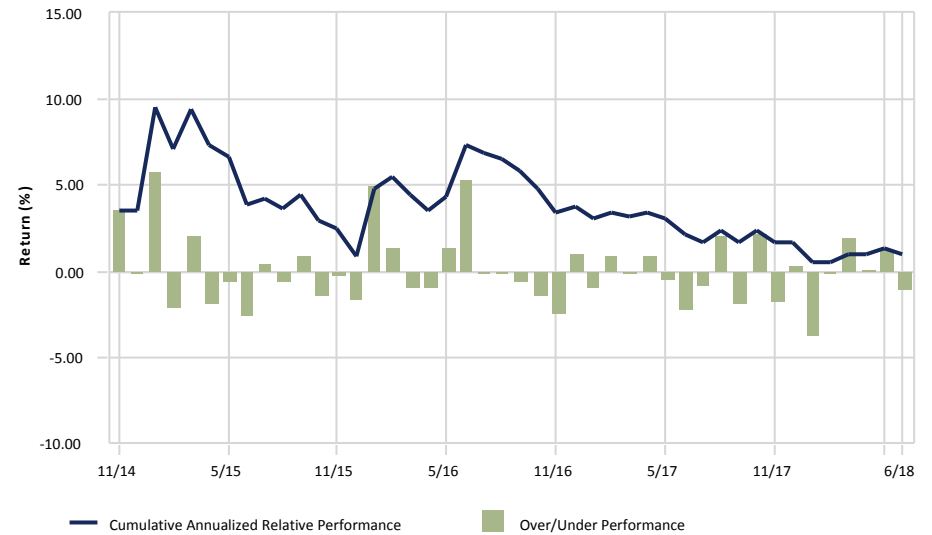
## Comparative Performance



## Growth of \$1 - Since Inception (11/01/14)



## Relative Performance vs. 60% MSCI World/40% Citigroup WGBI



net of fees

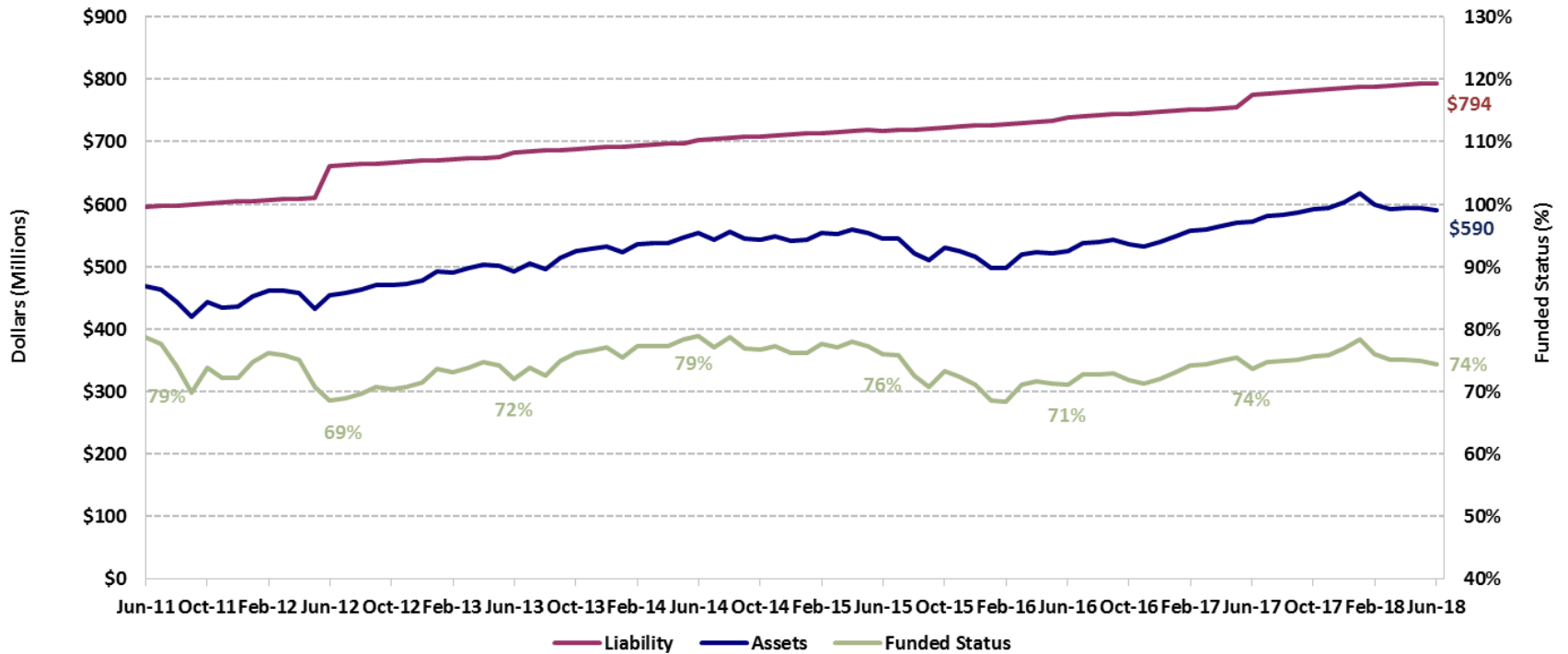
# City of Knoxville Employees' Pension Plan

Asset/Liability Scorecard Net of Fees

June 30, 2018

	<u>Market Value of Assets</u>	<u>1 Month</u>	<u>QTD</u>	<u>CYTD</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
Asset Return	\$590,209,745	-0.5%	0.2%	-0.5%	6.6%	6.6%	6.2%	7.5%	6.6%

Assets, Liability, and Funded Status



# City of Knoxville Employees' Pension Plan

## Asset Allocation Compliance

June 30, 2018

	Target %	Actual %	Difference %	Target (\$)	Actual (\$)	Difference (\$)
<b>Total Fund</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>590,209,745</b>	<b>590,209,745</b>	<b>-</b>
<b>Total Equity</b>	<b>45.50</b>	<b>49.88</b>	<b>4.38</b>	<b>268,545,434</b>	<b>294,414,672</b>	<b>(25,869,238)</b>
<b>US Equity</b>	<b>22.00</b>	<b>24.55</b>	<b>2.55</b>	<b>129,846,144</b>	<b>144,900,156</b>	<b>(15,054,012)</b>
<b>Total Large Cap</b>	<b>18.50</b>	<b>20.19</b>	<b>1.69</b>	<b>109,188,803</b>	<b>119,179,545</b>	<b>(9,990,742)</b>
Parametric	4.00	4.28	0.28	23,608,390	25,257,721	(1,649,331)
<b>Large Cap Equity</b>	<b>14.50</b>	<b>15.91</b>	<b>1.41</b>	<b>85,580,413</b>	<b>93,921,824</b>	<b>(8,341,410)</b>
Eagle Capital Management	7.25	8.01	0.76	42,790,207	47,256,998	(4,466,791)
NT Russell 1000 Growth Index Fd	7.25	7.91	0.66	42,790,207	46,664,826	(3,874,619)
<b>Small/Mid Cap</b>	<b>3.50</b>	<b>4.36</b>	<b>0.86</b>	<b>20,657,341</b>	<b>25,720,612</b>	<b>(5,063,271)</b>
William Blair Small Cap Value	1.75	2.54	0.79	10,328,671	14,973,672	(4,645,001)
Pinnacle Associates	1.75	1.82	0.07	10,328,671	10,746,940	(418,270)
<b>International Equity</b>	<b>18.50</b>	<b>21.26</b>	<b>2.76</b>	<b>109,188,803</b>	<b>125,493,122</b>	<b>(16,304,319)</b>
Silchester International Investors	8.25	11.95	3.70	48,692,304	70,548,785	(21,856,481)
Gryphon	4.25	3.31	(0.94)	25,083,914	19,545,254	5,538,660
<b>Emerging Markets</b>	<b>6.00</b>	<b>6.00</b>	<b>0.00</b>	<b>35,412,585</b>	<b>35,399,083</b>	<b>13,502</b>
Acadian Emerging Markets	6.00	6.00	0.00	35,412,585	35,399,083	13,502
<b>Private Equity</b>	<b>5.00</b>	<b>4.07</b>	<b>(0.93)</b>	<b>29,510,487</b>	<b>24,021,394</b>	<b>5,489,094</b>
<b>Adams Street</b>	<b>1.00</b>	<b>0.55</b>	<b>(0.45)</b>	<b>5,902,097</b>	<b>3,269,983</b>	<b>2,632,114</b>
Adams Street 2009 Direct	-	0.05	-	-	304,689	-
Adams Street 2009 US	-	0.28	-	-	1,663,845	-
Adams Street 2009 Non-US Developed	-	0.15	-	-	870,228	-
Adams Street 2009 Non-US Emerging	-	0.07	-	-	431,221	-
Neuberger Berman	1.00	0.46	(0.54)	5,902,097	2,697,171	3,204,927
Top Tier Venture Velocity Fd	1.00	0.84	(0.16)	5,902,097	4,942,344	959,753
Fort Washington Private Equity Fund III	1.00	0.78	(0.22)	5,902,097	4,618,511	1,283,586
57 Stars Global Opportunity Fund 4	1.00	0.49	(0.51)	5,902,097	2,916,198	2,985,899
Neuberger Berman Crossroads XXI	-	0.47	-	-	2,786,991	-
Fort Washington Private Equity Fund IX	-	0.25	-	-	1,470,196	-
Aberdeen Private Equity VII	-	0.22	-	-	1,320,000	-
<b>Total Fixed Income</b>	<b>26.00</b>	<b>24.90</b>	<b>(1.10)</b>	<b>153,454,534</b>	<b>146,945,682</b>	<b>6,508,851</b>
<b>Traditional Fixed Income</b>	<b>21.00</b>	<b>24.90</b>	<b>3.90</b>	<b>123,944,047</b>	<b>146,933,839</b>	<b>(22,989,793)</b>
<b>Core Fixed Income</b>	<b>8.00</b>	<b>11.50</b>	<b>3.50</b>	<b>47,216,780</b>	<b>67,861,461</b>	<b>(20,644,682)</b>
NT Aggregate Bond Fund	-	3.63	-	-	21,406,352	-
IR+M Core Fixed	8.00	7.87	(0.13)	47,216,780	46,455,109	761,671
<b>Long Fixed Income</b>	<b>10.00</b>	<b>10.12</b>	<b>0.12</b>	<b>59,020,975</b>	<b>59,749,153</b>	<b>(728,178)</b>
STW Fixed	10.00	10.12	0.12	59,020,975	59,749,153	(728,178)
<b>TIPS</b>	<b>3.00</b>	<b>3.27</b>	<b>0.27</b>	<b>17,706,292</b>	<b>19,323,226</b>	<b>(1,616,933)</b>
IR+M TIPS	3.00	3.27	0.27	17,706,292	19,323,226	(1,616,933)
<b>Emerging Debt</b>	<b>5.00</b>	<b>0.00</b>	<b>(5.00)</b>	<b>29,510,487</b>	<b>11,843</b>	<b>29,498,644</b>

## City of Knoxville Employees' Pension Plan

Asset Allocation Compliance

June 30, 2018

	Target %	Actual %	Difference %	Target (\$)	Actual (\$)	Difference (\$)
Pictet Emerging Local Currency Debt	5.00	0.00	(5.00)	29,510,487	11,843	29,498,644
<b>Real Assets</b>	<b>17.50</b>	<b>15.33</b>	<b>(2.17)</b>	<b>103,286,705</b>	<b>90,485,105</b>	<b>12,801,601</b>
<b>Core Real Estate</b>	<b>5.00</b>	<b>8.13</b>	<b>3.13</b>	<b>29,510,487</b>	<b>48,009,580</b>	<b>(18,499,092)</b>
Principal Global Investors	2.50	3.56	1.06	14,755,244	20,986,404	(6,231,160)
RREEF America II	2.50	4.58	2.08	14,755,244	27,023,175	(12,267,932)
<b>Energy/Natural Resources</b>	<b>7.50</b>	<b>7.20</b>	<b>(0.30)</b>	<b>44,265,731</b>	<b>42,475,525</b>	<b>1,790,206</b>
Tortoise	5.00	5.36	0.36	29,510,487	31,643,205	(2,132,718)
<b>Private Real Assets</b>	<b>2.50</b>	<b>1.84</b>	<b>(0.66)</b>	<b>14,755,244</b>	<b>10,832,320</b>	<b>3,922,924</b>
Aether Real Assets I	1.25	0.88	(0.37)	7,377,622	5,187,328	2,190,294
Aether Real Assets II	1.25	0.96	(0.29)	7,377,622	5,644,992	1,732,630
Non-Core Real Estate	5.00	0.00	(5.00)	29,510,487	-	29,510,487
<b>Hedge Funds</b>	<b>5.00</b>	<b>2.43</b>	<b>(2.57)</b>	<b>29,510,487</b>	<b>14,342,023</b>	<b>15,168,464</b>
Blackstone	5.00	2.43	(2.57)	29,510,487	14,342,023	15,168,464
<b>Risk Parity</b>	<b>5.00</b>	<b>6.60</b>	<b>1.60</b>	<b>29,510,487</b>	<b>38,950,837</b>	<b>(9,440,350)</b>
PanAgora Diversified Risk	5.00	6.60	1.60	29,510,487	38,950,837	(9,440,350)
Cash	1.00	0.86	(0.14)	5,902,097	5,071,427	830,671

## City of Knoxville Employees' Pension Plan

Asset Allocation Compliance

June 30, 2018

	Target %	Actual %	Difference %	Target (\$)	Actual (\$)	Difference (\$)
<b>Total Fund</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>590,209,745</b>	<b>590,209,745</b>	<b>-</b>
<b>Growth</b>	<b>73.00</b>	<b>66.11</b>	<b>(6.89)</b>	<b>430,853,114</b>	<b>390,194,900</b>	<b>40,658,214</b>
Domestic Large	19.00	20.19	1.19	112,139,852	119,179,545	(7,039,693)
Domestic Small	4.00	4.36	0.36	23,608,390	25,720,612	(2,112,222)
International	18.50	21.26	2.76	109,188,803	125,493,122	(16,304,319)
MLPs	5.00	5.36	0.36	29,510,487	31,643,205	(2,132,718)
Private Equity	4.00	4.07	0.07	23,608,390	24,021,394	(413,004)
Private Energy	2.50	1.84	(0.66)	14,755,244	10,832,320	3,922,924
Non-Core Real Estate	5.00	0.00	(5.00)	29,510,487	-	29,510,487
Growth Hedge Funds	5.00	2.43	(2.57)	29,510,487	14,342,023	15,168,464
Emerging Debt	5.00	0.00	(5.00)	29,510,487	11,843	29,498,644
High Yield	0.00	0.00	0.00	-	-	-
Risk Parity	5.00	6.60	1.60	29,510,487	38,950,837	(9,440,350)
<b>Income</b>	<b>23.00</b>	<b>29.76</b>	<b>6.76</b>	<b>135,748,241</b>	<b>175,620,193</b>	<b>(39,871,952)</b>
Core Fixed Income	8.00	11.50	3.50	47,216,780	67,861,461	(20,644,682)
Long Fixed Income	10.00	10.12	0.12	59,020,975	59,749,153	(728,178)
Core Real Estate	5.00	8.13	3.13	29,510,487	48,009,580	(18,499,092)
Global Fixed	0.00	0.00	0.00	-	-	-
<b>Diversification</b>	<b>4.00</b>	<b>4.13</b>	<b>0.13</b>	<b>23,608,390</b>	<b>24,394,652</b>	<b>(786,262)</b>
TIPS	3.00	3.27	0.27	17,706,292	19,323,226	(1,616,933)
Cash	1.00	0.86	(0.14)	5,902,097	5,071,427	830,671

## Appendix

## City of Knoxville Employees' Pension Plan

### Historical Hybrid Composition

#### Total Fund Policy Index

	(%)		(%)
<b>Oct-2017</b>		<b>Jun-2015</b>	
Russell 3000 Index	14.50	Russell 3000 Index	18.00
S&P 500	4.00	MSCI AC World ex USA (Net)	18.50
Russell 3000 Index	3.50	Blmbg. Barc. U.S. Aggregate	20.00
MSCI AC World ex USA (Net)	18.50	JPM GBI-EM Global Diversified	5.00
Russell 3000 Index	5.00	Blmbg. Barc. Global Aggregate Index (Hedged)	5.00
Blmbg. Barc. U.S. Aggregate	21.00	NCREIF Fund Index-ODCE (VW) [M]	17.50
JPM GBI-EM Global Diversified	5.00	HFRI Fund of Funds Composite Index	5.00
Blmbg. Barc. Global Aggregate Index (Hedged)	0.00	60% MSCI World/40% Citigroup WGBI	5.00
NCREIF Fund Index-ODCE (VW) [M]	17.50	Russell 3000 Index	5.00
HFRI Fund of Funds Composite Index	5.00	FTSE 3 Month T-Bill	1.00
60% MSCI World/40% Citigroup WGBI	5.00		
FTSE 3 Month T-Bill	1.00	<b>Nov-2014</b>	
		Russell 3000 Index	20.50
<b>Jul-2017</b>		MSCI AC World ex USA (Net)	21.00
Russell 3000 Index	14.50	Blmbg. Barc. U.S. Aggregate	20.00
S&P 500	4.00	JPM GBI-EM Global Diversified	5.00
Russell 3000 Index	3.50	NCREIF Fund Index-ODCE (VW) [M]	17.50
MSCI AC World ex USA (Net)	18.50	HFRI Fund of Funds Composite Index	5.00
Russell 3000 Index	5.00	60% MSCI World/40% Citigroup WGBI	5.00
Blmbg. Barc. U.S. Aggregate	16.00	Russell 3000 Index	5.00
JPM GBI-EM Global Diversified	5.00	FTSE 3 Month T-Bill	1.00
Blmbg. Barc. Global Aggregate Index (Hedged)	5.00		
NCREIF Fund Index-ODCE (VW) [M]	17.50	<b>Jan-2013</b>	
HFRI Fund of Funds Composite Index	5.00	Russell 3000 Index	28.50
60% MSCI World/40% Citigroup WGBI	5.00	MSCI AC World ex USA (Net)	23.00
FTSE 3 Month T-Bill	1.00	Blmbg. Barc. U.S. Aggregate	25.00
		NCREIF Fund Index-ODCE (VW) [M]	17.50
		HFRI Fund of Funds Composite Index	5.00
		FTSE 3 Month T-Bill	1.00

## City of Knoxville Employees' Pension Plan

### Historical Hybrid Composition

#### Total Fund Policy Index

	(%)		(%)
<b>Dec-2010</b>		<b>Jan-2006</b>	
Russell 3000 Index	38.00	Russell 3000 Index	44.00
MSCI AC World ex USA	27.00	MSCI EAFE Index	23.00
Blmbg. Barc. U.S. Aggregate	19.00	Blmbg. Barc. U.S. Aggregate	15.00
NCREIF Fund Index-ODCE (VW) [M]	10.00	NCREIF Property Index	10.00
HFRI Fund of Funds Composite Index	5.00	HFRI FOF: Conservative Index	7.00
FTSE 3 Month T-Bill	1.00	FTSE 3 Month T-Bill	1.00
<b>Jan-2010</b>		<b>Oct-2001</b>	
Russell 3000 Index	38.00	S&P 500	30.00
MSCI AC World ex USA	27.00	Russell 2000 Index	21.50
Blmbg. Barc. U.S. Aggregate	19.00	S&P/Citigroup EPAC BMI	10.00
NCREIF Fund Index-ODCE (VW) [M]	10.00	Blmbg. Barc. U.S. Aggregate	35.50
HFRI FOF: Conservative Index	5.00	FTSE 3 Month T-Bill	3.00
FTSE 3 Month T-Bill	1.00		
<b>Dec-2007</b>		<b>Jan-1976</b>	
Russell 3000 Index	44.00	S&P 500	55.00
MSCI EAFE Index	23.00	Blmbg. Barc. U.S. Aggregate	45.00
Blmbg. Barc. U.S. Aggregate	15.00		
NCREIF Fund Index-ODCE (VW) [M]	10.00		
HFRI FOF: Conservative Index	7.00		
FTSE 3 Month T-Bill	1.00		
<b>Dec-2006</b>			
Russell 3000 Index	44.00		
MSCI EAFE Index	23.00		
Blmbg. Barc. U.S. Aggregate	15.00		
NCREIF Fund Index-ODCE (VW) [M]	10.00		
HFRI FOF: Conservative Index	7.00		
FTSE 3 Month T-Bill	1.00		



## City of Knoxville Employees' Pension Plan

Historical Hybrid Composition

International Equity Policy Index

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(%)

**Jan-2010**

MSCI AC World ex USA (Net) 100.00

**Jan-1970**

MSCI EAFE Index 100.00

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**City of Knoxville Employees' Pension Plan**

Flash Report

August 31, 2018

# City of Knoxville Employees' Pension Plan

## Composite Asset Allocation & Performance | net of fees

August 31, 2018

	Asset \$	Asset %	1 Month	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year
<b>Total Fund</b>	<b>599,297,394</b>	<b>100.00</b>	<b>0.44</b>	<b>1.99</b>	<b>1.45</b>	<b>1.99</b>	<b>5.93</b>	<b>8.21</b>	<b>7.51</b>	<b>6.78</b>
<i>Total Fund Policy Index</i>			0.43	2.00	2.34	2.00	7.18	8.33	7.80	6.02
Excess Return			0.01	-0.01	-0.89	-0.01	-1.25	-0.12	-0.29	0.76
<i>Total Fund Allocation Index</i>			0.66	2.63	2.13	2.63	7.53	8.31	7.20	6.02
Total Equity	297,048,816	49.57	0.41	2.94	2.78	2.94	10.56	12.55	10.24	8.56
US Equity	148,324,559	24.75	3.25	6.56	10.76	6.56	19.30	15.70	13.63	10.39
<i>Russell 3000 Index</i>			3.51	6.95	10.39	6.95	20.25	15.86	14.25	10.89
Excess Return			-0.26	-0.39	0.37	-0.39	-0.95	-0.16	-0.62	-0.50
International Equity	124,617,227	20.79	-2.79	-0.70	-6.05	-0.70	0.77	9.41	6.76	6.81
<i>International Equity Policy Index</i>			-2.09	0.25	-3.53	0.25	3.18	8.08	5.43	3.15
Excess Return			-0.70	-0.95	-2.52	-0.95	-2.41	1.33	1.33	3.66
Private Equity Composite*	24,107,030	4.02								
Total Fixed Income	147,991,581	24.69	0.76	0.72	-2.29	0.72	-1.84	3.43	3.25	5.38
<i>Blmbg. Barc. U.S. Aggregate</i>			0.64	0.67	-0.96	0.67	-1.05	1.76	2.49	3.70
Excess Return			0.12	0.05	-1.33	0.05	-0.79	1.67	0.76	1.68
Real Assets Composite*	92,136,750	15.37	0.28	2.39	4.80	2.39	6.39	5.48	7.11	3.65
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			0.00	0.00	4.30	0.00	8.44	9.37	11.04	5.29
Excess Return			0.28	2.39	0.50	2.39	-2.05	-3.89	-3.93	-1.64
<i>NCREIF Property Index</i>			0.00	0.00	3.54	0.00	7.19	8.25	9.77	6.22
Hedge Funds	14,453,994	2.41	0.24	0.78	2.64	0.78	4.40	3.86	4.97	2.96
<i>HFRI Fund of Funds Composite Index</i>			0.32	0.57	1.25	0.57	3.80	2.75	3.51	1.89
Excess Return			-0.08	0.21	1.39	0.21	0.60	1.11	1.46	1.07
Risk Parity Composite	38,696,361	6.46	0.00	-0.65	-2.21	-0.65	1.04	7.45	-	-
<i>60% MSCI World/40% Citigroup WGBI</i>			0.69	2.43	2.57	2.43	7.38	8.49	-	-
Excess Return			-0.69	-3.08	-4.78	-3.08	-6.34	-1.04	-	-
<i>90 Day Libor + 4</i>			0.52	1.05	4.15	1.05	6.03	5.25	4.85	4.73
Cash	8,969,892	1.50	0.19	0.42	1.27	0.42	1.84	1.15	0.78	0.60

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.

# City of Knoxville Employees' Pension Plan

## Manager Asset Allocation & Performance | net of fees

August 31, 2018

	Asset \$	Asset %	1 Month	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
<b>US Equity</b>												
Eagle Capital Management	46,280,707	7.72	1.92	6.41	9.87	6.41	19.36	15.44	14.50	-	16.15	Sep-2010
<i>Russell 1000 Value Index</i>			1.48	5.49	3.71	5.49	12.47	12.32	11.22	-	13.79	
Excess Return			0.44	0.92	6.16	0.92	6.89	3.12	3.28	-	2.36	
NT Russell 1000 Growth Index Fund	48,585,707	8.11	5.45	8.64	16.57	8.64	27.34	19.32	-	-	16.06	May-2015
<i>Russell 1000 Growth Index</i>			5.47	8.56	16.44	8.56	27.23	19.33	-	-	16.08	
Excess Return			-0.02	0.08	0.13	0.08	0.11	-0.01	-	-	-0.02	
William Blair Small Cap Value	15,685,845	2.62	2.63	4.76	6.43	4.76	16.02	13.19	10.88	-	11.97	May-2013
<i>Russell 2000 Value Index</i>			2.38	4.19	9.86	4.19	20.05	15.73	11.72	-	11.83	
Excess Return			0.25	0.57	-3.43	0.57	-4.03	-2.54	-0.84	-	0.14	
Pinnacle Associates	11,566,373	1.93	4.61	7.63	9.71	7.63	13.12	14.01	12.50	11.55	9.69	Sep-2007
<i>Russell 2500 Growth Index</i>			6.76	8.75	17.50	8.75	30.18	16.34	14.63	12.17	10.44	
Excess Return			-2.15	-1.12	-7.79	-1.12	-17.06	-2.33	-2.13	-0.62	-0.75	
Parametric	26,205,926	4.37	1.61	3.75	4.87	3.75	9.12	-	-	-	8.86	Aug-2017
<i>S&amp;P 500</i>			3.26	7.10	9.94	7.10	19.66	-	-	-	18.35	
Excess Return			-1.65	-3.35	-5.07	-3.35	-10.54	-	-	-	-9.49	
<b>International Equity</b>												
Silchester International Investors	70,158,611	11.71	-2.75	-0.55	-4.89	-0.55	2.52	8.59	7.72	8.52	10.87	Nov-2001
<i>MSCI EAFE Value Index (Net)</i>			-3.64	-0.87	-5.44	-0.87	0.63	5.11	4.28	2.73	5.85	
Excess Return			0.89	0.32	0.55	0.32	1.89	3.48	3.44	5.79	5.02	
Gryphon	19,634,013	3.28	-1.82	0.47	-1.63	0.47	7.97	10.25	7.57	6.13	6.26	Aug-2005
<i>MSCI EAFE Growth Index (Net)</i>			-0.28	1.78	0.83	1.78	8.12	8.87	7.10	4.51	5.80	
Excess Return			-1.54	-1.31	-2.46	-1.31	-0.15	1.38	0.47	1.62	0.46	
Acadian Emerging Markets	34,824,604	5.81	-3.42	-1.62	-10.62	-1.62	-5.99	10.41	4.50	-	4.79	Jan-2010
<i>MSCI Emerging Markets (Net)</i>			-2.70	-0.57	-7.18	-0.57	-0.68	11.42	5.04	-	3.23	
Excess Return			-0.72	-1.05	-3.44	-1.05	-5.31	-1.01	-0.54	-	1.56	
<b>Private Equity</b>												
Adams Street*	3,080,871	0.51										
Neuberger Berman*	2,697,167	0.45										
Neuberger Berman Crossroads XXI*	2,786,991	0.47										

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.

\*\*Not priced monthly.

# City of Knoxville Employees' Pension Plan

## Manager Asset Allocation & Performance | net of fees

August 31, 2018

	Asset \$	Asset %	1 Month	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Top Tier Venture Velocity Fd*	4,933,366	0.82										
Fort Washington Private Equity Fund III*	4,617,376	0.77										
Fort Washington Private Equity Fund IX*	1,530,977	0.26										
57 Stars Global Opportunity Fund 4*	3,106,391	0.52										
Aberdeen Private Equity VII*	1,353,891	0.23										
<b>Fixed Income</b>												
IR+M Core Fixed	46,791,288	7.81	0.71	0.72	-0.75	0.72	-0.86	2.10	2.86	-	3.16	Jul-2011
<i>Blmbg. Barc. U.S. Aggregate</i>			0.64	0.67	-0.96	0.67	-1.05	1.76	2.49	-	2.60	
Excess Return			0.07	0.05	0.21	0.05	0.19	0.34	0.37	-	0.56	
STW Fixed	60,270,699	10.06	0.85	0.87	-3.95	0.87	-2.72	4.44	6.34	8.29	8.54	Sep-1991
<i>Blmbg. Barc. U.S. Long Government/Credit</i>			0.85	1.10	-3.93	1.10	-2.15	4.25	5.61	6.80	7.61	
Excess Return			0.00	-0.23	-0.02	-0.23	-0.57	0.19	0.73	1.49	0.93	
IR+M TIPS	19,379,170	3.23	0.71	0.29	0.52	0.29	0.43	1.77	1.31	-	2.08	Jul-2010
<i>Blmbg. Barc. U.S. TIPS 1-10 Year</i>			0.67	0.28	0.50	0.28	0.54	1.80	1.34	-	2.03	
Excess Return			0.04	0.01	0.02	0.01	-0.11	-0.03	-0.03	-	0.05	
NT Aggregate Bond Fund	21,550,425	3.60	0.66	0.67	-	0.67	-	-	-	-	0.67	Jul-2018
<i>Blmbg. Barc. U.S. Aggregate</i>			0.64	0.67	-	0.67	-	-	-	-	0.67	
Excess Return			0.02	0.00	-	0.00	-	-	-	-	0.00	
<b>Real Assets</b>												
Principal Global Investors	21,384,298	3.57	1.17	1.90	5.86	1.90	7.74	8.94	10.49	4.89	6.93	Mar-2005
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			0.00	0.00	4.30	0.00	8.44	9.37	11.04	5.29	7.89	
Excess Return			1.17	1.90	1.56	1.90	-0.70	-0.43	-0.55	-0.40	-0.96	
<i>NCREIF Property Index</i>			0.00	0.00	3.54	0.00	7.19	8.25	9.77	6.22	8.56	Mar-2005
RREEF America II**	26,807,394	4.47	0.00	0.00	4.10	0.00	7.80	8.77	10.70	4.87	7.20	Mar-2004
<i>NCREIF Fund Index-ODCE (VW) [M]</i>			0.00	0.00	4.30	0.00	8.44	9.37	11.04	5.29	8.24	
Excess Return			0.00	0.00	-0.20	0.00	-0.64	-0.60	-0.34	-0.42	-1.04	
<i>NCREIF Property Index</i>			0.00	0.00	3.54	0.00	7.19	8.25	9.77	6.22	8.96	Mar-2004
Tortoise	33,426,338	5.58	0.04	5.64	6.88	5.64	6.86	0.47	2.12	-	7.78	Dec-2010
<i>S&amp;P MLP Index</i>			1.58	7.80	8.89	7.80	9.32	-0.71	-1.06	-	4.31	
Excess Return			-1.54	-2.16	-2.01	-2.16	-2.46	1.18	3.18	-	3.47	

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.

\*\*Not priced monthly.

# City of Knoxville Employees' Pension Plan

## Manager Asset Allocation & Performance | net of fees

August 31, 2018

	Asset \$	Asset %	1 Month	QTD	CYTD	FYTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Aether Real Assets I*	5,187,328	0.87										
Aether Real Assets II*	5,331,392	0.89										
<b>Hedge Fund</b>												
Blackstone	14,453,994	2.41	0.24	0.78	2.64	0.78	4.40	4.16	5.05	-	4.87	Dec-2010
<i>HFRI Fund of Funds Composite Index</i>			0.32	0.57	1.25	0.57	3.80	2.75	3.51	-	2.86	
Excess Return			-0.08	0.21	1.39	0.21	0.60	1.41	1.54	-	2.01	
<b>Risk Parity</b>												
PanAgora Diversified Risk	38,696,361	6.46	0.00	-0.65	-2.21	-0.65	1.04	7.45	-	-	6.05	Nov-2014
<i>60% MSCI World/40% Citigroup WGBI</i>			0.69	2.43	2.57	2.43	7.38	8.49	-	-	5.86	
Excess Return			-0.69	-3.08	-4.78	-3.08	-6.34	-1.04	-	-	0.19	
<b>Cash</b>												
Cash	8,969,892	1.50	0.19	0.42	1.27	0.42	1.84	1.15	0.78	0.60	3.14	Oct-1991

Returns for periods greater than one year are annualized.

\*Private Investments shown on time-weighted return basis for Flash Report purposes. Not priced monthly.

\*\*Not priced monthly.

# City of Knoxville Employees' Pension Plan

## Asset Allocation Compliance

August 31, 2018

	Target %	Actual %	Difference %	Target (\$)	Actual (\$)	Difference (\$)
<b>Total Fund</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>599,297,394</b>	<b>599,297,394</b>	<b>-</b>
<b>Total Equity</b>	<b>45.50</b>	<b>49.57</b>	<b>4.07</b>	<b>272,680,314</b>	<b>297,048,816</b>	<b>(24,368,502)</b>
<b>US Equity</b>	<b>22.00</b>	<b>24.75</b>	<b>2.75</b>	<b>131,845,427</b>	<b>148,324,559</b>	<b>(16,479,132)</b>
<b>Total Large Cap</b>	<b>18.50</b>	<b>20.20</b>	<b>1.70</b>	<b>110,870,018</b>	<b>121,072,340</b>	<b>(10,202,323)</b>
Parametric	4.00	4.37	0.37	23,971,896	26,205,926	(2,234,030)
<b>Large Cap Equity</b>	<b>14.50</b>	<b>15.83</b>	<b>1.33</b>	<b>86,898,122</b>	<b>94,866,414</b>	<b>(7,968,292)</b>
Eagle Capital Management	7.25	7.72	0.47	43,449,061	46,280,707	(2,831,646)
NT Russell 1000 Growth Index Fd	7.25	8.11	0.86	43,449,061	48,585,707	(5,136,646)
<b>Small/Mid Cap</b>	<b>3.50</b>	<b>4.55</b>	<b>1.05</b>	<b>20,975,409</b>	<b>27,252,219</b>	<b>(6,276,810)</b>
William Blair Small Cap Value	1.75	2.62	0.87	10,487,704	15,685,845	(5,198,141)
Pinnacle Associates	1.75	1.93	0.18	10,487,704	11,566,373	(1,078,669)
<b>International Equity</b>	<b>18.50</b>	<b>20.79</b>	<b>2.29</b>	<b>110,870,018</b>	<b>124,617,227</b>	<b>(13,747,210)</b>
Silchester International Investors	8.25	11.71	3.46	49,442,035	70,158,611	(20,716,576)
Gryphon	4.25	3.28	(0.97)	25,470,139	19,634,013	5,836,126
<b>Emerging Markets</b>	<b>6.00</b>	<b>5.81</b>	<b>(0.19)</b>	<b>35,957,844</b>	<b>34,824,604</b>	<b>1,133,240</b>
Acadian Emerging Markets	6.00	5.81	(0.19)	35,957,844	34,824,604	1,133,240
<b>Private Equity</b>	<b>5.00</b>	<b>4.02</b>	<b>(0.98)</b>	<b>29,964,870</b>	<b>24,107,030</b>	<b>5,857,840</b>
<b>Adams Street</b>	<b>1.00</b>	<b>0.51</b>	<b>(0.49)</b>	<b>5,992,974</b>	<b>3,080,871</b>	<b>2,912,103</b>
Adams Street 2009 Direct	-	0.04	-	-	254,465	-
Adams Street 2009 US	-	0.26	-	-	1,577,982	-
Adams Street 2009 Non-US Developed	-	0.14	-	-	817,203	-
Adams Street 2009 Non-US Emerging	-	0.07	-	-	431,221	-
Neuberger Berman	1.00	0.45	(0.55)	5,992,974	2,697,167	3,295,807
Top Tier Venture Velocity Fd	1.00	0.82	(0.18)	5,992,974	4,933,366	1,059,608
Fort Washington Private Equity Fund III	1.00	0.77	(0.23)	5,992,974	4,617,376	1,375,598
57 Stars Global Opportunity Fund 4	1.00	0.52	(0.48)	5,992,974	3,106,391	2,886,583
Neuberger Berman Crossroads XXI	-	0.47	-	-	2,786,991	-
Fort Washington Private Equity Fund IX	-	0.26	-	-	1,530,977	-
Aberdeen Private Equity VII	-	0.23	-	-	1,353,891	-
<b>Total Fixed Income</b>	<b>26.00</b>	<b>24.69</b>	<b>(1.31)</b>	<b>155,817,322</b>	<b>147,991,581</b>	<b>7,825,742</b>
<b>Traditional Fixed Income</b>	<b>21.00</b>	<b>24.69</b>	<b>3.69</b>	<b>125,852,453</b>	<b>147,991,581</b>	<b>(22,139,128)</b>
<b>Core Fixed Income</b>	<b>8.00</b>	<b>11.40</b>	<b>3.40</b>	<b>47,943,791</b>	<b>68,341,712</b>	<b>(20,397,921)</b>
NT Aggregate Bond Fund	-	3.60	-	-	21,550,425	-
IR+M Core Fixed	8.00	7.81	(0.19)	47,943,791	46,791,288	1,152,504
<b>Long Fixed Income</b>	<b>10.00</b>	<b>10.06</b>	<b>0.06</b>	<b>59,929,739</b>	<b>60,270,699</b>	<b>(340,960)</b>
STW Fixed	10.00	10.06	0.06	59,929,739	60,270,699	(340,960)
<b>TIPS</b>	<b>3.00</b>	<b>3.23</b>	<b>0.23</b>	<b>17,978,922</b>	<b>19,379,170</b>	<b>(1,400,248)</b>
IR+M TIPS	3.00	3.23	0.23	17,978,922	19,379,170	(1,400,248)
<b>Emerging Debt</b>	<b>5.00</b>	<b>0.00</b>	<b>(5.00)</b>	<b>29,964,870</b>	<b>-</b>	<b>29,964,870</b>



## City of Knoxville Employees' Pension Plan

Asset Allocation Compliance

August 31, 2018

	Target %	Actual %	Difference %	Target (\$)	Actual (\$)	Difference (\$)
Pictet Emerging Local Currency Debt	5.00	0.00	(5.00)	29,964,870	-	29,964,870
<b>Real Assets</b>	<b>17.50</b>	<b>15.37</b>	<b>(2.13)</b>	<b>104,877,044</b>	<b>92,136,750</b>	<b>12,740,294</b>
<b>Core Real Estate</b>	<b>5.00</b>	<b>8.04</b>	<b>3.04</b>	<b>29,964,870</b>	<b>48,191,692</b>	<b>(18,226,822)</b>
Principal Global Investors	2.50	3.57	1.07	14,982,435	21,384,298	(6,401,863)
RREEF America II	2.50	4.47	1.97	14,982,435	26,807,394	(11,824,959)
<b>Energy/Natural Resources</b>	<b>7.50</b>	<b>7.33</b>	<b>(0.17)</b>	<b>44,947,305</b>	<b>43,945,058</b>	<b>1,002,246</b>
Tortoise	5.00	5.58	0.58	29,964,870	33,426,338	(3,461,469)
<b>Private Real Assets</b>	<b>2.50</b>	<b>1.76</b>	<b>(0.74)</b>	<b>14,982,435</b>	<b>10,518,720</b>	<b>4,463,715</b>
Aether Real Assets I	1.25	0.87	(0.38)	7,491,217	5,187,328	2,303,889
Aether Real Assets II	1.25	0.89	(0.36)	7,491,217	5,331,392	2,159,825
Non-Core Real Estate	5.00	0.00	(5.00)	29,964,870	-	29,964,870
<b>Hedge Funds</b>	<b>5.00</b>	<b>2.41</b>	<b>(2.59)</b>	<b>29,964,870</b>	<b>14,453,994</b>	<b>15,510,876</b>
Blackstone	5.00	2.41	(2.59)	29,964,870	14,453,994	15,510,876
<b>Risk Parity</b>	<b>5.00</b>	<b>6.46</b>	<b>1.46</b>	<b>29,964,870</b>	<b>38,696,361</b>	<b>(8,731,491)</b>
PanAgora Diversified Risk	5.00	6.46	1.46	29,964,870	38,696,361	(8,731,491)
Cash	1.00	1.50	0.50	5,992,974	8,969,892	(2,976,918)

# City of Knoxville Employees' Pension Plan

Asset Allocation Compliance

August 31, 2018

	Target %	Actual %	Difference %	Target (\$)	Actual (\$)	Difference (\$)
<b>Total Fund</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>599,297,394</b>	<b>599,297,394</b>	<b>-</b>
<b>Growth</b>	<b>73.00</b>	<b>65.77</b>	<b>(7.23)</b>	<b>437,487,097</b>	<b>394,144,230</b>	<b>43,342,868</b>
Domestic Large	19.00	20.20	1.20	113,866,505	121,072,340	(7,205,836)
Domestic Small	4.00	4.55	0.55	23,971,896	27,252,219	(3,280,323)
International	18.50	20.79	2.29	110,870,018	124,617,227	(13,747,210)
MLPs	5.00	5.58	0.58	29,964,870	33,426,338	(3,461,469)
Private Equity	4.00	4.02	0.02	23,971,896	24,107,030	(135,134)
Private Energy	2.50	1.76	(0.74)	14,982,435	10,518,720	4,463,715
Non-Core Real Estate	5.00	0.00	(5.00)	29,964,870	-	29,964,870
Growth Hedge Funds	5.00	2.41	(2.59)	29,964,870	14,453,994	15,510,876
Emerging Debt	5.00	0.00	(5.00)	29,964,870	-	29,964,870
High Yield	0.00	0.00	0.00	-	-	-
Risk Parity	5.00	6.46	1.46	29,964,870	38,696,361	(8,731,491)
<b>Income</b>	<b>23.00</b>	<b>29.50</b>	<b>6.50</b>	<b>137,838,401</b>	<b>176,804,103</b>	<b>(38,965,702)</b>
Core Fixed Income	8.00	11.40	3.40	47,943,791	68,341,712	(20,397,921)
Long Fixed Income	10.00	10.06	0.06	59,929,739	60,270,699	(340,960)
Core Real Estate	5.00	8.04	3.04	29,964,870	48,191,692	(18,226,822)
Global Fixed	0.00	0.00	0.00	-	-	-
<b>Diversification</b>	<b>4.00</b>	<b>4.73</b>	<b>0.73</b>	<b>23,971,896</b>	<b>28,349,061</b>	<b>(4,377,165)</b>
TIPS	3.00	3.23	0.23	17,978,922	19,379,170	(1,400,248)
Cash	1.00	1.50	0.50	5,992,974	8,969,892	(2,976,918)

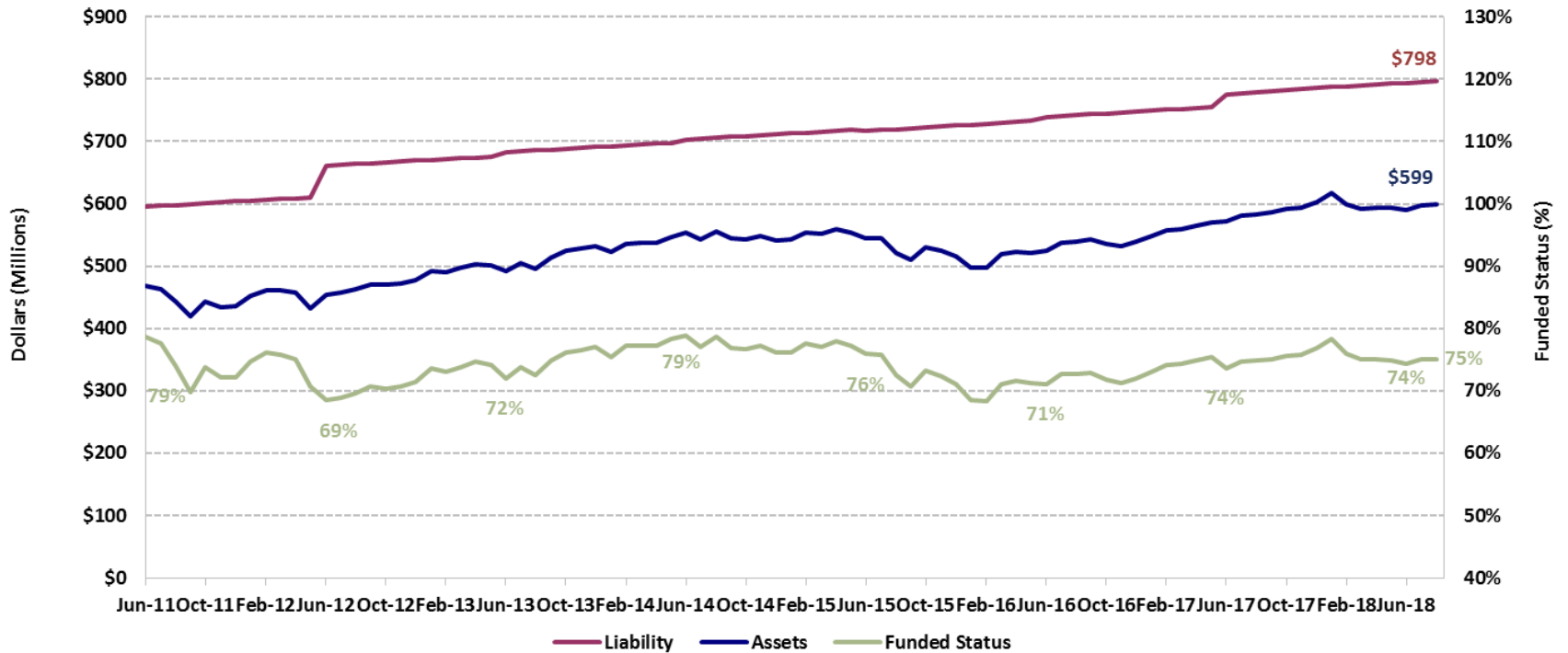
# City of Knoxville Employees' Pension Plan

Asset/Liability Scorecard Net of Fees

August 31, 2018

	<u>Market Value of Assets</u>	<u>1 Month</u>	<u>QTD</u>	<u>CYTD</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
Asset Return	\$599,297,394	0.4%	2.0%	1.4%	2.0%	5.9%	8.2%	7.5%	6.8%

Assets, Liability, and Funded Status



## City of Knoxville Employees' Pension Plan

### Historical Hybrid Composition

#### Total Fund Policy Index

	(%)		(%)
<b>Oct-2017</b>		<b>Jun-2015</b>	
Russell 3000 Index	14.50	Russell 3000 Index	18.00
S&P 500	4.00	MSCI AC World ex USA (Net)	18.50
Russell 3000 Index	3.50	Blmbg. Barc. U.S. Aggregate	20.00
MSCI AC World ex USA (Net)	18.50	JPM GBI-EM Global Diversified	5.00
Russell 3000 Index	5.00	Blmbg. Barc. Global Aggregate Index (Hedged)	5.00
Blmbg. Barc. U.S. Aggregate	21.00	NCREIF Fund Index-ODCE (VW) [M]	17.50
JPM GBI-EM Global Diversified	5.00	HFRI Fund of Funds Composite Index	5.00
Blmbg. Barc. Global Aggregate Index (Hedged)	0.00	60% MSCI World/40% Citigroup WGBI	5.00
NCREIF Fund Index-ODCE (VW) [M]	17.50	Russell 3000 Index	5.00
HFRI Fund of Funds Composite Index	5.00	FTSE 3 Month T-Bill	1.00
60% MSCI World/40% Citigroup WGBI	5.00		
FTSE 3 Month T-Bill	1.00	<b>Nov-2014</b>	
		Russell 3000 Index	20.50
<b>Jul-2017</b>		MSCI AC World ex USA (Net)	21.00
Russell 3000 Index	14.50	Blmbg. Barc. U.S. Aggregate	20.00
S&P 500	4.00	JPM GBI-EM Global Diversified	5.00
Russell 3000 Index	3.50	NCREIF Fund Index-ODCE (VW) [M]	17.50
MSCI AC World ex USA (Net)	18.50	HFRI Fund of Funds Composite Index	5.00
Russell 3000 Index	5.00	60% MSCI World/40% Citigroup WGBI	5.00
Blmbg. Barc. U.S. Aggregate	16.00	Russell 3000 Index	5.00
JPM GBI-EM Global Diversified	5.00	FTSE 3 Month T-Bill	1.00
Blmbg. Barc. Global Aggregate Index (Hedged)	5.00		
NCREIF Fund Index-ODCE (VW) [M]	17.50	<b>Jan-2013</b>	
HFRI Fund of Funds Composite Index	5.00	Russell 3000 Index	28.50
60% MSCI World/40% Citigroup WGBI	5.00	MSCI AC World ex USA (Net)	23.00
FTSE 3 Month T-Bill	1.00	Blmbg. Barc. U.S. Aggregate	25.00
		NCREIF Fund Index-ODCE (VW) [M]	17.50
		HFRI Fund of Funds Composite Index	5.00
		FTSE 3 Month T-Bill	1.00

## City of Knoxville Employees' Pension Plan

### Historical Hybrid Composition

#### Total Fund Policy Index

	(%)		(%)
<b>Dec-2010</b>		<b>Jan-2006</b>	
Russell 3000 Index	38.00	Russell 3000 Index	44.00
MSCI AC World ex USA	27.00	MSCI EAFE Index	23.00
Blmbg. Barc. U.S. Aggregate	19.00	Blmbg. Barc. U.S. Aggregate	15.00
NCREIF Fund Index-ODCE (VW) [M]	10.00	NCREIF Property Index	10.00
HFRI Fund of Funds Composite Index	5.00	HFRI FOF: Conservative Index	7.00
FTSE 3 Month T-Bill	1.00	FTSE 3 Month T-Bill	1.00
<b>Jan-2010</b>		<b>Oct-2001</b>	
Russell 3000 Index	38.00	S&P 500	30.00
MSCI AC World ex USA	27.00	Russell 2000 Index	21.50
Blmbg. Barc. U.S. Aggregate	19.00	S&P/Citigroup EPAC BMI	10.00
NCREIF Fund Index-ODCE (VW) [M]	10.00	Blmbg. Barc. U.S. Aggregate	35.50
HFRI FOF: Conservative Index	5.00	FTSE 3 Month T-Bill	3.00
FTSE 3 Month T-Bill	1.00		
<b>Dec-2007</b>		<b>Jan-1976</b>	
Russell 3000 Index	44.00	S&P 500	55.00
MSCI EAFE Index	23.00	Blmbg. Barc. U.S. Aggregate	45.00
Blmbg. Barc. U.S. Aggregate	15.00		
NCREIF Fund Index-ODCE (VW) [M]	10.00		
HFRI FOF: Conservative Index	7.00		
FTSE 3 Month T-Bill	1.00		
<b>Dec-2006</b>			
Russell 3000 Index	44.00		
MSCI EAFE Index	23.00		
Blmbg. Barc. U.S. Aggregate	15.00		
NCREIF Fund Index-ODCE (VW) [M]	10.00		
HFRI FOF: Conservative Index	7.00		
FTSE 3 Month T-Bill	1.00		

## DISCLAIMER

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Addendum to Statement of Investment Policy

Target Asset Allocation

<b>Asset Class</b>	<b>Current Long Term Target as % of Total Assets</b>	<b>Current Target Range</b>	<b>Authorized Limits</b>
<b>Equity</b>	<b>45.5%</b>	<b>40.5-50.5%</b>	<b>0-75%</b>
Large Cap Stocks	14.5%	9.5-19.5%	0-60%
Defensive Equity	4.0%	0-8%	0-25%
Small-Mid Cap Stocks	3.5%	0-8.5%	0-40%
Developed Int'l Stocks	12.5%	7.5-17.5%	0-50%
Emerging Markets Stocks	6%	0-11%	0-25%
Convertible Securities	-%	-%	0-25%
Private Equity	5%	0-10%	0-25%
<b>Fixed Income</b>	<b>26%</b>	<b>19-33%</b>	<b>0-75%</b>
Core/Core Plus	21%	15%-30%	0-75%
Emerging Market Debt	5%	0-10%	0-10%
<b>Hedge Funds</b>	<b>5%</b>	<b>0-10%</b>	<b>0-15%</b>
<b>Risk Parity</b>	<b>5%</b>	<b>0-10%</b>	<b>0-15%</b>
<b>Real Assets</b>	<b>17.5%</b>	<b>12.5-20%</b>	<b>0-20%</b>
Real Estate	10%	5-15%	0-20%
Energy/Commodities	7.5%	2.5-12.5%	0-15%
<b>Cash</b>	<b>1%</b>	<b>0-5%</b>	<b>0-10%</b>

Policy Index  
Approved September 14, 2017

Russell 3000 Index	23.0%
S& P 500 Index	4.0%
MSCI ACWI-Ex US	18.5%
NCREIF	17.5%
Barclays Capital Aggregate Index	21%
HFR FoF Composite Index	5%
60% MSCI World/40% Citigroup WGBI	5%
JPM GBI-EM Global Diversified	5%
Treasury Bills	1%



**EXHIBIT A**

**THE CITY OF KNOXVILLE  
EMPLOYEES' PENSION SYSTEM**

**STATEMENT  
OF  
INVESTMENT POLICY**

Amended and Restated February 3, 2015

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Addendum – Pension Board Investment Committee Charter

## **I. PURPOSE**

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The purpose of this Statement of Investment Policy (“Policy” or “Statement”) is to define the investment policy for the City of Knoxville Employees’ Pension System (“Fund”) and to set forth its goals, objectives and guidelines for the Fund in order that:

- Appropriate investment authority be conveyed by the Council of the City of Knoxville (“City Council”) to the City of Knoxville Pension Board (“Board”) in accordance with the City of Knoxville Charter (“City Charter”);
- The fiduciaries and service providers to the Fund be provided guidance on their respective duties and responsibilities to the Fund;
- There be a clear understanding of the financial needs of the Fund;
- There be a determination of the collective risk tolerance of the Board;
- The investment managers and other investment advisors be provided guidance and appropriate limitations on the investment of Fund assets; and
- The Board be provided a meaningful basis for evaluating the effectiveness of investment strategy, the achievement of goals and objectives, and the performance of investment managers so that the Board can meet its fiduciary responsibility to prudently monitor the Fund’s investments.

It is the Board’s intent in establishing this Policy to state the objectives, goals, guidelines, and a philosophy concerning the investment of Fund assets so that the desired investment results can be achieved. It is also the Board’s intention that the investment policies be sufficiently specific to be meaningful but adequately flexible to be practicable. However, the policies stated herein are not to be deviated from by any responsible party without the written permission of the Board.

## II. RESPONSIBILITIES

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**A. Board** - The Board is charged by the City Charter with the responsibility of administering and managing Divisions A, B, C, F, G and H of the Fund's pension plan (the "Plan" or "Plans"). The primary responsibilities of the Board are:

- as a primary objective, to ensure that sufficient assets are available to provide the benefits promised to the Fund's participants and beneficiaries at the time they are payable;
- as a secondary objective, to achieve an optimum level of return within specified risk tolerances; and
- to do so effectively and prudently, in full compliance with all applicable laws and regulations.

Specific responsibilities of the Board in the investment process include:

- complying with all applicable laws, regulations and rulings appropriate thereto;
- maintaining all records dealing with the Fund, with such records being kept and maintained at the Board's offices, and/or at the discretion of the Board, in the office of the Board's duly appointed agent;
- determining the Fund's projected financial needs and communicating such to the Fund's actuary, investment consultant, investment managers and other service providers as necessary;
- establishing realistic investment goals and objectives, as well as reasonable investment policies and limitations;
- establishing the Fund's asset allocation (defined as determining an appropriate mix of the Fund's assets between various asset classes and investment styles) in a manner to achieve the Fund's goals and objectives without excessive risk;
- expressing the collective risk tolerance of the Board, primarily through the Fund's asset allocation;
- communicating clearly the major duties and responsibilities of those accountable for achieving investment results and to whom specific responsibilities have been delegated;
- providing a semi-annual reporting to City Council of the condition of the Fund as of December 31 and June 30 of each year, which shall include the Board's then current and target asset allocations for the Fund;
- selecting and maintaining a qualified actuary, investment consultant, investment managers, trustees, custodians and other service providers;
- monitoring and evaluating results to ensure compliance with policy guidelines and that performance objectives are being met;
- taking appropriate action to add or replace investment managers, advisors or other service providers as the Board determines is necessary or in the best

interest of the Fund; and

- undertaking such work, studies and education as may be necessary to keep the Board adequately informed as to the status of Fund assets.

To more effectively discharge its investment responsibilities, the Pension Board has established and appointed an investment committee (“Investment Committee”) for the purpose of providing assistance and advice to the Pension Board on investment matters related to the Fund’s assets. The Investment Committee’s function and duties shall be delegated to the committee by the Board under the committee’s charter, which the Board may amend from time to time. A copy of the Investment Committee’s charter is attached as an addendum to this Policy.

### **Delegation of Responsibilities**

Under the City Charter, the Board is authorized to delegate certain responsibilities to qualified agents to assist it in properly meeting its fiduciary duties and responsibilities as outlined above. Specifically, the Board has appointed trustees, investment managers, an investment consultant, legal counsel and actuary to perform various functions. These fiduciaries, and other service providers who may be appointed by the Board from time to time, shall have the duties and responsibilities specifically assigned to them as provided below.

**B. Trustee or Custodian** - The Fund shall retain one or more trust companies or banks to act as trustee or custodian for the Fund’s assets. The duties and responsibilities of each such fiduciary with respect to the Fund’s assets it holds shall include, but not be limited to the following:

- safekeeping of Fund assets under trust or custodial arrangement;
- except to the extent delegated to the investment managers, perform, participate in and exercise such rights, privileges, duties and responsibilities possessed by any other owner or holder of bonds or other evidence or indebtedness and common and preferred stock;
- provide the Board, investment consultant and managers a regular valuation, transaction listing, and accounting of Fund assets. Such valuation, listing, and accounting shall occur at least on a monthly basis;
- settle all purchases and sales of securities and other related transactions by the investment managers employed by the Fund;
- sweep all Fund accounts daily into a cash management account to ensure no Fund assets are left uninvested;
- make available and return all securities eligible to participate and loaned through the securities lending agent employed by the Fund;
- manage all uninvested cash and cash awaiting disbursement to the Fund’s investment managers in liquid, safe, interest-bearing instruments;
- provide all other custodial services not mentioned above necessary for the efficient investment, custody and administration of Fund assets;

- unless and until assumed by the Board, process all benefit distributions to retirees and beneficiaries in a timely manner; and
- unless and until assumed by the Board, provide annual tax reporting to the Internal Revenue Service and to retirees and beneficiaries in a timely manner.

**C. Investment Consultant** - The designated investment consultant shall have the following responsibilities:

- The primary duty of the investment consultant is to work with the Board and Investment Committee, supporting the Board's management of the investment process. This includes meeting regularly with the Board and Investment Committee to provide information, perspective, and evaluation as to the Fund's goals, objectives, investment structure, and investment managers that encompass the development, implementation, and monitoring of a properly diversified investment portfolio.
- Specific duties of the investment consultant include, but are not limited to, the following:
  - Make recommendations to the Board of appropriate actions that will enhance the probability of achieving overall objectives, such as use of various asset classes, implementation of investment strategy, changes in investment policy and changes in investment managers or other service providers;
  - Assist the Board in developing an appropriate asset mix through the use of regular studies that employ analysis of both the assets and liabilities of the Fund;
  - Assist the Board in deploying an appropriate asset mix through the development of specific investment strategies and supporting policies;
  - Provide comprehensive evaluation of the investment results of the total Fund and individual investment managers, in light of the investment guidelines and performance standards contained in this Policy;
  - Notify the Board of changes in the structure, personnel, ownership, investment philosophy or process of investment managers serving the Fund and present a course of corrective action when necessary;
  - Provide ad hoc investment research and other support as may be necessary to support the Board's educational and informational needs;
  - Assist the Board in screening and selecting investment managers and trustees and such other advisors to the Fund as the Board may request;
  - Monitor and evaluate each investment manager's performance under and adherence to this Policy and any applicable manager Instructions (as defined below);
  - Monitor performance of the capital markets, the Fund's assets relative to applicable targets and allowable ranges, the Fund's investment managers relative to applicable targets and allowable ranges, and make rebalancing

recommendations to the Board or Investment Committee as necessary; and

- Monitor the capital market environment, investment community, and the Fund’s investment managers in order to keep the Board and Investment Committee informed of any developments that may adversely impact on the Fund or any of its investment managers and to recommend any necessary actions.
- Within the duties and responsibilities outlined above, the investment consultant shall act in a fiduciary capacity.

**D. Investment Managers** – Each investment manager shall be charged with adhering to the requirements of this Policy as well as a set of individualized investment manager instructions (“Instructions”) that are to be developed for each investment manager by the investment consultant and approved by the Board. Such instructions will contain the manager’s benchmark by which its performance is measured, any internal account restrictions or limitations, and any necessary exceptions to this Policy that the Board determines are prudent under the circumstances. The designated investment managers are charged with the following responsibilities:

- Adherence to this Policy and Instructions:
  - Each separate account investment manager shall respect and observe the specific limitations, guidelines, and philosophies expressed herein, or as expressed in any written amendments of this Policy, and all applicable manager Instructions.
  - The investment manager’s acceptance of the responsibility to manage assets of the Fund will constitute an acceptance of this Policy, affirming the belief that the manager is realistically capable of achieving the Fund’s objectives within the guidelines and limitations stated herein.
- Discretionary Authority:
  - The investment managers will be responsible for making all investment decisions on a fully discretionary basis regarding all assets placed under its control and will be held accountable for achieving the investment objectives indicated. Such discretion shall include decisions to buy, hold, and sell securities in amounts and proportions that are reflective of the investment manager’s current investment strategy and compatible with the Fund’s investment guidelines.
  - The investment managers will construct and manage investment portfolios consistent with the investment philosophy, style and discipline for which they were retained. They will also execute trades and allocate brokerage commissions according to this Policy and any applicable manager Instructions.
  - The investment managers shall invest and manage Fund assets as prudent investors would, by considering the purposes, terms, distribution

requirement, and other circumstances of the Fund but subject to the requirements of this Policy and any applicable Instructions.

- Communication:
  - Investment managers will keep the Board and investment consultant informed on a timely basis of: major changes in their investment outlook, investment strategy, or asset allocation; significant changes in the ownership, organizational structure, financial condition, or professional staffing of the investment management firm or investment product utilized (including client service personnel); and other matters affecting their investment policies or philosophy.
  - Whenever investment managers believe that any particular guideline should be altered or deleted, it will be the investment manager's responsibility to initiate written communications with the Board expressing its views and recommendations.
  - Unless otherwise waived by the Board, investment managers will meet with the Board or the Investment Committee at least annually, at which time they shall review changes within the firm, review past investment performance and performance attribution, evaluate the current investment outlook, and discuss portfolio structure and any inherent or specific tactics (for example the significant over/under weighting of an economic sector relative to a market benchmark) in the portfolio as well as investment strategy with the Board.
- Reporting:
  - The investment managers shall provide the Board and its investment consultant with timely notices of transaction activities as may be required, as well as quarterly performance reports, commission summaries, and reports on proxy voting.
  - In addition, any information needed to assist the Board in conducting its evaluation of the investment manager's performance as it relates to Fund assets will be presented on a timely basis.
- Compliance with Appropriate State and Federal Laws:
  - The investment managers are responsible for strict compliance with the provisions of the Tennessee statutes including without limitation, the Tennessee Uniform Prudent Investors Act of 2002, as amended (T.C.A. Section 35-14-101 et seq.), the City Charter, and all other applicable state and federal laws, rules and regulations as they pertain to the investment manager's duties and responsibilities as a fiduciary.
  - Each investment manager shall acknowledge in writing its recognition and acceptance of full responsibility as a fiduciary under applicable federal or state law with regard to Fund assets.
- Investment Transactions:



- All transactions shall be completed on a best price, best execution basis.
- Understanding that the investment managers, as fiduciaries, have the responsibility to execute every transaction in the best interest of the Fund, the Board reserves the right to set specific brokerage policies, which shall be contained in the manager's investment Instructions.

**E. Actuary** - The Board's designated actuary shall have the following responsibilities:

- Prepare an annual valuation of all the Fund's assets and liabilities. Such valuation shall be provided to the Board to determine the financial condition of the Plans both individually and collectively and determine the contribution rates necessary to fully fund each Plan.
- Recommend to the Board adoption of certain assumptions including those concerning contribution rates, death, disability, withdrawal, retirement, and investment returns.
- Conduct, on a frequency determined by the Board but not less than once each six years, a study of the actual assumptions adopted by the Board and the actual Fund experience to determine the appropriateness of such assumptions.
- Assist the investment consultant in the preparation of all asset-liability studies and, specifically, the analysis of the Fund's liabilities and Plan provisions.
- Provide guidance and perspective regarding special actuarial studies, experience studies, benefit changes and all things of an actuarial nature as may be required by the Board from time to time.

**F. Legal Counsel** - The Board's designated legal counsel will advise and represent the Board in all matters requiring legal insight and advice.

**G. Benefit Payment Administration** - The Board may contract for benefit payment administration services to handle various benefit payment functions required by the Fund, which may include without limitation, the processing and distribution of benefit payments to retirees and participants and providing tax reporting to the Internal Revenue Service and to retirees and beneficiaries in a timely manner. All such services shall be specified in a written contract with a qualified and reputable provider and shall contain appropriate provisions to safeguard Fund assets.

### III. INVESTMENT OBJECTIVES AND GOALS

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The primary investment objective of the Fund is to ensure, over the long-term life of the Fund, an adequate level of assets to fund the benefits guaranteed to Plan members and their beneficiaries at the time they are payable. In meeting this objective, the Board seeks to achieve a high level of investment return consistent with a prudent level of portfolio risk.

In addition, a secondary investment objective of the Fund is to earn a total rate of return after all expenses that equals or exceeds the actuarial investment return assumption. The Board, with help from its actuary and investment consultant, will use the Fund's asset allocation as the primary tool to achieve this objective. As this is a long-term projection and investments are subject to short-term volatility, the main investment focus of the Board towards the total Fund's assumed rate of return and that of each investment manager will be on performance relative to the appropriate asset class, mix of asset classes, and peer performance over relevant time periods. Each manager is expected to maintain a consistent philosophy and style, perform well versus others utilizing the same style, and add incremental value after costs.

With these investment objectives and limitations in mind, it is the Board's general goal to maintain a fully funded status, to the extent possible and taking into account plan amendments and investment performance that may from time to time affect that goal. The Board's commitment to maintain a fully funded condition allows the adoption of a long-term investment time horizon, which is consistent with the long-term nature and liabilities of the Fund without undue concern for short-term variation in the market value of the Fund's assets. The Fund also has the following specific investment goals:

- ◆ Total Fund: It is **expected** that the Fund shall achieve an annualized total rate of return, net of fees, over a investment planning time horizon (generally 10 years) which:
  - Meets or exceeds the annual actuarial investment return assumption;
  - Meets or exceeds the return of a Policy Index, such index being comprised of the returns of the various broad market benchmarks representing each asset class in which the Fund is invested and weighted to reflect the Fund's target asset allocation. Changes to the Policy Index will be made by the Board when new asset classes are funded or the target allocation changes.

**Note:** The term "annualized total rate of return" used above and throughout this Policy, is defined as total rate of return, including all dividend and interest income and both realized and unrealized capital gains or losses, as measured on a compounded or time-weighted (geometric mean) basis. This does not include investment management fees, but does include transaction costs. For comparison purposes, performance will be reviewed gross of fees; however, for goal/objective evaluation purposes, performance will be reviewed net of fees.

- ◆ Investment Managers:
  - It is expected that each active investment manager shall achieve an annualized total rate of return, over a market cycle (generally 3-5 years) which exceeds a

broad market benchmark, net of fees, and ranks above median in a style peer performance universe, gross of fees. The broad market benchmarks shall be set by the Board for each investment manager in the manager's Instructions.

- It is expected that each passive investment manager shall achieve an annualized total rate of return, gross of fees, that matches the underlying market benchmark.

#### IV. ASSET STRUCTURE

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Based on its determination of the appropriate risk posture for the Fund and its related long-term return expectations, the Board, along with the investment consultant and actuary, will periodically review and establish asset-mix guidelines for the Fund, based on market values, which shall comply at all times with the authorized limits set by City Council through this Policy. The City Council's authorized investment limits for the Fund's assets are prescribed as follows:

<b>ASSET CLASS</b>	<b>AUTHORIZED LIMITS</b>
Equity (Domestic, International and Private)	0-75%
Fixed Income	0-75%
Hedge Funds	0-15%
Real Assets	0-20%
Risk Parity	0-15%
Cash	0-100%

The asset-mix guidelines established by the Board from time to time shall include current long term targets as a percentage of total Fund assets and current target ranges for each of the Fund's investment classes. The asset-mix guidelines shall serve as a strategic asset allocation and shall be based upon the most recent asset-liability study performed by the investment consultant and as adopted by the Board from time to time. Both the target allocations and target ranges should be adhered to under normal circumstances and should always remain in the authorized limits specified above. However, because the target allocations and target ranges are long term in nature, periodically the asset mix may fall outside the target or range. Dollar-cost-averaging, portfolio transition or other cases where the Board determines deviation from the target or range is in the best interest of the Fund are permitted exceptions. This in no way should be considered tactical asset allocation or market timing and is not viewed as such by the Board.

The Board, with the advice and assistance of its investment consultant and actuary, is responsible for broad asset allocation decisions. A manager's cash holdings can disrupt this position and therefore should be limited to five percent (5%) of its portfolio market value. Therefore, each manager's portfolio is to be fully invested, although cash can be held briefly when a security is sold prior to reinvestment. An exception to this will be when cash is used as part of a duration or term-structure strategy of a fixed income manager. This exception is consistent with the Board's decision to have managers avoid market-timing decisions stated above. Another exception will be risk parity managers are allowed to hold additional cash to create the desired amount of economic exposure through derivatives. Until such time as the Board changes the broad asset class targets, a routine rebalancing of the various portfolios back to the target allocation shall be implemented as necessary by the Board.

The strategic allocation provides reasonable assurance that the Fund's investment objective can be achieved based on historic relationships of asset class performance. Liquidity is required only to meet defined payout needs, unless the managers are otherwise advised by the Board.

Should an independent manager deem an asset structure outside the tactical range to be appropriate, the investment manager may deviate from these guidelines only with the approval of the Board.

## V. INVESTMENT GUIDELINES

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### A. DOMESTIC EQUITY

#### Permissible Investments

Unless otherwise authorized in writing by the Board, domestic equity managers are allowed to invest only in separate accounts or commingled vehicles made up of the security types listed below:

- Domestic Common Stocks
- Domestic Preferred Stocks
- Convertible Preferred Stocks
- Convertible Bonds
- Stock Index Futures
- American Depository Receipts
- Real Estate Investment Trusts
- Derivatives, including swaps, futures and options if used to protect the portfolio.

#### Role in the Portfolio

The principal purpose of equity investments is to provide capital appreciation over the long term. The low correlation between stocks and bonds, real assets, hedge funds or cash equivalents also helps create a portfolio with acceptable volatility.

A convertible securities portfolio may also be held, and if so, shall be included in the 75% maximum equity allocation for the Fund. The principal purpose of convertible securities is to provide equity-like returns (through their equity conversion feature) with less than equity-like volatility (through downside protection of the bond feature). Unless expressly permitted by the Board, convertible portfolios shall be limited to domestic common stocks (not to exceed 30% of the portfolio at market value), domestic convertible bonds and preferred stocks, foreign issue convertible bonds and preferred stocks denominated in U.S. dollars and traded on U.S. exchanges, as well as short-term cash reserves. Below investment grade (BB/Bb or below) convertible bonds shall be permitted, however the overall credit rating of the portfolio shall remain at investment grade (BBB-/Baa- or above). All other equity restrictions and limitations shall apply.

### Restricted Investments

With the exception of holdings in a Board approved Private Equity, Hedge Fund, or Risk Parity portfolio, the following are restricted:

- Letter stock
- Short sales or margin transactions
- Investments in commodities or commodity contracts
- Unregistered securities and private placements (except those securities regulated by SEC Rule 144A)
- Derivatives unless used as noted above and with advance written permission from the Board.

### Limitations

- Diversification: All equity portfolios should be well-diversified according to each manager's internal guidelines to avoid excessive exposure to any single economic sector, industry group, or individual security.
- The overall equity portfolio should be diversified by style and capitalization also to avoid excessive risk.
- Capitalization: Equity investments should be made in seasoned companies whose market capitalization is at least as large as that of each manager's underlying index.
- Exchange Traded Funds: In an effort to avoid high cash allocations, equity managers may hold up to 5% of their portfolio at market value in exchange traded funds replicating the manager's underlying index.

### Investment Goals

Primary emphasis is to be placed on relative rates of return. Over a market cycle (usually 3-5 years), the total rate of return of the domestic equity composite after fees should exceed the total rate of return of the Russell 3000 Index or other suitable broad index specified by the Board.

## **B. FIXED INCOME**

### Permissible Investments

Unless otherwise authorized in writing by the Board, fixed income managers are allowed to invest only in separate accounts or commingled vehicles made up of the security types listed below:

- U.S. Treasury and Agency Bills, Notes and Bonds
- Corporate and Municipal Notes and Bonds
- Mortgage-Backed Securities
- Asset-Backed Securities
- Convertible Securities
- Cash-Equivalent Securities
- Money Market Funds
- Non Dollar bonds and other debt securities, including Emerging Market Debt
- Derivatives, including swaps, futures and options if used to protect the portfolio.

### Role in the Portfolio

The principal purpose of fixed income investments is to provide relative safety of principal and a predictable source of income.

### Restricted Investments

With the exception of holdings in a Board approved Private Equity, Hedge Fund, or Risk Parity portfolio, the following are restricted:

- Derivatives unless used as noted above and with advance written permission from the Board.
- Direct loans or extension lines of credit to any interested party.
- Private placement bonds or unregistered securities (except those securities regulated under SEC Rule 144A).
- Leverage.

### Limitations

- Unless expressly permitted by the Board, fixed income securities shall be limited to those with a credit rating of investment grade (BBB-/Baa-) or above. Investment managers shall immediately notify the Board of any investments that are downgraded below investment grade, provide a plan for holding or disposition, and report their status regularly to the Board.
- Unless expressly permitted by the Board, the overall



portfolio credit rating shall remain A or better at all times.

- Investments in any one issuer (excluding obligations of the U.S. Government, either direct or implied) shall not exceed 5% of any fixed income portfolio's market value, unless otherwise authorized by the Board.
- Without specific written permission by the Board, the effective duration of any fixed income portfolio shall not exceed 120% of the effective duration of the manager's broad market benchmark.
- Collateralized mortgage obligations shall not be more sensitive to interest-rate changes than the underlying mortgage-backed security.

### Special Exceptions

On an opportunistic basis and only after express written permission by the Board, the following exceptions to the Restricted Investments and Limitations stated above may be permitted:

- Below investment grade credits rated BB, B, CCC
- Below investment grade debt shall not exceed 30% of the manager's portfolio
- Interest rate futures used to adjust portfolio duration

### Investment Goals

Primary emphasis is to be placed on relative rates of return. Over a market cycle (usually 3-5 years), the total rate of return of the fixed income composite after fees should exceed the total rate of return of the Barclays Capital Aggregate Bond Index or other suitable broad index specified by the Board.

## C. REAL ASSETS<sup>1</sup>

### Permissible Investments

Real assets, for purposes of this Policy, shall consist of investments in real estate, real estate securities (REITS), timberland, commodities, energy, and master limited partnerships (MLPs). Ownership may include direct investments, index investments, publicly traded securities, private investments, and commingled funds. Investment vehicles may include: units of or partnership interests in pooled fund(s), insurance company separate accounts, limited partnerships, open-end or closed-end funds, public or private real estate investment trusts or real estate securities. Derivatives, including swaps, futures and options may be used if used to protect the portfolio or where direct investment in the underlying physical property is impractical.

### Role in the Portfolio

The principal purpose of real assets is to provide low correlation to the equity portfolio thereby reducing overall Plan volatility. Real estate and timber investments may be included to provide a steady source of income over time, with volatility of returns between that of domestic equities and bonds. The purpose of commodities, energy and MLPs is to provide an inflation hedge, a source of income, and low correlation to other assets classes.

### Restricted Investments

Derivatives unless used as noted above and with advance written permission from the Board.

### Limitations

- At least 50% of the real assets portfolio shall be invested in core investments including real estate investment trusts. Core investments are equity ownership interests primarily in existing properties, which are substantially leased, located in economically diversified metropolitan areas with credit quality tenants and a staggered lease maturity schedule.
- Leverage on core investments should not exceed 35% of the fund or investment.
- Core investments should also offer broad diversification as a primary objective. Diversification should be by both property type including: retail, office, multi-family

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<sup>1</sup> Real Assets are interests in physical or tangible property or investments in financial vehicles backed by physical or tangible property

and industrial, and by geographic region.

- Up to 50% of the overall real assets portfolio may be invested in specialty or value-added strategies. Specialty or value-added strategies represent investments in properties that require specialized acquisition and management expertise or skill to mitigate the business, leasing or development risk that may be associated with individual investment opportunities. These investments have greater associated volatility, as well as the possibility of loss of principal, compared to core investments and as such provide expected yields higher than those associated with core investments.
- Leverage on value-added or specialty investments should not exceed 75% of the fund.
- Value-added funds should be diversified by property-type and geographic location but may be more concentrated than core investments and may include other property types, such as hotels, storage facilities, and senior housing. Specialty investments, by definition, are not diversified by property type, but typically dedicated to one or two property types.
- Limitations for other real asset investments shall be established by the Board on a case-by-case basis according to the type of investment and contained in a set of Manager Instructions.

### Investment Goals

Primary emphasis is to be placed on absolute rates of return. Over a market cycle (5-10 years), the total rate of return of the real assets portfolio should achieve at least a 5% real rate of return and outperform the full NCREIF index for value-added investments and the NCREIF ODCE Index for core real estate investments. Investments in other real assets should exceed the return of an appropriate index established for each investment by the Board over a market cycle.

## D. INTERNATIONAL EQUITY

### Permissible Investments

Unless otherwise authorized in writing by the Board, international equity managers are allowed to invest only in separate accounts or commingled vehicles made up of the security types listed below:

- Common and preferred stocks issued by non-U.S. corporations domiciled in developed and emerging market countries.
- Forward foreign currency exchange contracts for hedging purposes.
- American and Global Depository Receipts or similar instruments.
- Units of commingled or mutual funds investing in substantially the same permissible investments.
- Derivatives, including swaps, futures and options if used to protect the portfolio.

### Role in the Portfolio

The principal purpose of international equity investments is to provide capital appreciation and diversification. A low correlation to both domestic equity and bonds creates reduced portfolio volatility.

### Restricted Investment

- Derivatives unless used as noted above and with advance written permission from the Board.
- Any investment restricted by the domestic equity restrictions provisions.

### Limitations

- Each portfolio will be diversified by country, economic sector, industry, number of issues held and other investment characteristics.
- Use of derivatives such as options and futures to establish unleveraged long positions are permissible.
- Net short foreign currency positions may not be taken.
- Currency management is at the discretion of each manager.
- On an opportunistic basis, developed country managers may invest in common and preferred stocks issued by non-U.S. corporations domiciled in emerging markets,

not to exceed 15% of any manager's portfolio.

Investment Goals

Primary emphasis is to be placed on relative rates of return. Over a market cycle (usually 3-5 years), the total rate of return of the international equity composite after fees should exceed the total rate of return of the MSCI ACWI-EX US or other suitable broad Index specified by the Board.

## **E. HEDGE FUNDS**

### Permissible Investments

Hedge funds are portfolios of primarily publicly traded securities, including all types of stocks, bonds, currencies and derivative instruments managed using a variety of active strategies designed to achieve particular market exposure and in aggregate minimize or hedge market related risks.

The Plan may invest directly with individual hedge fund managers or invest in one or more hedge fund-of-funds vehicles. However, in order to quickly build a diversified program of hedge fund managers, each using different strategies, fund-of-funds vehicles will primarily be used. Fund-of-funds are either separate or commingled accounts managed by a fund-of-funds manager. Although fees charged by the fund-of-funds vehicle are possibly higher than those charged by long-only equity managers or direct hedge fund managers, the Board believes using the fund-of-funds vehicle is initially the most attractive option for achieving diversified hedge fund exposure due to the diversification of strategies and managers, as well as the fund-of-funds manager's expertise in the due diligence process of evaluating, hiring, terminating and monitoring individual hedge funds. If a fund-of-funds is used, the fund-of-funds manager is solely responsible for selection of the underlying strategies and the hiring and terminating of managers who carry out those strategies. The Board shall establish investment guidelines for the hedge fund portfolio in aggregate and shall select fund-of-funds investment or direct hedge fund managers to achieve the stated objectives.

Each fund-of-funds manager shall be an investment fiduciary to the Plan and a registered investment advisor under the Investment Advisers Act of 1940.

Preference shall be given to those fund-of-funds managers who commit a significant amount of their own capital together with the Plan in the fund-of-funds vehicles.

The underlying managers contained within the overall hedge fund portfolio shall employ a variety of skill-based and generally proprietary strategies. All strategies are permitted and are generally defined as Relative Value strategies (equity market neutral, convertible arbitrage and fixed income arbitrage), Event-Driven strategies (merger arbitrage and distressed securities), and Opportunistic strategies (long/short equity, short-biased and global macro).

Short-term strategies, especially trading-based strategies, may also be used. Accordingly, the following is permitted: short sales of securities; purchase and sale of options, commodities, futures and private placements, all types of publicly traded securities and currencies; and the use of leverage and derivatives. Further definitions of permissible strategies are contained in specific hedge fund or fund-of-funds manager Investment Instructions.

#### Role in the Portfolio

The long-term role of hedge funds as an asset class in the overall portfolio is to improve the risk-adjusted returns of the overall portfolio by reducing market risk, providing low correlation with traditional asset classes and providing consistently positive nominal returns. The goal of the hedge fund portfolio is to provide a “fixed income surrogate,” offering fixed income-like volatility but low equity-like returns over a market cycle.

#### Restricted Investments

The Board’s investment in any single fund-of-hedge funds vehicle shall not exceed 10% of the market value of that fund-of-funds (including all its feeder funds).

Each fund-of-funds shall be diversified according to each Investment Manager’s internal policies regarding permissible strategies, asset classes, and risk management (strategy concentration, manager concentration, and level of leverage). Accordingly, at the composite level, no limitations are imposed on exposure to any single: strategy, economic sector, hedge fund manager, use of derivatives, or use of leverage within strategies. However each fund-of-funds manager is responsible for managing these exposures and its accompanying risks and shall outline such limitations contained within its internal policy, which shall be enumerated in their fund-of-funds manager instructions.

Financial leverage at the fund-of-funds level is prohibited, unless specifically permitted by the Board. Leverage at the manager or strategy level shall be fully disclosed and regularly updated.

Lock-up periods shall not exceed one year. Thereafter, at least quarterly liquidity is preferred.

In the event any fund-of-funds manager invests any Board assets in any hedge fund, strategy or manager in which the fund-of-funds manager has an ownership interest or stands to materially benefit from or which presents the Board with a conflict of interest, such investment shall be fully disclosed to the Board by the fund-of-funds manager.

## Investment Goals

It is expected that the hedge fund composite (the aggregation of all hedge funds employed by the Board) should achieve a return goal of LIBOR (30 day) + 4%, net of fees, over rolling 3-5 year periods with 4-6% standard deviation of returns over similar periods. Where possible, peer comparisons will be made using statistically valid performance universe(s), e.g. appropriate HFR index comparisons, with the expectation that performance will rank above median over rolling 3-5 year periods.



## F. RISK PARITY

### Permissible Investments

Unless otherwise authorized in writing by the Board, the Plan may utilize both separate accounts or discretionary commingled investment vehicles that are sponsored by risk parity Investment Managers. Commingled fund vehicles shall be open-end in nature and permit regular liquidity. The sponsoring risk parity Investment Manager shall be a qualified organization with an established track record and be registered under the Investment Advisors Act of 1940.

Risk parity by definition aims for equal risk across multiple asset classes and relies on risk-based diversification to generate higher and more consistent returns. Both cash-based securities and derivatives may be used to obtain the desired economic exposures.

The typical risk parity portfolio begins with much lower exposure to equities relative to traditional portfolios, and invests significantly in multiple types of fixed income securities, currencies, and other asset classes. As a result, the risk of the portfolio is not just concentrated in equities, but spread more evenly across other asset classes.

In some cases, leverage may be employed to increase the expected return of the balanced-risk portfolio, thereby creating a more “efficient” portfolio, a higher return with less volatility. The concept is a more balanced approach to risk allocation.

Risk parity strategies seek to deliver exposure to a broadly diversified set of global risk premiums covering equities, government bonds, commodities, and credit. These include exposures to global developed and emerging stocks, developed government bonds, high yield and investment grade credit spreads, mortgage spreads, and commodities, among other exposures.

The investment instruments expected to be utilized include stock index futures, swaps on equity indices, bond futures, interest rate swaps, TIPS and inflation linked bonds, currency forwards, credit derivatives, commodity futures and swaps, and cash equities. Further definitions of permissible strategies are contained in specific risk parity manager Investment Instructions or Fund documents.

### Role in the Portfolio

The long-term role of risk parity as an asset class in the overall portfolio is to improve the risk-adjusted returns of the overall portfolio by reducing market risk, providing low correlation with traditional asset classes and providing consistently positive nominal returns. The goal of the risk parity portfolio is to deliver exposure to a broadly diversified set of global risk premiums. Strategies are risk balanced among several sources of risk premium, including but not limited to:

- Equity Risk
- Nominal Interest Rate Risk
- Inflation Risk
- Credit/Default Risk

### Restricted Investments

Leverage shall not exceed 400% of the total portfolio and the portfolio is to be leveraged through the use of derivatives. Traditional leverage that includes outright borrowing may also be used.

### Investment Goals

Over a market cycle (usually 3-5 years), the total rate of return on the risk parity composite, after fees, should exceed the total rate of return of a blended index, 60% MSCI World / 40% Citigroup WGBI.

## G. PRIVATE EQUITY

### Permissible Investments

Private equity investments generally involve the privately negotiated purchase primarily of unlisted, illiquid common and preferred stock; subordinated and senior debt of mostly privately held companies; and distressed debt of both private and public companies. Private equity investments may also include providing mezzanine financing and other growth capital to both public and private companies. These investments are generally made in blind-pool limited partnerships and fall under the strategies generally known as venture capital, acquisition/buyouts/ growth capital, restructuring, distressed debt, mezzanine financing and special situations.

Investments in private equity shall be made only through professionally managed, institutional, limited partnership or limited liability company vehicles. Direct investments in privately held companies are prohibited.

The private equity portfolio in aggregate will be prudently diversified by having broad exposure across the strategies listed above, but in general, more heavily weighted in venture capital and acquisition/buyout. Further, the private equity portfolio in aggregate shall be diversified by: industry groups, company, number of transactions, stage of company maturity, form of investment, geography and time. Investment in non-US limited partnerships is permitted. The long-term nature of private equity investments and vintage year diversification shall be emphasized so that the Plan, as a long-term investor, may properly take advantage of the private negotiation of transactions and the liquidity premium associated with private equity investments.

In private equity investing there is the risk, especially in venture capital investments, of sustaining a complete loss on any of the individual company investments. The Board understands and expects that while specific investments may incur losses of all or part of invested capital, a diversified portfolio of holdings should produce a positive rate of return in excess of that available from public equities. Therefore, the Plan shall prudently diversify its private equity program in a manner consistent with professionally managed institutional private equity programs so as to decrease the likelihood of loss.

The implementation of the private equity program by the Plan shall be made over time so as to increase vintage year diversification. The timing of new commitments shall be spread out so as to avoid

undue concentration of commitments in any one year. Over long-term, it is expected that approximately equal amounts of new funding will be committed each year to increase diversification. The Board recognizes that it will be necessary to make capital commitments in excess of the target allocation for private equity in order to achieve the target allocation and subsequently maintain it. The Investment Consultant shall monitor the amount of capital committed, drawn, invested and distributed and make a recommendation to the Board as to the amount of new commitments to be made each year.

In order to quickly build a diversified program of private equity managers/limited partnerships, the Plan may invest in private equity investments through institutional, commingled private equity fund-of-fund vehicles (“fund”). These will be managed by the fund-of-funds manager (“Investment Manager”). The Investment Manager shall be a Registered Investment Advisor registered under the Investment Advisors Act of 1940 and shall act as a fiduciary. Although fees charged by the fund and Investment Manager are possibly higher in total than fees from directly investing in limited partnerships, the Board believes using the fund-of-funds approach is currently the most attractive option to the Board for achieving the prudent diversification described above as well as obtaining the Investment Manager’s access to new, as well as proven, top tier general partners (e.g. deal flow); expertise in due diligence process of general partner evaluation and selection; monitoring of individual investments and partnerships; and valuation of investments.

The Investment Manager has full discretion with respect to the management of the fund, subject to operating parameters contained in the fund’s legal documents. The Investment Manager is solely responsible for the selection of the underlying partnerships and strategies utilized in the fund.

The Board shall establish guidelines for the private equity portfolio in aggregate and select Investment Managers to achieve the stated performance objectives. Preference shall be given to Investment Managers who commit a significant amount of their own capital together with the Plan in the fund.

Each Investment Manager shall be expected to achieve the investment goals stated above. In addition, the Board shall monitor each fund’s interim performance at least annually. It is expected that each fund shall produce a dollar-weighted internal rate of return, net of fees, in excess of those available in public

markets over rolling 5-year periods and rank above median in vintage year private equity universe peer comparisons.

### Role in the Portfolio

The long-term role of private equity as an asset class in the overall portfolio is to improve the risk-adjusted returns of the overall portfolio by increasing the long-term expected return and possibly reducing year-over-year portfolio volatility. The Board understands that there are certain additional risks associated with investing in private equity, such as: the long-term nature and illiquidity of the investment; the complexity of the strategies employed; the delay of investment return to the Plan (e.g. “J-curve effect”); the possible lack of full public disclosure of certain financial information; and the labor intensive nature of private equity programs for plan sponsors to implement and monitor. However the Board has determined that possible rewards outweighs the possible risks and has also determined that the long-term role of private equity stated above is consistent with this Policy and its objectives.

### Investment Restrictions

Each fund-of-funds shall be invested and diversified according to that fund’s legal documentation. Accordingly, at the composite level, no limitations shall be imposed on any single partnership, strategy, or investment.

### Monitoring and Reporting

The private equity fund-of-funds managers will monitor and administer the underlying limited partnership investments in a prudent manner, in part, by:

- Administering capital calls and distribution,
- Employing financial monitoring and reporting Plans,
- Maintaining an understanding of the limited partnership’s holdings and activities, including periodic discussions with the general partners and attending partnership investor meetings as appropriate,
- Attending to partnership amendments or other matters related to the underlying partnerships in the best interest of the investors,
- Liquidating stock distributions, and
- Except as provided for in liquidating distributions, providing a cash-to-cash service to the Plan.

Reporting requirements will be governed by the fund-of-funds’ legal documentation, which at a minimum will provide for quarterly unaudited financial statements and other relevant investment holdings-related exhibits, and annual audited financial statements

and relevant investment holdings-related exhibits, which may include:

- A listing of assets with historical cost and market valuations by security and in total
- Holdings by sector segmentations
- Performance results for the month, quarter-to-date, fiscal year-to-date and since inception
- Dealings with minority and woman-owned businesses
- Firm composition specifying majority, minority, and women personnel by management category
- Changes in personnel or firm composition
- Investor purchases and sales
- Major changes in market conditions

It is expected that the fund-of-funds' Investment Managers will meet with the Board, its Investment Committee or the Investment Consultant as reasonably required and at least annually.

#### Investment Goals

It is expected that the private equity composite (the aggregation of all private equity investments employed by the Plan) should produce a dollar-weighted internal rate of return (IRR) that exceeds the S&P 500 Index by 3-5%, net of fees, over the life of the investment (typically 10-12 years). Where possible, peer comparisons will be made using statistically valid private equity performance universe(s) with the expectation that performance will rank above median in vintage year periods.

## H. CASH EQUIVALENTS

### Types of Securities

Debt securities of any U.S. entity not otherwise prohibited, with maturities of less than one year.

### Diversification

No more than 10% of the cash portfolio shall be invested in Certificates of Deposit or Banker's Acceptances issued by any single bank. No more than 35% of the cash portfolio shall be invested in commercial paper, with no more than 5% of the portfolio invested with any single issuer of commercial paper.

### Quality

Only cash equivalents with the following minimum quality ratings are eligible for inclusion in the portfolio:

- Commercial Paper: A1/P1 or equivalent
- Certificates of Deposit and Banker's Acceptances: AA-, Aa3 or equivalent
- Repurchase Agreements: U.S. Government or agency secured

### Pooled Funds

Pooled funds or other commingled investment vehicles may be utilized that are invested in substantially the same manner and same investments as stated above. Investing through a pooled fund vehicle means the investments will be governed by that fund's own set of guidelines and restrictions as set forth in Section V.F. of this Policy ("Pooled or Commingled Funds").

## **I. POOLED OR COMMINGLED FUNDS**

The Fund may invest in pooled or commingled vehicles such as mutual funds, commingled fund or common trust funds that are invested in substantially the same manner and same investments as stated in this Policy. When utilizing such a pooled or commingled vehicle, however, the portfolio will be managed according to such fund's applicable prospectus, offering memorandum or trust document. In the event any such prospectus, offering memorandum or trust document conflicts with this Policy, the prospectus, offering memorandum or trust document will control and the areas of conflict will be outlined in detail by the manager for the Board. In such events, the investment consultant shall advise the Board whether such differences are reasonable and whether the Fund's adoption of the conflicting provision is recommended. The investment manager shall immediately notify, and if possible provide advance warning to the Board should investment guidelines in the prospectus, offering memorandum or trust document change.



## J. SECURITIES LENDING

### Borrowers

Only institutions meeting defined and agreed upon credit standards will be eligible to borrow securities from the Fund. The Trustee, or a securities lending agent designated by the Board, shall advise the Board of the lender's credit standards and lending policies, and once approved by the Board, shall monitor the borrower's compliance with such standards and policies.

### Quality

All borrowers shall have a credit rating not less than the quality ratings required by this Policy for active Fixed Income holdings.

### Collateral

The lending agent shall obtain from such borrower collateral in an amount equal, as of such date, to 102% in the case of securities on U. S. issuers, and 105% in the case of securities of non-U.S. issuers, of the market value of any securities loaned, including any accrued interest. On a daily basis, each security shall be marked to the market. In the event the market value of the collateral falls below 101.5% of the market value of the loaned securities of U.S. issuers or 104.5% of the market value of the loaned securities of non-U.S. issuers, the lending agent shall require such borrower to deliver additional collateral at the rates required above. The collateral shall be invested in sufficiently liquid, short-term securities such as, but not limited to:

- Commercial Paper (minimum credit quality of A1/P1) or equivalent;
- Repurchase Agreements;
- U.S. Treasury bills, notes and bonds;
- Other obligations issued by the U.S. Government, its agencies and instrumentalities; and
- Corporate debt rated "A" or better at time of purchase.

Collateral other than corporate debt or that issued by the U.S. Government, its agencies and instrumentalities, must also be rated "A" or better at time of purchase.

Diversification by credit quality, issuer and security type within the Collateral Pool is desirable. To that extent, the pool

will maintain an average credit quality of “AA” on that portion of the pool, which consists of securities with maturities longer than one year. An average credit quality rating of A1/P1 will be maintained on the remainder of the pool. Aside from U.S. Government securities, and money market mutual funds whose limit is 10%, no more than 5% of the pool will be invested in securities of any one issuer. Additionally, the pool will be prudently diversified by security type so as not to bring undue risk upon the Fund.

Pooled Funds

Pooled funds or other commingled investment vehicles may be utilized that are invested in substantially the same manner and same investments as stated above. Investing through a pooled fund vehicle means the investments will be governed by that fund’s own set of guidelines and restrictions as set forth in Section V.F. of this Policy.

Other

At no time shall the value of the borrowed securities exceed 30% of the market value of the Fund’s assets.

## **VI. REVIEW AND EVALUATION**

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Total Fund investment performance shall be measured on at least a quarterly basis. Performance benchmarks shall include those stated in the Investment Goals section above as well as comparisons to other public pension funds with similar market value and asset allocation.

Investment manager investment performance shall be measured on at least a quarterly basis. Performance benchmarks shall include those stated in the Investment Goals section above and any applicable manager Instructions.

Investment performance will be compared using a statistically valid universe provided by the investment consultant as authorized by the Board.

Consideration shall be given to the extent to which the investment results are consistent with the investment objectives, goals, and guidelines as set forth in this Policy.

While the Board intends to fairly evaluate the portfolio performance, it reserves the right to change investment managers, without liability except payment of current charges, for any reason which in the exercise of the Board's discretion is deemed sufficient, including but not limited to those stated below:

- Change of Board's investment philosophy;
- Unacceptable justification for poor results;
- Failure to meet stated performance goals;
- Failure to meet Board's communication and reporting requirements;
- Deviation from the stated investment philosophy or style of the investment management firm; or
- Change of decision-making personnel or ownership of the investment management firm.

## **VII. INVESTMENT ADMINISTRATION**

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### Documentation

The investment managers are requested to submit a written statement to the Board describing their proposed investment strategy and tactics for achieving the investment goals and objectives that are required in this Statement of Investment Policy. They should also submit suggested revisions to this Policy whenever their strategy or tactics change significantly as a result of changing market conditions or other factors.

Statements are to be supplied quarterly by the investment managers indicating:

1. The portfolio composition (i.e., asset mix at book and at market values) for each major class of security, including cash equivalents;
2. Position, by individually named securities and/or by appropriately described units of collective funds, showing both book and market values of individually invested securities;
3. All transactions in descriptive detail;
4. Investment performance for the quarter, year-to-date, annualized trailing 1, 2, 3, 4, 5 year periods and since inception;
5. Economic sector allocation, portfolio characteristics, and ten largest positions compared to the benchmark; and
6. Economic and market outlook.

### Regular Review Meeting

The investment manager will be expected to meet regularly with the Board, its Investment Committee, or the Investment Consultant. The agenda for these meetings shall include, but not be limited to:

1. A presentation of investment results in light of the stated objectives of this Statement of Investment Policy;
2. A discussion of investment strategies currently being executed by the manager; and
3. Communication of material changes in policy, objectives, staffing or business condition of the investment manager.

## VIII. INVESTMENT MANAGER'S ACCEPTANCE AGREEMENT

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The undersigned investment manager hereby acknowledges its appointment as a named fiduciary to the Plan and agrees that this Statement of Investment Policy (Amended and Restated on February 3, 2015) shall be incorporated as a part of the investment manager's Advisory Agreement with the Board or if no Advisory Agreement is utilized by the Board, as part of the Investment Manager's Instructions. This Statement of Investment Policy shall be substituted for any previous Statement of Investment Policy, if any, agreed to by the Board and the investment manager.

If at any time the investment manager believes that the objectives and guidelines contained in this Statement of Investment Policy cannot be met or performed in strict compliance with this Statement, the investment manager agrees to promptly notify the Board in writing. In consideration of the investment manager's initial engagement by the Board and the investment manager's ongoing relationship as an investment advisor for the Board, the investment manager hereby acknowledges a complete understanding of the objectives and guidelines of this Statement and agrees to abide by each of said requirements during the course of the investment manager's engagement.

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(INVESTMENT MANAGER)

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(DATE)

1825-011, #410775, ver. 3 (2015)

# ADDENDUM TO STATEMENT OF INVESTMENT POLICY

## CITY OF KNOXVILLE PENSION BOARD

### INVESTMENT COMMITTEE CHARTER

#### I. AUTHORITY

Section 1350.2(A) of the City of Knoxville Charter and T.C.A. § 35-14-111 of the Tennessee Uniform Prudent Investor Act.

#### II. PURPOSE

The Investment Committee (the “Committee”) is a standing committee of the City of Knoxville Pension Board (the “Pension Board”) created and appointed by the Pension Board in accordance with this committee charter for the purpose of providing assistance and advice to the Pension Board on all matters related to the investment of the City of Knoxville Employees’ Pension Fund (the “Fund”) and to perform the duties that are delegated to the Committee by this committee charter.

#### III. APPOINTMENT AND STRUCTURE

- A. All members of the Committee shall be appointed by the Pension Board in accordance with this committee charter, except for the ex-officio members of the committee, who shall serve by virtue of their office.
- B. The Committee shall be comprised of not less than three nor more than five voting members of the Pension Board that shall include the City of Knoxville’s Director of Finance, who shall serve as a voting ex-officio member of the Committee and at least one additional member of the Pension Board, who must be elected by the City of Knoxville employees to the Pension Board. The Pension Board’s Executive Director shall also be a non-voting ex-officio member of the Committee.
- C. Except for the Executive Director and the City of Knoxville’s Director of Finance, who shall serve as ex-officio members of the Committee, Committee member terms shall normally be staggered for three years commencing on the first day of January following appointment. Committee appointments shall be made by the Pension Board at its December meeting. Notwithstanding their appointment to a three year term, all Committee members excluding the ex-officio members shall serve at the pleasure of the Pension Board and may be removed

with or without cause at any time by vote of the Pension Board and no Committee member's term shall extend beyond his or her term as a member of the Pension Board.

- D. Vacancies on the Committee shall be filled by the Pension Board for the remainder of the Committee member's term.
- E. The Executive Director shall serve as chair of the committee. The Committee shall by a majority vote elect a vice-chair and a secretary for a term of office expiring at the end of the year for which the officer is elected to serve. A quorum, which shall be a majority of the voting Committee members, is required for an official meeting of the Committee. Actions of the Committee require a majority of the voting members present.

#### IV. DUTIES

- A. Operate under this committee charter, which it will review each year at or near the beginning of each calendar year and make any recommendations for revisions to the Pension Board for the board's consideration.
- B. Recommend to the Pension Board appointment and removal of the Fund's Trustee/custodian, Investment Consultants and Investment Managers.
- C. Review each year the Investment Policy for the Fund and make any recommendations for revisions to the Pension Board for its consideration.
- D. Develop, review and recommend for Pension Board consideration such procedures for the investment, management, supervision and control of the Fund and its investment advisors as the Committee deems necessary or convenient to properly oversee and manage the investment functions of the Fund.
- E. Communicate as necessary the Fund's investment policy to Investment Managers.
- F. Review the performance of and make recommendations to the Pension Board regarding the hiring, retention and dismissal of the Fund's investment consultants as the Committee deems necessary.
- G. Monitor and report to the Pension Board the performance of the Fund's Trustee/custodian, Investment Consultant and Investment Managers on a regular basis and make such recommendations for action to the Pension Board as the Committee deems appropriate.
- H. Periodically review the Fund's permitted and targeted asset allocations as authorized by the Fund's investment policy and make such recommendations to the Pension Board as the Committee deems appropriate to properly manage the

Fund in accordance with such policy.

V. LIMITATIONS

- A. The Committee shall not supervise, hire, fire, or discipline Pension Board employees.
- B. The Committee shall not negotiate or contract with third parties, nor shall it incur unauthorized expenses on behalf of the Pension Board or otherwise obligate or commit funds of the Pension Board.

VI. MEETINGS

Committee meetings will be held periodically on an announced basis or as needed and shall be open to the public and comply with all applicable state laws regarding open meetings of like governmental bodies. Regularly scheduled meetings, if any, will be scheduled by vote of the Committee and appropriate public notice of the same shall be given. Special meetings may be called at any time by the Executive Director, the vice-chair or any two members of the Committee provided proper public notice of the meeting and its purpose is given under the circumstances.

VII. REPORTS

The Committee will be expected to furnish oral or written reports at Pension Board meetings, when requested, which shall include any Pension Board action requested or recommended by the Committee. Minutes of all Committee meetings shall be maintained and furnished to the Pension Board on a timely basis.

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Revised by Pension Board: July 9, 2009