

# QUARTERLY PERFORMANCE REPORT

## OKLAHOMA STATE PENSION COMMISSION



**December 31, 2018**

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# MARKET ENVIRONMENT UPDATE AND OUTLOOK

NEPC, LLC

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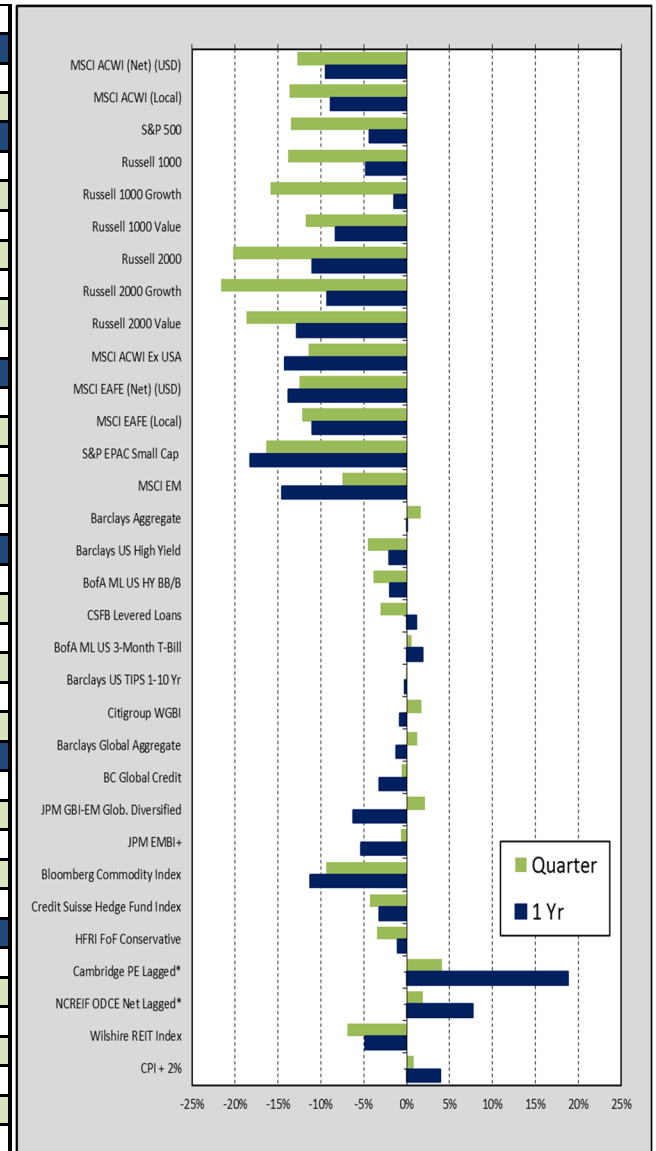
# ECONOMIC ENVIRONMENT

- **Real GDP (third quarter) increased at an annual rate of 3.4%.**
  - Retail sales ended October at +3.7% on a YoY basis. In the same period last year the YoY growth rate was 5.9%.
  - Corporate profits (ended July) as a percent of GDP decreased to 9.59% from 9.61% (in April) and remain elevated relative to historical levels.
  - The inventory-to-sales ratio ended October up to 1.4 from 1.3 in July and has remained relatively constant since early 2010.
  - The U.S. trade deficit widened 7.3% as exports in soy and aircraft fell.
- **The unemployment rate increased slightly to 3.9% from to 3.7% ended Q4; U-6, a broader measure of unemployment, increased to 7.6% from 7.5% during the fourth quarter.**
- **The Case-Shiller Home Price Index (ended October) increased to 206.3 from 205.4 and remains at levels higher than that of pre-financial crisis levels of 150.9.**
- **Rolling 12-month seasonally-adjusted CPI saw a down-tick to 1.9% from 2.3% ended December; Capacity Utilization increased to 78.7% from 78.4% in Q4.**
- **Fed Funds rate was increased 0.25% to a targeted range of 2.25% -to- 2.50%. The 10-year Treasury Yield (constant maturity) finished Q4 down to 2.8% from 3.0%.**
- **The Fed continues its planned reduction in balance sheet size, while the European Central Bank balance sheet increased.**
  - ECB held its benchmark refinance rate at 0%, deposit rates -0.4% and has ended its bond purchase program.
- **S&P valuations decreased in Q4, remaining above the 10-year and long-term averages.**
  - Cyclically adjusted Shiller PE ratio (28.41x) is above the long-term average of 16.6x and above the 10-year average of 24.3x.



# MARKET ENVIRONMENT – Q4 2018 OVERVIEW

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>World Equity Benchmarks</b>						
MSCI ACWI (Net) (USD)	World	-12.8%	-9.4%	6.6%	4.3%	9.5%
MSCI ACWI (Local)	World (Local Currency)	-13.6%	-8.9%	5.9%	5.6%	9.8%
<b>Domestic Equity Benchmarks</b>						
S&P 500	Large Core	-13.5%	-4.4%	9.3%	8.5%	13.1%
Russell 1000	Large Core	-13.8%	-4.8%	9.1%	8.2%	13.3%
Russell 1000 Growth	Large Growth	-15.9%	-1.5%	11.1%	10.4%	15.3%
Russell 1000 Value	Large Value	-11.7%	-8.3%	7.0%	5.9%	11.2%
Russell 2000	Small Core	-20.2%	-11.0%	7.4%	4.4%	12.0%
Russell 2000 Growth	Small Growth	-21.7%	-9.3%	7.2%	5.1%	13.5%
Russell 2000 Value	Small Value	-18.7%	-12.9%	7.4%	3.6%	10.4%
<b>International Equity Benchmarks</b>						
MSCI ACWI Ex USA	World ex-US	-11.5%	-14.2%	4.5%	0.7%	6.6%
MSCI EAFE (Net) (USD)	Int'l Developed	-12.5%	-13.8%	2.9%	0.5%	6.3%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	-12.2%	-11.0%	2.6%	3.8%	7.5%
S&P EPAC Small Cap	Small Cap Int'l	-16.4%	-18.3%	3.7%	3.3%	10.2%
MSCI EM	Emerging Equity	-7.5%	-14.6%	9.2%	1.6%	8.0%
<b>Domestic Fixed Income Benchmarks</b>						
Barclays Aggregate	Core Bonds	1.6%	0.0%	2.1%	2.5%	3.5%
Barclays US High Yield	High Yield	-4.5%	-2.1%	7.2%	3.8%	11.1%
BofA ML US HY BB/B	High Yield	-3.8%	-2.0%	6.4%	3.9%	10.0%
CSFB Levered Loans	Bank Loans	-3.1%	1.1%	5.0%	3.3%	8.3%
BofA ML US 3-Month T-Bill	Cash	0.6%	1.9%	1.0%	0.6%	0.4%
Barclays US TIPS 1-10 Yr	Inflation	-0.1%	-0.3%	1.9%	1.2%	3.1%
<b>Global Fixed Income Benchmarks</b>						
Citigroup WGBI	World Gov. Bonds	1.8%	-0.8%	2.7%	0.8%	1.5%
Barclays Global Aggregate	Global Core Bonds	1.2%	-1.2%	2.7%	1.1%	2.5%
BC Global Credit	Global Bonds	-0.6%	-3.2%	3.0%	1.7%	4.5%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	2.1%	-6.2%	5.9%	-1.0%	3.5%
JPM EMBI+	Em. Mkt. Bonds	-0.7%	-5.3%	4.0%	4.0%	7.3%
<b>Alternative Benchmarks</b>						
Bloomberg Commodity Index	Commodities	-9.4%	-11.2%	0.3%	-8.8%	-3.8%
Credit Suisse Hedge Fund Index	Hedge Fund	-4.3%	-3.2%	1.6%	1.7%	5.1%
HFRI FoF Conservative	Fund of Hedge Funds	-3.4%	-1.1%	1.6%	1.7%	3.1%
Cambridge PE Lagged*	Private Equity	4.1%	18.9%	14.8%	13.6%	12.1%
NCREIF ODCE Net Lagged*	Real Estate	1.9%	7.7%	7.8%	9.7%	4.6%
Wilshire REIT Index	REIT	-6.9%	-4.8%	2.1%	7.9%	12.2%
CPI + 2%	Inflation/Real Assets	0.8%	4.0%	4.1%	3.5%	3.8%















\* As of 9/30/2018



# PERFORMANCE OVERVIEW

## Q4 Market Summary

Macro			Equity			Credit			Real Assets		
US Dollar	VIX	US 10-Yr	S&P 500	MSCI EAFE	MSCI EM	US Agg.	High Yield	Dollar EMD	Oil	Gold	REITS
											
1.1%	13.3	-38 bps	-13.5%	-12.5%	-7.5%	1.6%	-4.5%	-1.2%	-38.0%	7.7%	-6.0%

- **Global equities sold-off during the quarter due to concerns related to fed funds rate increases , fears of a global slowdown, and trade uncertainties**
- **The sharp decline in crude oil prices weighed on commodities overall and US high-yield bonds, which have meaningful portion to the energy sector**
- **The Federal Reserve hiked rates for the fourth time in 2018 with one to two additional rate increases expected for 2019**

Market segment (index representation) as follows: US Dollar (DXY Index), VIX (CBOE Volatility Index), US 10-Year (US 10-Year Treasury Yield), S&P 500 (US Equity), MSCI EAFE Index (International Developed Equity), MSCI Emerging Markets (Emerging Markets Equity), US Agg (Barclays US Aggregate Bond Index), High Yield (Barclays US High Yield Index), Dollar EMD (JPM Emerging Market Bond Index), Crude Oil (WTI Crude Oil Spot), Gold (Gold Price Spot), and REITs (NAREIT Composite Index).



# MACRO PERFORMANCE OVERVIEW

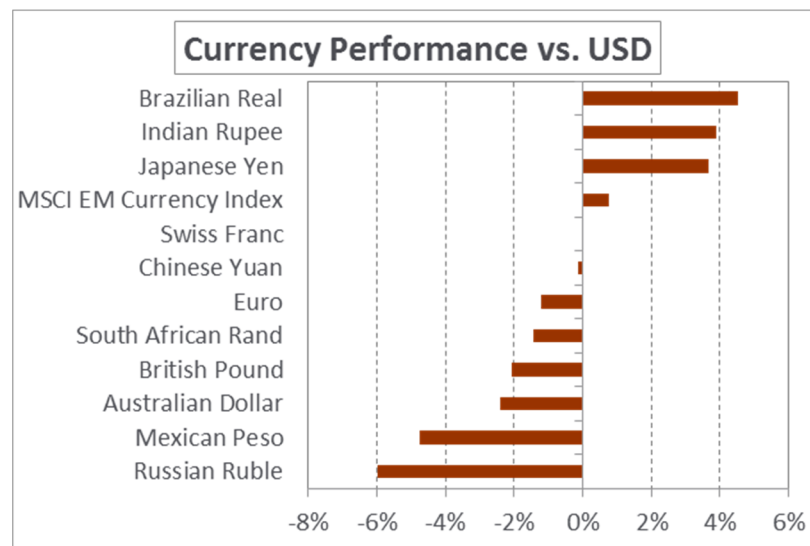
## Q4 Macro Market Summary

- **Global growth has been revised lower and the outlook is likely to moderate in 2019**
- **Developed government bond yields decreased as demand for safe haven assets increased**
- **Global liquidity tightened as the Fed raised rates and the ECB ended the expansion of its QE program**

Central Banks	Current Rate	CPI YOY	Notes from the Quarter
Federal Reserve	2.25% - 2.50%	2.2%	The Fed increased its benchmark interest rate 0.25% to 2.25% - 2.50% in December
European Central Bank	0.0%	1.9%	The ECB maintained its current benchmark interest rate, but ended the expansion of its QE bond-buying program
Bank of Japan	-0.1%	0.8%	The BoJ will continue its ultra-easy QE program with inflation remaining well below target

	Yield 09/29/18	Yield 12/31/18	Δ
US 10-Yr	3.06%	2.68%	-0.38%
US 30-Yr	3.21%	3.01%	-0.19%
US Real 10-Yr	0.92%	0.97%	0.05%
German 10-Yr	0.47%	0.24%	-0.23%
Japan 10-Yr	0.13%	0.00%	-0.13%
China 10-Yr	3.63%	3.31%	-0.32%
EM Local Debt	6.62%	6.46%	-0.17%

Source: Bloomberg



Source: Bloomberg



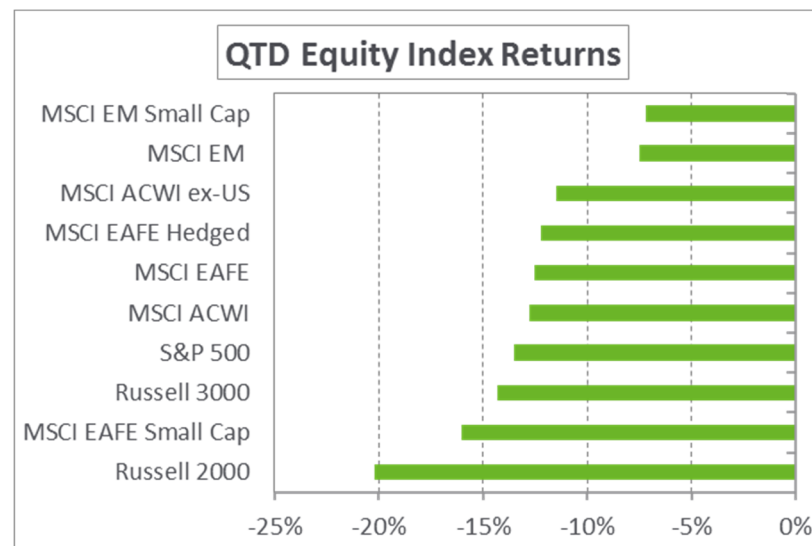
# EQUITY PERFORMANCE OVERVIEW

## Q4 Equity Market Summary

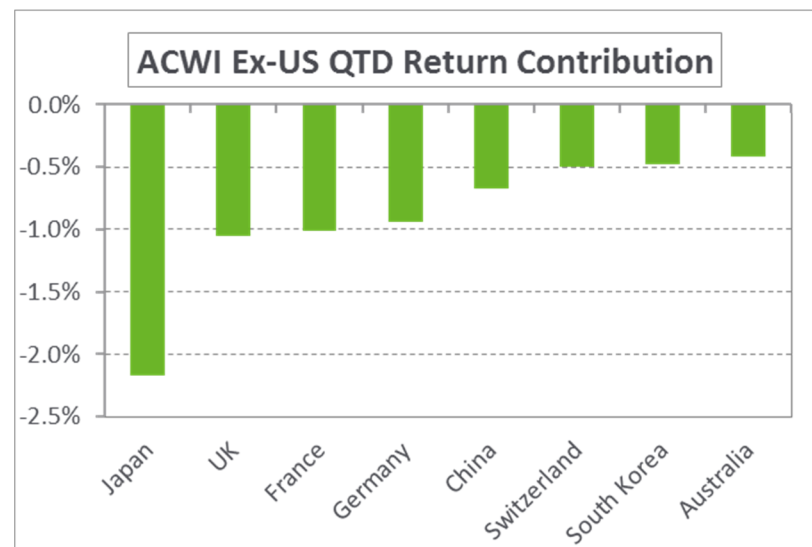
- **US equities led the global equity sell-off and developed market indices moved into a bear market**
- **Equities markets were volatile as ongoing trade concerns and fears of global growth slowdown weighed on investor sentiment**

Russell 3000 QTD Sector Return Contribution	
Information Technology	-3.35%
Consumer Discretionary	-1.80%
Financials	-1.80%
Industrials	-1.82%
Consumer Staples	-0.35%
Energy	-1.42%
Materials	-0.43%
Health Care	-1.52%
Real Estate	-0.22%
Communication Services	-1.64%
Utilities	0.02%

Source: Russell, Bloomberg



Source: MSCI, Russell, S&P, Bloomberg



Source: MSCI, Bloomberg. QTD top country contributors to index return





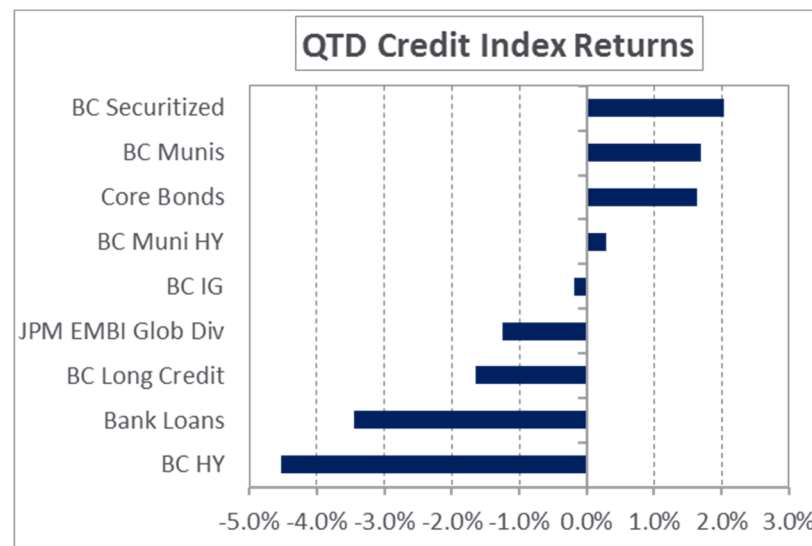
# CREDIT PERFORMANCE OVERVIEW

## Q4 Credit Market Summary

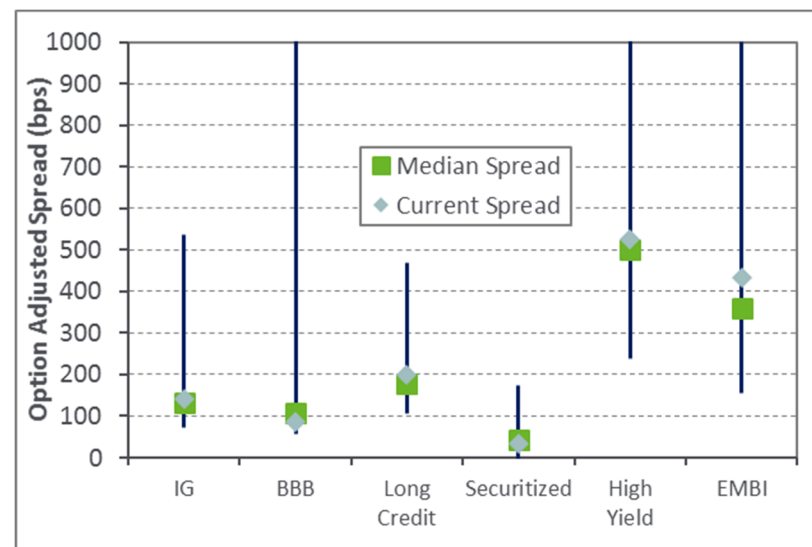
- **Credit spreads broadly increased across most areas of the market**
- **Riskier assets underperformed as demand for high quality and safe-haven assets increased**
- **Bank loans declined by 3.5% as market outflows weighed on asset prices**

Credit Spread (Basis Points)	09/30/18	12/31/18	Δ
BC IG Credit	100	143	43
BC Long Credit	153	200	47
BC Securitized	28	35	7
BC High Yield	316	526	210
Muni HY	184	236	52
JPM EMBI	362	435	73
Bank Loans - Libor	281	414	133

Source: Barclays, Merrill Lynch, JPM, Bloomberg, NEPC



Source: Barclays, JPM, S&P, Bloomberg



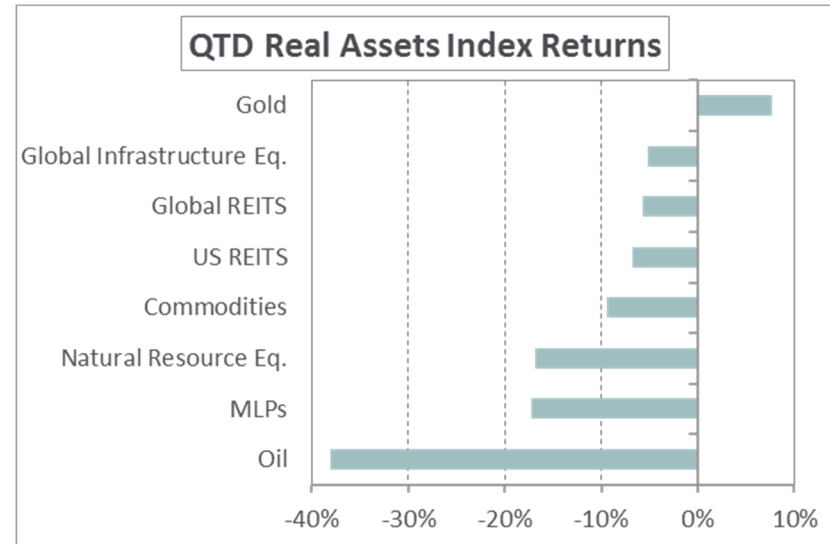
Source: Barclays, JPM, S&P, Bloomberg; as of 01/31/2000



# REAL ASSETS PERFORMANCE OVERVIEW

## Q4 Real Assets Market Summary

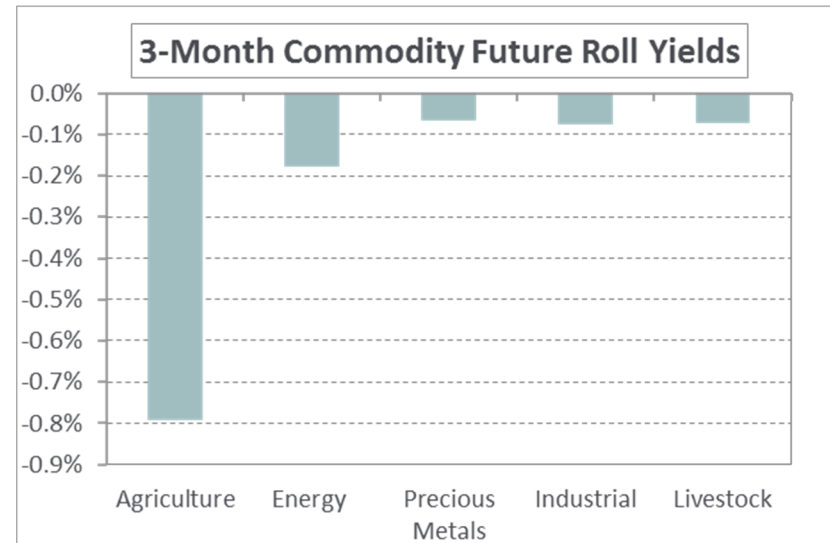
- **Oil declined 38% for the quarter due to an increase in supply led by US shale production**
- **MLPs decreased 17.3% under pressure from falling energy prices and investor outflows**
- **Commodities declined overall due to the substantial decline in oil markets**



Source: S&P, NAREIT, Alerian, Bloomberg

Real Asset Yields	09/30/18	12/31/18
MLPs	8.0%	9.0%
Core Real Estate	4.4%	4.5%
US REITs	4.2%	4.6%
Global REITs	3.7%	3.9%
Global Infrastructure Equities	4.5%	4.6%
Natural Resource Equities	3.5%	4.5%
US 10-Yr Breakeven Inflation	2.1%	1.7%
Commodity Index Roll Yield	-1.2%	-6.1%

Source: NCREIF, Alerian, NAREIT, S&P, Bloomberg



Source: Bloomberg, NEPC Calculated as of 09/28/2018



# 2019 SUMMARY OUTLOOK

## **Market dynamics shifted significantly in 2018, with Fed policy and US-China trade tensions disrupting many of our key market themes**

As a result we have removed Federal Reserve Gradualism, Extended US Economic Cycle, and Global Synchronized Growth as key themes

## **We believe we have entered a late-cycle market environment and the dynamics of such an environment will be a focal point for investors**

However, late-cycle does not mean end of cycle and equities can still offer lucrative returns, though are likely to be accompanied by additional volatility

## **We encourage investors to rebalance developed market equity exposure**

We have downgraded our outlook for non-US developed equities and removed the overweight recommendation from our current opportunities list

The main driver of the change is negative sentiment surrounding economic and political conditions of Europe, concerns related to the earnings growth outlook, and central banks paring back their support of easy financial conditions

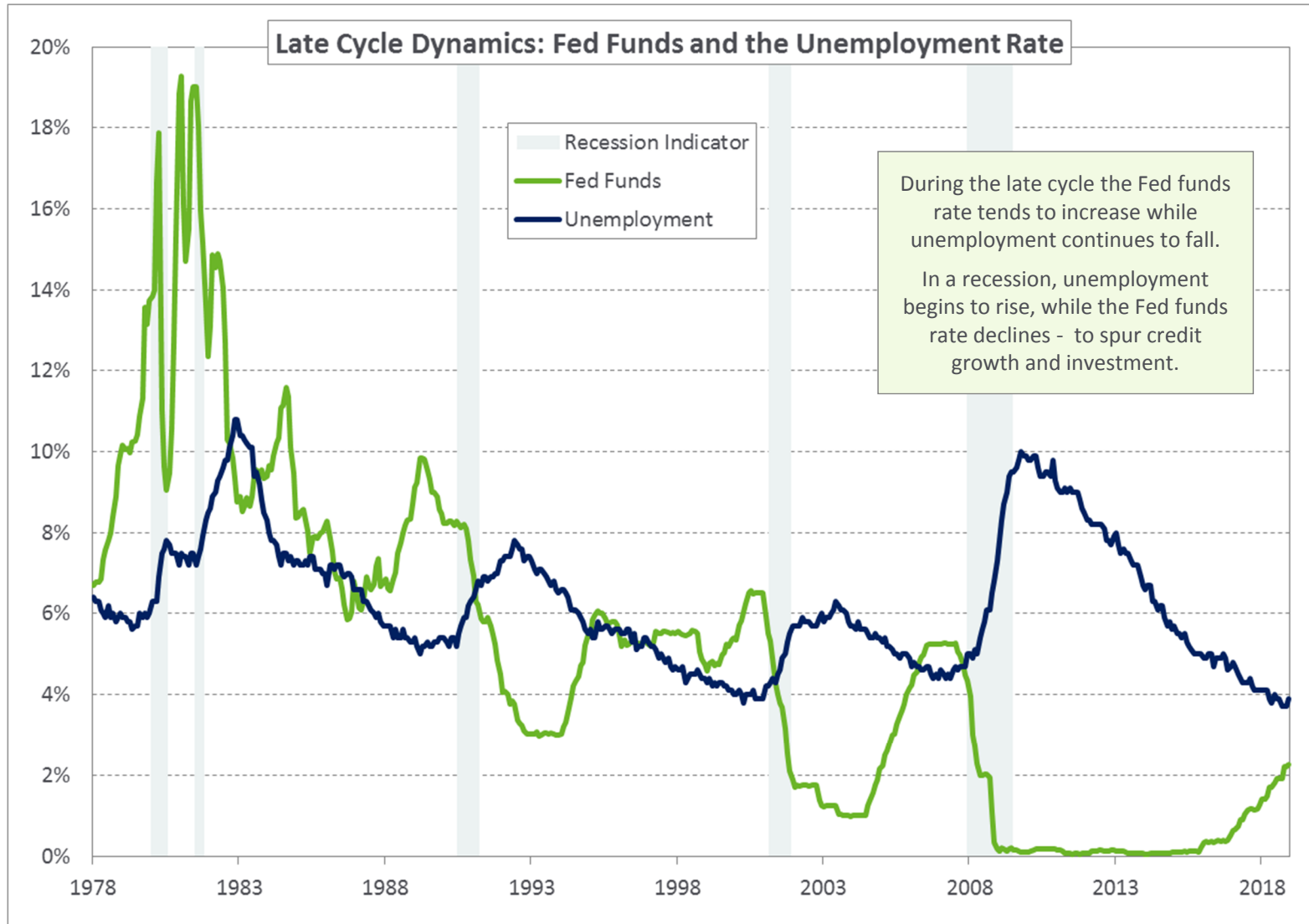
## **The transition to a late-cycle is accompanied with a more risk-averse investment outlook as economic risks become more pronounced**

After years of low volatility and outsized equity returns, the market is likely to transition to a higher volatility regime, which offers more risk but also tactical opportunities

We recommend reducing lower quality credit exposure as higher default rates are a common aspect of late-cycle market dynamics



# THE ECONOMIC CYCLE IS IN TRANSITION



Source: St. Louis Federal Reserve, NBER



# KEY MARKET THEMES

## Late Cycle Dynamics

### The US economy has transitioned from a mid- to late-cycle environment

Late cycle does not mean end of cycle; equity markets can offer strong returns and abandoning risk assets early may detract from long-term results

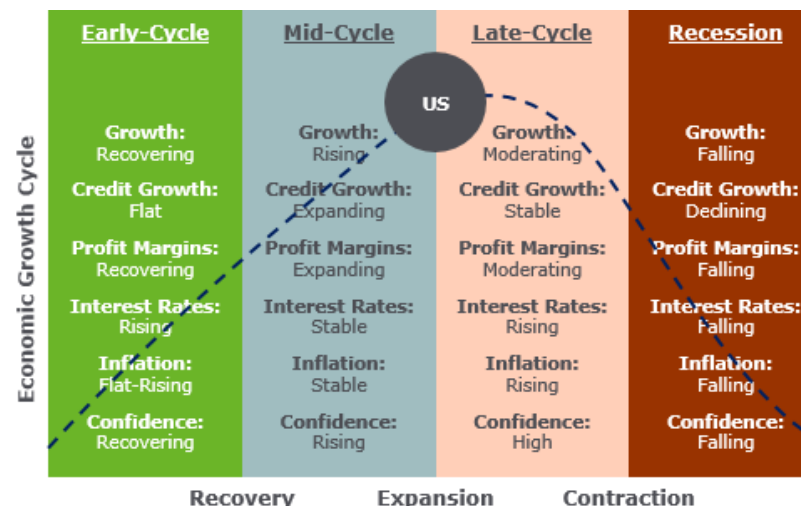
Positive economic data can support continued US economic expansion and further equity gains

However, moving into a late cycle negatively skews the range of outcomes and our investment outlook reflects a more risk-averse posture with a bias toward selling low quality credit and increasing safe-haven fixed income exposure

### Trends among key indicators suggest a transition to late-cycle has occurred

These indicators provide a useful guide to recognize changes in the economic cycle

Despite the recent trend, there is minimal evidence in economic/financial indicators to suggest that a US recession is imminent

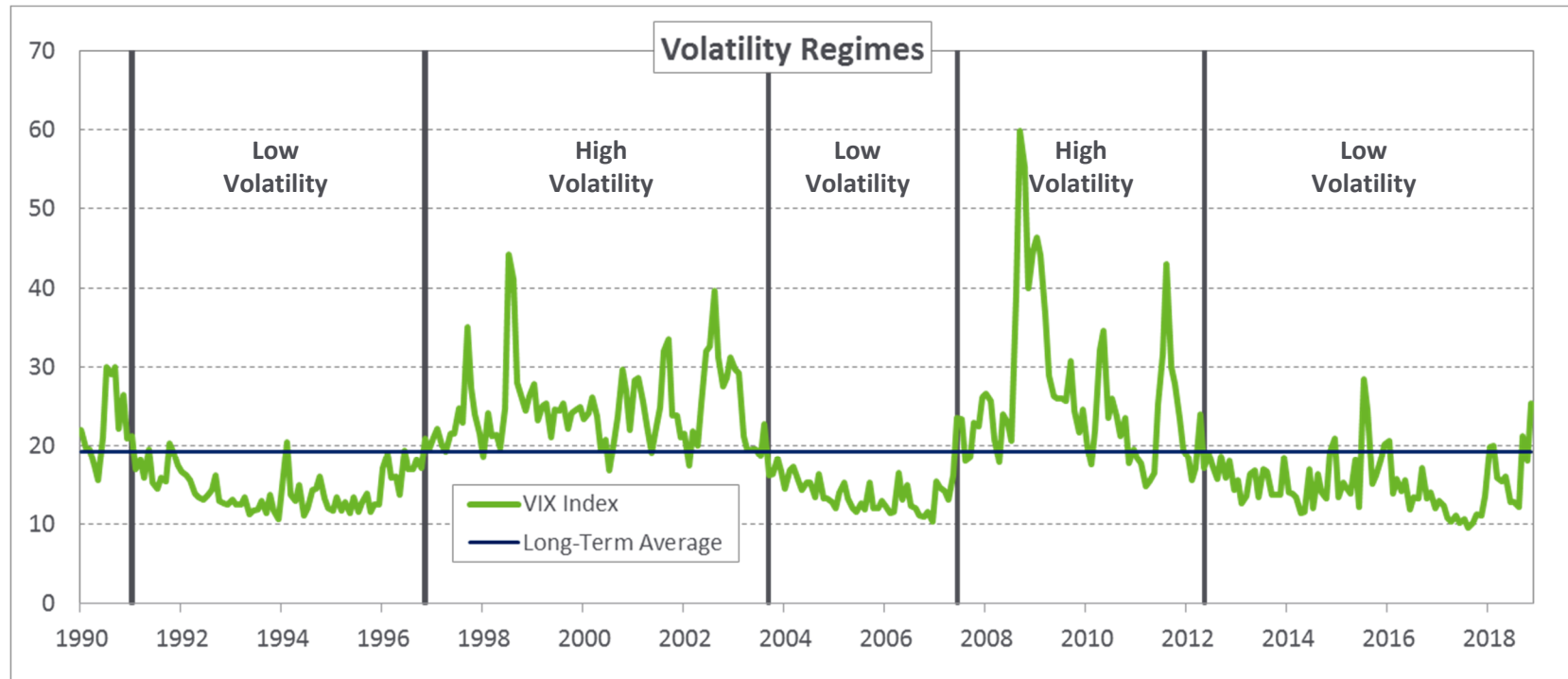


US Indicators	Late-Cycle Trend	Current Trend
Equities	Peaking	Uncertain
Interest Rates	Rising	Yes
Yield Curve	Flattening	Yes
Inflation	Rising	Yes
GDP Growth	Moderating	Uncertain
Credit Spreads	Stable/Rising	Yes
Output Gap	Near/Above Potential	Yes
Unemployment	Falling/Bottoming	Uncertain

Source: (Top) NEPC  
Source: (Bottom) NEPC



# BRACE FOR HIGHER VOLATILITY IN 2019



## Equity volatility regimes tend to persist over prolonged periods and 2018 was witness to a material shift higher in equity volatility

We encourage investors to raise "safe haven" fixed income exposure as trends associated with each of our key market themes suggest higher volatility is on the horizon

## 2019 may prove to be a difficult year for markets but higher volatility can also offer a greater number of opportunities for dynamic investors

Investors should be prepared to act in a higher volatility regime, as dynamic opportunities may arise to deploy safe-haven assets back into US equity and other risk assets



# KEY MARKET THEMES

## Tightening Global Liquidity

**The Fed has shifted from a “lower for longer” policy to a more balanced posture of raising rates in line with higher inflation**

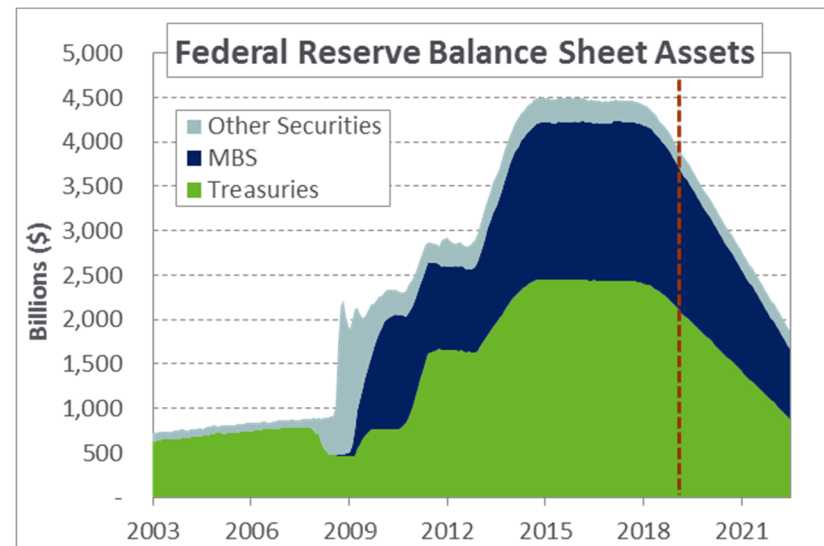
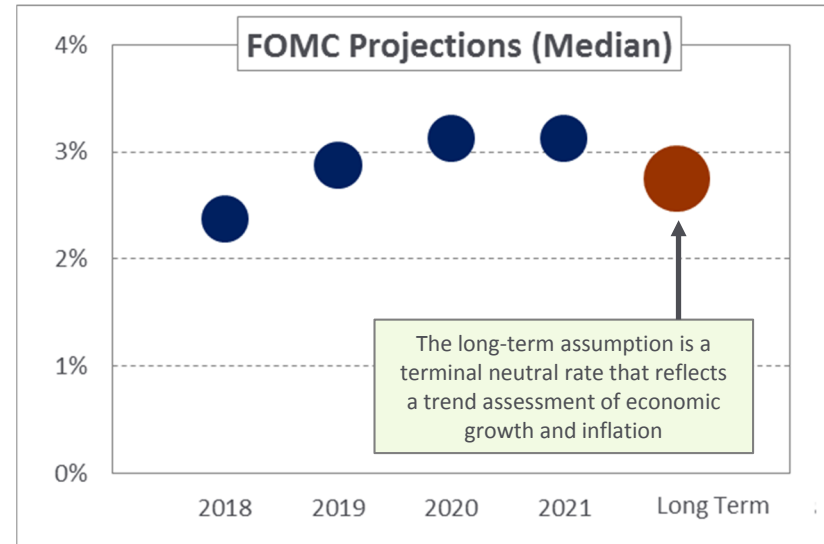
Based on the FOMC projections, the Fed is communicating a tightening path as their forecast for interest rate hikes moves beyond the long-term neutral rate

Markets are discounting a muted pace of hikes relative to Fed projections, creating potential for capital market disruption. However, the Fed’s bias appears to be to raise rates in the absence of market turmoil

**The Fed’s balance sheet has shrunk by \$400B and will continue to decline by a monthly maximum target of \$50B**

Normalization of the balance sheet is a form of monetary policy tightening as liquidity is methodically extracted from the system

The impact of the balance sheet reduction is untested – potentially mirroring how the Fed’s balance sheet expansion (QE) had easing effects



Source: (Top) Bloomberg, NEPC  
Source: (Bottom) Bloomberg, NEPC



# KEY MARKET THEMES

## China Transitions

### China is the global growth engine but faces fundamental transitions

China's economy is transitioning from a focus on production and investment to a service and consumption based economy

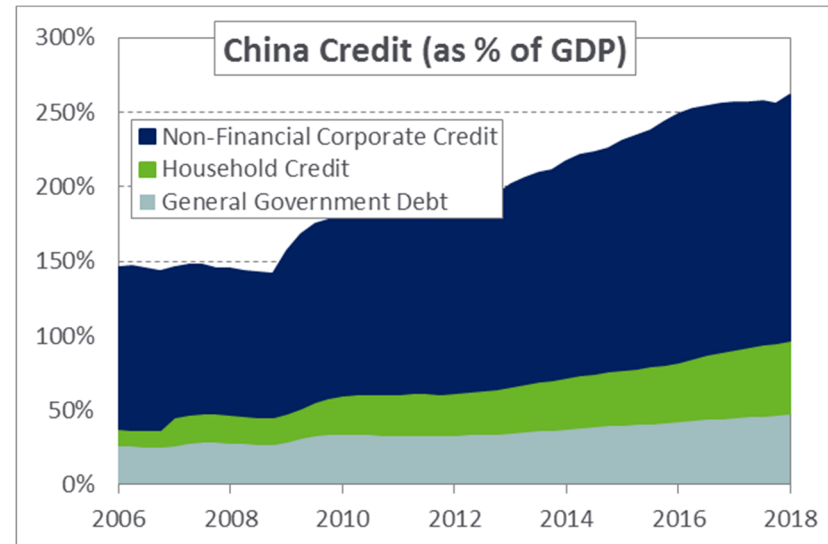
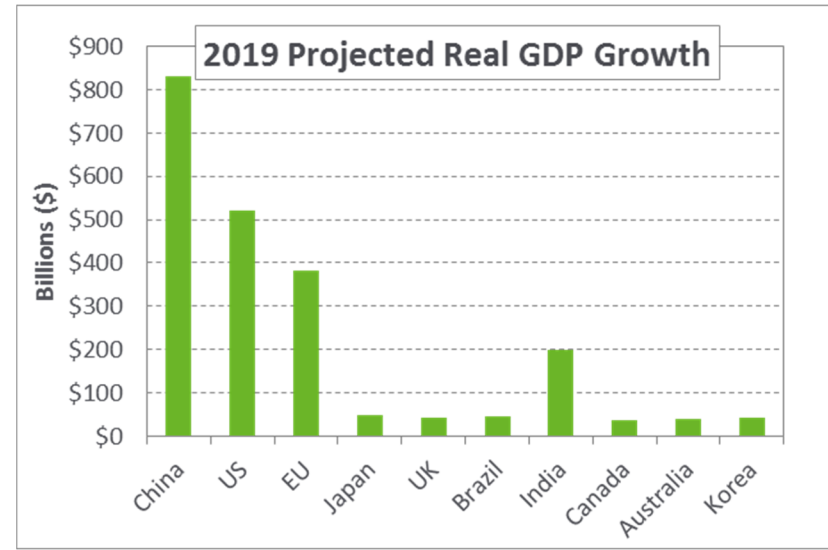
Fixed investment and credit expansion is needed to sustain the "old" production-based economy and support employment as the population shifts to urban centers

Any disruption to these transitions will be transmitted globally due to China's outsized role in the world economy

### Policy makers must continue to balance goals of moderating credit expansion against sustaining healthy economic growth rates

Recent shifts in policy suggest a tilt away from credit moderation to offset the harmful effects of the US-China trade dispute

However, an uncontrolled expansion of credit growth and real estate development pose a future systemic risk to the economy



Source: (Top) Bloomberg, NEPC  
Source: (Bottom) BIS, NEPC





# OK Pension Commission

NEPC, LLC

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# OKLAHOMA STATE PENSION COMMISSION

## ASSET ALLOCATION SUMMARY

Key Policy Items	Teachers <sup>^</sup>	TRS 12/31/17	PERS*	PERS 12/31/17	Firefighters	FTRS 12/31/17	Police **	POLICE 12/31/17
<b>TOTAL EQUITY</b>	Target 57.5%	57.5%	68.0%	68.0%	57.0%	57.0%	50.0%	50.0%
	Actual 54.7%	58.9%	66.9%	69.8%	60.5%	66.0%	51.0%	54.5%
	Range 37.5-73.5	37.5-73.5	59.2-76.8	59.2-76.8	42-62	42-62	25-80	25-80
<b>Large Cap</b>	Target 17.0%	17.0%	34.0%	38.0%	29.4%	29.4%	15.0%	15.0%
	Actual 17.9%	18.3%	33.6%	34.3%	33.5%	34.7%	16.4%	17.6%
	Range 12-23	12-23	31.2-36.8	35-41	24.4-34.4	24.4-34.4	10-20	10-20
<b>MidCap</b>	Target 13.0%	13.0%	-	-	-	-	-	-
	Actual 10.0%	10.9%	-	-	-	-	-	-
	Range 8-18	8-18	-	-	-	-	-	-
<b>Small Cap</b>	Target 10.0%	10.0%	6.0%	6.0%	12.6%	12.6%	5.0%	5.0%
	Actual 9.0%	10.0%	6.3%	6.9%	12.7%	16.3%	6.5%	7.2%
	Range 5-15	5-15	3.2-8.8	3.2-8.8	7.6-17.6	7.6-17.6	0-15	0-15
<b>International / Equity</b>	Target 17.5%	17.5%	28.0%	24.0%	15.0%	15.0%	15.0%	15.0%
	Actual 17.8%	19.7%	27.0%	28.6%	14.3%	14.9%	14.1%	15.6%
	Range 12.5-22.5	12.5-22.5	25-31	21-27	10-20	10-20	5-25	5-25
<b>Long/Short Equity</b>	Target -	-	-	-	-	-	15.0%	15.0%
	Actual -	-	-	-	-	0.1%	14.0%	14.1%
	Range -	-	-	-	-	-	10-20	10-20
<b>TOTAL FIXED INCOME</b>	Target 23.5%	23.5%	32.0%	32.0%	20.0%	20.0%	15.0%	15.0%
	Actual 22.8%	21.4%	32.8%	29.8%	17.8%	14.5%	16.3%	15.7%
	Range 18.5-28.5	18.5-28.5	27.5-36.5	27.5-36.5	10-30	10-30	10-20	10-20
<b>Dom. Fixed Income/High Yield</b>	Target 23.5%	23.5%	32.0%	32.0%	13.0%	13.0%	-	17.5%
	Actual 22.8%	21.4%	32.8%	29.8%	11.4%	8.5%	-	-
	Range 18.5-28.5	18.5-28.5	27.5-36.5	27.5-36.5	0-28	0-28	-	12.5-30
<b>Int'l &amp; Global Fixed Income</b>	Target -	-	-	-	7.0%	7.0%	7.5%	7.5%
	Actual -	-	-	-	6.4%	6.0%	16.3%	15.7%
	Range -	-	-	-	2-12	2-12	10-20	5-10
<b>TOTAL ALTERNATIVES</b>	Target 19.0%	19%	0%	0%	23.0%	23%	35.0%	35.0%
	Actual 21.5%	19.3%	0.1%	0.1%	20.3%	19.0%	30.8%	28.1%
	Range 17.1-20.9	17.1-20.9	0-5	0-5	5-40	5-40	10-60	10-60
<b>Low Volatility Hedge Funds</b>	Target -	-	-	-	5.0%	5.0%	10.0%	10.0%
	Actual -	-	-	-	3.2%	3.3%	8.0%	7.5%
	Range -	-	-	-	0-10	0-10	5-15	5-15
<b>Private Equity/MLP's</b>	Target 12.0%	12.0%	-	-	8.0%	8.0%	10.0%	10.0%
	Actual 13.3%	12.3%	-	-	3.7%	2.9%	10.1%	8.5%
	Range 7-17	7-17	-	-	0-15	0-15	5-15	5-15
<b>Real Estate/Real Assets</b>	Target 7.0%	7%	0%	0%	10.0%	10%	15.0%	15.0%
	Actual 8.2%	7.0%	0.1%	0.1%	13.4%	12.8%	12.7%	12.1%
	Range 2-12	2-12	0-5	0-5	5-15	5-15	0-30	0-30
<b>CASH</b>	Actual 1.0%	0.3%	0.2%	0.2%	1.3%	0.4%	2.0%	1.6%
<b>Actuarial Assumed Rates</b>	7.5%		7.0%		7.5%		7.5%	

Out of Range

<sup>^</sup>Master Limited Partnerships included in Private Equity allocation.

\*The Russell 3000 index was broken down into Large Cap & Small Cap allocations for the PERS retirement plan

\*\*Real Assets are included in Real Estate

Please note that allocations may not add to 100% due to rounding.



# OKLAHOMA STATE PENSION COMMISSION ASSET ALLOCATION SUMMARY

Key Policy Items		Law	Law 12/31/17	Judges	Judges 12/31/17	Wildlife	Wildlife 12/31/17
<b>TOTAL EQUITY</b>	Target	55.0%	55.0%	68.0%	68.0%	50.0%	50.0%
	Actual	56.6%	60.5%	67.3%	70.3%	54.6%	52.3%
	Range	55-65	55-65	59.2-76.8	59.2-76.8	40-65	40-65
<i>Large Cap</i>	Target	20.0%	20.0%	34.0%	38.0%	50.0%	50.0%
	Actual	27.1%	29.3%	33.9%	34.9%	34.3%	39.8%
	Range	15-25	15-25	31.2-36.8	35-41	40-65	40-65
<i>MidCap</i>	Target	-	-	-	-	0.0%	0.0%
	Actual	-	-	-	-	10.7%	4.7%
	Range	-	-	-	-	0-10	0-10
<i>Small Cap</i>	Target	10.0%	10.0%	6.0%	6.0%	0.0%	0.0%
	Actual	5.6%	6.3%	6.3%	6.5%	3.6%	1.5%
	Range	5-15	5-15	3.2-8.8	3.2-8.8	0-10	0-10
<i>International / Equity</i>	Target	15.0%	15.0%	28.0%	24.0%	0.0%	0.0%
	Actual	13.5%	14.7%	27.1%	28.9%	6.0%	6.3%
	Range	5-15	5-15	25-31	21-27	0-15	0-15
<i>Long/Short Equity</i>	Target	10.0%	10.0%	-	-	-	-
	Actual	10.4%	10.2%	-	-	-	-
	Range	5-15	5-15	-	-	-	-
<b>TOTAL FIXED INCOME</b>	Target	30.0%	30.0%	32.0%	32.0%	40.0%	40.0%
	Actual	28.7%	26.5%	32.4%	29.5%	39.7%	41.8%
	Range	25-35	25-35	27.5-36.5	27.5-36.5	35-55	35-55
<i>Dom. Fixed Income/High Yield</i>	Target	20.0%	20.0%	32.0%	32.0%	40.0%	40.0%
	Actual	20.2%	18.6%	32.4%	29.5%	39.7%	41.8%
	Range	15-25	15-25	27.5-36.5	27.5-36.5	35-55	35-55
<i>Int'l &amp; Global Fixed Income</i>	Target	10.0%	10.0%	-	-	-	-
	Actual	8.5%	7.9%	-	-	-	-
	Range	5-15	5-15	-	-	-	-
<b>TOTAL ALTERNATIVES</b>	Target	15.0%	15.0%	-	-	10.0%	10.0%
	Actual	14.5%	12.8%	-	-	5.1%	3.9%
	Range	5-15	5-15	-	-	0-10	0-10
<i>Low Volatility Hedge Funds</i>	Target	-	-	-	-	-	-
	Actual	-	-	-	-	-	-
	Range	-	-	-	-	-	-
<i>Private Equity/MLP's</i>	Target	5.0%	5.0%	-	-	-	-
	Actual	3.3%	2.7%	-	-	-	-
	Range	0-5	0-5	-	-	-	-
<i>Real Estate/Real Assets</i>	Target	10.0%	0.10	-	-	-	-
	Actual	11.2%	10.1%	-	-	-	-
	Range	2-12	2-12	-	-	-	-
<b>CASH</b>	Actual	0.2%	0.2%	0.2%	0.2%	0.8%	2.0%
<b>Actuarial Assumed Rates</b>		<b>7.5%</b>		<b>7.0%</b>		<b>7.0%</b>	

^Master Limited Partnerships included in Private Equity allocation.

\*The Russell 3000 index was broken down into Large Cap & Small Cap allocations for the PERS retirement plan

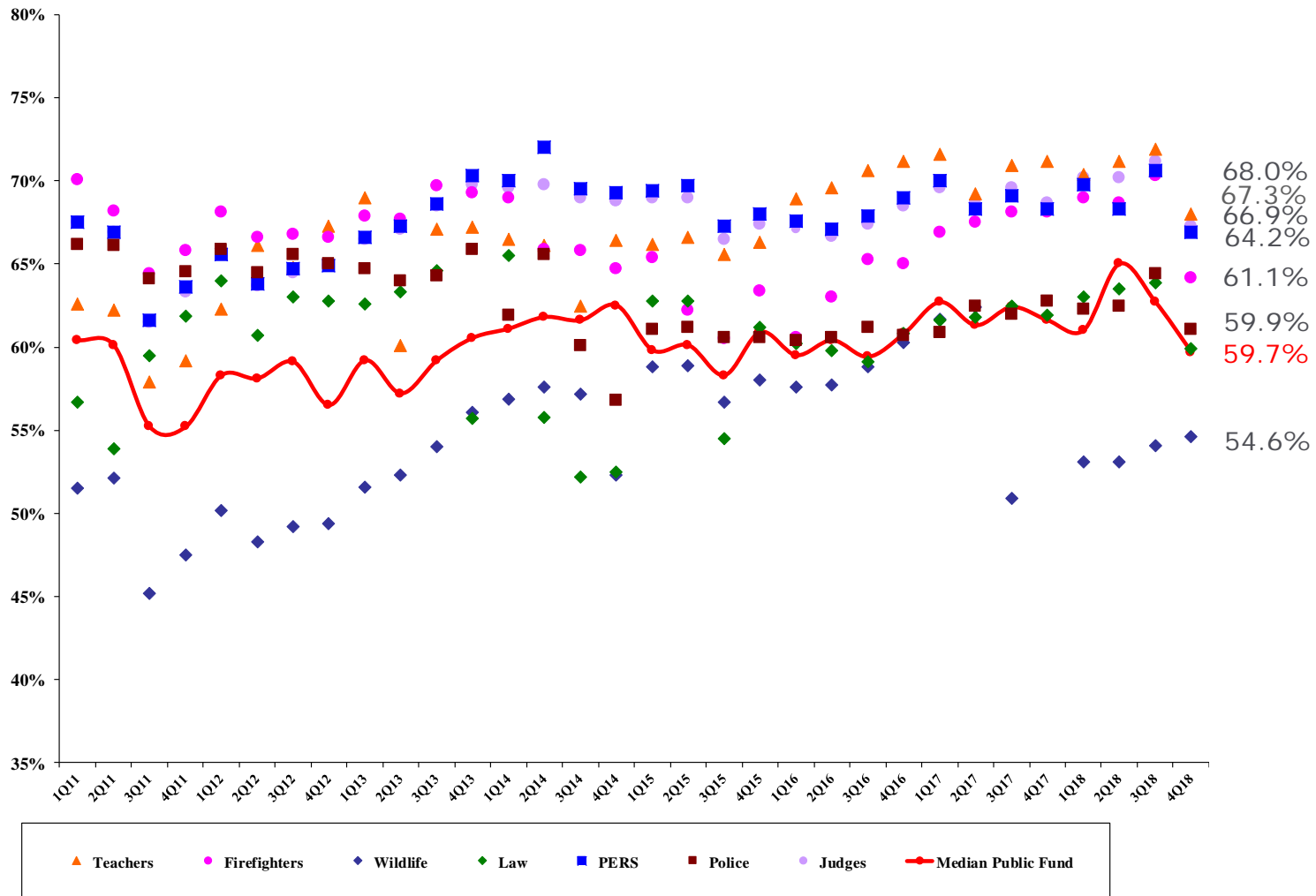
\*\*Real Assets are included in Real Estate

Please note that allocations may not add to 100% due to rounding.

Out of  
Range



# OKLAHOMA STATE PENSION COMMISSION EQUITY COMMITMENT (PUBLIC EQUITY + PRIVATE EQUITY)



\*Cash allocations not broken out for individual managers.

\*Before Q2 2012, the Median Public Fund assumes 4.6% allocation to private equity



Oklahoma State Pension Commission

# Total Fund Attribution Analysis

## Performance Attribution

Teachers Attribution Analysis	Last 3 Mo.	1 Yr	3 Yrs	5 Yrs
Wtd. Actual Return	-9.6%	-5.0%	7.1%	5.2%
Wtd. Index Return *	-9.3%	-5.1%	6.2%	4.5%
<b>Excess Return</b>	<b>-0.4%</b>	<b>0.1%</b>	<b>0.9%</b>	<b>0.7%</b>
Selection Effect	-0.3%	-0.3%	0.5%	0.7%
Allocation Effect	0.0%	0.0%	0.0%	0.0%
Interaction Effect	-0.1%	0.3%	0.4%	0.1%

PERS Attribution Analysis	Last 3 Mo.	1 Yr	3 Yrs	5 Yrs
Wtd. Actual Return	-9.2%	-6.5%	5.6%	4.7%
Wtd. Index Return *	-8.7%	-6.1%	5.9%	4.7%
<b>Excess Return</b>	<b>-0.6%</b>	<b>-0.4%</b>	<b>-0.2%</b>	<b>0.0%</b>
Selection Effect	-0.2%	-0.2%	-0.2%	0.0%
Allocation Effect	0.0%	0.0%	0.0%	0.0%
Interaction Effect	-0.3%	-0.2%	-0.1%	-0.1%

Firefighters Attribution Analysis	Last 3 Mo.	1 Yr	3 Yrs	5 Yrs
Wtd. Actual Return	-8.9%	-2.5%	7.6%	6.3%
Wtd. Index Return *	-8.2%	-3.4%	6.9%	6.2%
<b>Excess Return</b>	<b>-0.6%</b>	<b>1.0%</b>	<b>0.6%</b>	<b>0.2%</b>
Selection Effect	-0.6%	1.0%	0.6%	0.2%
Allocation Effect	0.0%	0.0%	0.0%	0.0%
Interaction Effect	0.0%	0.0%	0.0%	0.0%

Police Attribution Analysis	Last 3 Mo.	1 Yr	3 Yrs	5 Yrs
Wtd. Actual Return	-7.3%	-2.6%	5.8%	4.7%
Wtd. Index Return *	-7.9%	-5.3%	5.4%	3.7%
<b>Excess Return</b>	<b>0.6%</b>	<b>2.8%</b>	<b>0.4%</b>	<b>1.0%</b>
Selection Effect	1.8%	3.9%	0.4%	1.0%
Allocation Effect	0.0%	0.0%	0.0%	0.0%
Interaction Effect	-1.3%	-1.1%	0.0%	-0.1%



## Oklahoma State Pension Commission

# Total Fund Attribution Analysis

Law Attribution Analysis	Last 3 Mo.	1 Yr	3 Yrs	5 Yrs
Wtd. Actual Return	-8.8%	-5.1%	5.3%	4.4%
Wtd. Index Return *	-7.9%	-3.6%	5.9%	5.1%
<b>Excess Return</b>	<b>-0.9%</b>	<b>-1.5%</b>	<b>-0.6%</b>	<b>-0.7%</b>
Selection Effect	0.3%	-0.7%	-0.6%	-0.6%
Allocation Effect	0.0%	0.0%	0.0%	0.0%
Interaction Effect	-1.1%	-0.8%	0.0%	-0.1%

Judges Attribution Analysis	Last 3 Mo.	1 Yr	3 Yrs	5 Yrs
Wtd. Actual Return	-9.1%	-6.4%	5.7%	4.6%
Wtd. Index Return *	-8.7%	-6.1%	5.9%	4.7%
<b>Excess Return</b>	<b>-0.5%</b>	<b>-0.3%</b>	<b>-0.1%</b>	<b>-0.1%</b>
Selection Effect	-0.1%	-0.1%	0.0%	0.0%
Allocation Effect	0.0%	0.0%	0.0%	0.0%
Interaction Effect	-0.4%	-0.2%	-0.1%	-0.1%

Wildlife Attribution Analysis	Last 3 Mo.	1 Yr	3 Yrs	5 Yrs
Wtd. Actual Return	-7.7%	-3.4%	5.6%	4.9%
Wtd. Index Return *	-7.7%	-4.7%	4.8%	5.0%
<b>Excess Return</b>	<b>0.0%</b>	<b>1.2%</b>	<b>0.7%</b>	<b>0.0%</b>
Selection Effect	1.1%	-0.1%	0.2%	-1.5%
Allocation Effect	0.0%	0.0%	0.0%	0.0%
Interaction Effect	-1.2%	1.3%	0.6%	1.4%

- Returns are gross of manager fees.
- Plan attribution calculations are returns based and the results shown reflect the composites shown. As result the total returns shown may vary from the calculated returns shown on the performance summary.



## Oklahoma State Pension Commission

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Oklahoma State Pension Commission</b>	<b>30,279,088,665</b>	<b>100.0</b>	<b>-9.2</b>	<b>87</b>	<b>-6.4</b>	<b>87</b>	<b>-5.0</b>	<b>80</b>	<b>6.5</b>	<b>19</b>	<b>5.1</b>	<b>28</b>	<b>9.4</b>	<b>9</b>
S&P 500			-13.5	99	-6.9	96	-4.4	61	9.3	1	8.5	1	13.1	1
BBgBarc US Aggregate TR			1.6	1	1.7	1	0.0	3	2.1	99	2.5	99	3.5	99
60% S&P 500 / 40% BBgBarc Aggregate			-7.6	52	-3.3	9	-2.3	10	6.5	20	6.2	4	9.4	9
MSCI EAFE			-12.5	99	-11.4	99	-13.8	99	2.9	99	0.5	99	6.3	96
<b>Teachers</b>	<b>15,131,848,426</b>	<b>50.0</b>	<b>-9.6</b>	<b>94</b>	<b>-6.8</b>	<b>95</b>	<b>-5.0</b>	<b>80</b>	<b>7.1</b>	<b>7</b>	<b>5.2</b>	<b>21</b>	<b>10.4</b>	<b>1</b>
TEACHERS Allocation Index			-8.8	82	-5.8	78	-4.5	65	6.6	18	5.1	27	9.5	7
TEACHERS Policy Index			-9.3	89	-6.2	83	-5.1	81	6.2	36	4.5	62	9.2	14
<b>PERS</b>	<b>8,899,444,811</b>	<b>29.4</b>	<b>-9.2</b>	<b>88</b>	<b>-6.5</b>	<b>89</b>	<b>-6.5</b>	<b>96</b>	<b>5.6</b>	<b>67</b>	<b>4.7</b>	<b>55</b>	<b>8.6</b>	<b>39</b>
PERS Allocation Index			-9.0	85	-6.4	87	-6.5	96	5.6	69	4.5	58	8.2	55
PERS Policy Index			-8.7	80	-6.1	82	-6.1	94	5.9	58	4.7	54	8.5	45
<b>Firefighters</b>	<b>2,519,328,822</b>	<b>8.3</b>	<b>-8.8</b>	<b>81</b>	<b>-5.2</b>	<b>65</b>	<b>-2.4</b>	<b>11</b>	<b>7.5</b>	<b>3</b>	<b>6.3</b>	<b>3</b>	<b>9.1</b>	<b>16</b>
FIREFIGHTERS Allocation Index			-9.5	92	-6.1	81	-3.8	46	6.8	11	5.4	17	9.2	14
FIREFIGHTERS Policy Index			-8.2	69	-4.5	39	-3.4	31	6.9	9	6.2	4	9.8	3
<b>Police</b>	<b>2,393,881,006</b>	<b>7.9</b>	<b>-7.2</b>	<b>43</b>	<b>-4.5</b>	<b>41</b>	<b>-2.5</b>	<b>13</b>	<b>5.9</b>	<b>57</b>	<b>4.7</b>	<b>52</b>	<b>7.9</b>	<b>68</b>
POLICE Allocation Index			-6.7	27	-4.8	52	-3.5	36	5.4	77	4.1	78	8.7	34
POLICE Policy Index			-7.9	61	-5.4	69	-5.4	87	5.3	80	3.7	92	8.1	57
<b>Law</b>	<b>917,376,909</b>	<b>3.0</b>	<b>-8.3</b>	<b>69</b>	<b>-6.2</b>	<b>83</b>	<b>-4.6</b>	<b>66</b>	<b>5.5</b>	<b>75</b>	<b>4.5</b>	<b>60</b>	<b>8.3</b>	<b>50</b>
LAW Allocation Index			-7.0	38	-4.4	35	-3.4	33	6.2	34	5.2	24	8.5	44
LAW Policy Index			-7.9	60	-5.2	66	-3.6	39	5.9	56	5.1	27	8.4	45
<b>Judges</b>	<b>310,728,061</b>	<b>1.0</b>	<b>-9.1</b>	<b>87</b>	<b>-6.5</b>	<b>88</b>	<b>-6.4</b>	<b>95</b>	<b>5.7</b>	<b>63</b>	<b>4.6</b>	<b>57</b>	<b>8.5</b>	<b>45</b>
JUDGES Allocation Index			-9.1	87	-6.5	88	-6.5	96	5.6	71	4.4	67	8.0	65
JUDGES Policy Index			-8.7	80	-6.1	82	-6.1	94	5.9	58	4.7	54	8.3	50
<b>Wildlife</b>	<b>106,480,630</b>	<b>0.4</b>	<b>-7.8</b>	<b>56</b>	<b>-4.9</b>	<b>53</b>	<b>-3.4</b>	<b>33</b>	<b>5.6</b>	<b>71</b>	<b>4.9</b>	<b>39</b>	<b>7.7</b>	<b>75</b>
WILDLIFE Allocation Index			-7.8	57	-4.4	35	-3.7	42	6.0	53	5.0	31	7.7	73
WILDLIFE Policy Index			-7.7	53	-5.5	70	-4.7	68	4.8	94	5.0	35	8.2	55
InvestorForce Public DB Gross Median			-7.5		-4.8		-4.0		6.0		4.7		8.3	

Returns are gross of manager fees.



## Oklahoma State Pension Commission

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	2018 (%)	Rank	2017 (%)	Rank	2016 (%)	Rank	2015 (%)	Rank	2014 (%)	Rank
<b>Oklahoma State Pension Commission</b>	<b>30,279,088,665</b>	<b>100.0</b>	<b>-5.0</b>	<b>80</b>	<b>16.4</b>	<b>28</b>	<b>9.5</b>	<b>5</b>	<b>-1.5</b>	<b>83</b>	<b>7.5</b>	<b>12</b>
S&P 500			-4.4	61	21.8	1	12.0	1	1.4	11	13.7	1
BBgBarc US Aggregate TR			0.0	3	3.5	99	2.6	99	0.5	35	6.0	45
60% S&P 500 / 40% BBgBarc Aggregate			-2.3	10	14.2	72	8.3	27	1.3	13	10.6	1
MSCI EAFE			-13.8	99	25.0	1	1.0	99	-0.8	75	-4.9	99
Teachers	15,131,848,426	50.0	-5.0	80	16.1	34	11.4	1	-2.9	98	8.1	4
TEACHERS Allocation Index			-4.5	65	14.3	70	11.0	1	-2.0	89	8.2	4
TEACHERS Policy Index			-5.1	81	14.1	74	10.6	1	-2.5	95	6.7	28
PERS	8,899,444,811	29.4	-6.5	96	17.1	17	7.7	52	-0.8	74	7.4	15
PERS Allocation Index			-6.5	96	16.5	26	8.1	34	-0.9	77	7.0	21
PERS Policy Index			-6.1	94	16.9	21	8.1	34	-0.9	76	7.0	21
Firefighters	2,519,328,822	8.3	-2.4	11	18.7	4	7.3	61	2.1	6	6.9	24
FIREFIGHTERS Allocation Index			-3.8	46	15.6	44	9.4	5	0.5	35	6.1	40
FIREFIGHTERS Policy Index			-3.4	31	16.4	28	8.7	15	1.6	10	8.7	3
Police	2,393,881,006	7.9	-2.5	13	13.2	86	7.5	57	1.0	21	5.1	68
POLICE Allocation Index			-3.5	36	13.8	77	6.7	80	-0.4	63	5.0	70
POLICE Policy Index			-5.4	87	15.5	48	7.1	70	-1.9	89	4.5	79
Law	917,376,909	3.0	-4.6	66	14.6	63	7.2	66	-0.4	65	6.8	28
LAW Allocation Index			-3.4	33	14.6	63	8.3	29	0.3	42	7.1	20
LAW Policy Index			-3.6	39	13.4	86	8.6	18	1.0	22	7.0	21
Judges	310,728,061	1.0	-6.4	95	16.9	21	8.1	36	-1.1	79	7.0	22
JUDGES Allocation Index			-6.5	96	16.7	24	7.9	44	-1.2	81	6.7	29
JUDGES Policy Index			-6.1	94	16.9	21	8.1	34	-0.9	76	7.0	21
Wildlife	106,480,630	0.4	-3.4	33	14.3	71	6.6	82	0.1	49	7.9	7
WILDLIFE Allocation Index			-3.7	42	14.4	69	8.0	37	-0.3	61	7.7	10
WILDLIFE Policy Index			-4.7	68	12.8	89	7.2	67	1.0	22	9.5	1
InvestorForce Public DB Gross Median			-4.0		15.3		7.7		0.1		5.8	

Returns are gross of manager fees.

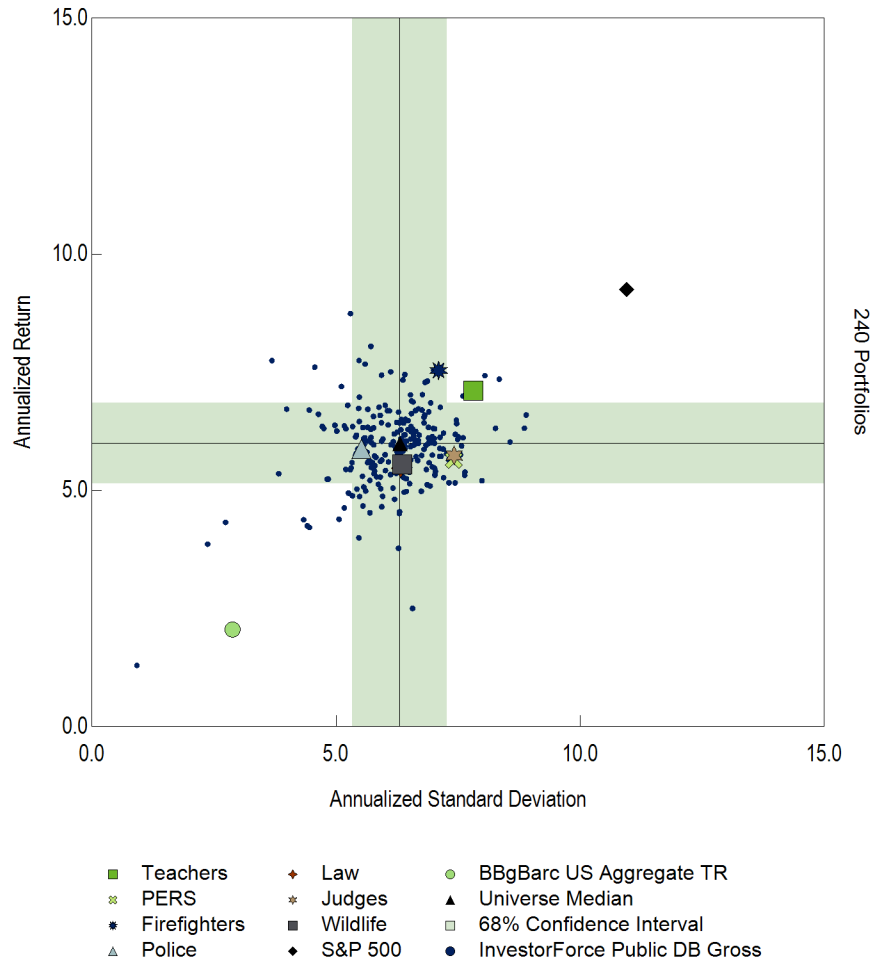


December 31, 2018



# TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending December 31, 2018



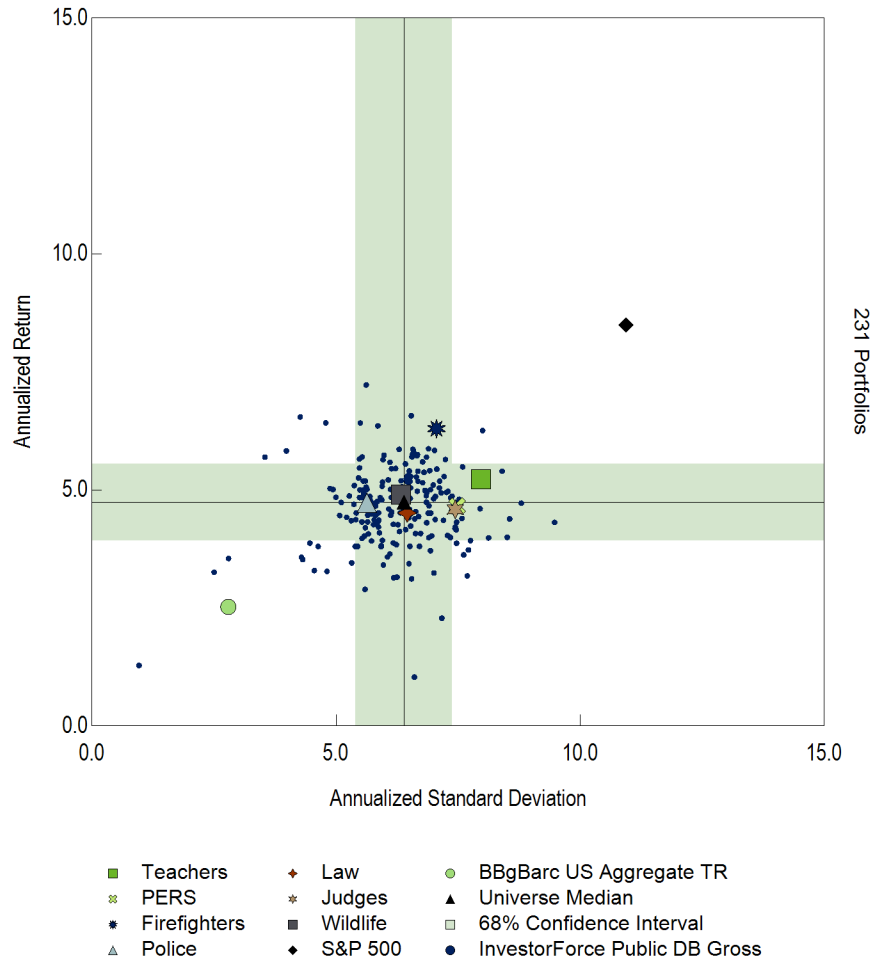
3 Years Ending December 31, 2018				
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Oklahoma State Pension Commission	6.54%	19	7.33%	92
Teachers	7.11%	7	7.82%	98
PERS	5.64%	67	7.41%	92
Firefighters	7.54%	3	7.10%	87
Police	5.88%	57	5.52%	19
Law	5.47%	75	6.32%	51
Judges	5.74%	63	7.42%	92
Wildlife	5.56%	71	6.35%	54

3 Years Ending December 31, 2018				
	Sharpe Ratio	Rank	Sortino Ratio	Rank
Oklahoma State Pension Commission	0.75	59	0.90	64
Teachers	0.78	49	0.94	56
PERS	0.62	91	0.78	89
Firefighters	0.92	19	1.04	36
Police	0.88	25	1.05	34
Law	0.70	74	0.85	76
Judges	0.63	88	0.78	89
Wildlife	0.71	71	0.88	67



# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending December 31, 2018



5 Years Ending December 31, 2018

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Oklahoma State Pension Commission	5.07%	28	7.44%	92
Teachers	5.22%	21	7.97%	98
PERS	4.66%	55	7.48%	94
Firefighters	6.30%	3	7.06%	84
Police	4.72%	52	5.63%	22
Law	4.51%	60	6.46%	56
Judges	4.59%	57	7.44%	92
Wildlife	4.90%	39	6.32%	49

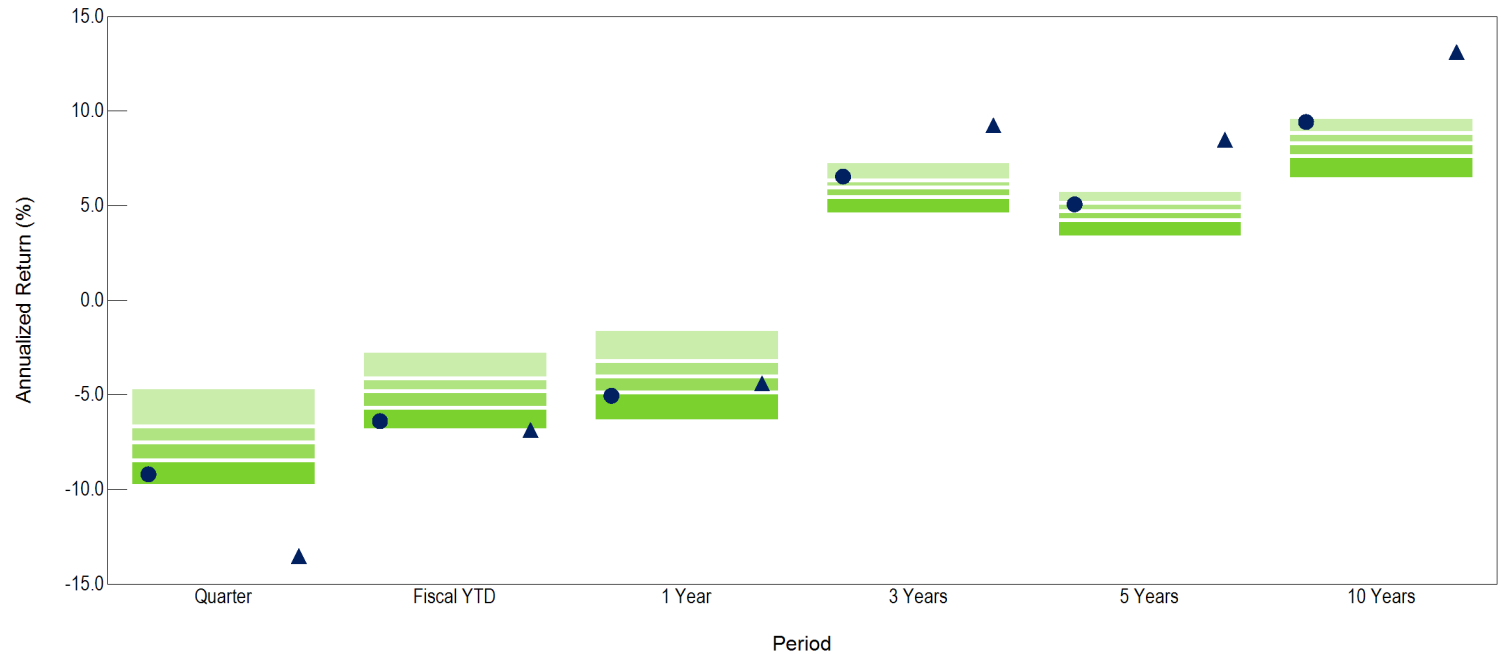
5 Years Ending December 31, 2018

	Sharpe Ratio	Rank	Sortino Ratio	Rank
Oklahoma State Pension Commission	0.60	67	0.87	70
Teachers	0.58	74	0.84	74
PERS	0.54	81	0.80	81
Firefighters	0.80	12	1.12	19
Police	0.73	26	1.10	24
Law	0.60	66	0.88	68
Judges	0.53	83	0.78	84
Wildlife	0.67	47	0.97	52



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

Oklahoma State Pension Commission vs. InvestorForce Public DB Gross

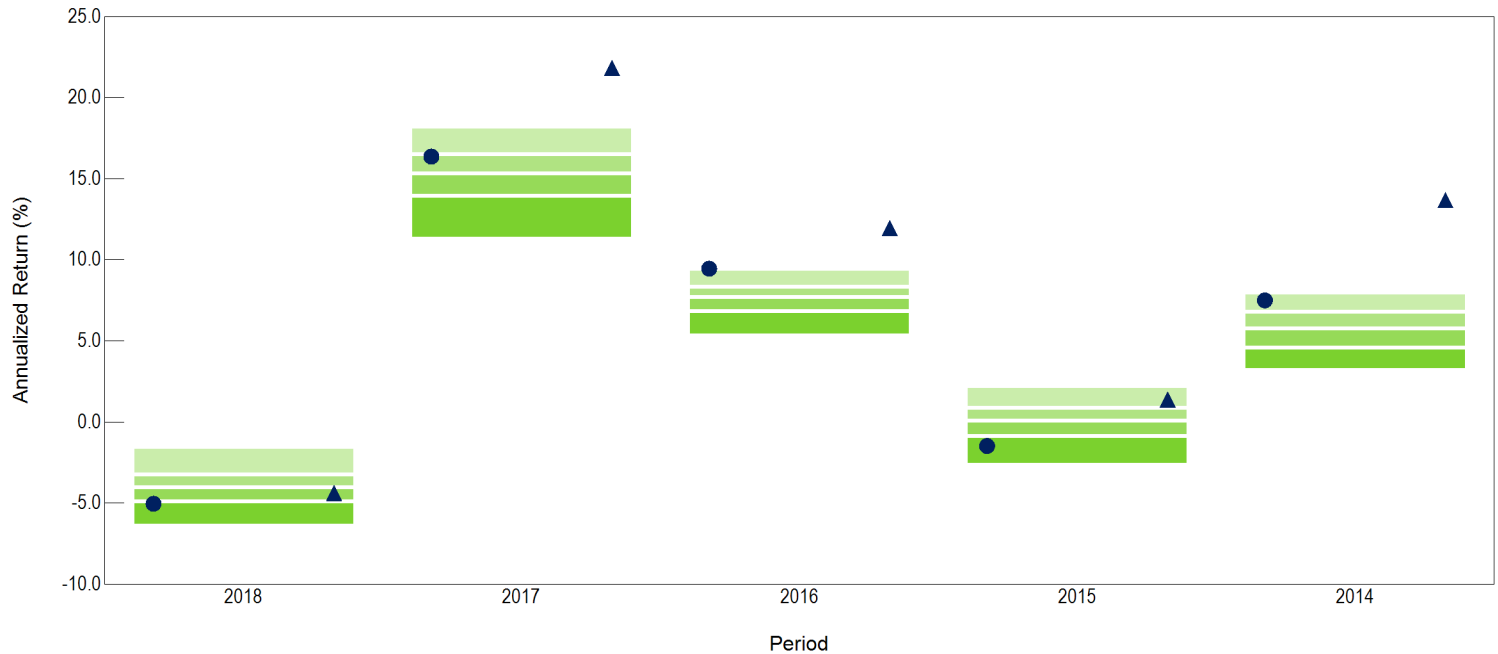


	Return (Rank)		Return (Rank)		Return (Rank)		Return (Rank)		Return (Rank)		Return (Rank)	
5th Percentile	-4.6		-2.7		-1.5		7.3		5.8		9.7	
25th Percentile	-6.7		-4.1		-3.2		6.4		5.2		8.9	
Median	-7.5		-4.8		-4.0		6.0		4.7		8.3	
75th Percentile	-8.4		-5.7		-4.9		5.5		4.2		7.6	
95th Percentile	-9.8		-6.8		-6.4		4.5		3.4		6.4	
# of Portfolios	251		251		251		240		231		197	
● Oklahoma State Pension Commission	-9.2	(87)	-6.4	(87)	-5.0	(80)	6.5	(19)	5.1	(28)	9.4	(9)
▲ S&P 500	-13.5	(99)	-6.9	(96)	-4.4	(61)	9.3	(1)	8.5	(1)	13.1	(1)



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

Oklahoma State Pension Commission vs. InvestorForce Public DB Gross



	Return (Rank)									
5th Percentile	-1.5		18.2		9.4		2.2		8.0	
25th Percentile	-3.2		16.5		8.4		0.9		6.8	
Median	-4.0		15.3		7.7		0.1		5.8	
75th Percentile	-4.9		14.0		6.9		-0.9		4.6	
95th Percentile	-6.4		11.3		5.3		-2.6		3.2	
# of Portfolios	251		304		305		316		248	
● Oklahoma State Pension Commission	-5.0	(80)	16.4	(28)	9.5	(5)	-1.5	(83)	7.5	(12)
▲ S&P 500	-4.4	(61)	21.8	(1)	12.0	(1)	1.4	(11)	13.7	(1)



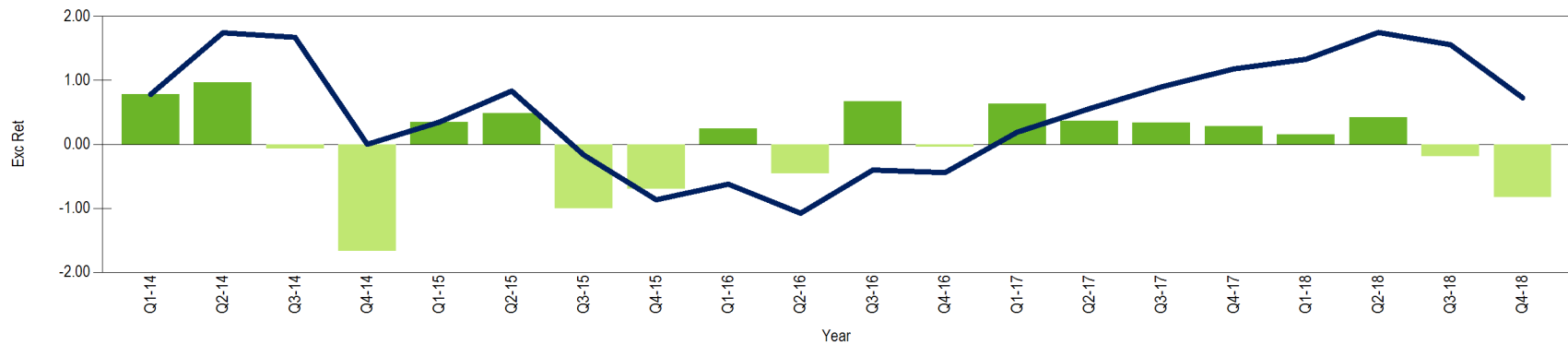
# OKLAHOMA TEACHERS



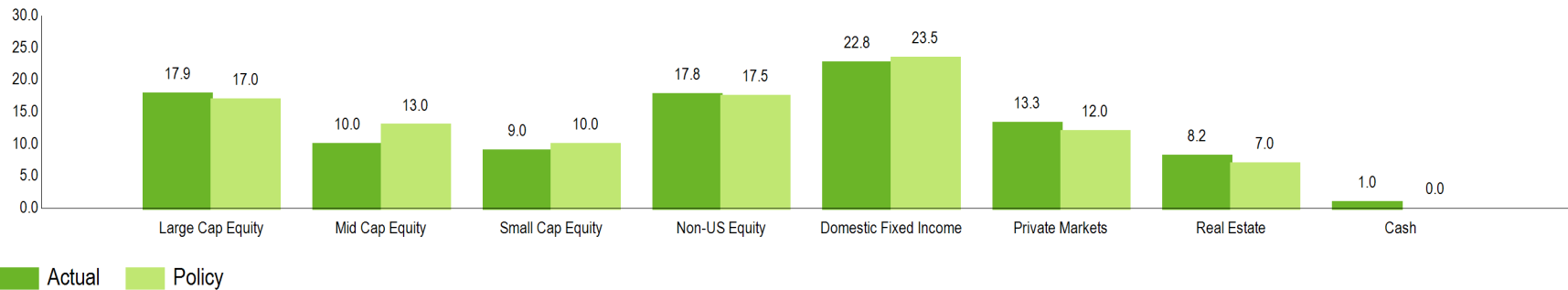
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK TEACHERS</b>	<b>\$15,131,848,426</b>	<b>-9.6%</b>	<b>94</b>	<b>-6.8%</b>	<b>95</b>	<b>-5.0%</b>	<b>80</b>	<b>7.1%</b>	<b>7</b>	<b>5.2%</b>	<b>21</b>	<b>10.4%</b>	<b>1</b>
<i>TEACHERS Allocation Index</i>		-8.8%	82	-5.8%	78	-4.5%	65	6.6%	18	5.1%	27	9.5%	7
<i>TEACHERS Policy Index</i>		-9.3%	89	-6.2%	83	-5.1%	81	6.2%	36	4.5%	62	9.2%	14
<i>InvestorForce Public DB Gross Median</i>		-7.5%		-4.8%		-4.0%		6.0%		4.7%		8.3%	

## Quarterly and Cumulative Excess Performance



## Actual vs Target Allocation (%)



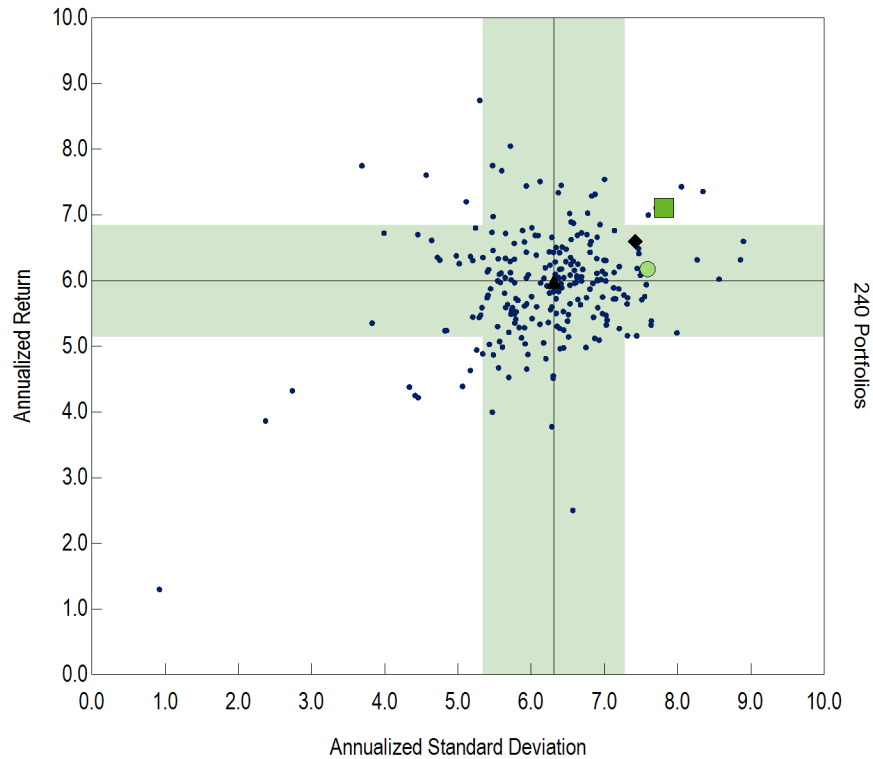
Returns are gross of manager fees.



# Oklahoma Teachers

## TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending December 31, 2018



- OK TEACHERS
- ◆ TEACHERS Allocation Index
- TEACHERS Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

3 Years Ending December 31, 2018

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK TEACHERS	7.11%	7	7.82%	98
TEACHERS Allocation Index	6.60%	18	7.42%	92
TEACHERS Policy Index	6.18%	36	7.59%	96

3 Years Ending December 31, 2018

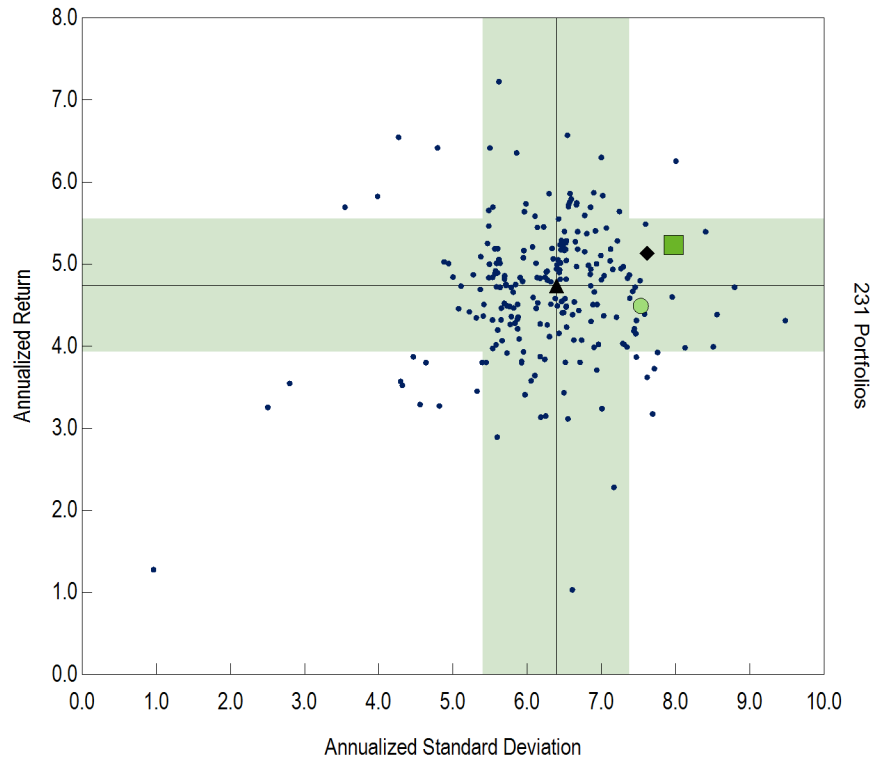
	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK TEACHERS	0.78	49	0.94	56
TEACHERS Allocation Index	0.75	59	0.93	60
TEACHERS Policy Index	0.68	79	0.82	82



# Oklahoma Teachers

## TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending December 31, 2018



- OK TEACHERS
- ◆ TEACHERS Allocation Index
- TEACHERS Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

5 Years Ending December 31, 2018

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK TEACHERS	5.23%	21	7.97%	98
TEACHERS Allocation Index	5.13%	27	7.61%	95
TEACHERS Policy Index	4.49%	62	7.53%	94

5 Years Ending December 31, 2018

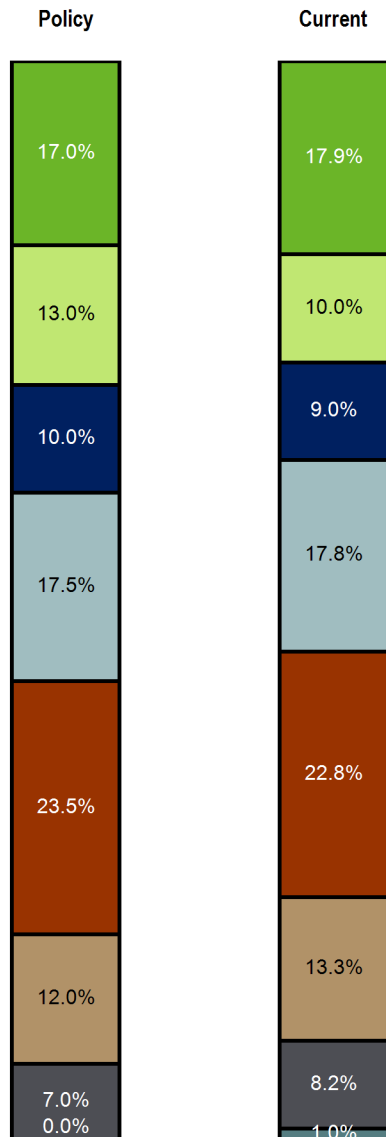
	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK TEACHERS	0.58	74	0.84	74
TEACHERS Allocation Index	0.59	68	0.89	67
TEACHERS Policy Index	0.51	85	0.77	85





## Oklahoma Teachers

# TOTAL FUND ASSET ALLOCATION VS. POLICY



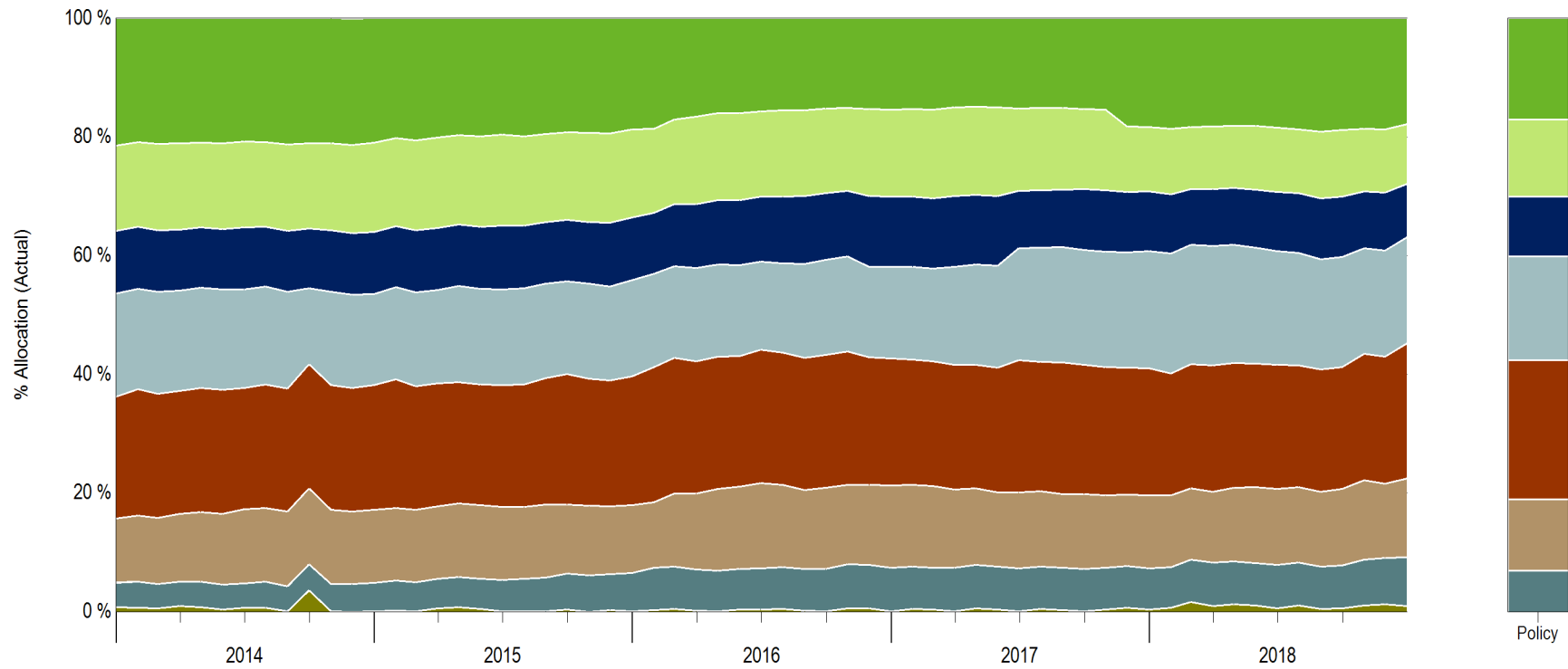
Asset Allocation vs. Target							
	Current	Policy	Current Difference*	Policy Range	Within Range		
Large Cap Equity	\$2,705,524,893	17.0%	17.9%	0.9%	12.0% - 23.0%	Yes	
Mid Cap Equity	\$1,516,959,968	13.0%	10.0%	-3.0%	8.0% - 18.0%	Yes	
Small Cap Equity	\$1,365,515,512	10.0%	9.0%	-1.0%	5.0% - 15.0%	Yes	
Non-US Equity	\$2,696,613,496	17.5%	17.8%	0.3%	12.5% - 22.5%	Yes	
Domestic Fixed Income	\$3,446,109,102	23.5%	22.8%	-0.7%	18.5% - 28.5%	Yes	
Private Markets	\$2,018,181,772	12.0%	13.3%	1.3%	7.0% - 17.0%	Yes	
Real Estate	\$1,236,929,119	7.0%	8.2%	1.2%	2.0% - 12.0%	Yes	
Cash	\$146,014,564	0.0%	1.0%	1.0%	0.0% - 5.0%	Yes	
<b>Total</b>	<b>\$15,131,848,426</b>	<b>100.0%</b>	<b>100.0%</b>				

\*Difference between Policy and Current Allocation



# TOTAL FUND ASSET ALLOCATION HISTORY

Asset Allocation History



- Large Cap Equity
- Small Cap Equity
- Domestic Fixed Income
- Private Equity
- Cash
- Mid Cap Equity
- Non-US Equity
- Private Markets
- Real Estate



## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK TEACHERS</b>	<b>15,131,848,426</b>	<b>100.0</b>	<b>-9.6</b>	<b>94</b>	<b>-6.8</b>	<b>95</b>	<b>-5.0</b>	<b>80</b>	<b>7.1</b>	<b>7</b>	<b>5.2</b>	<b>21</b>	<b>10.4</b>	<b>1</b>
<i>TEACHERS Allocation Index</i>			<u>-8.8</u>	82	<u>-5.8</u>	78	<u>-4.5</u>	65	<u>6.6</u>	18	<u>5.1</u>	27	<u>9.5</u>	7
Over/Under			<b>-0.8</b>		<b>-1.0</b>		<b>-0.5</b>		0.5		0.1		0.9	
<i>TEACHERS Policy Index</i>			-9.3	89	-6.2	83	-5.1	81	6.2	36	4.5	62	9.2	14
<i>InvestorForce Public DB Gross Median</i>			-7.5		-4.8		-4.0		6.0		4.7		8.3	
<b>Total Equity Composite</b>	<b>8,284,613,869</b>	<b>54.7</b>	<b>-15.8</b>	<b>80</b>	<b>-12.5</b>	<b>77</b>	<b>-10.6</b>	<b>64</b>	<b>7.1</b>	<b>38</b>	<b>5.0</b>	<b>50</b>	<b>11.8</b>	<b>26</b>
<i>Russell 3000</i>			<u>-14.3</u>	66	<u>-8.2</u>	36	<u>-5.2</u>	22	<u>9.0</u>	16	<u>7.9</u>	11	<u>13.2</u>	14
Over/Under			<b>-1.5</b>		<b>-4.3</b>		<b>-5.4</b>		<b>-1.9</b>		<b>-2.9</b>		<b>-1.4</b>	
<i>eV All Global Equity Gross Median</i>			-13.2		-9.6		-9.0		6.6		5.0		10.5	
<b>U.S. Equity Comp</b>	<b>5,588,000,373</b>	<b>36.9</b>	<b>-16.6</b>	<b>58</b>	<b>-11.6</b>	<b>56</b>	<b>-7.8</b>	<b>56</b>	<b>8.7</b>	<b>41</b>	<b>6.5</b>	<b>54</b>	<b>13.5</b>	<b>48</b>
<i>S&amp;P 500</i>			<u>-13.5</u>	26	<u>-6.9</u>	22	<u>-4.4</u>	33	<u>9.3</u>	32	<u>8.5</u>	24	<u>13.1</u>	58
Over/Under			<b>-3.1</b>		<b>-4.7</b>		<b>-3.4</b>		<b>-0.6</b>		<b>-2.0</b>		0.4	
<i>eV All US Equity Gross Median</i>			-15.8		-10.5		-6.8		8.1		6.7		13.4	
<i>Sawgrass Large Growth</i>	647,699,752	4.3	-10.4	6	-1.2	3	3.4	14	10.7	41	9.5	52	14.3	65
<i>Russell 1000 Growth</i>			<u>-15.9</u>	60	<u>-8.2</u>	47	<u>-1.5</u>	57	<u>11.1</u>	29	<u>10.4</u>	31	<u>15.3</u>	36
Over/Under			5.5		7.0		4.9		<b>-0.4</b>		<b>-0.9</b>		<b>-1.0</b>	
<i>eV US Large Cap Growth Equity Gross Median</i>			-15.3		-8.3		-0.6		10.3		9.6		14.9	
<i>Hotchkis &amp; Wiley Large Cap Value</i>	617,392,646	4.1	-17.9	96	-13.9	93	-13.5	90	7.8	43	5.9	62	13.7	10
<i>Russell 1000 Value</i>			<u>-11.7</u>	30	<u>-6.7</u>	36	<u>-8.3</u>	49	<u>7.0</u>	59	<u>5.9</u>	60	<u>11.2</u>	73
Over/Under			<b>-6.2</b>		<b>-7.2</b>		<b>-5.2</b>		0.8		0.0		2.5	
<i>eV US Large Cap Value Equity Gross Median</i>			-13.1		-8.1		-8.4		7.4		6.3		11.9	
<i>Aronson Mid Cap</i>	374,289,717	2.5	-15.9	39	-13.1	59	-11.9	63	5.8	70	5.3	66	13.7	62
<i>Russell MidCap</i>			<u>-15.4</u>	32	<u>-11.1</u>	39	<u>-9.1</u>	46	<u>7.0</u>	50	<u>6.3</u>	48	<u>14.0</u>	54
Over/Under			<b>-0.5</b>		<b>-2.0</b>		<b>-2.8</b>		<b>-1.2</b>		<b>-1.0</b>		<b>-0.3</b>	
<i>eV US Mid Cap Equity Gross Median</i>			-16.6		-12.1		-9.7		7.0		6.1		14.2	
<i>Frontier</i>	395,506,971	2.6	-15.0	20	-9.0	26	-5.4	66	7.7	62	7.6	42	14.0	76
<i>Russell MidCap Growth</i>			<u>-16.0</u>	36	<u>-9.6</u>	40	<u>-4.8</u>	58	<u>8.6</u>	47	<u>7.4</u>	46	<u>15.1</u>	39
Over/Under			1.0		0.6		<b>-0.6</b>		<b>-0.9</b>		0.2		<b>-1.1</b>	

Returns are gross of manager fees.



## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Wellington	400,703,182	2.6	-17.5	65	-9.6	41	1.5	15	11.8	15	6.5	66	15.0	44
<i>Russell MidCap Growth</i>			<u>-16.0</u>	36	<u>-9.6</u>	40	<u>-4.8</u>	58	<u>8.6</u>	47	<u>7.4</u>	46	<u>15.1</u>	39
Over/Under			-1.5		0.0		6.3		3.2		-0.9		-0.1	
<i>eV US Mid Cap Growth Equity Gross Median</i>			-16.7		-10.4		-4.1		8.4		7.1		14.6	
Hotchkis & Wiley Mid Cap	346,460,098	2.3	-25.3	99	-22.8	98	-17.9	87	3.1	89	2.0	93	15.3	5
<i>Russell MidCap Value</i>			<u>-15.0</u>	33	<u>-12.2</u>	28	<u>-12.3</u>	38	<u>6.1</u>	51	<u>5.4</u>	45	<u>13.0</u>	57
Over/Under			-10.3		-10.6		-5.6		-3.0		-3.4		2.3	
<i>eV US Mid Cap Value Equity Gross Median</i>			-16.4		-13.9		-13.2		6.1		5.2		13.2	
Shapiro Capital	625,591,402	4.1	-22.2	92	-20.8	86	-18.5	87	12.1	5	5.5	20	16.0	7
<i>Russell 2000 Value</i>			<u>-18.7</u>	45	<u>-17.4</u>	46	<u>-12.9</u>	39	<u>7.4</u>	36	<u>3.6</u>	61	<u>10.4</u>	94
Over/Under			-3.5		-3.4		-5.6		4.7		1.9		5.6	
Frontier Capital Management Small Cap Value	178,533,965	1.2	-21.1	83	-19.1	68	-13.7	48	6.6	47	5.1	28	--	--
<i>Russell 2000 Value</i>			<u>-18.7</u>	45	<u>-17.4</u>	46	<u>-12.9</u>	39	<u>7.4</u>	36	<u>3.6</u>	61	<u>10.4</u>	94
Over/Under			-2.4		-1.7		-0.8		-0.8		1.5		--	--
Neumeier Poma Investment Counsel Small Cap Value	214,380,993	1.4	-15.5	15	-13.3	15	-9.5	13	10.6	9	9.3	1	--	--
<i>Russell 2000 Value</i>			<u>-18.7</u>	45	<u>-17.4</u>	46	<u>-12.9</u>	39	<u>7.4</u>	36	<u>3.6</u>	61	<u>10.4</u>	94
Over/Under			3.2		4.1		3.4		3.2		5.7		--	--
<i>eV US Small Cap Value Equity Gross Median</i>			-19.0		-17.8		-14.0		6.5		4.1		12.9	
Geneva Capital Management Small Cap Growth	174,228,722	1.2	-19.8	32	-10.7	14	0.6	27	11.6	32	8.8	18	--	--
<i>Russell 2000 Growth</i>			<u>-21.7</u>	65	<u>-17.3</u>	84	<u>-9.3</u>	80	<u>7.2</u>	80	<u>5.1</u>	74	<u>13.5</u>	82
Over/Under			1.9		6.6		9.9		4.4		3.7		--	--

Returns are gross of manager fees.



December 31, 2018

## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Wasatch Advisors Small Cap Growth	172,780,430	1.1	-17.7	11	-11.5	17	-0.4	32	12.1	29	9.1	15	--	--
<i>Russell 2000 Growth</i>			<u>-21.7</u>	65	<u>-17.3</u>	84	<u>-9.3</u>	80	<u>7.2</u>	80	<u>5.1</u>	74	<u>13.5</u>	82
Over/Under			4.0		5.8		8.9		4.9		4.0			
<i>eV US Small Cap Growth Equity Gross Median</i>			-20.8		-14.8		-3.8		9.7		6.7		15.2	
<b>Domestic Passive Equity</b>	<b>1,440,432,495</b>	<b>9.5</b>	<b>-12.9</b>	<b>--</b>	<b>-7.0</b>	<b>--</b>	<b>-5.0</b>	<b>--</b>	<b>8.5</b>	<b>--</b>	<b>7.7</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>S&amp;P 500</i>			<u>-13.5</u>	--	<u>-6.9</u>	--	<u>-4.4</u>	--	<u>9.3</u>	--	<u>8.5</u>	--	<u>13.1</u>	--
Over/Under			0.6		-0.1		-0.6		-0.8		-0.8			
Northern Trust Russell 1000	567,780,200	3.8	-13.8	--	-7.4	--	-4.6	--	--	--	--	--	--	--
<i>Russell 1000</i>			<u>-13.8</u>	--	<u>-7.4</u>	--	<u>-4.8</u>	--	<u>9.1</u>	--	<u>8.2</u>	--	<u>13.3</u>	--
Over/Under			0.0		0.0		0.2							
Sci Beta US HFE MBMS	872,652,295	5.8	-12.3	--	-6.7	--	-5.3	--	--	--	--	--	--	--
<i>S&amp;P 500</i>			<u>-13.5</u>	--	<u>-6.9</u>	--	<u>-4.4</u>	--	<u>9.3</u>	--	<u>8.5</u>	--	<u>13.1</u>	--
Over/Under			1.2		0.2		-0.9							
<b>International Equity Composite</b>	<b>2,696,613,496</b>	<b>17.8</b>	<b>-14.0</b>	<b>62</b>	<b>-14.3</b>	<b>69</b>	<b>-15.9</b>	<b>61</b>	<b>3.2</b>	<b>71</b>	<b>1.2</b>	<b>64</b>	<b>7.2</b>	<b>74</b>
<i>MSCI ACWI ex USA</i>			<u>-11.5</u>	22	<u>-10.8</u>	25	<u>-14.2</u>	41	<u>4.5</u>	47	<u>0.7</u>	78	<u>6.6</u>	84
Over/Under			-2.5		-3.5		-1.7		-1.3		0.5		0.6	
<i>eV All ACWI ex-US Equity Gross Median</i>			-13.2		-12.7		-15.1		4.3		1.8		8.8	
Causeway - Value	405,065,410	2.7	-13.2	41	-13.0	53	-17.7	73	3.3	59	0.2	73	7.8	49
<i>MSCI EAFE</i>			<u>-12.5</u>	33	<u>-11.4</u>	35	<u>-13.8</u>	33	<u>2.9</u>	61	<u>0.5</u>	60	<u>6.3</u>	77
Over/Under			-0.7		-1.6		-3.9		0.4		-0.3		1.5	
<i>eV EAFE Value Equity Gross Median</i>			-13.7		-12.8		-15.6		3.7		1.0		7.7	
Allianz Intl	892,983,623	5.9	-10.4	10	-10.1	15	-13.7	34	--	--	--	--	--	--
<i>MSCI ACWI ex USA</i>			<u>-11.5</u>	22	<u>-10.8</u>	25	<u>-14.2</u>	42	<u>4.5</u>	48	<u>0.7</u>	80	<u>6.6</u>	85
Over/Under			1.1		0.7		0.5							
<i>eV ACWI ex-US Equity Unhedged Gross Median</i>			-13.2		-12.7		-15.1		4.4		1.9		8.9	
Wellington Intl	431,835,849	2.9	-13.7	58	-12.9	52	-10.9	11	--	--	--	--	--	--
<i>MSCI ACWI ex USA</i>			<u>-11.5</u>	22	<u>-10.8</u>	25	<u>-14.2</u>	42	<u>4.5</u>	48	<u>0.7</u>	80	<u>6.6</u>	85
Over/Under			-2.2		-2.1		3.3							
<i>eV ACWI ex-US Equity Unhedged Gross Median</i>			-13.2		-12.7		-15.1		4.4		1.9		8.9	
Northern Trust Intl - Liquidating	31,354	0.0												

Returns are gross of manager fees.



## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>International Small Cap Equity</b>	<b>966,697,260</b>	<b>6.4</b>	<b>-17.5</b>	<b>71</b>	<b>-19.0</b>	<b>70</b>	<b>-19.1</b>	<b>67</b>	<b>1.4</b>	<b>85</b>	<b>1.4</b>	<b>81</b>	<b>--</b>	<b>--</b>
MSCI ACWI ex USA			<u>-11.5</u>	10	<u>-10.8</u>	3	<u>-14.2</u>	17	<u>4.5</u>	47	<u>0.7</u>	93	<u>6.6</u>	99
Over/Under			-6.0		-8.2		-4.9		-3.1		0.7			
eV ACWI ex-US Small Cap Equity Gross Median			-16.2		-16.5		-17.9		4.3		3.1		12.4	
Advisory Research Int'l Small Cap	921,300	0.0	-1.3	1	-1.1	1	-4.0	2	5.4	33	3.1	51	--	--
MSCI ACWI ex USA			<u>-11.5</u>	10	<u>-10.8</u>	3	<u>-14.2</u>	17	<u>4.5</u>	47	<u>0.7</u>	93	<u>6.6</u>	99
Over/Under			10.2		9.7		10.2		0.9		2.4			
EPOCH Int'l Small Cap	230,919,382	1.5	-18.2	74	-21.6	90	-21.0	79	0.9	91	0.5	97	--	--
MSCI ACWI ex USA			<u>-11.5</u>	10	<u>-10.8</u>	3	<u>-14.2</u>	17	<u>4.5</u>	47	<u>0.7</u>	93	<u>6.6</u>	99
Over/Under			-6.7		-10.8		-6.8		-3.6		-0.2			
Wasatch Int'l Small Cap	255,632,446	1.7	-21.7	94	-20.3	80	-14.5	19	2.5	76	3.2	47	--	--
MSCI ACWI ex USA			<u>-11.5</u>	10	<u>-10.8</u>	3	<u>-14.2</u>	17	<u>4.5</u>	47	<u>0.7</u>	93	<u>6.6</u>	99
Over/Under			-10.2		-9.5		-0.3		-2.0		2.5			
Wellington Int'l Small Cap	227,022,628	1.5	-21.0	91	-22.7	92	-25.0	99	-1.3	99	-0.1	99	--	--
MSCI ACWI ex USA			<u>-11.5</u>	10	<u>-10.8</u>	3	<u>-14.2</u>	17	<u>4.5</u>	47	<u>0.7</u>	93	<u>6.6</u>	99
Over/Under			-9.5		-11.9		-10.8		-5.8		-0.8			
eV ACWI ex-US Small Cap Equity Gross Median			-16.2		-16.5		-17.9		4.3		3.1		12.4	
SSGA Emerging Market Small Cap	252,201,504	1.7	-8.1	1	-10.9	3	-15.8	27	--	--	--	--	--	--
MSCI Emerging Markets Small Cap Gross			<u>-7.1</u>	1	<u>-10.9</u>	3	<u>-18.3</u>	55	<u>4.0</u>	55	<u>1.3</u>	82	<u>10.2</u>	97
Over/Under			-1.0		0.0		2.5							
eV ACWI ex-US Small Cap Equity Gross Median			-16.2		-16.5		-17.9		4.3		3.1		12.4	
<b>Fixed Composite</b>	<b>3,446,109,102</b>	<b>22.8</b>	<b>-0.2</b>	<b>71</b>	<b>0.2</b>	<b>74</b>	<b>-1.3</b>	<b>78</b>	<b>4.3</b>	<b>25</b>	<b>3.7</b>	<b>26</b>	<b>6.3</b>	<b>30</b>
BBgBarc US Aggregate TR			<u>1.6</u>	14	<u>1.7</u>	22	<u>0.0</u>	61	<u>2.1</u>	67	<u>2.5</u>	61	<u>3.5</u>	68
Over/Under			-1.8		-1.5		-1.3		2.2		1.2		2.8	
eV All US Fixed Inc Gross Median			0.7		1.2		0.6		2.6		2.8		4.3	
Loomis Sayles Core Plus	968,673,025	6.4	-1.0	97	-0.5	99	-1.4	94	3.8	14	3.1	55	6.5	21
BBgBarc US Aggregate TR			<u>1.6</u>	8	<u>1.7</u>	8	<u>0.0</u>	30	<u>2.1</u>	99	<u>2.5</u>	94	<u>3.5</u>	99
Over/Under			-2.6		-2.2		-1.4		1.7		0.6		3.0	

Returns are gross of manager fees.



## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Mackay Shields Core Plus	957,654,995	6.3	-1.1	97	-0.4	99	-2.6	99	2.5	86	1.9	99	5.0	77
BBgBarc US Aggregate TR			<u>1.6</u>	8	<u>1.7</u>	8	<u>0.0</u>	30	<u>2.1</u>	99	<u>2.5</u>	94	<u>3.5</u>	99
Over/Under			-2.7		-2.1		-2.6		0.4		-0.6		1.5	
Lord Abbett Core Plus	980,811,748	6.5	-0.1	88	0.3	95	-1.2	89	2.7	79	2.9	67	5.5	55
BBgBarc US Aggregate TR			<u>1.6</u>	8	<u>1.7</u>	8	<u>0.0</u>	30	<u>2.1</u>	99	<u>2.5</u>	94	<u>3.5</u>	99
Over/Under			-1.7		-1.4		-1.2		0.6		0.4		2.0	
eV US Core Plus Fixed Inc Gross Median			0.7		1.1		-0.4		3.1		3.1		5.7	
Hoisington Long Bonds	538,962,337	3.6	4.3	5	0.2	41	-2.9	13	2.4	99	6.9	6	3.8	99
BBgBarc US Aggregate TR			<u>1.6</u>	12	<u>1.7</u>	4	<u>0.0</u>	3	<u>2.1</u>	99	<u>2.5</u>	99	<u>3.5</u>	99
Over/Under			2.7		-1.5		-2.9		0.3		4.4		0.3	
eV US Long Duration Fixed Inc Gross Median			0.0		0.1		-5.2		4.6		5.5		7.3	
Loomis High Yield	7,448	0.0	3.3	1	5.5	1	5.4	1	9.4	5	5.4	4	--	--
ICE BofAML US High Yield TR			<u>-4.6</u>	66	<u>-2.3</u>	69	<u>-2.2</u>	66	<u>7.3</u>	23	<u>3.8</u>	46	<u>11.0</u>	20
Over/Under			7.9		7.8		7.6		2.1		1.6			
Lord Abbett High Yield	-452	0.0	5.3	1	8.3	1	7.3	1	10.7	2	6.9	1	--	--
ICE BofAML US High Yield TR			<u>-4.6</u>	66	<u>-2.3</u>	69	<u>-2.2</u>	66	<u>7.3</u>	23	<u>3.8</u>	46	<u>11.0</u>	20
Over/Under			9.9		10.6		9.5		3.4		3.1			
Mackay High Yield	1	0.0	-1.3	7	1.1	1	1.4	10	8.5	7	5.4	4	--	--
ICE BofAML US High Yield TR			<u>-4.6</u>	66	<u>-2.3</u>	69	<u>-2.2</u>	66	<u>7.3</u>	23	<u>3.8</u>	46	<u>11.0</u>	20
Over/Under			3.3		3.4		3.6		1.2		1.6			
eV US High Yield Fixed Inc Gross Median			-4.0		-1.8		-1.8		6.3		3.8		10.2	
<b>Total Private Equity</b>	<b>1,485,303,454</b>	<b>9.8</b>	<b>3.5</b>	<b>--</b>	<b>10.5</b>	<b>--</b>	<b>21.0</b>	<b>--</b>	<b>15.9</b>	<b>--</b>	<b>16.0</b>	<b>--</b>	<b>--</b>	<b>--</b>
Cambridge Associates US All PE			<u>0.0</u>	--	<u>4.1</u>	--	<u>13.1</u>	--	<u>14.6</u>	--	<u>12.0</u>	--	<u>14.0</u>	--
Over/Under			3.5		6.4		7.9		1.3		4.0			
Legacy LP - Aldus PE	16,770,304	0.1	-1.5	--	2.7	--	-2.5	--	3.6	--	5.7	--	3.7	--
Pimco Bravo	4,323,171	0.0	-2.9	--	-8.1	--	99.4	--	22.9	--	21.2	--	--	--
PIMCO Bravo 2	100,614,021	0.7	2.0	--	4.4	--	7.0	--	8.9	--	12.5	--	--	--

Returns are gross of manager fees.



## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
OK - OTRS/Franklin Park	1,213,505,751	8.0	4.0	--	11.6	--	23.7	--	17.7	--	16.8	--	--	--
Pimco COF II	50,714,593	0.3	0.9	--	7.5	--	10.9	--	--	--	--	--	--	--
PIMCO Bravo 3	99,375,614	0.7	1.7	--	8.0	--	16.1	--	--	--	--	--	--	--
<b>Master Limited Partnerships</b>	<b>532,878,318</b>	<b>3.5</b>	<b>-18.4</b>	<b>--</b>	<b>-17.2</b>	<b>--</b>	<b>-17.8</b>	<b>--</b>	<b>-0.7</b>	<b>--</b>	<b>-4.7</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Alerian MLP Index</i>			<u>-17.3</u>	--	<u>-11.9</u>	--	<u>-12.4</u>	--	<u>-1.1</u>	--	<u>-7.3</u>	--	<u>9.6</u>	--
Over/Under			-1.1		-5.3		-5.4		0.4		2.6			
Chickasaw Capital Management	180,737,181	1.2	-20.5	--	-18.6	--	-21.2	--	-2.3	--	-4.4	--	--	--
<i>Alerian MLP Index</i>			<u>-17.3</u>	--	<u>-11.9</u>	--	<u>-12.4</u>	--	<u>-1.1</u>	--	<u>-7.3</u>	--	<u>9.6</u>	--
Over/Under			-3.2		-6.7		-8.8		-1.2		2.9			
Swank Capital Cushing	352,141,137	2.3	-17.1	--	-16.3	--	-15.8	--	1.4	--	-3.9	--	--	--
<i>Alerian MLP Index</i>			<u>-17.3</u>	--	<u>-11.9</u>	--	<u>-12.4</u>	--	<u>-1.1</u>	--	<u>-7.3</u>	--	<u>9.6</u>	--
Over/Under			0.2		-4.4		-3.4		2.5		3.4			
<b>Total Core Real Estate</b>	<b>1,236,929,119</b>	<b>8.2</b>	<b>1.8</b>	<b>--</b>	<b>3.9</b>	<b>--</b>	<b>7.7</b>	<b>--</b>	<b>8.1</b>	<b>--</b>	<b>9.8</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>NCREIF Property Index</i>			<u>1.4</u>	--	<u>3.1</u>	--	<u>6.7</u>	--	<u>7.2</u>	--	<u>9.3</u>	--	<u>7.5</u>	--
Over/Under			0.4		0.8		1.0		0.9		0.5			
L & B Real Estate	287,349,811	1.9	1.9	--	4.1	--	7.9	--	9.1	--	10.9	--	--	--
<i>NCREIF ODCE</i>			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			0.1		0.2		-0.4		0.9		0.5			
Heitman Real Estate	320,262,144	2.1	2.2	--	3.3	--	8.9	--	9.6	--	10.5	--	--	--
<i>NCREIF ODCE</i>			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			0.4		-0.6		0.6		1.4		0.1			
AEW Real Estate	309,120,853	2.0	1.5	--	4.6	--	8.3	--	7.1	--	9.4	--	--	--
<i>NCREIF ODCE</i>			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			-0.3		0.7		0.0		-1.1		-1.0			
L & B Gold Driller	71,048,284	0.5	0.0	--	0.0	--	0.0	--	1.8	--	--	--	--	--
<i>NCREIF ODCE</i>			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			-1.8		-3.9		-8.3		-6.4					

Returns are gross of manager fees.





## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

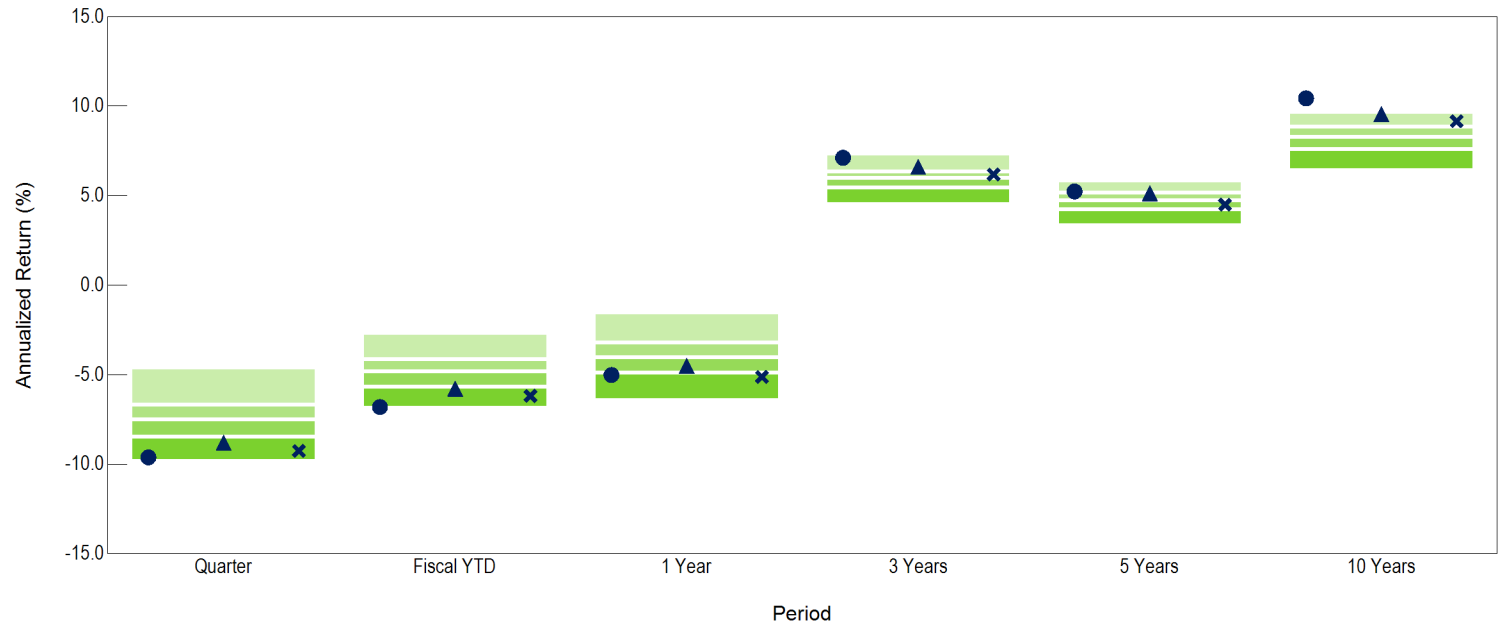
	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Greenoak Real Estate II	36,827,009	0.2	1.1	--	8.0	--	10.0	--	7.1	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			-0.7		4.1		1.7		-1.1					
Greenoak Real Estate III	6,596,371	0.0	-4.6	--	-30.1	--	--	--	--	--	--	--	--	--
Lyrical-OTRS Realty Partner IV	41,829,688	0.3	-1.7	--	-3.1	--	-2.7	--	-5.4	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			-3.5		-7.0		-11.0		-13.6					
Dune Real Estate	54,904,084	0.4	5.8	--	11.0	--	13.9	--	12.7	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			4.0		7.1		5.6		4.5					
Landmark Realty	20,341,435	0.1	0.9	--	2.0	--	4.0	--	11.0	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			-0.9		-1.9		-4.3		2.8					
American Realty	61,567,539	0.4	2.1	--	5.0	--	10.0	--	11.2	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			0.3		1.1		1.7		3.0					

Returns are gross of manager fees.



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK TEACHERS vs. InvestorForce Public DB Gross

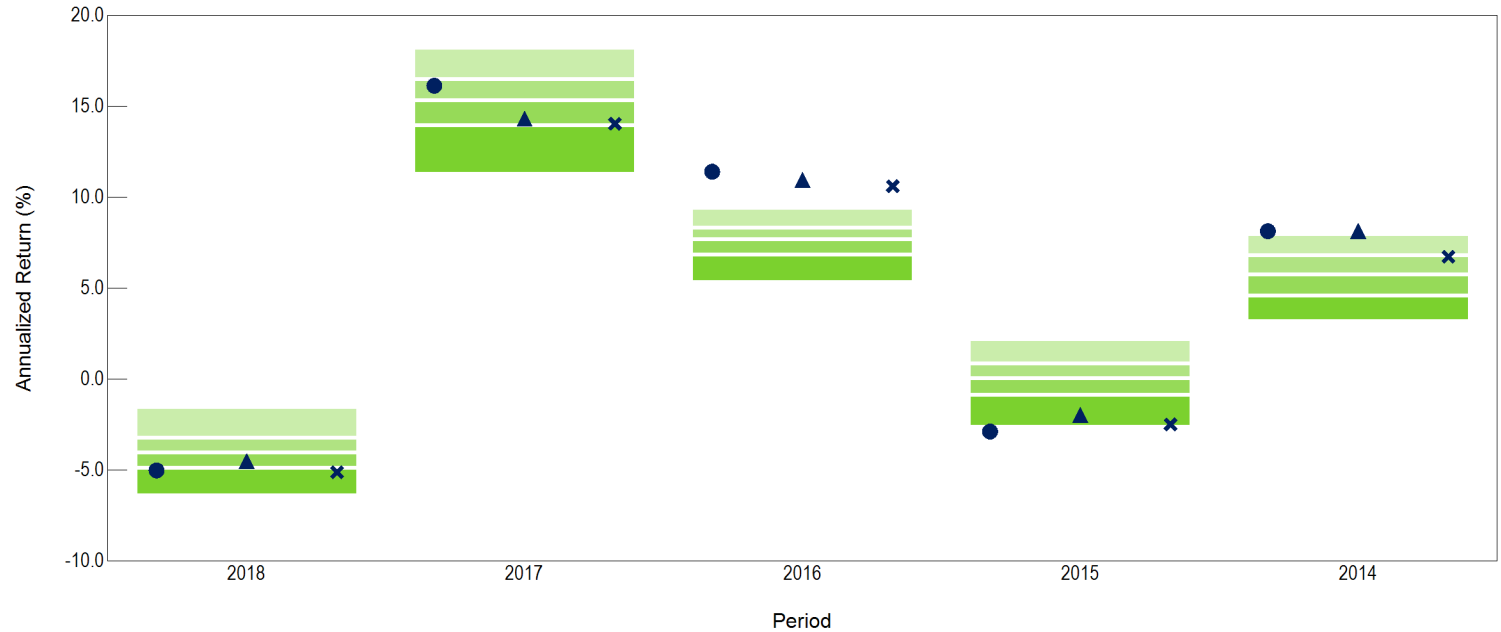


	Return (Rank)											
5th Percentile	-4.6		-2.7		-1.5		7.3		5.8		9.7	
25th Percentile	-6.7		-4.1		-3.2		6.4		5.2		8.9	
Median	-7.5		-4.8		-4.0		6.0		4.7		8.3	
75th Percentile	-8.4		-5.7		-4.9		5.5		4.2		7.6	
95th Percentile	-9.8		-6.8		-6.4		4.5		3.4		6.4	
# of Portfolios	251		251		251		240		231		197	
● OK TEACHERS	-9.6	(94)	-6.8	(95)	-5.0	(80)	7.1	(7)	5.2	(21)	10.4	(1)
▲ TEACHERS Allocation Index	-8.8	(82)	-5.8	(78)	-4.5	(65)	6.6	(18)	5.1	(27)	9.5	(7)
× TEACHERS Policy Index	-9.3	(89)	-6.2	(83)	-5.1	(81)	6.2	(36)	4.5	(62)	9.2	(14)



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK TEACHERS vs. InvestorForce Public DB Gross



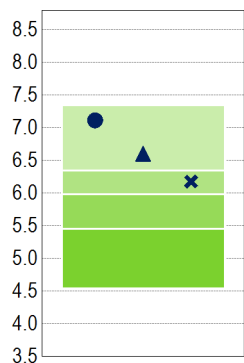
	Return (Rank)									
5th Percentile	-1.5		18.2		9.4		2.2		8.0	
25th Percentile	-3.2		16.5		8.4		0.9		6.8	
Median	-4.0		15.3		7.7		0.1		5.8	
75th Percentile	-4.9		14.0		6.9		-0.9		4.6	
95th Percentile	-6.4		11.3		5.3		-2.6		3.2	
# of Portfolios	251		304		305		316		248	
● OK TEACHERS	-5.0	(80)	16.1	(34)	11.4	(1)	-2.9	(97)	8.1	(4)
▲ TEACHERS Allocation Index	-4.5	(65)	14.3	(70)	11.0	(1)	-2.0	(89)	8.2	(4)
× TEACHERS Policy Index	-5.1	(81)	14.1	(74)	10.6	(1)	-2.5	(95)	6.7	(28)



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

## OK TEACHERS vs. InvestorForce Public DB Gross 3 Years

### Anlzd Return

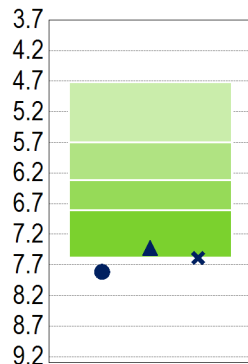


- OK TEACHERS  
Value 7.11  
Rank 7
- ▲ TEACHERS Allocation Index  
Value 6.60  
Rank 18
- × TEACHERS Policy Index  
Value 6.18  
Rank 36

Universe

5th %tile	7.34
25th %tile	6.36
Median	5.99
75th %tile	5.46
95th %tile	4.55

### Anlzd Standard Deviation

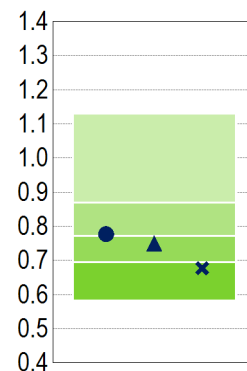


- OK TEACHERS  
Value 7.82  
Rank 98
- ▲ TEACHERS Allocation Index  
Value 7.42  
Rank 92
- × TEACHERS Policy Index  
Value 7.59  
Rank 96

Universe

5th %tile	4.72
25th %tile	5.69
Median	6.31
75th %tile	6.80
95th %tile	7.57

### Sharpe Ratio

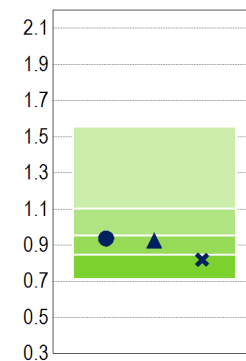


- OK TEACHERS  
Value 0.78  
Rank 49
- ▲ TEACHERS Allocation Index  
Value 0.75  
Rank 59
- × TEACHERS Policy Index  
Value 0.68  
Rank 79

Universe

5th %tile	1.13
25th %tile	0.87
Median	0.77
75th %tile	0.70
95th %tile	0.58

### Sortino Ratio



- OK TEACHERS  
Value 0.94  
Rank 56
- ▲ TEACHERS Allocation Index  
Value 0.93  
Rank 60
- × TEACHERS Policy Index  
Value 0.82  
Rank 82

Universe

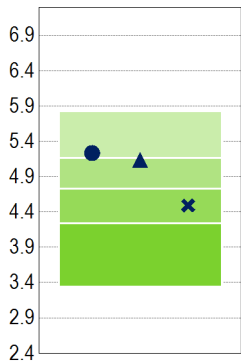
5th %tile	1.56
25th %tile	1.10
Median	0.96
75th %tile	0.85
95th %tile	0.72



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

## OK TEACHERS vs. InvestorForce Public DB Gross 5 Years

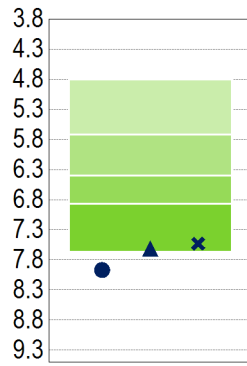
Anlzd Return



● OK TEACHERS	
Value	5.23
Rank	21
▲ TEACHERS Allocation Index	
Value	5.13
Rank	27
× TEACHERS Policy Index	
Value	4.49
Rank	62

Universe	
5th %tile	5.83
25th %tile	5.17
Median	4.74
75th %tile	4.25
95th %tile	3.35

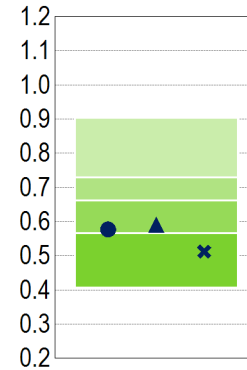
Anlzd Standard Deviation



● OK TEACHERS	
Value	7.97
Rank	98
▲ TEACHERS Allocation Index	
Value	7.61
Rank	95
× TEACHERS Policy Index	
Value	7.53
Rank	94

Universe	
5th %tile	4.80
25th %tile	5.70
Median	6.39
75th %tile	6.85
95th %tile	7.65

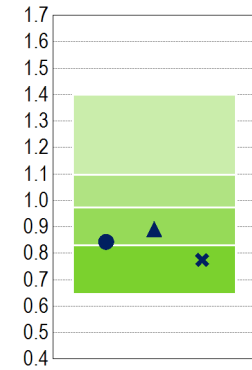
Sharpe Ratio



● OK TEACHERS	
Value	0.58
Rank	74
▲ TEACHERS Allocation Index	
Value	0.59
Rank	68
× TEACHERS Policy Index	
Value	0.51
Rank	85

Universe	
5th %tile	0.90
25th %tile	0.73
Median	0.66
75th %tile	0.57
95th %tile	0.41

Sortino Ratio



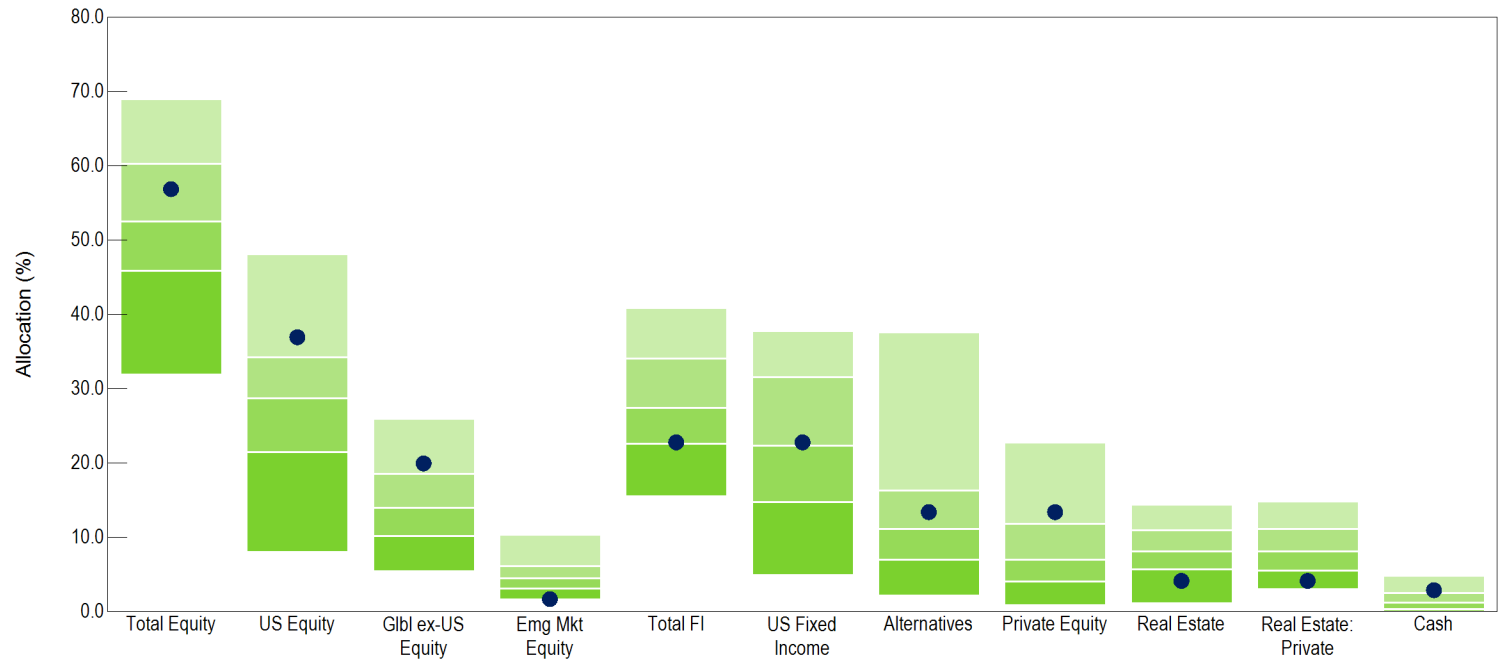
● OK TEACHERS	
Value	0.84
Rank	74
▲ TEACHERS Allocation Index	
Value	0.89
Rank	67
× TEACHERS Policy Index	
Value	0.77
Rank	85

Universe	
5th %tile	1.40
25th %tile	1.10
Median	0.98
75th %tile	0.83
95th %tile	0.65



# TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE

Total Plan Allocation vs. InvestorForce Public DB Gross



Allocation (Rank)

	Total Equity	US Equity	Gbl ex-US Equity	Emg Mkt Equity	Total FI	US Fixed Income	Alternatives	Private Equity	Real Estate	Real Estate: Private	Cash	
5th Percentile	68.9	48.1	25.9	10.3	40.9	37.7	37.6	22.8	14.4	14.8	4.8	--
25th Percentile	60.4	34.4	18.6	6.2	34.1	31.6	16.3	11.9	11.0	11.2	2.6	--
Median	52.6	28.8	14.0	4.5	27.5	22.4	11.2	7.1	8.2	8.2	1.3	--
75th Percentile	45.9	21.6	10.3	3.2	22.7	14.8	7.1	4.2	5.7	5.6	0.4	--
95th Percentile	32.0	8.1	5.5	1.7	15.6	5.0	2.2	0.9	1.2	3.1	0.0	--
# of Portfolios	210	145	178	98	209	133	133	96	141	108	192	--
● OK TEACHERS	56.9 (40)	36.9 (22)	19.9 (21)	1.7 (96)	22.8 (75)	22.8 (50)	13.4 (37)	13.4 (18)	4.1 (88)	4.1 (91)	2.9 (21)	--



# OK TEACHERS

Performance Attribution		
	Last 3 Mo.	1 Yr
Wtd. Actual Return	-9.7%	-5.1%
Wtd. Index Return *	-9.3%	-5.1%
<b>Excess Return</b>	<b>-0.4%</b>	<b>0.1%</b>
Selection Effect	-0.3%	-0.3%
Allocation Effect	0.1%	0.0%
Interaction Effect	-0.1%	0.3%
Returns by Asset Class		
OK TEACHERS	-9.6%	-5.0%
Total Equity Composite	-15.8%	-10.6%
U.S. Equity Comp	-16.6%	-7.8%
Domestic Passive Equity	-12.9%	-5.0%
International Equity Composite	-14.0%	-15.9%
International Small Cap Equity	-17.5%	-19.1%
Fixed Composite	-0.2%	-1.3%
Total Private Equity	3.5%	21.0%
Master Limited Partnerships	-18.4%	-17.8%
Total Core Real Estate	1.8%	7.7%
Other	0.6%	1.8%

\*Calculated from benchmark returns and weightings of each component.



# OKLAHOMA PERS

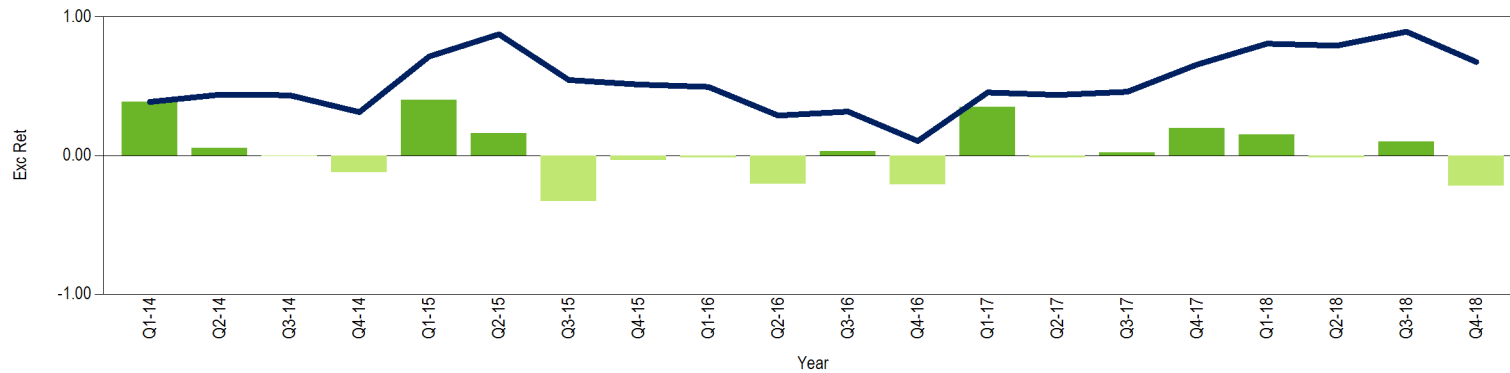




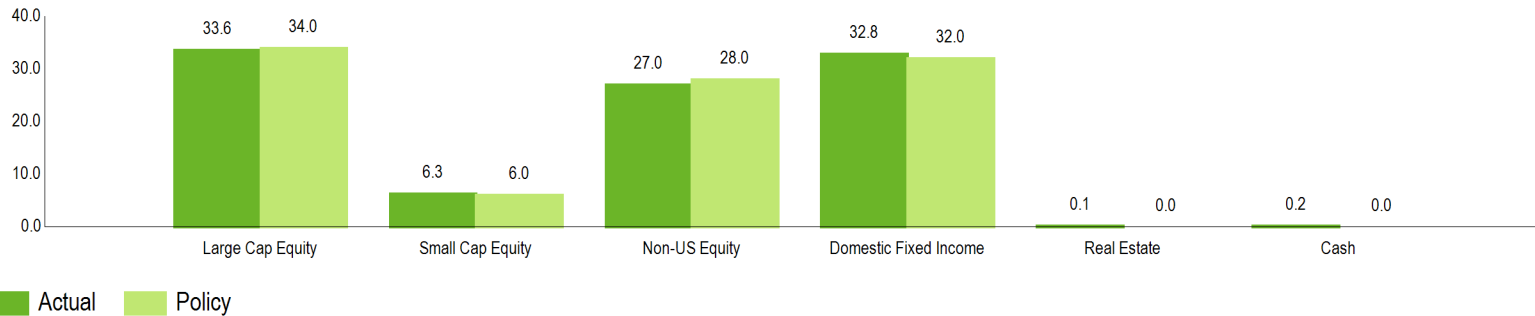
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK PERS</b>	<b>\$8,899,444,811</b>	<b>-9.2%</b>	<b>88</b>	<b>-6.5%</b>	<b>89</b>	<b>-6.5%</b>	<b>96</b>	<b>5.6%</b>	<b>67</b>	<b>4.7%</b>	<b>54</b>	<b>8.6%</b>	<b>38</b>
<i>PERS Allocation Index</i>		-9.0%	85	-6.4%	87	-6.5%	96	5.6%	69	4.5%	58	8.2%	55
<i>PERS Policy Index</i>		-8.7%	80	-6.1%	82	-6.1%	94	5.9%	58	4.7%	54	8.5%	45
<i>InvestorForce Public DB Gross Median</i>		-7.5%		-4.8%		-4.0%		6.0%		4.7%		8.3%	

## Quarterly and Cumulative Excess Performance



## Actual vs Target Allocation (%)

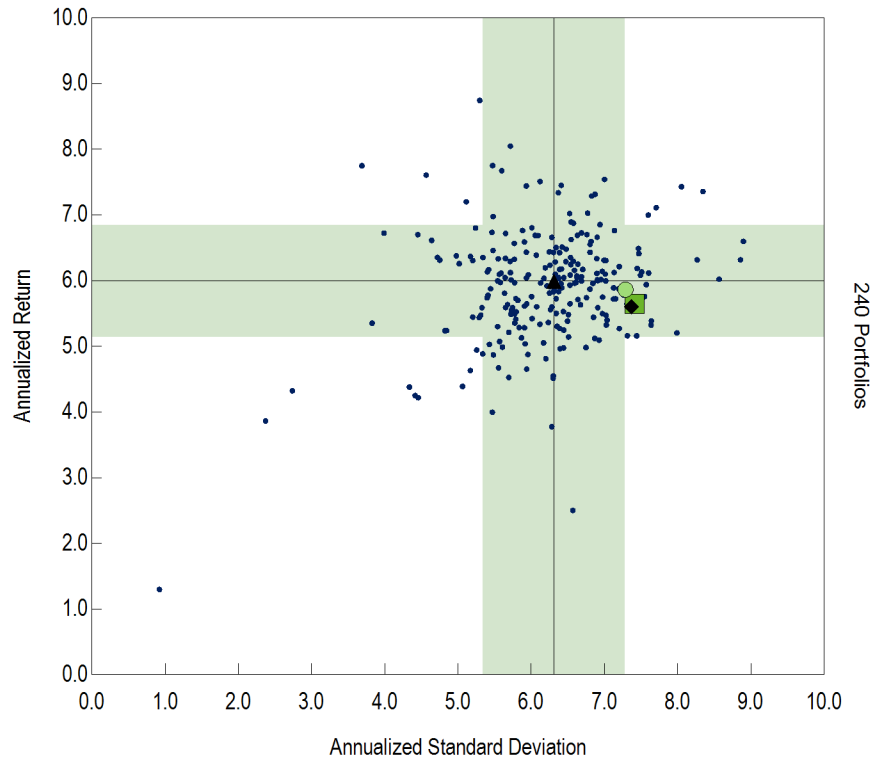


Returns are gross of manager fees.



# TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending December 31, 2018



- OK PERS
- ◆ PERS Allocation Index
- PERS Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

3 Years Ending December 31, 2018

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK PERS	5.64%	67	7.41%	92
PERS Allocation Index	5.60%	69	7.37%	92
PERS Policy Index	5.86%	58	7.29%	91

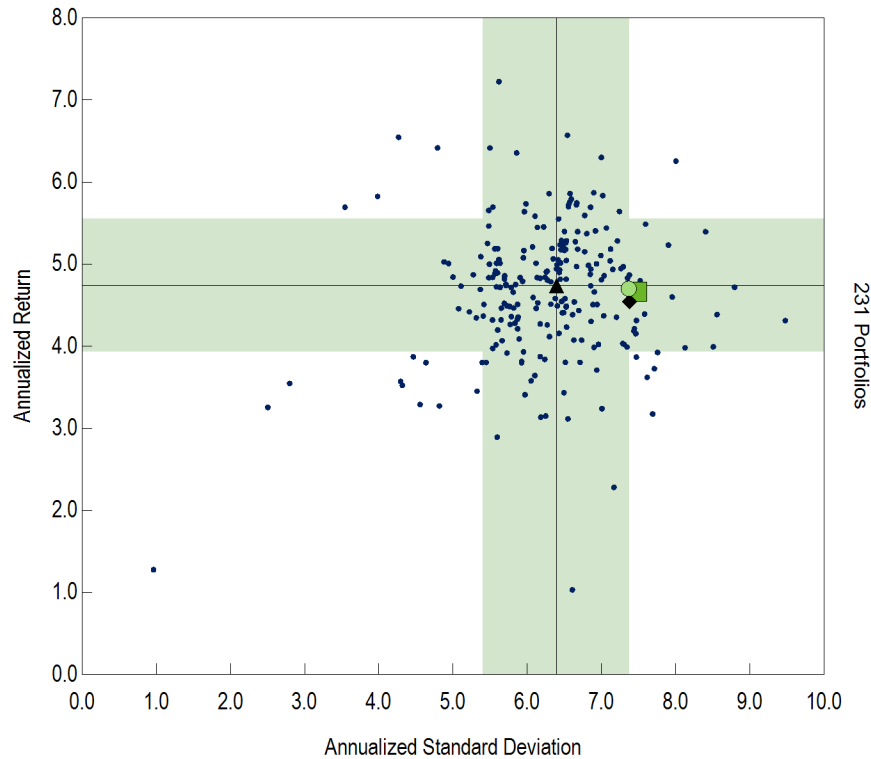
3 Years Ending December 31, 2018

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK PERS	0.62	91	0.78	89
PERS Allocation Index	0.62	91	0.77	91
PERS Policy Index	0.66	82	0.83	79



# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending December 31, 2018



- OK PERS
- ◆ PERS Allocation Index
- PERS Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

231 Portfolios

5 Years Ending December 31, 2018

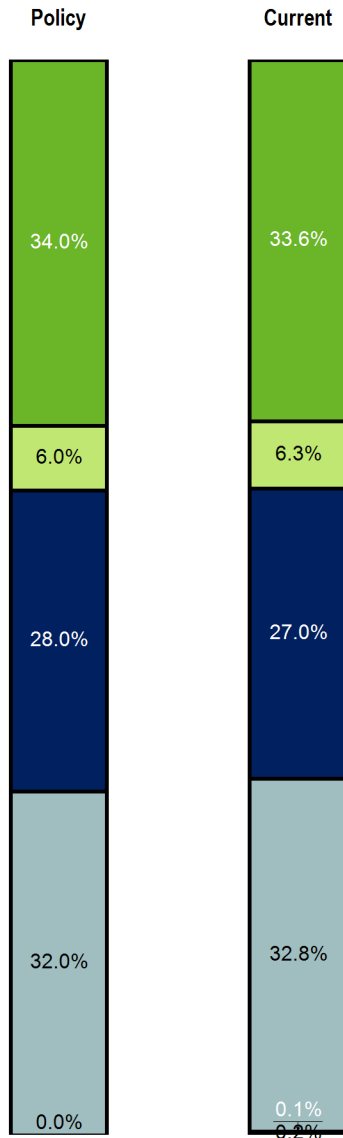
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK PERS	4.67%	54	7.48%	94
PERS Allocation Index	4.54%	58	7.38%	90
PERS Policy Index	4.70%	54	7.37%	90

5 Years Ending December 31, 2018

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK PERS	0.54	81	0.80	81
PERS Allocation Index	0.53	83	0.78	84
PERS Policy Index	0.55	79	0.83	76



# TOTAL FUND ASSET ALLOCATION VS. POLICY



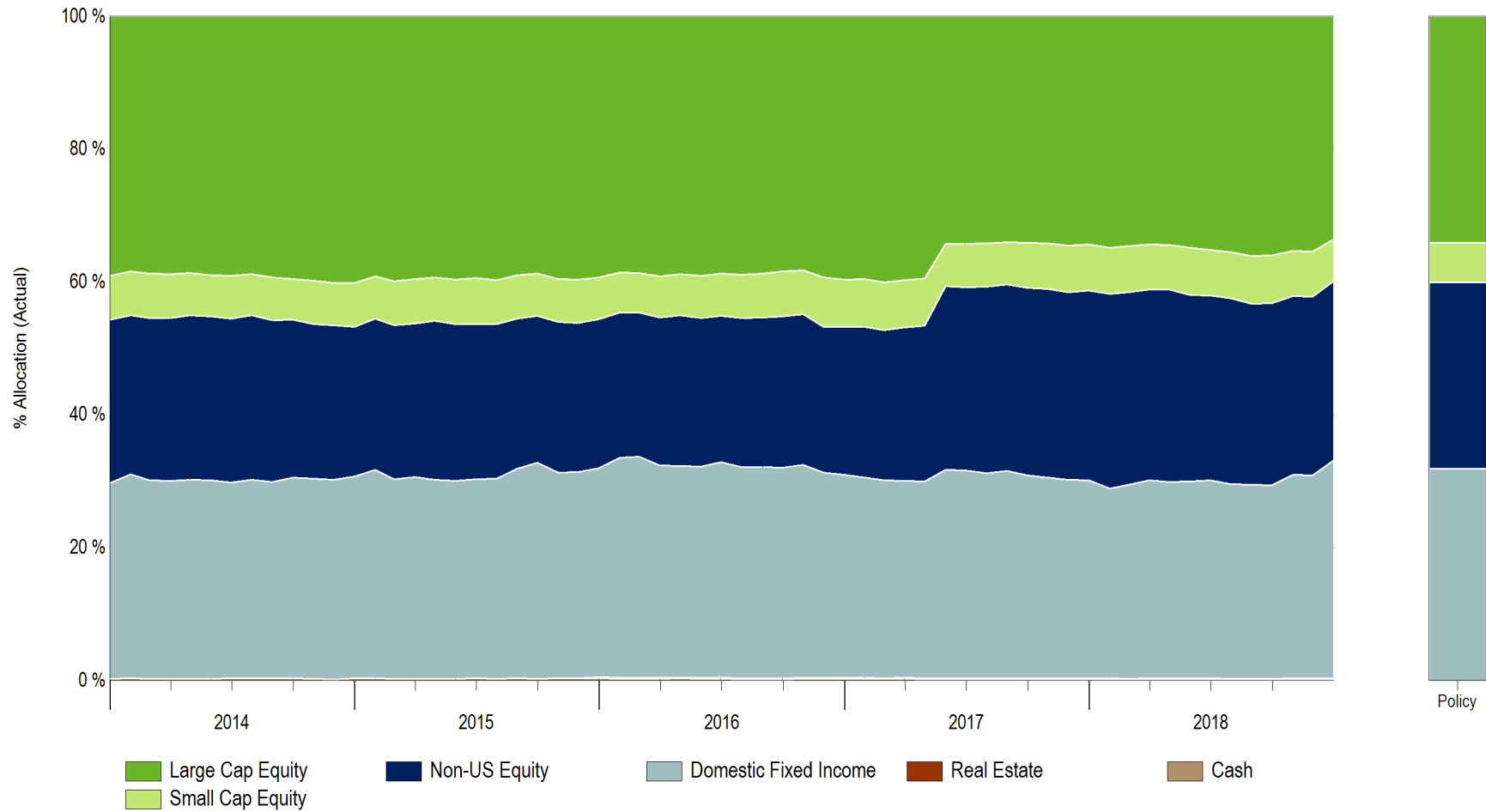
Asset Allocation vs. Target						
	Current	Policy	Current	Difference*	Policy Range	Within Range
Large Cap Equity	\$2,987,618,682	34.0%	33.6%	-0.4%	31.2% - 36.8%	Yes
Small Cap Equity	\$557,748,012	6.0%	6.3%	0.3%	3.2% - 8.8%	Yes
Non-US Equity	\$2,401,936,305	28.0%	27.0%	-1.0%	25.0% - 31.0%	Yes
Domestic Fixed Income	\$2,922,520,915	32.0%	32.8%	0.8%	27.5% - 36.5%	Yes
Real Estate	\$12,600,000	0.0%	0.1%	0.1%	0.0% - 5.0%	Yes
Cash	\$17,020,897	0.0%	0.2%	0.2%	0.0% - 5.0%	Yes
<b>Total</b>	<b>\$8,899,444,811</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation



# TOTAL FUND ASSET ALLOCATION HISTORY

Asset Allocation History



## Oklahoma PERS

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK PERS</b>	<b>8,899,444,811</b>	<b>100.0</b>	<b>-9.2</b>	<b>88</b>	<b>-6.5</b>	<b>89</b>	<b>-6.5</b>	<b>96</b>	<b>5.6</b>	<b>67</b>	<b>4.7</b>	<b>54</b>	<b>8.6</b>	<b>38</b>
<i>PERS Allocation Index</i>			<u>-9.0</u>	85	<u>-6.4</u>	87	<u>-6.5</u>	96	<u>5.6</u>	69	<u>4.5</u>	58	<u>8.2</u>	55
Over/Under			-0.2		-0.1		0.0		0.0		0.2		0.4	
<i>PERS Policy Index</i>			-8.7	80	-6.1	82	-6.1	94	5.9	58	4.7	54	8.5	45
<i>InvestorForce Public DB Gross Median</i>			-7.5		-4.8		-4.0		6.0		4.7		8.3	
<b>Domestic Equity Composite</b>	<b>3,545,366,694</b>	<b>39.8</b>	<b>-15.2</b>	<b>45</b>	<b>-9.4</b>	<b>43</b>	<b>-6.4</b>	<b>48</b>	<b>8.6</b>	<b>42</b>	<b>7.5</b>	<b>40</b>	<b>13.3</b>	<b>53</b>
<i>Domestic Equity Benchmark</i>			<u>-14.6</u>	39	<u>-8.7</u>	37	<u>-5.5</u>	42	<u>8.9</u>	39	<u>7.8</u>	37	<u>13.2</u>	56
Over/Under			-0.6		-0.7		-0.9		-0.3		-0.3		0.1	
<i>eV All US Equity Gross Median</i>			-15.8		-10.5		-6.8		8.1		6.7		13.4	
Aronson Johnson & Ortiz	266,579,217	3.0	-14.4	67	-10.4	75	-11.3	76	4.3	93	4.6	84	11.0	77
<i>Russell 1000 Value</i>			<u>-11.7</u>	30	<u>-6.7</u>	36	<u>-8.3</u>	49	<u>7.0</u>	59	<u>5.9</u>	60	<u>11.2</u>	73
Over/Under			-2.7		-3.7		-3.0		-2.7		-1.3		-0.2	
<i>eV US Large Cap Value Equity Gross Median</i>			-13.1		-8.1		-8.4		7.4		6.3		11.9	
Mellon	506,194,156	5.7	-13.6	49	-8.7	69	-6.0	65	8.1	64	7.6	66	13.0	47
<i>Russell 1000</i>			<u>-13.8</u>	55	<u>-7.4</u>	51	<u>-4.8</u>	45	<u>9.1</u>	40	<u>8.2</u>	44	<u>13.3</u>	38
Over/Under			0.2		-1.3		-1.2		-1.0		-0.6		-0.3	
State Street Enhanced Index	511,701,651	5.7	-13.5	49	-6.8	44	-5.1	50	8.8	45	8.6	31	13.3	37
<i>Russell 1000</i>			<u>-13.8</u>	55	<u>-7.4</u>	51	<u>-4.8</u>	45	<u>9.1</u>	40	<u>8.2</u>	44	<u>13.3</u>	38
Over/Under			0.3		0.6		-0.3		-0.3		0.4		0.0	
Blackrock Russell 1000	1,432,451,383	16.1	-13.8	55	-7.4	52	-4.8	45	9.1	39	8.2	44	--	--
<i>Russell 1000</i>			<u>-13.8</u>	55	<u>-7.4</u>	51	<u>-4.8</u>	45	<u>9.1</u>	40	<u>8.2</u>	44	<u>13.3</u>	38
Over/Under			0.0		0.0		0.0		0.0		0.0			
<i>eV US Large Cap Core Equity Gross Median</i>			-13.6		-7.4		-5.1		8.5		8.0		12.9	
UBS Global Asset Mgmt	184,064,946	2.1	-24.1	91	-16.8	78	-3.5	48	7.7	76	5.8	68	15.7	41
<i>Russell 2000 Growth</i>			<u>-21.7</u>	65	<u>-17.3</u>	84	<u>-9.3</u>	80	<u>7.2</u>	80	<u>5.1</u>	74	<u>13.5</u>	82
Over/Under			-2.4		0.5		5.8		0.5		0.7		2.2	
<i>eV US Small Cap Growth Equity Gross Median</i>			-20.8		-14.8		-3.8		9.7		6.7		15.2	

Domestic Equity Benchmark is 86.4% Russell 1000 and 13.6% Russell 2000.

Returns are gross of manager fees.



## Oklahoma PERS

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Barrow Hanley	177,264,844	2.0	-24.2	98	-20.9	87	-18.3	87	7.2	39	3.5	64	16.4	4
<i>Russell 2000 Value</i>			<u>-18.7</u>	45	<u>-17.4</u>	46	<u>-12.9</u>	39	<u>7.4</u>	36	<u>3.6</u>	61	<u>10.4</u>	94
Over/Under			-5.5		-3.5		-5.4		-0.2		-0.1		6.0	
DePrince Race & Zollo	196,418,222	2.2	-15.7	16	-11.8	10	-13.3	43	11.0	8	4.6	40	--	--
<i>Russell 2000 Value</i>			<u>-18.7</u>	45	<u>-17.4</u>	46	<u>-12.9</u>	39	<u>7.4</u>	36	<u>3.6</u>	61	<u>10.4</u>	94
Over/Under			3.0		5.6		-0.4		3.6		1.0			
<i>eV US Small Cap Value Equity Gross Median</i>			-19.0		-17.8		-14.0		6.5		4.1		12.9	
Westfield	270,692,275	3.0	-16.1	62	-9.2	66	-1.5	57	--	--	--	--	--	--
<i>Russell 1000 Growth</i>			<u>-15.9</u>	60	<u>-8.2</u>	47	<u>-1.5</u>	57	<u>11.1</u>	29	<u>10.4</u>	31	<u>15.3</u>	36
Over/Under			-0.2		-1.0		0.0							
<i>eV US Large Cap Growth Equity Gross Median</i>			-15.3		-8.3		-0.6		10.3		9.6		14.9	
<b>Domestic Fixed Income Composite</b>	<b>2,922,520,915</b>	<b>32.8</b>	<b>1.6</b>	<b>15</b>	<b>1.2</b>	<b>50</b>	<b>-0.2</b>	<b>66</b>	<b>2.4</b>	<b>56</b>	<b>3.1</b>	<b>41</b>	<b>4.1</b>	<b>54</b>
<i>BBgBarc US Aggregate TR</i>			<u>1.6</u>	14	<u>1.7</u>	22	<u>0.0</u>	61	<u>2.1</u>	67	<u>2.5</u>	61	<u>3.5</u>	68
Over/Under			0.0		-0.5		-0.2		0.3		0.6		0.6	
<i>eV All US Fixed Inc Gross Median</i>			0.7		1.2		0.6		2.6		2.8		4.3	
Blackrock	1,428,070,602	16.0	1.5	43	1.6	49	0.0	52	2.3	63	2.8	52	4.3	57
<i>BBgBarc US Aggregate TR</i>			<u>1.6</u>	20	<u>1.7</u>	38	<u>0.0</u>	54	<u>2.1</u>	84	<u>2.5</u>	84	<u>3.5</u>	92
Over/Under			-0.1		-0.1		0.0		0.2		0.3		0.8	
Met West	868,036,867	9.8	1.7	18	1.7	26	0.6	16	2.4	50	2.8	47	5.6	12
<i>BBgBarc US Aggregate TR</i>			<u>1.6</u>	20	<u>1.7</u>	38	<u>0.0</u>	54	<u>2.1</u>	84	<u>2.5</u>	84	<u>3.5</u>	92
Over/Under			0.1		0.0		0.6		0.3		0.3		2.1	
<i>eV US Core Fixed Inc Gross Median</i>			1.4		1.6		0.1		2.4		2.8		4.3	
Hoisington	320,757,102	3.6	4.3	5	0.4	28	-2.8	11	2.7	99	7.4	4	4.0	99
<i>BBgBarc US Treasury Long TR</i>			<u>4.2</u>	6	<u>1.2</u>	6	<u>-1.8</u>	6	<u>2.6</u>	99	<u>5.9</u>	23	<u>4.1</u>	99
Over/Under			0.1		-0.8		-1.0		0.1		1.5		-0.1	
<i>eV US Long Duration Fixed Inc Gross Median</i>			0.0		0.1		-5.2		4.6		5.5		7.3	
Blackrock TIPS	305,656,345	3.4	-0.4	99	-1.2	99	-1.1	99	2.3	22	1.9	87	--	--
<i>BBgBarc US TIPS TR</i>			<u>-0.4</u>	99	<u>-1.2</u>	99	<u>-1.3</u>	99	<u>2.1</u>	34	<u>1.7</u>	93	<u>3.6</u>	43
Over/Under			0.0		0.0		0.2		0.2		0.2			
<i>eV US Interm Duration Fixed Inc Gross Median</i>			1.4		1.8		0.9		2.0		2.2		3.5	

Returns are gross of manager fees.



## Oklahoma PERS

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>International Equity Composite</b>	<b>2,401,936,305</b>	<b>27.0</b>	<b>-11.5</b>	<b>23</b>	<b>-10.8</b>	<b>25</b>	<b>-13.7</b>	<b>34</b>	<b>4.6</b>	<b>45</b>	<b>1.4</b>	<b>62</b>	<b>6.7</b>	<b>81</b>
MSCI ACWI ex USA			-11.5	22	-10.8	25	-14.2	41	4.5	47	0.7	78	6.6	84
Over/Under			0.0		0.0		0.5		0.1		0.7		0.1	
eV All ACWI ex-US Equity Gross Median			-13.2		-12.7		-15.1		4.3		1.8		8.8	
Baillie Gifford	292,650,748	3.3	-15.7	63	-16.5	55	-16.9	78	3.7	59	2.1	61	--	--
MSCI ACWI ex USA Growth			-12.2	8	-12.4	14	-14.4	48	4.2	55	1.7	66	7.1	88
Over/Under			-3.5		-4.1		-2.5		-0.5		0.4			
eV ACWI ex-US All Cap Growth Eq Gross Median			-15.2		-16.0		-15.9		4.5		2.9		9.9	
Blackrock ACWI Ex US	1,275,354,305	14.3	-11.4	22	-10.8	24	-13.9	38	4.8	41	0.9	73	--	--
MSCI ACWI ex USA			-11.5	22	-10.8	25	-14.2	41	4.5	47	0.7	78	6.6	84
Over/Under			0.1		0.0		0.3		0.3		0.2			
eV All ACWI ex-US Equity Gross Median			-13.2		-12.7		-15.1		4.3		1.8		8.8	
Blackrock ACWI Ex US Growth	283,163,200	3.2	-12.0	4	-11.3	7	-13.4	47	4.7	48	1.7	66	--	--
MSCI ACWI ex USA Growth			-12.2	8	-12.4	14	-14.4	48	4.2	55	1.7	66	7.1	88
Over/Under			0.2		1.1		1.0		0.5		0.0			
eV ACWI ex-US All Cap Growth Eq Gross Median			-15.2		-16.0		-15.9		4.5		2.9		9.9	
Mondrian	550,768,052	6.2	-9.0	4	-7.3	4	-11.5	14	4.5	46	1.5	60	6.2	86
MSCI ACWI ex USA Value			-10.7	14	-9.2	8	-14.0	38	4.7	41	-0.4	92	6.0	92
Over/Under			1.7		1.9		2.5		-0.2		1.9		0.2	
eV All ACWI ex-US Equity Gross Median			-13.2		-12.7		-15.1		4.3		1.8		8.8	
<b>Real Estate</b>	<b>12,600,000</b>	<b>0.1</b>	<b>1.7</b>	<b>--</b>	<b>-1.4</b>	<b>--</b>	<b>-2.9</b>	<b>--</b>	<b>1.2</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF ODCE			1.8	--	3.9	--	8.3	--	8.2	--	10.4	--	7.0	--
Over/Under			-0.1		-5.3		-11.2		-7.0					
Grand Centre	12,600,000	0.1	1.7	--	-1.4	--	-2.9	--	1.2	--	--	--	--	--
NCREIF ODCE			1.8	--	3.9	--	8.3	--	8.2	--	10.4	--	7.0	--
Over/Under			-0.1		-5.3		-11.2		-7.0					

New Policy Index effective as of November 1, 2013 consist of 38% Large Cap Equity, 6% Small Cap Equity, 24% International Equity, and 32% Domestic Fixed Income.

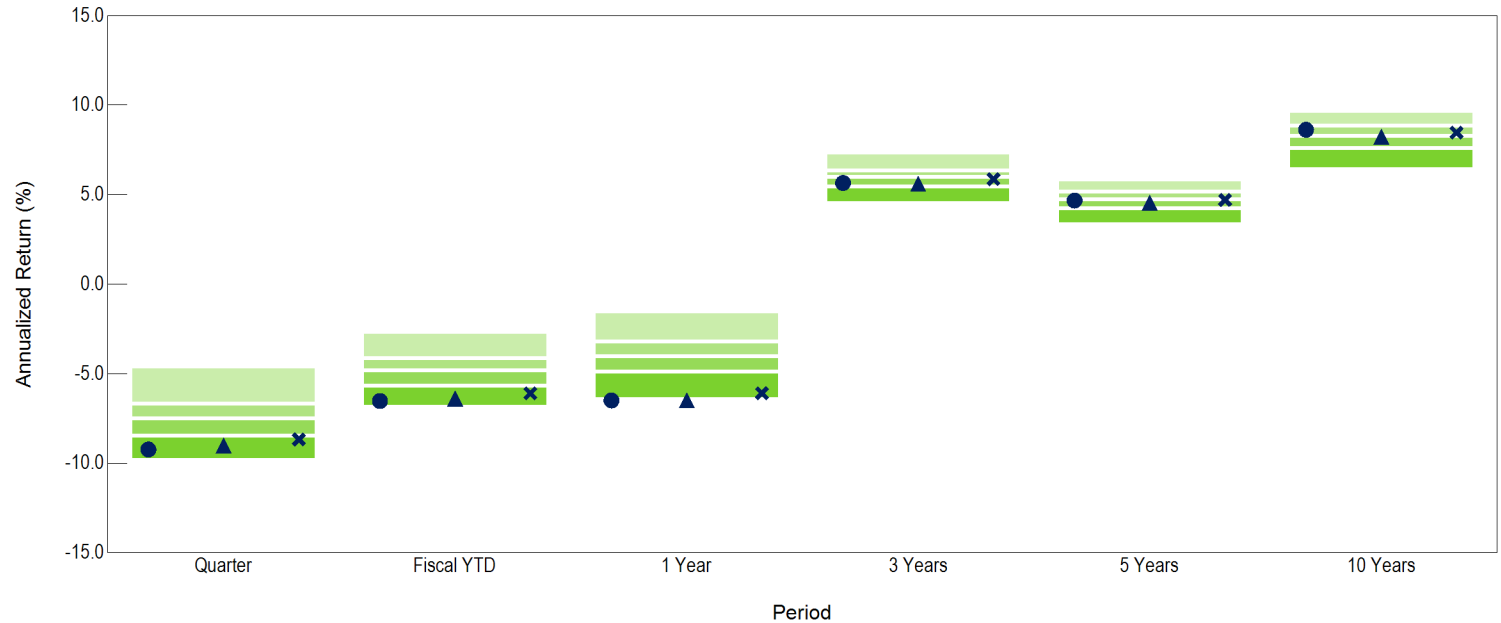
Returns are gross of manager fees.





# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK PERS vs. InvestorForce Public DB Gross

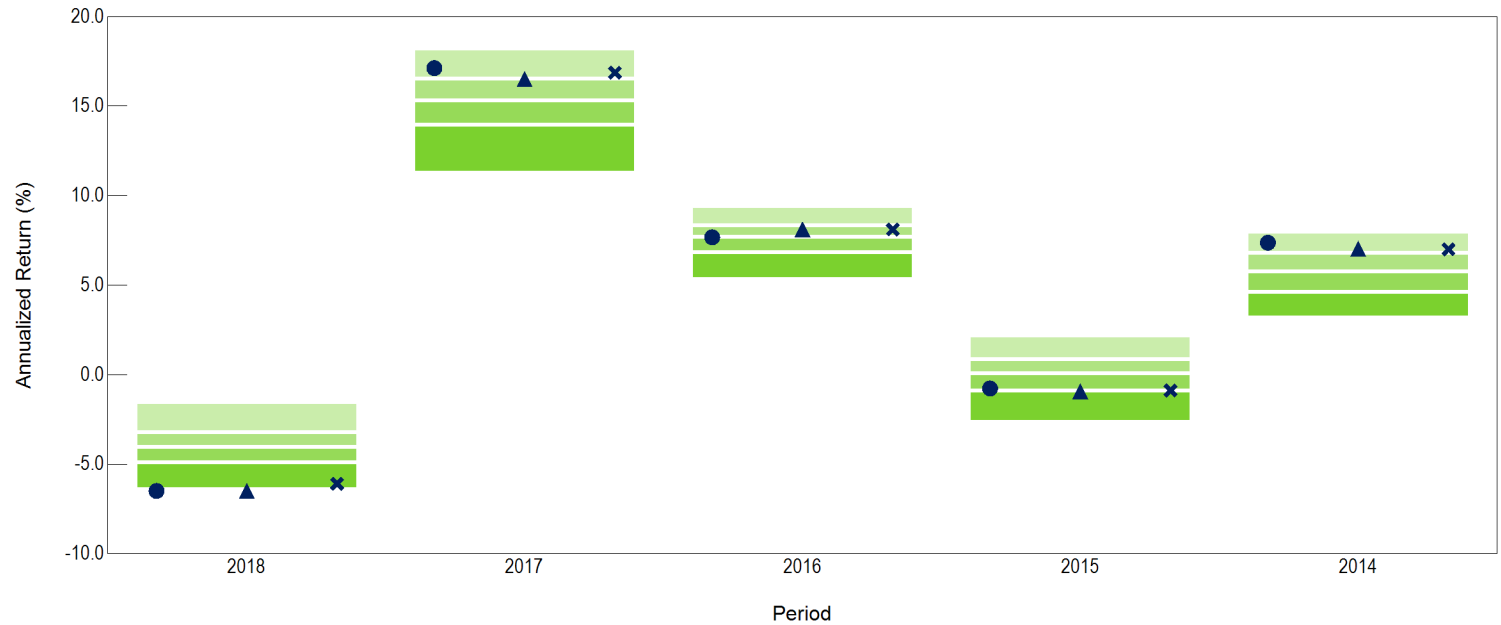


	Return (Rank)											
5th Percentile	-4.6	-2.7	-1.5	7.3	5.8	9.7						
25th Percentile	-6.7	-4.1	-3.2	6.4	5.2	8.9						
Median	-7.5	-4.8	-4.0	6.0	4.7	8.3						
75th Percentile	-8.4	-5.7	-4.9	5.5	4.2	7.6						
95th Percentile	-9.8	-6.8	-6.4	4.5	3.4	6.4						
# of Portfolios	251	251	251	240	231	197						
● OK PERS	-9.2	(88)	-6.5	(89)	-6.5	(96)	5.6	(67)	4.7	(54)	8.6	(38)
▲ PERS Allocation Index	-9.0	(85)	-6.4	(87)	-6.5	(96)	5.6	(69)	4.5	(58)	8.2	(55)
× PERS Policy Index	-8.7	(80)	-6.1	(82)	-6.1	(94)	5.9	(58)	4.7	(54)	8.5	(45)



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK PERS vs. InvestorForce Public DB Gross



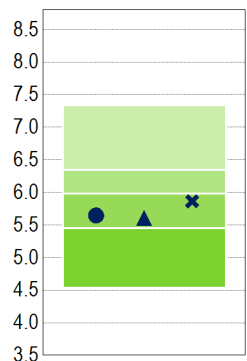
	Return (Rank)									
5th Percentile	-1.5		18.2		9.4		2.2		8.0	
25th Percentile	-3.2		16.5		8.4		0.9		6.8	
Median	-4.0		15.3		7.7		0.1		5.8	
75th Percentile	-4.9		14.0		6.9		-0.9		4.6	
95th Percentile	-6.4		11.3		5.3		-2.6		3.2	
# of Portfolios	251		304		305		316		248	
● OK PERS	-6.5	(96)	17.1	(17)	7.7	(52)	-0.8	(73)	7.4	(15)
▲ PERS Allocation Index	-6.5	(96)	16.5	(26)	8.1	(34)	-0.9	(77)	7.0	(21)
× PERS Policy Index	-6.1	(94)	16.9	(21)	8.1	(34)	-0.9	(76)	7.0	(21)



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

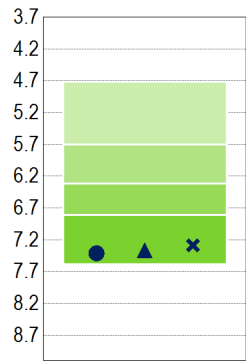
## OK PERS vs. InvestorForce Public DB Gross 3 Years

Anlzd Return



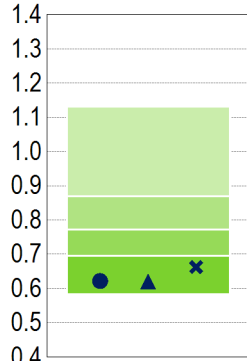
● OK PERS	
Value	5.64
Rank	67
▲ PERS Allocation Index	
Value	5.60
Rank	69
× PERS Policy Index	
Value	5.86
Rank	58
Universe	
5th %tile	7.34
25th %tile	6.36
Median	5.99
75th %tile	5.46
95th %tile	4.55

Anlzd Standard Deviation



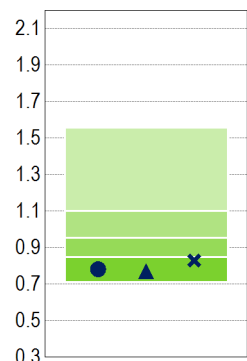
● OK PERS	
Value	7.41
Rank	92
▲ PERS Allocation Index	
Value	7.37
Rank	92
× PERS Policy Index	
Value	7.29
Rank	91
Universe	
5th %tile	4.72
25th %tile	5.69
Median	6.31
75th %tile	6.80
95th %tile	7.57

Sharpe Ratio



● OK PERS	
Value	0.62
Rank	91
▲ PERS Allocation Index	
Value	0.62
Rank	91
× PERS Policy Index	
Value	0.66
Rank	82
Universe	
5th %tile	1.13
25th %tile	0.87
Median	0.77
75th %tile	0.70
95th %tile	0.58

Sortino Ratio



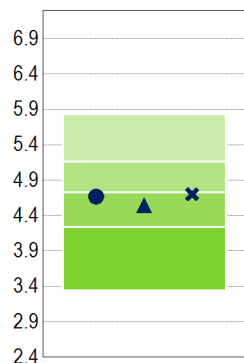
● OK PERS	
Value	0.78
Rank	89
▲ PERS Allocation Index	
Value	0.77
Rank	91
× PERS Policy Index	
Value	0.83
Rank	79
Universe	
5th %tile	1.56
25th %tile	1.10
Median	0.96
75th %tile	0.85
95th %tile	0.72



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

## OK PERS vs. InvestorForce Public DB Gross 5 Years

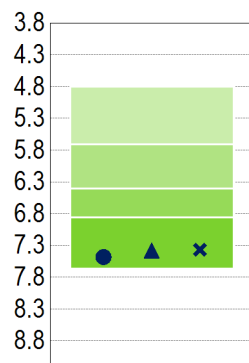
Anlzd Return



● OK PERS	
Value	4.67
Rank	54
▲ PERS Allocation Index	
Value	4.54
Rank	58
× PERS Policy Index	
Value	4.70
Rank	54

Universe	
5th %tile	5.83
25th %tile	5.17
Median	4.74
75th %tile	4.25
95th %tile	3.35

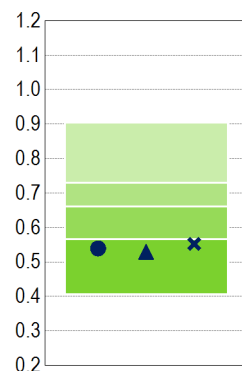
Anlzd Standard Deviation



● OK PERS	
Value	7.48
Rank	94
▲ PERS Allocation Index	
Value	7.38
Rank	90
× PERS Policy Index	
Value	7.37
Rank	90

Universe	
5th %tile	4.80
25th %tile	5.70
Median	6.39
75th %tile	6.85
95th %tile	7.65

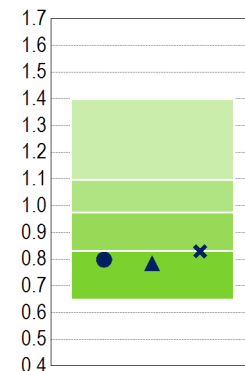
Sharpe Ratio



● OK PERS	
Value	0.54
Rank	81
▲ PERS Allocation Index	
Value	0.53
Rank	83
× PERS Policy Index	
Value	0.55
Rank	79

Universe	
5th %tile	0.90
25th %tile	0.73
Median	0.66
75th %tile	0.57
95th %tile	0.41

Sortino Ratio



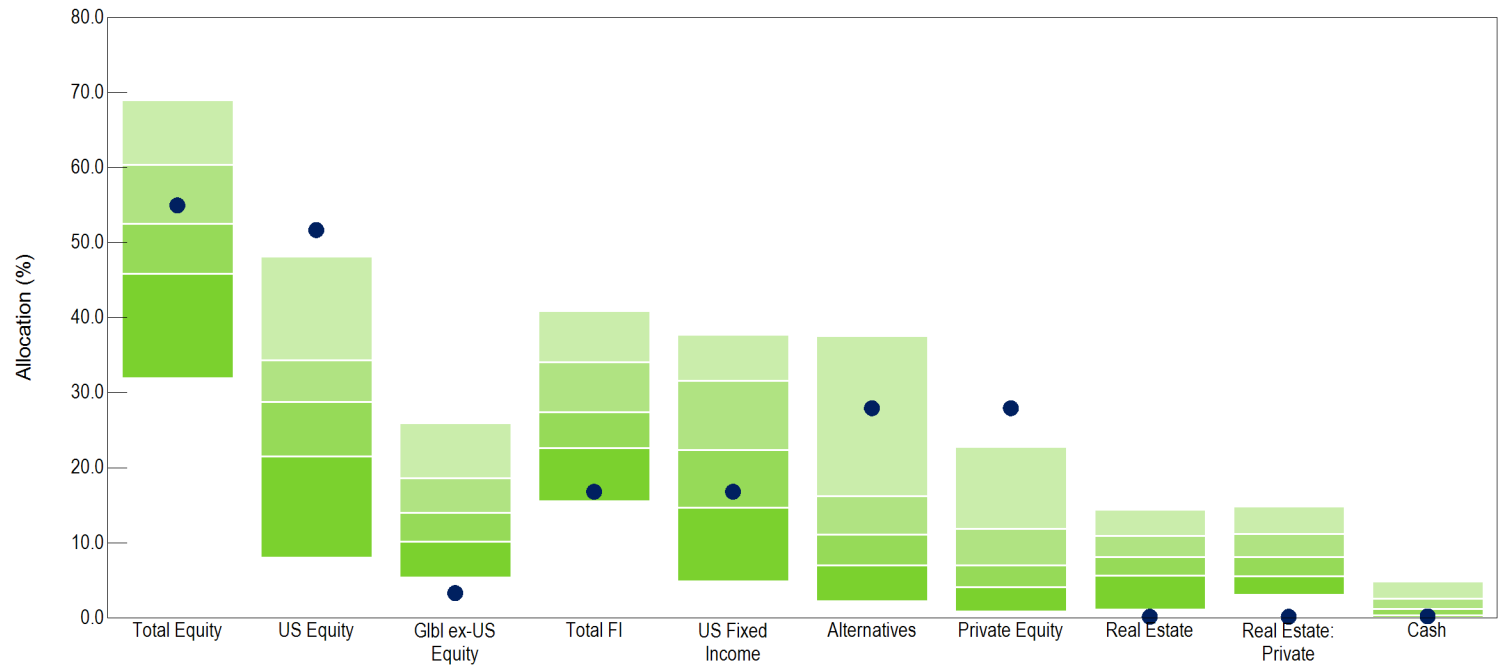
● OK PERS	
Value	0.80
Rank	81
▲ PERS Allocation Index	
Value	0.78
Rank	84
× PERS Policy Index	
Value	0.83
Rank	76

Universe	
5th %tile	1.40
25th %tile	1.10
Median	0.98
75th %tile	0.83
95th %tile	0.65



# TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE

Total Plan Allocation vs. InvestorForce Public DB Gross



	Allocation (Rank)																			
5th Percentile	68.9	48.1	25.9	40.9	37.7	37.6	22.8	14.4	14.8	4.8	-	-	-	-	-	-	-	-	-	-
25th Percentile	60.4	34.4	18.6	34.1	31.6	16.3	11.9	11.0	11.2	2.6	-	-	-	-	-	-	-	-	-	-
Median	52.6	28.8	14.0	27.5	22.4	11.2	7.1	8.2	8.2	1.3	-	-	-	-	-	-	-	-	-	-
75th Percentile	45.9	21.6	10.3	22.7	14.8	7.1	4.2	5.7	5.6	0.4	-	-	-	-	-	-	-	-	-	-
95th Percentile	32.0	8.1	5.5	15.6	5.0	2.2	0.9	1.2	3.1	0.0	-	-	-	-	-	-	-	-	-	-
# of Portfolios	210	145	178	209	133	133	96	141	108	192	-	-	-	-	-	-	-	-	-	-
● OK PERS	55.0	(45)	51.7	(5)	3.3	(99)	16.8	(93)	16.8	(72)	27.9	(8)	27.9	(4)	0.1	(99)	0.1	(99)	0.2	(86)



# TOTAL FUND ATTRIBUTION ANALYSIS

Performance Attribution		
	Last 3 Mo.	1 Yr
Wtd. Actual Return	-9.3%	-6.5%
Wtd. Index Return *	-8.7%	-6.1%
<b>Excess Return</b>	<b>-0.6%</b>	<b>-0.4%</b>
Selection Effect	-0.2%	-0.2%
Allocation Effect	0.0%	0.0%
Interaction Effect	-0.3%	-0.2%
Asset Class Returns		
OK PERS	-9.2%	-6.5%
Domestic Equity Composite	-15.2%	-6.4%
Domestic Fixed Income Composite	1.6%	-0.2%
International Equity Composite	-11.5%	-13.7%
Cash Composite	3.0%	7.5%
Z TERMINATED - R/E Composite		
Real Estate	1.7%	-2.9%

\*Calculated from benchmark returns and weightings of each component.

Z TERMINATED represents Composite that fully liquidated.



# OKLAHOMA FIREFIGHTERS

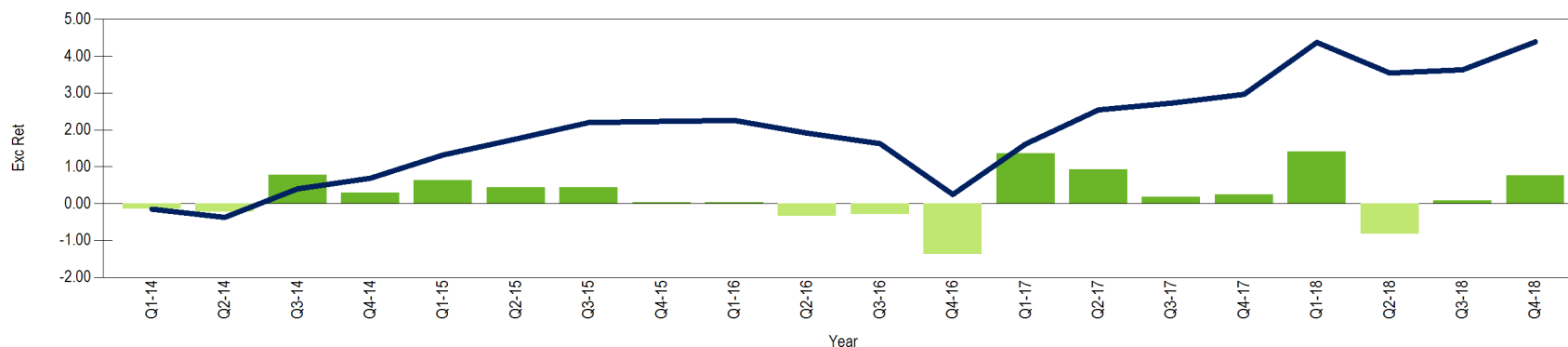


# Oklahoma Firefighters

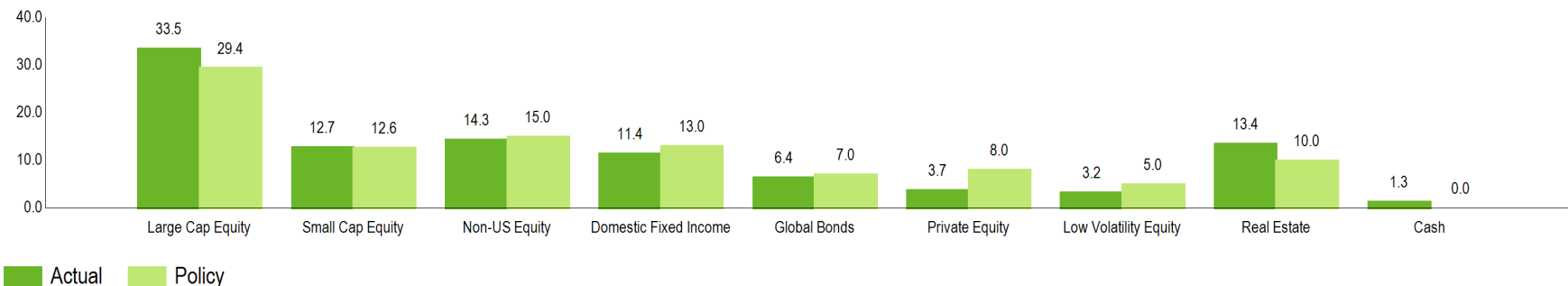
## TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK FIREFIGHTERS</b>	<b>\$2,519,328,822</b>	<b>-8.8%</b>	<b>81</b>	<b>-5.2%</b>	<b>65</b>	<b>-2.4%</b>	<b>11</b>	<b>7.5%</b>	<b>3</b>	<b>6.3%</b>	<b>3</b>	<b>9.1%</b>	<b>15</b>
<i>FIREFIGHTERS Allocation Index</i>		-9.5%	92	-6.1%	81	-3.8%	46	6.8%	11	5.4%	17	9.2%	14
<i>FIREFIGHTERS Policy Index</i>		-8.2%	69	-4.5%	39	-3.4%	31	6.9%	9	6.2%	4	9.8%	3
<i>InvestorForce Public DB Gross Median</i>		-7.5%		-4.8%		-4.0%		6.0%		4.7%		8.3%	

Quarterly and Cumulative Excess Performance



Actual vs Target Allocation (%)



Returns are gross of manager fees.

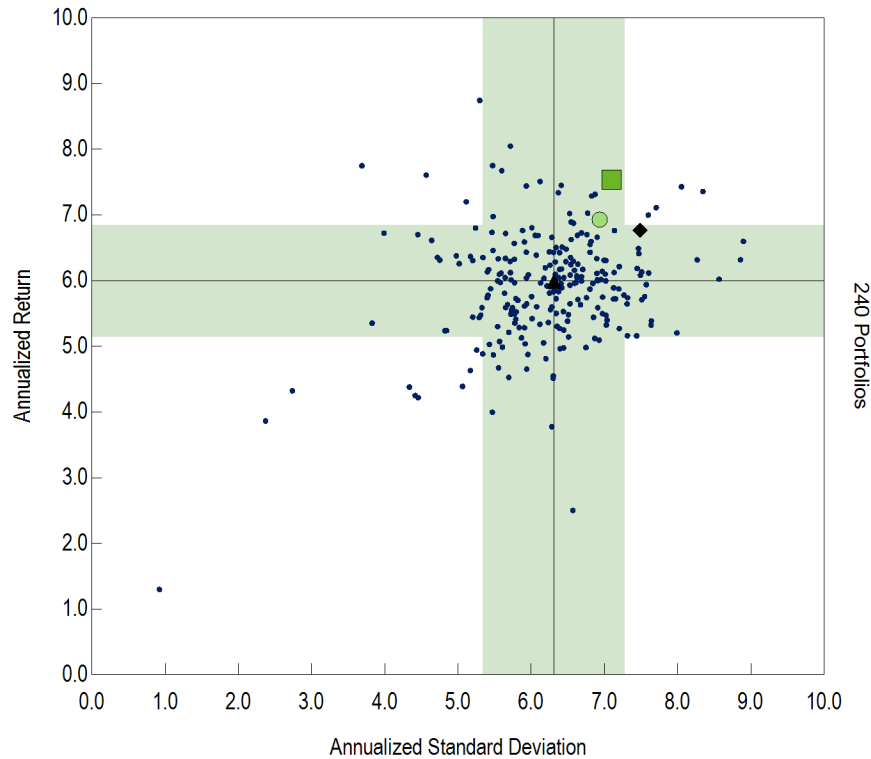




# Oklahoma Firefighters

## TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending December 31, 2018



- OK FIREFIGHTERS
- ◆ FIREFIGHTERS Allocation Index
- FIREFIGHTERS Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

3 Years Ending December 31, 2018

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK FIREFIGHTERS	7.54%	3	7.10%	87
FIREFIGHTERS Allocation Index	6.77%	11	7.48%	94
FIREFIGHTERS Policy Index	6.93%	9	6.94%	82

3 Years Ending December 31, 2018

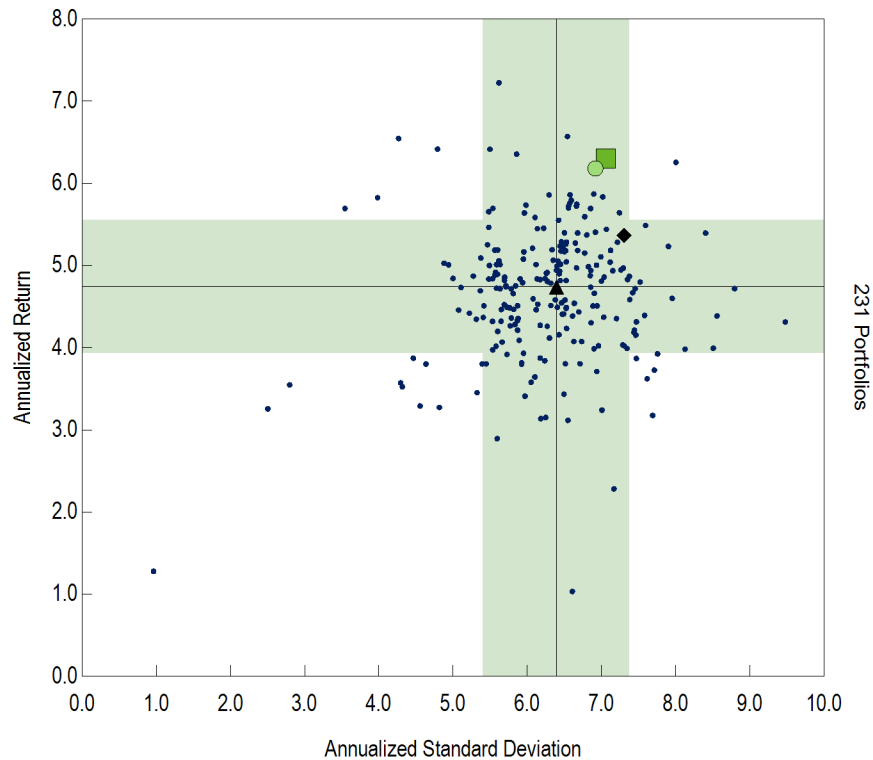
	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK FIREFIGHTERS	0.92	19	1.04	36
FIREFIGHTERS Allocation Index	0.77	54	0.90	64
FIREFIGHTERS Policy Index	0.85	30	1.09	28



# Oklahoma Firefighters

## TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending December 31, 2018



- OK FIREFIGHTERS
- ◆ FIREFIGHTERS Allocation Index
- FIREFIGHTERS Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

5 Years Ending December 31, 2018

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK FIREFIGHTERS	6.30%	3	7.06%	84
FIREFIGHTERS Allocation Index	5.37%	17	7.31%	89
FIREFIGHTERS Policy Index	6.18%	4	6.92%	79

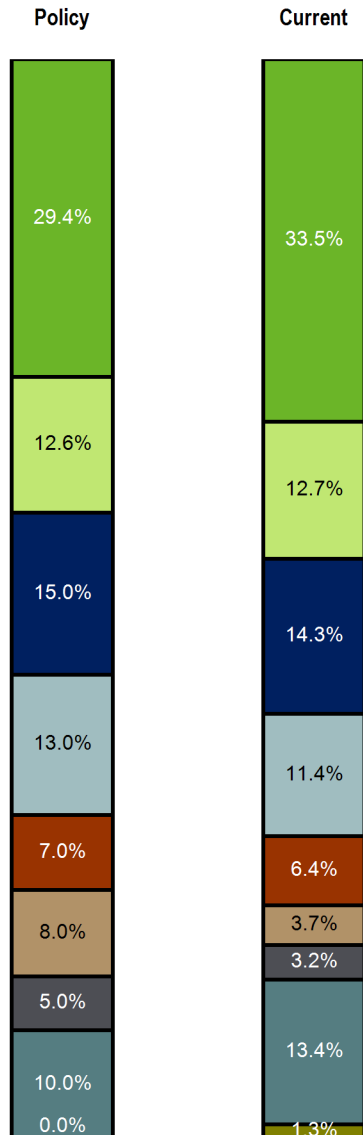
5 Years Ending December 31, 2018

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK FIREFIGHTERS	0.80	12	1.12	19
FIREFIGHTERS Allocation Index	0.65	54	0.88	68
FIREFIGHTERS Policy Index	0.80	12	1.17	15



# Oklahoma Firefighters

## TOTAL PLAN ASSET ALLOCATION VS. POLICY



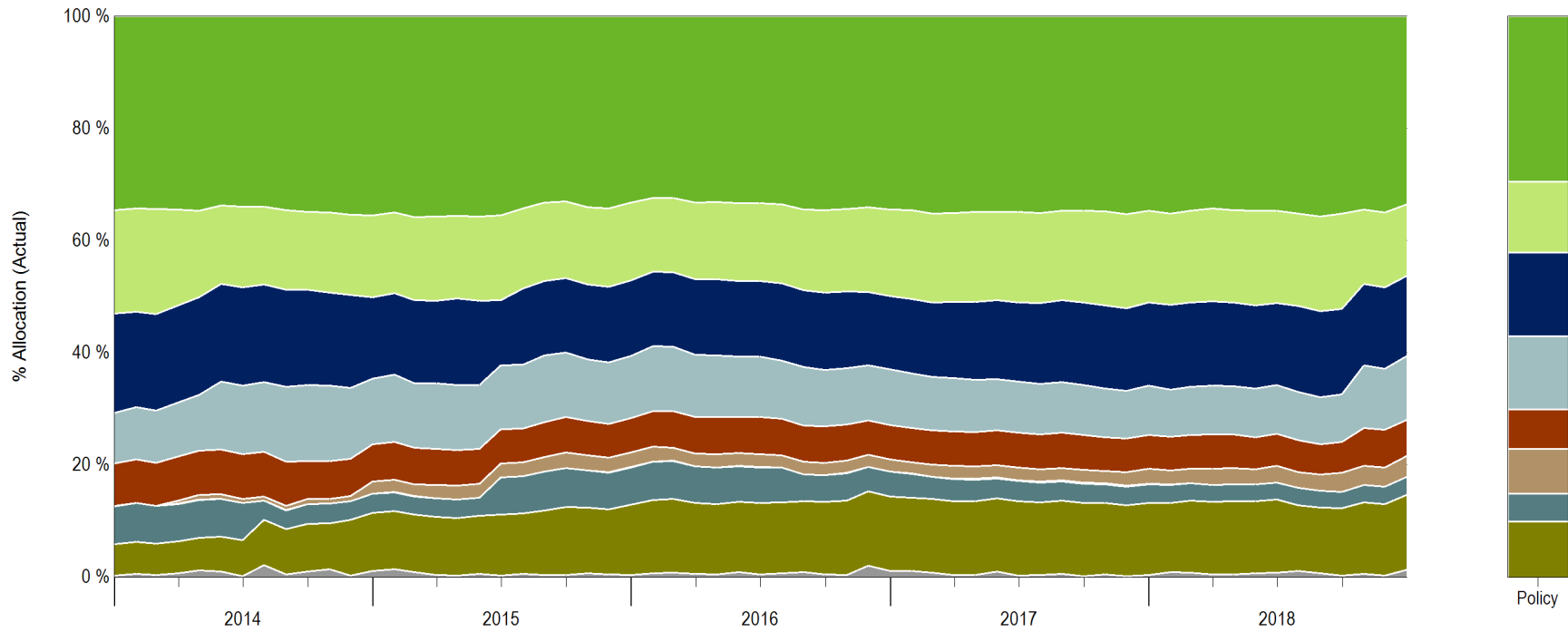
Asset Allocation vs. Target						
	Current	Policy	Current Difference*	Policy Range	Within Range	
Large Cap Equity	\$844,806,465	29.4%	33.5%	4.1%	24.4% - 34.4%	Yes
Small Cap Equity	\$320,983,810	12.6%	12.7%	0.1%	7.6% - 17.6%	Yes
Non-US Equity	\$361,365,041	15.0%	14.3%	-0.7%	10.0% - 20.0%	Yes
Domestic Fixed Income	\$286,861,364	13.0%	11.4%	-1.6%	0.0% - 28.0%	Yes
Global Bonds	\$161,535,628	7.0%	6.4%	-0.6%	2.0% - 12.0%	Yes
Private Equity	\$92,646,356	8.0%	3.7%	-4.3%	0.0% - 13.0%	Yes
Low Volatility Equity	\$80,547,900	5.0%	3.2%	-1.8%	0.0% - 10.0%	Yes
Real Estate	\$338,763,478	10.0%	13.4%	3.4%	5.0% - 15.0%	Yes
Cash	\$31,818,781	0.0%	1.3%	1.3%	0.0% - 5.0%	Yes
<b>Total</b>	<b>\$2,519,328,822</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation



# TOTAL PLAN ASSET ALLOCATION HISTORY

Asset Allocation History



- Large Cap Equity
- Non-US Equity
- Global Bonds
- Long/Short Equity
- Real Estate
- Small Cap Equity
- Domestic Fixed Income
- Private Equity
- Low Volatility Equity
- Cash



## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK FIREFIGHTERS</b>	<b>2,519,328,822</b>	<b>100.0</b>	<b>-8.8</b>	<b>80</b>	<b>-5.2</b>	<b>61</b>	<b>-2.4</b>	<b>13</b>	<b>7.5</b>	<b>3</b>	<b>6.3</b>	<b>3</b>	<b>9.1</b>	<b>18</b>
<i>FIREFIGHTERS Allocation Index</i>			<u>-9.5</u>	92	<u>-6.1</u>	82	<u>-3.9</u>	47	<u>6.8</u>	13	<u>5.4</u>	19	<u>9.2</u>	16
Over/Under			0.7		0.9		1.5		0.7		0.9		-0.1	
<i>FIREFIGHTERS Policy Index</i>			-8.2	68	-4.5	37	-3.4	32	6.9	11	6.2	4	9.8	5
<i>InvestorForce Public DB Gross Median</i>			-7.7		-4.8		-4.0		6.0		4.8		8.4	
<b>Domestic Equity Composite</b>	<b>1,165,790,274</b>	<b>46.3</b>	<b>-14.4</b>	<b>37</b>	<b>-8.6</b>	<b>37</b>	<b>-4.6</b>	<b>34</b>	<b>9.1</b>	<b>35</b>	<b>7.7</b>	<b>39</b>	<b>12.4</b>	<b>72</b>
<i>Russell 3000</i>			<u>-14.3</u>	36	<u>-8.2</u>	34	<u>-5.2</u>	40	<u>9.0</u>	38	<u>7.9</u>	34	<u>13.2</u>	55
Over/Under			-0.1		-0.4		0.6		0.1		-0.2		-0.8	
<i>eV All US Equity Gross Median</i>			-15.8		-10.5		-6.8		8.1		6.8		13.3	
<b>Large Cap Equity Composite</b>	<b>844,806,465</b>	<b>33.5</b>	<b>-14.1</b>	<b>33</b>	<b>-8.2</b>	<b>34</b>	<b>-5.7</b>	<b>43</b>	<b>8.4</b>	<b>46</b>	<b>7.9</b>	<b>35</b>	<b>12.8</b>	<b>65</b>
<i>Russell 1000</i>			<u>-13.8</u>	30	<u>-7.4</u>	26	<u>-4.8</u>	36	<u>9.1</u>	36	<u>8.2</u>	29	<u>13.3</u>	52
Over/Under			-0.3		-0.8		-0.9		-0.7		-0.3		-0.5	
<i>eV All US Equity Gross Median</i>			-15.8		-10.5		-6.8		8.1		6.8		13.3	
Aronson	81,204,045	3.2	-14.8	75	-10.6	77	-11.4	78	4.3	93	4.7	83	10.9	79
<i>Russell 1000 Value</i>			<u>-11.7</u>	30	<u>-6.7</u>	36	<u>-8.3</u>	50	<u>7.0</u>	59	<u>5.9</u>	60	<u>11.2</u>	74
Over/Under			-3.1		-3.9		-3.1		-2.7		-1.2		-0.3	
SSgA Equity Index	176,823,805	7.0	-13.5	49	-6.8	44	-4.4	40	9.3	36	8.5	32	13.2	39
<i>S&amp;P 500</i>			<u>-13.5</u>	49	<u>-6.9</u>	44	<u>-4.4</u>	40	<u>9.3</u>	37	<u>8.5</u>	33	<u>13.1</u>	41
Over/Under			0.0		0.1		0.0		0.0		0.0		0.1	
SSgA EQ Wtd S&P	171,735,616	6.8	-14.1	61	-9.4	80	-7.8	82	8.1	64	7.1	77	15.1	4
<i>S&amp;P 500</i>			<u>-13.5</u>	49	<u>-6.9</u>	44	<u>-4.4</u>	40	<u>9.3</u>	37	<u>8.5</u>	33	<u>13.1</u>	41
Over/Under			-0.6		-2.5		-3.4		-1.2		-1.4		2.0	
Intech	167,977,661	6.7	-15.2	76	-9.5	80	-7.3	78	7.5	76	8.0	50	13.0	45
<i>S&amp;P 500</i>			<u>-13.5</u>	49	<u>-6.9</u>	44	<u>-4.4</u>	40	<u>9.3</u>	37	<u>8.5</u>	33	<u>13.1</u>	41
Over/Under			-1.7		-2.6		-2.9		-1.8		-0.5		-0.1	
<i>eV US Large Cap Core Equity Gross Median</i>			-13.6		-7.3		-5.1		8.6		8.0		12.9	

Returns are gross of manager fees.



## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Fred Alger Management	159,572,324	6.3	-15.2	49	-8.7	58	0.6	36	10.6	42	10.8	27	--	--
<i>Russell 1000 Growth</i>			<u>-15.9</u>	60	<u>-8.2</u>	46	<u>-1.5</u>	57	<u>11.1</u>	29	<u>10.4</u>	32	<u>15.3</u>	36
Over/Under			0.7		-0.5		2.1		-0.5		0.4			
<i>eV US Large Cap Growth Equity Gross Median</i>			-15.3		-8.4		-0.6		10.3		9.6		14.9	
Beutel Goodman Company	87,493,013	3.5	-10.0	--	-2.8	--	-7.6	--	--	--	--	--	--	--
<i>Russell 1000 Value</i>			<u>-11.7</u>	--	<u>-6.7</u>	--	<u>-8.3</u>	--	<u>7.0</u>	--	<u>5.9</u>	--	<u>11.2</u>	--
Over/Under			1.7		3.9		0.7							
<b>Small Cap Equity Composite</b>	<b>288,702,490</b>	<b>11.5</b>	<b>-16.3</b>	<b>12</b>	<b>-10.7</b>	<b>9</b>	<b>-1.7</b>	<b>14</b>	<b>11.0</b>	<b>17</b>	<b>7.3</b>	<b>18</b>	<b>14.0</b>	<b>45</b>
<i>Russell 2000</i>			<u>-20.2</u>	58	<u>-17.3</u>	61	<u>-11.0</u>	52	<u>7.4</u>	54	<u>4.4</u>	62	<u>12.0</u>	84
Over/Under			3.9		6.6		9.3		3.6		2.9		2.0	
<i>eV US Small Cap Equity Gross Median</i>			-19.8		-16.3		-10.8		7.6		5.0		13.6	
Earnest Partner	71,872,804	2.9	-16.4	19	-13.3	15	-13.6	47	9.0	18	6.6	7	13.3	42
<i>Russell 2000 Value</i>			<u>-18.7</u>	45	<u>-17.4</u>	46	<u>-12.9</u>	39	<u>7.4</u>	36	<u>3.6</u>	63	<u>10.4</u>	94
Over/Under			2.3		4.1		-0.7		1.6		3.0		2.9	
River Road	70,461,291	2.8	-15.4	14	-9.7	3	-5.7	5	10.9	8	6.6	7	11.9	71
<i>Russell 2000 Value</i>			<u>-18.7</u>	45	<u>-17.4</u>	46	<u>-12.9</u>	39	<u>7.4</u>	36	<u>3.6</u>	63	<u>10.4</u>	94
Over/Under			3.3		7.7		7.2		3.5		3.0		1.5	
<i>eV US Small Cap Value Equity Gross Median</i>			-19.0		-17.7		-14.0		6.5		4.1		12.9	
Lord Abbet	68,631,232	2.7	-23.8	88	-14.3	44	6.5	9	11.1	36	5.7	67	--	--
<i>Russell 2000 Growth</i>			<u>-21.7</u>	65	<u>-17.3</u>	85	<u>-9.3</u>	80	<u>7.2</u>	80	<u>5.1</u>	73	<u>13.5</u>	81
Over/Under			-2.1		3.0		15.8		3.9		0.6			
Delaware Small Growth	77,737,163	3.1	-16.6	7	-10.8	15	4.3	14	11.7	30	9.4	13	--	--
<i>Russell 2500 Growth</i>			<u>-20.1</u>	37	<u>-14.4</u>	45	<u>-7.5</u>	73	<u>8.1</u>	73	<u>6.2</u>	59	<u>14.8</u>	61
Over/Under			3.5		3.6		11.8		3.6		3.2			
<i>eV US Small Cap Growth Equity Gross Median</i>			-20.8		-14.9		-3.9		9.6		6.7		15.2	

Returns are gross of manager fees.



## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Tortoise Direct Opportunities	32,281,320	1.3	-4.2	--	1.7	--	-5.3	--	--	--	--	--	--	--
Alerian MLP Index			<u>-17.3</u>	--	<u>-11.9</u>	--	<u>-12.4</u>	--	<u>-1.1</u>	--	<u>-7.3</u>	--	<u>9.6</u>	--
Over/Under			13.1		13.6		7.1							
<b>International Equity Composite</b>	<b>316,608,233</b>	<b>12.6</b>	<b>-13.5</b>	<b>57</b>	<b>-13.2</b>	<b>56</b>	<b>-13.2</b>	<b>28</b>	<b>6.2</b>	<b>21</b>	<b>3.0</b>	<b>28</b>	<b>6.1</b>	<b>86</b>
MSCI ACWI ex USA			<u>-11.5</u>	23	<u>-10.8</u>	26	<u>-14.2</u>	42	<u>4.5</u>	49	<u>0.7</u>	77	<u>6.6</u>	83
Over/Under			<b>-2.0</b>		<b>-2.4</b>		1.0		1.7		2.3		<b>-0.5</b>	
eV All ACWI ex-US Equity Gross Median			-13.2		-12.5		-15.0		4.4		1.7		8.7	
Chautauqua	114,591,019	4.5	-17.1	90	-17.8	89	-16.8	71	4.4	50	3.9	15	--	--
MSCI EAFE			<u>-12.5</u>	40	<u>-11.4</u>	34	<u>-13.8</u>	35	<u>2.9</u>	76	<u>0.5</u>	80	<u>6.3</u>	84
Over/Under			<b>-4.6</b>		<b>-6.4</b>		<b>-3.0</b>		1.5		3.4			
eV All ACWI ex-US Equity Gross Median			-13.2		-12.5		-15.0		4.4		1.7		8.7	
WCM	132,503,736	5.3	-12.3	37	-9.5	11	-6.7	3	8.1	8	6.5	5	--	--
MSCI EAFE			<u>-12.5</u>	40	<u>-11.4</u>	34	<u>-13.8</u>	35	<u>2.9</u>	76	<u>0.5</u>	80	<u>6.3</u>	84
Over/Under			0.2		1.9		7.1		5.2		6.0			
eV All ACWI ex-US Equity Gross Median			-13.2		-12.5		-15.0		4.4		1.7		8.7	
<b>Emerging Markets Equity Composite</b>	<b>69,484,474</b>	<b>2.8</b>	<b>-9.1</b>	<b>80</b>	<b>-11.8</b>	<b>78</b>	<b>-17.9</b>	<b>78</b>	<b>5.6</b>	<b>89</b>	<b>-0.4</b>	<b>97</b>	<b>--</b>	<b>--</b>
MSCI Emerging Markets			<u>-7.5</u>	55	<u>-8.5</u>	42	<u>-14.6</u>	43	<u>9.2</u>	47	<u>1.6</u>	72	<u>8.0</u>	86
Over/Under			<b>-1.6</b>		<b>-3.3</b>		<b>-3.3</b>		<b>-3.6</b>		<b>-2.0</b>			
eV Emg Mkts Equity Gross Median			-7.3		-9.3		-15.2		9.1		2.4		9.5	
Wasatch	20,337,608	0.8	-6.6	39	-13.1	86	-17.9	79	2.4	99	-0.4	96	--	--
MSCI Emerging Markets			<u>-7.5</u>	55	<u>-8.5</u>	42	<u>-14.6</u>	43	<u>9.2</u>	47	<u>1.6</u>	72	<u>8.0</u>	86
Over/Under			0.9		<b>-4.6</b>		<b>-3.3</b>		<b>-6.8</b>		<b>-2.0</b>			
eV Emg Mkts Equity Gross Median			-7.3		-9.3		-15.2		9.1		2.4		9.5	
ClariVest Emerging Market Equity	49,146,866	2.0	-10.1	91	-11.3	74	-17.8	78	7.2	75	-0.4	97	--	--
MSCI Emerging Markets			<u>-7.5</u>	55	<u>-8.5</u>	42	<u>-14.6</u>	43	<u>9.2</u>	47	<u>1.6</u>	72	<u>8.0</u>	86
Over/Under			<b>-2.6</b>		<b>-2.8</b>		<b>-3.2</b>		<b>-2.0</b>		<b>-2.0</b>			
eV Emg Mkts Equity Gross Median			-7.3		-9.3		-15.2		9.1		2.4		9.5	
<b>Fixed Income Composite</b>	<b>448,396,992</b>	<b>17.8</b>	<b>0.0</b>	<b>69</b>	<b>0.1</b>	<b>75</b>	<b>-1.8</b>	<b>81</b>	<b>2.8</b>	<b>44</b>	<b>2.7</b>	<b>55</b>	<b>4.2</b>	<b>52</b>
BBgBarc US Aggregate TR			<u>1.6</u>	14	<u>1.7</u>	22	<u>0.0</u>	61	<u>2.1</u>	67	<u>2.5</u>	61	<u>3.5</u>	69
Over/Under			<b>-1.6</b>		<b>-1.6</b>		<b>-1.8</b>		0.7		0.2		0.7	
eV All US Fixed Inc Gross Median			0.7		1.2		0.6		2.5		2.8		4.3	

Returns are gross of manager fees.



## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Core Bonds Composite</b>	<b>211,498,539</b>	<b>8.4</b>	<b>1.2</b>	<b>71</b>	<b>1.2</b>	<b>85</b>	<b>0.2</b>	<b>40</b>	<b>2.4</b>	<b>54</b>	<b>2.8</b>	<b>51</b>	<b>--</b>	<b>--</b>
<i>BBgBarc US Aggregate TR</i>			<u>1.6</u>	19	<u>1.7</u>	37	<u>0.0</u>	54	<u>2.1</u>	84	<u>2.5</u>	84	<u>3.5</u>	93
Over/Under			-0.4		-0.5		0.2		0.3		0.3			
<i>eV US Core Fixed Inc Gross Median</i>			1.4		1.6		0.0		2.4		2.8		4.3	
<b>Orleans Capital Management</b>	<b>66,654,517</b>	<b>2.6</b>	<b>1.0</b>	<b>79</b>	<b>1.4</b>	<b>73</b>	<b>-0.6</b>	<b>89</b>	<b>2.5</b>	<b>47</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>BBgBarc US Aggregate TR</i>			<u>1.6</u>	19	<u>1.7</u>	37	<u>0.0</u>	54	<u>2.1</u>	84	<u>2.5</u>	84	<u>3.5</u>	93
Over/Under			-0.6		-0.3		-0.6		0.4					
<i>eV US Core Fixed Inc Gross Median</i>			1.4		1.6		0.0		2.4		2.8		4.3	
<b>Garcia Hamilton Associates</b>	<b>144,844,023</b>	<b>5.7</b>	<b>1.2</b>	<b>66</b>	<b>1.1</b>	<b>89</b>	<b>1.2</b>	<b>6</b>	<b>2.8</b>	<b>23</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>BBgBarc US Aggregate TR</i>			<u>1.6</u>	19	<u>1.7</u>	37	<u>0.0</u>	54	<u>2.1</u>	84	<u>2.5</u>	84	<u>3.5</u>	93
Over/Under			-0.4		-0.6		1.2		0.7					
<i>eV US Core Fixed Inc Gross Median</i>			1.4		1.6		0.0		2.4		2.8		4.3	
<b>Intermediate Bonds Composite</b>	<b>--</b>	<b>--</b>	<b>0.0</b>	<b>98</b>	<b>0.1</b>	<b>99</b>	<b>-1.2</b>	<b>99</b>	<b>1.0</b>	<b>99</b>	<b>1.7</b>	<b>94</b>	<b>--</b>	<b>--</b>
<i>BBgBarc US Govt/Credit Int TR</i>			<u>1.7</u>	21	<u>1.9</u>	30	<u>0.9</u>	47	<u>1.7</u>	81	<u>1.9</u>	88	<u>2.9</u>	90
Over/Under			-1.7		-1.8		-2.1		-0.7		-0.2			
<i>eV US Interm Duration Fixed Inc Gross Median</i>			1.4		1.8		0.8		2.0		2.2		3.5	
<b>Garrison Middle Market Funding</b>	<b>9,008,366</b>	<b>0.4</b>	<b>0.1</b>	<b>82</b>	<b>1.0</b>	<b>65</b>	<b>3.7</b>	<b>1</b>	<b>1.2</b>	<b>99</b>	<b>3.8</b>	<b>6</b>	<b>--</b>	<b>--</b>
<i>Credit Suisse Leveraged Loans</i>			<u>-3.1</u>	99	<u>-1.2</u>	99	<u>1.1</u>	8	<u>5.0</u>	2	<u>3.3</u>	35	<u>8.3</u>	3
Over/Under			3.2		2.2		2.6		-3.8		0.5			
<i>eV US Core Plus Fixed Inc Gross Median</i>			0.7		1.1		-0.3		3.1		3.1		5.7	
<b>Medley Opportunity Fund II</b>	<b>19,942,269</b>	<b>0.8</b>	<b>-7.0</b>	<b>99</b>	<b>-8.2</b>	<b>99</b>	<b>-13.2</b>	<b>99</b>	<b>-2.5</b>	<b>99</b>	<b>0.2</b>	<b>99</b>	<b>--</b>	<b>--</b>
<i>Credit Suisse Leveraged Loans</i>			<u>-3.1</u>	41	<u>-1.2</u>	35	<u>1.1</u>	20	<u>5.0</u>	40	<u>3.3</u>	56	<u>8.3</u>	49
Over/Under			-3.9		-7.0		-14.3		-7.5		-3.1			
<i>eV US Float-Rate Bank Loan Fixed Inc Gross Median</i>			-3.2		-1.4		0.7		4.8		3.4		8.3	
<b>PIMCO Corporate Opp Fund II</b>	<b>18,045,884</b>	<b>0.7</b>	<b>0.9</b>	<b>2</b>	<b>8.2</b>	<b>1</b>	<b>11.6</b>	<b>1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>BBgBarc US High Yield TR</i>			<u>-4.5</u>	99	<u>-2.2</u>	99	<u>-2.1</u>	38	<u>7.2</u>	1	<u>3.8</u>	31	<u>11.1</u>	1
Over/Under			5.4		10.4		13.7							
<i>eV US Corporate Fixed Inc Gross Median</i>			-0.4		0.8		-2.3		3.6		3.6		6.7	

Returns are gross of manager fees.





## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
PIMCO Bravo III	28,366,307	1.1	1.7	1	7.9	1	17.9	1	--	--	--	--	--	--
Cambridge Associates US All PE			<u>0.0</u>	19	<u>3.8</u>	1	<u>12.3</u>	1	<u>14.3</u>	1	<u>11.9</u>	1	<u>13.9</u>	1
Over/Under			1.7		4.1		5.6							
eV US Corporate Fixed Inc Net Median			-0.4		0.6		-2.6		3.3		3.3		6.5	
<b>Global Fixed Composite</b>	<b>161,535,628</b>	<b>6.4</b>	<b>-0.9</b>	<b>54</b>	<b>-1.5</b>	<b>72</b>	<b>-5.3</b>	<b>87</b>	<b>4.2</b>	<b>34</b>	<b>2.2</b>	<b>52</b>	<b>--</b>	<b>--</b>
FTSE WGBI TR			<u>1.8</u>	7	<u>0.1</u>	40	<u>-0.8</u>	36	<u>2.7</u>	72	<u>0.8</u>	80	<u>1.5</u>	97
Over/Under			-2.7		-1.6		-4.5		1.5		1.4			
eV All Global Fixed Inc Gross Median			-0.7		-0.4		-1.7		3.5		2.3		4.6	
Brandywine	161,535,628	6.4	-0.9	54	-1.5	72	-5.3	87	4.2	34	2.2	52	--	--
FTSE WGBI TR			<u>1.8</u>	7	<u>0.1</u>	40	<u>-0.8</u>	36	<u>2.7</u>	72	<u>0.8</u>	80	<u>1.5</u>	97
Over/Under			-2.7		-1.6		-4.5		1.5		1.4			
eV All Global Fixed Inc Gross Median			-0.7		-0.4		-1.7		3.5		2.3		4.6	
<b>Real Estate Composite</b>	<b>338,763,478</b>	<b>13.4</b>	<b>2.0</b>	<b>--</b>	<b>4.3</b>	<b>--</b>	<b>9.4</b>	<b>--</b>	<b>8.9</b>	<b>--</b>	<b>10.6</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF Property Index			<u>1.4</u>	--	<u>3.1</u>	--	<u>6.7</u>	--	<u>7.2</u>	--	<u>9.3</u>	--	<u>7.5</u>	--
Over/Under			0.6		1.2		2.7		1.7		1.3			
JP Morgan RE	136,829,699	5.4	1.8	--	3.7	--	8.0	--	7.9	--	10.0	--	7.3	--
NCREIF Property Index			<u>1.4</u>	--	<u>3.1</u>	--	<u>6.7</u>	--	<u>7.2</u>	--	<u>9.3</u>	--	<u>7.5</u>	--
Over/Under			0.4		0.6		1.3		0.7		0.7		-0.2	
Portfolio Advisors RE III	3,767,510	0.1	-2.1	--	-1.4	--	-0.5	--	4.8	--	10.9	--	1.1	--
NCREIF Property Index			<u>1.4</u>	--	<u>3.1</u>	--	<u>6.7</u>	--	<u>7.2</u>	--	<u>9.3</u>	--	<u>7.5</u>	--
Over/Under			-3.5		-4.5		-7.2		-2.4		1.6		-6.4	
Realty Associates IX Corp	20,571	0.0	-4.2	--	-3.8	--	6.5	--	4.6	--	8.8	--	--	--
NCREIF Property Index			<u>1.4</u>	--	<u>3.1</u>	--	<u>6.7</u>	--	<u>7.2</u>	--	<u>9.3</u>	--	<u>7.5</u>	--
Over/Under			-5.6		-6.9		-0.2		-2.6		-0.5			
Portfolio Advisors RE IV	3,047,745	0.1	2.6	--	12.5	--	16.4	--	13.4	--	14.4	--	--	--
NCREIF Property Index			<u>1.4</u>	--	<u>3.1</u>	--	<u>6.7</u>	--	<u>7.2</u>	--	<u>9.3</u>	--	<u>7.5</u>	--
Over/Under			1.2		9.4		9.7		6.2		5.1			
Angelo Gordon Net Lease Realty III LP	20,244,481	0.8	1.5	--	3.6	--	9.7	--	7.0	--	--	--	--	--
NCREIF Property Index			<u>1.4</u>	--	<u>3.1</u>	--	<u>6.7</u>	--	<u>7.2</u>	--	<u>9.3</u>	--	<u>7.5</u>	--
Over/Under			0.1		0.5		3.0		-0.2					

Returns are gross of manager fees.



## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Mesirow	26,121,714	1.0	0.6	--	1.8	--	11.0	--	10.6	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			-0.8		-1.3		4.3		3.4					
Dune Real Estate Fund III	25,539,459	1.0	5.4	--	9.4	--	13.9	--	13.5	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			4.0		6.3		7.2		6.3					
OK FF Portfolio Advisors	11,449,418	0.5	0.3	--	4.7	--	6.4	--	6.9	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			-1.1		1.6		-0.3		-0.3					
Landmark RE VII	15,190,640	0.6	0.9	--	1.9	--	3.9	--	11.4	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			-0.5		-1.2		-2.8		4.2					
JP Morgan Special Situation Property	67,579,291	2.7	2.3	--	5.1	--	11.3	--	10.5	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			0.9		2.0		4.6		3.3					
Hall Capital III	11,387,173	0.5	1.2	--	2.2	--	5.4	--	7.3	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			-0.2		-0.9		-1.3		0.1					
Portfolio Advisors RE VI	13,846,261	0.5	4.2	--	9.4	--	24.4	--	--	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			2.8		6.3		17.7							
Hall Capital Real Estate Fund	3,739,517	0.1	0.1	--	--	--	--	--	--	--	--	--	--	--
NCREIF Property Index			1.4	--	3.1	--	6.7	--	7.2	--	9.3	--	7.5	--
Over/Under			-1.3											
<b>Hedge Fund Composite</b>	<b>125,304,708</b>	<b>5.0</b>	<b>-5.1</b>	<b>--</b>	<b>-4.0</b>	<b>--</b>	<b>-2.8</b>	<b>--</b>	<b>2.8</b>	<b>--</b>	<b>1.6</b>	<b>--</b>	<b>4.1</b>	<b>--</b>
HFRI FOF: Conservative Index			-3.2	--	-2.5	--	-0.9	--	1.7	--	1.7	--	3.1	--
Over/Under			-1.9		-1.5		-1.9		1.1		-0.1		1.0	

Returns are gross of manager fees.



## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

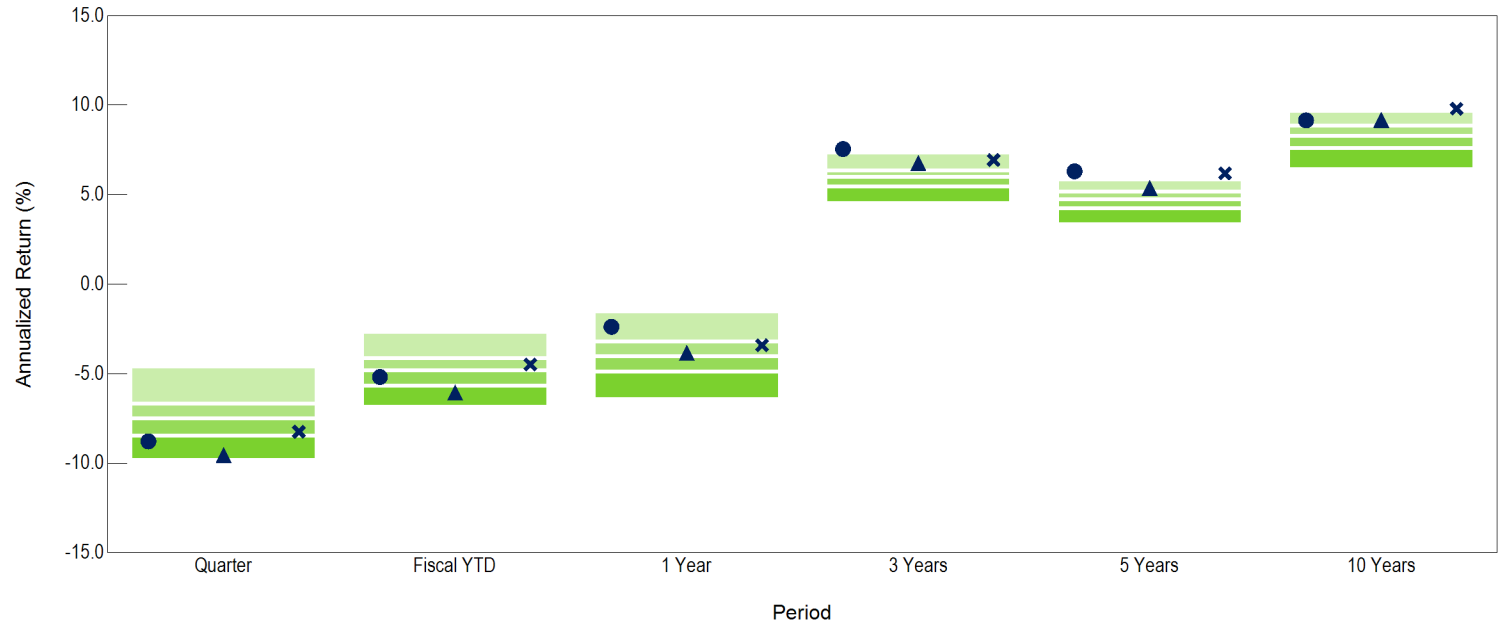
	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Permal	80,547,900	3.2	-1.8	--	-1.6	--	1.8	--	3.2	--	--	--	--	--
<i>HFRI Fund of Funds Composite Index</i>			<u>-5.0</u>	--	<u>-4.8</u>	--	<u>-4.1</u>	--	<u>1.3</u>	--	<u>1.4</u>	--	<u>3.1</u>	--
Over/Under			3.2		3.2		5.9		1.9					
Allianz Global Investors DMAP	44,756,808	1.8	-9.9	--	-7.5	--	-8.7	--	2.6	--	--	--	--	--
<i>Russell 2500 Growth</i>			<u>-20.1</u>	--	<u>-14.4</u>	--	<u>-7.5</u>	--	<u>8.1</u>	--	<u>6.2</u>	--	<u>14.8</u>	--
Over/Under			10.2		6.9		-1.2		-5.5					
<b>Private Equity Composite</b>	<b>92,646,356</b>	<b>3.7</b>	<b>5.3</b>	<b>--</b>	<b>8.2</b>	<b>--</b>	<b>19.3</b>	<b>--</b>	<b>13.6</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Cambridge Associates US All PE</i>			<u>0.0</u>	--	<u>3.8</u>	--	<u>12.3</u>	--	<u>14.3</u>	--	<u>11.9</u>	--	<u>13.9</u>	--
Over/Under			5.3		4.4		7.0		-0.7					
Pomona Captial Fund VIII	4,870,348	0.2	11.6	--	17.9	--	21.6	--	17.9	--	--	--	--	--
<i>Cambridge Associates US All PE</i>			<u>0.0</u>	--	<u>3.8</u>	--	<u>12.3</u>	--	<u>14.3</u>	--	<u>11.9</u>	--	<u>13.9</u>	--
Over/Under			11.6		14.1		9.3		3.6					
Ardian	26,340,623	1.0	6.4	--	9.9	--	15.8	--	11.9	--	--	--	--	--
<i>Cambridge Associates US All PE</i>			<u>0.0</u>	--	<u>3.8</u>	--	<u>12.3</u>	--	<u>14.3</u>	--	<u>11.9</u>	--	<u>13.9</u>	--
Over/Under			6.4		6.1		3.5		-2.4					
Dynamics Global Secondaries IV	30,492,955	1.2	5.7	--	10.5	--	25.1	--	13.4	--	--	--	--	--
<i>Cambridge Associates US All PE</i>			<u>0.0</u>	--	<u>3.8</u>	--	<u>12.3</u>	--	<u>14.3</u>	--	<u>11.9</u>	--	<u>13.9</u>	--
Over/Under			5.7		6.7		12.8		-0.9					
AESF VI	16,971,378	0.7	1.3	--	0.9	--	12.0	--	--	--	--	--	--	--
<i>Cambridge Associates US All PE</i>			<u>0.0</u>	--	<u>3.8</u>	--	<u>12.3</u>	--	<u>14.3</u>	--	<u>11.9</u>	--	<u>13.9</u>	--
Over/Under			1.3		-2.9		-0.3							
Pomona Capital Fund IX	9,589,386	0.4	11.7	--	1.0	--	--	--	--	--	--	--	--	--
<i>Cambridge Associates US All PE</i>			<u>0.0</u>	--	<u>3.8</u>	--	<u>12.3</u>	--	<u>14.3</u>	--	<u>11.9</u>	--	<u>13.9</u>	--
Over/Under			11.7		-2.8									
Argonaut Private Equity Fund IV	4,381,665	0.2	-1.6	--	--	--	--	--	--	--	--	--	--	--
<i>Cambridge Associates US All PE</i>			<u>0.0</u>	--	<u>3.8</u>	--	<u>12.3</u>	--	<u>14.3</u>	--	<u>11.9</u>	--	<u>13.9</u>	--
Over/Under			-1.6											

Returns are gross of manager fees.



# TOTAL PLAN RETURN SUMMARY VS. PEER UNIVERSE

OK FIREFIGHTERS vs. InvestorForce Public DB Gross

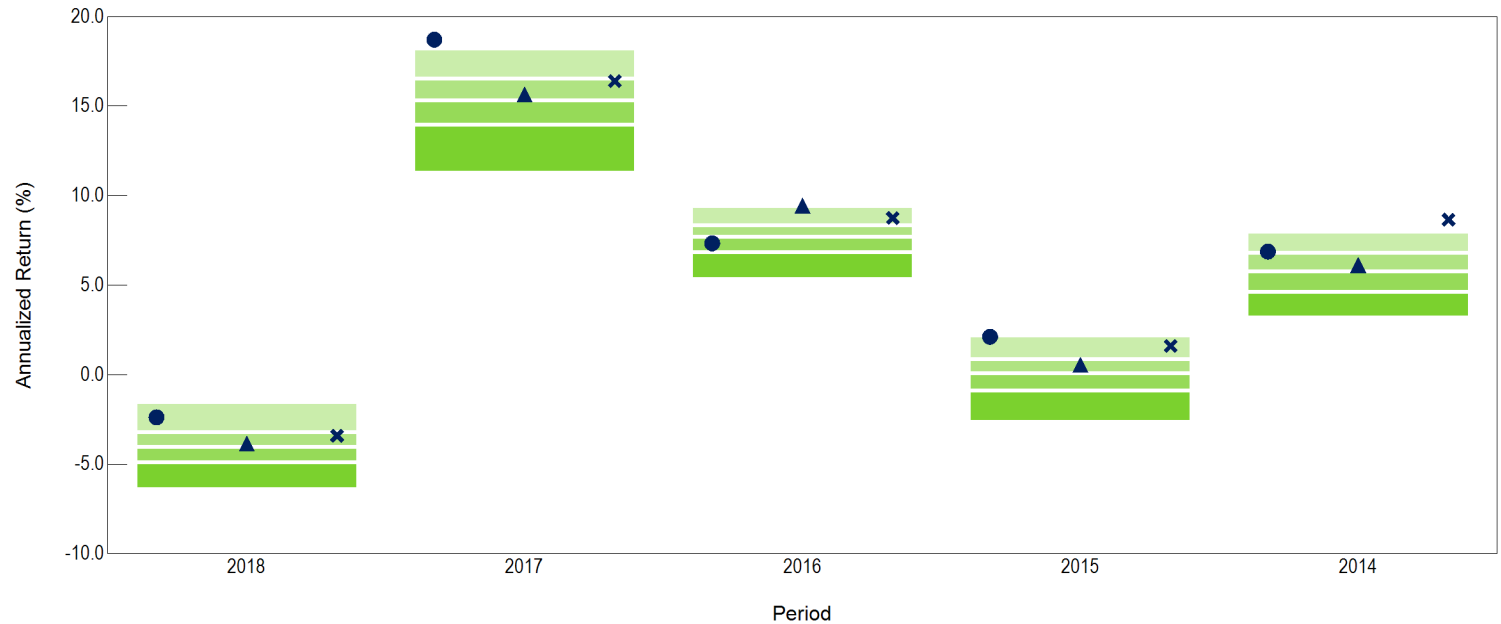


	Return (Rank)											
5th Percentile	-4.6		-2.7		-1.5		7.3		5.8		9.7	
25th Percentile	-6.7		-4.1		-3.2		6.4		5.2		8.9	
Median	-7.5		-4.8		-4.0		6.0		4.7		8.3	
75th Percentile	-8.4		-5.7		-4.9		5.5		4.2		7.6	
95th Percentile	-9.8		-6.8		-6.4		4.5		3.4		6.4	
# of Portfolios	251		251		251		240		231		197	
● OK FIREFIGHTERS	-8.8	(81)	-5.2	(65)	-2.4	(11)	7.5	(3)	6.3	(3)	9.1	(15)
▲ FIREFIGHTERS Allocation Index	-9.5	(92)	-6.1	(81)	-3.8	(46)	6.8	(11)	5.4	(17)	9.2	(14)
× FIREFIGHTERS Policy Index	-8.2	(69)	-4.5	(39)	-3.4	(31)	6.9	(9)	6.2	(4)	9.8	(3)



# TOTAL PLAN RETURN SUMMARY VS. PEER UNIVERSE

OK FIREFIGHTERS vs. InvestorForce Public DB Gross



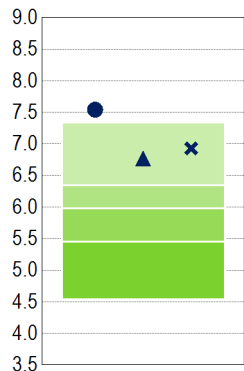
	Return (Rank)									
5th Percentile	-1.5		18.2		9.4		2.2		8.0	
25th Percentile	-3.2		16.5		8.4		0.9		6.8	
Median	-4.0		15.3		7.7		0.1		5.8	
75th Percentile	-4.9		14.0		6.9		-0.9		4.6	
95th Percentile	-6.4		11.3		5.3		-2.6		3.2	
# of Portfolios	251		304		305		316		248	
● OK FIREFIGHTERS	-2.4	(11)	18.7	(4)	7.3	(61)	2.1	(6)	6.9	(24)
▲ FIREFIGHTERS Allocation Index	-3.8	(46)	15.6	(44)	9.4	(5)	0.5	(35)	6.1	(40)
× FIREFIGHTERS Policy Index	-3.4	(31)	16.4	(28)	8.7	(15)	1.6	(10)	8.7	(3)



# TOTAL PLAN RISK STATISTICS VS. PEER UNIVERSE

## OK FIREFIGHTERS vs. InvestorForce Public DB Gross 3 Years

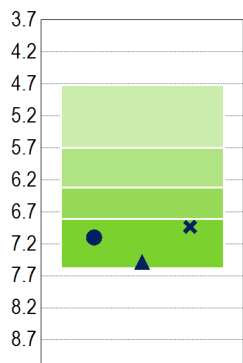
### Anlzd Return



● OK FIREFIGHTERS	
Value	7.54
Rank	3
▲ FIREFIGHTERS Allocation Index	
Value	6.77
Rank	11
× FIREFIGHTERS Policy Index	
Value	6.93
Rank	9

Universe	
5th %tile	7.34
25th %tile	6.36
Median	5.99
75th %tile	5.46
95th %tile	4.55

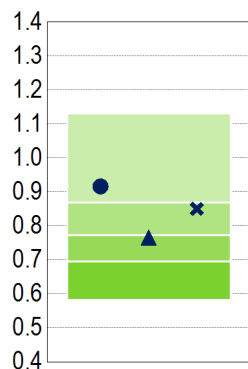
### Anlzd Standard Deviation



● OK FIREFIGHTERS	
Value	7.10
Rank	87
▲ FIREFIGHTERS Allocation Index	
Value	7.48
Rank	94
× FIREFIGHTERS Policy Index	
Value	6.94
Rank	82

Universe	
5th %tile	4.72
25th %tile	5.69
Median	6.31
75th %tile	6.80
95th %tile	7.57

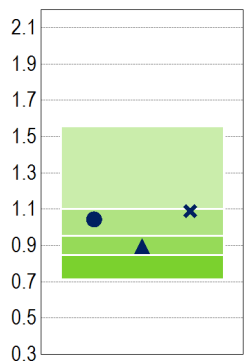
### Sharpe Ratio



● OK FIREFIGHTERS	
Value	0.92
Rank	19
▲ FIREFIGHTERS Allocation Index	
Value	0.77
Rank	54
× FIREFIGHTERS Policy Index	
Value	0.85
Rank	30

Universe	
5th %tile	1.13
25th %tile	0.87
Median	0.77
75th %tile	0.70
95th %tile	0.58

### Sortino Ratio



● OK FIREFIGHTERS	
Value	1.04
Rank	36
▲ FIREFIGHTERS Allocation Index	
Value	0.90
Rank	64
× FIREFIGHTERS Policy Index	
Value	1.09
Rank	28

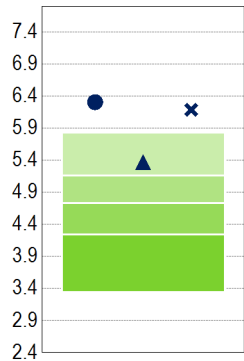
Universe	
5th %tile	1.56
25th %tile	1.10
Median	0.96
75th %tile	0.85
95th %tile	0.72



# TOTAL PLAN RISK STATISTICS VS. PEER UNIVERSE

## OK FIREFIGHTERS vs. InvestorForce Public DB Gross 5 Years

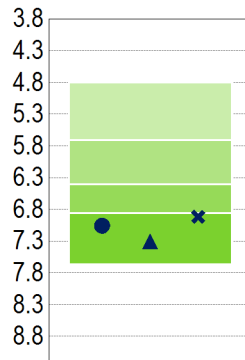
Anlzd Return



● OK FIREFIGHTERS	
Value	6.30
Rank	3
▲ FIREFIGHTERS Allocation Index	
Value	5.37
Rank	17
× FIREFIGHTERS Policy Index	
Value	6.18
Rank	4

Universe	
5th %tile	5.83
25th %tile	5.17
Median	4.74
75th %tile	4.25
95th %tile	3.35

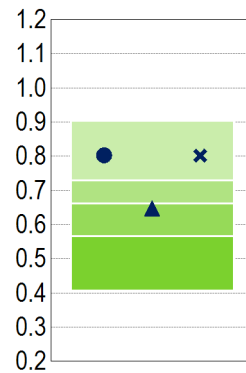
Anlzd Standard Deviation



● OK FIREFIGHTERS	
Value	7.06
Rank	84
▲ FIREFIGHTERS Allocation Index	
Value	7.31
Rank	89
× FIREFIGHTERS Policy Index	
Value	6.92
Rank	79

Universe	
5th %tile	4.80
25th %tile	5.70
Median	6.39
75th %tile	6.85
95th %tile	7.65

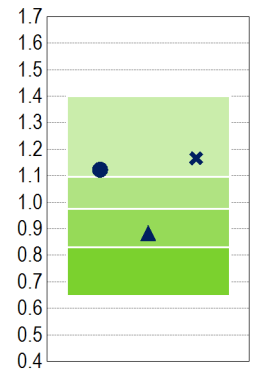
Sharpe Ratio



● OK FIREFIGHTERS	
Value	0.80
Rank	12
▲ FIREFIGHTERS Allocation Index	
Value	0.65
Rank	54
× FIREFIGHTERS Policy Index	
Value	0.80
Rank	12

Universe	
5th %tile	0.90
25th %tile	0.73
Median	0.66
75th %tile	0.57
95th %tile	0.41

Sortino Ratio



● OK FIREFIGHTERS	
Value	1.12
Rank	19
▲ FIREFIGHTERS Allocation Index	
Value	0.88
Rank	68
× FIREFIGHTERS Policy Index	
Value	1.17
Rank	15

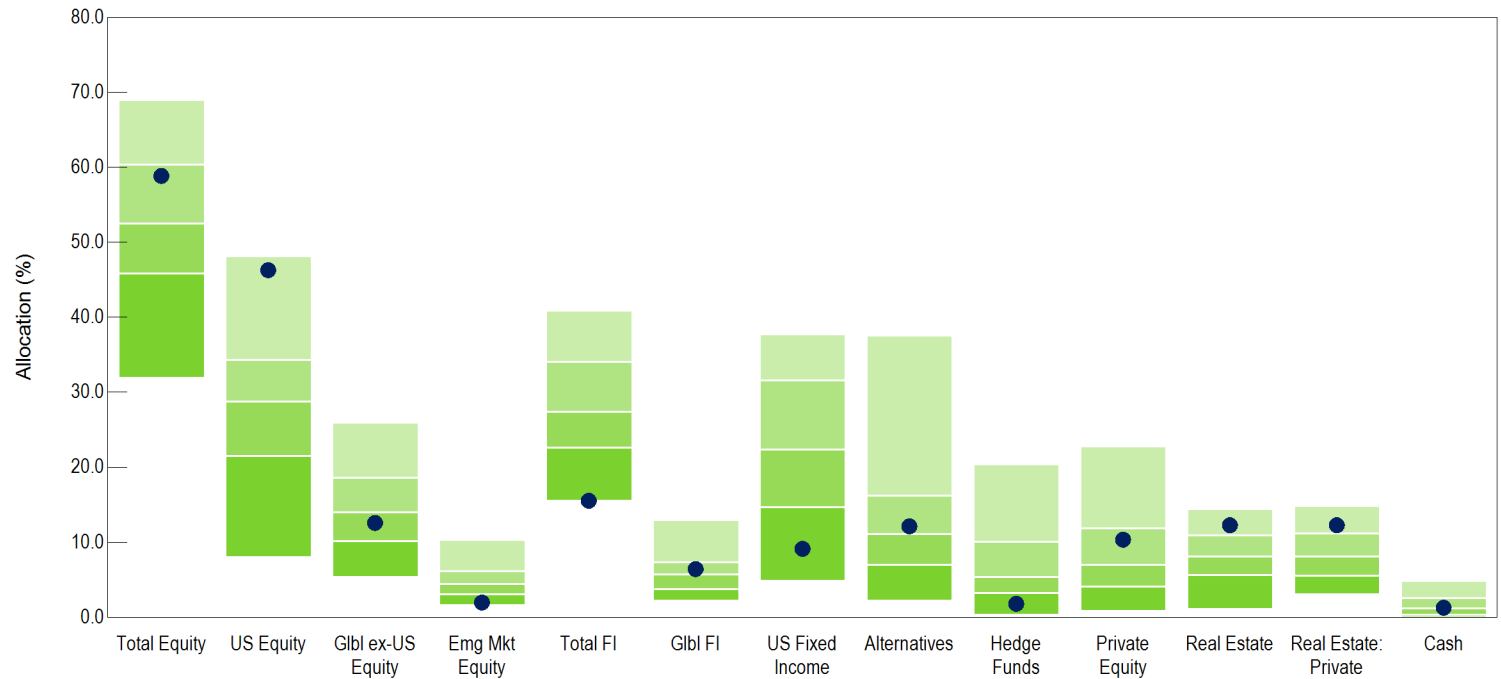
Universe	
5th %tile	1.40
25th %tile	1.10
Median	0.98
75th %tile	0.83
95th %tile	0.65



# Oklahoma Firefighters

## TOTAL PLAN ALLOCATIONS VS. PEER UNIVERSE

Total Plan Allocation vs. InvestorForce Public DB Gross



	Total Equity	US Equity	Gbl ex-US Equity	Emg Mkt Equity	Total FI	Gbl FI	US Fixed Income	Alternatives	Hedge Funds	Private Equity	Real Estate	Real Estate: Private	Cash	
<b>Allocation (Rank)</b>	68.9	48.1	25.9	10.3	40.9	13.0	37.7	37.6	20.4	22.8	14.4	14.8	4.8	--
<b>5th Percentile</b>	60.4	34.4	18.6	6.2	34.1	7.4	31.6	16.3	10.1	11.9	11.0	11.2	2.6	--
<b>25th Percentile</b>	52.6	28.8	14.0	4.5	27.5	5.8	22.4	11.2	5.5	7.1	8.2	8.2	1.3	--
<b>Median</b>	45.9	21.6	10.3	3.2	22.7	3.8	14.8	7.1	3.3	4.2	5.7	5.6	0.4	--
<b>75th Percentile</b>	32.0	8.1	5.5	1.7	15.6	2.3	5.0	2.2	0.4	0.9	1.2	3.1	0.0	--
<b>95th Percentile</b>	210	145	178	98	209	28	133	133	66	96	141	108	192	--
<b># of Portfolios</b>														--
<b>OK FIREFIGHTERS</b>	58.8 (29)	46.3 (10)	12.6 (62)	2.0 (94)	15.5 (96)	6.4 (34)	9.1 (89)	12.1 (43)	1.8 (82)	10.3 (37)	12.3 (12)	12.3 (14)	1.3 (51)	--





# TOTAL PLAN ATTRIBUTION ANALYSIS

Performance Attribution		
	Last 3 Mo.	1 Yr
Wtd. Actual Return	-9.4%	-3.2%
Wtd. Index Return *	-8.2%	-3.4%
<b>Excess Return</b>	<b>-1.2%</b>	<b>0.3%</b>
Selection Effect	-1.2%	0.3%
Allocation Effect	0.0%	0.0%
Interaction Effect	0.0%	0.0%
Asset Class Returns		
OK FIREFIGHTERS	-8.8%	-2.4%
Domestic Equity Composite	-14.4%	-4.6%
Large Cap Equity Composite	-14.1%	-5.7%
Small Cap Equity Composite	-16.3%	-1.7%
Z TERMINATED - Long/Short Equity Composite		
International Equity Composite	-13.5%	-13.2%
Emerging Markets Equity Composite	-9.1%	-17.9%
Fixed Income Composite	0.0%	-1.8%
Domestic Fixed Income	0.5%	0.5%
Core Bonds Composite	1.2%	0.2%
Intermediate Bonds Composite	0.0%	-1.2%
Global Fixed Composite	-0.9%	-5.3%
Real Estate Composite	2.0%	9.4%
Hedge Fund Composite	-5.1%	-2.8%
Private Equity Composite	5.3%	19.3%

\*Calculated from benchmark returns and weightings of each component.

Z TERMINATED represents Composite that fully liquidated.



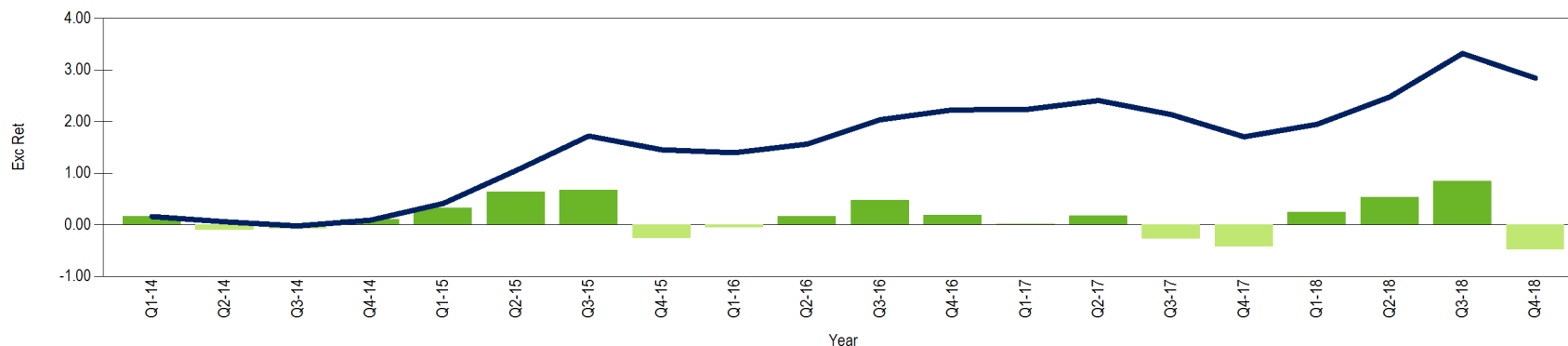
# OKLAHOMA POLICE



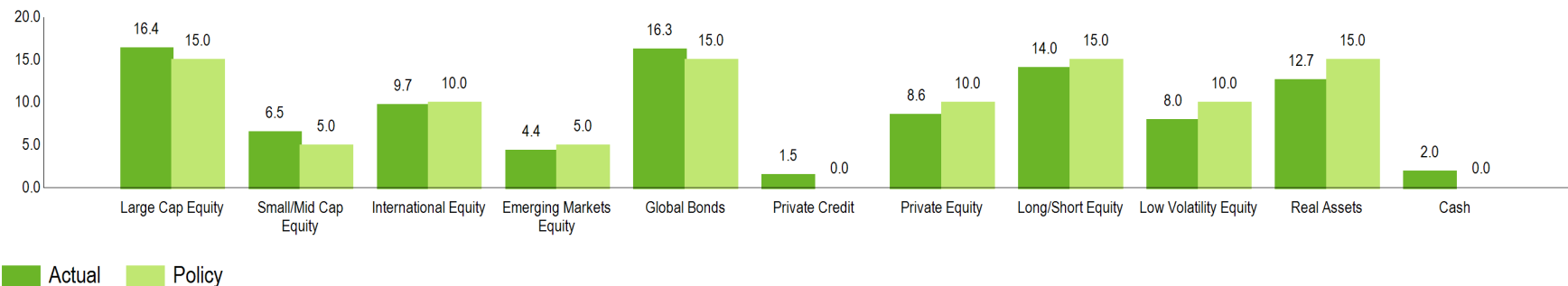
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK POLICE</b>	<b>\$2,393,881,006</b>	<b>-7.2%</b>	<b>43</b>	<b>-4.5%</b>	<b>41</b>	<b>-2.5%</b>	<b>13</b>	<b>5.9%</b>	<b>57</b>	<b>4.7%</b>	<b>52</b>	<b>7.9%</b>	<b>67</b>
<i>POLICE Allocation Index</i>		-6.7%	27	-4.8%	52	-3.5%	36	5.4%	77	4.1%	78	8.7%	34
<i>POLICE Policy Index</i>		-7.9%	61	-5.4%	69	-5.4%	87	5.3%	80	3.7%	92	8.1%	57
<i>InvestorForce Public DB Gross Median</i>		-7.5%		-4.8%		-4.0%		6.0%		4.7%		8.3%	

## Quarterly and Cumulative Excess Performance



## Actual vs Target Allocation (%)

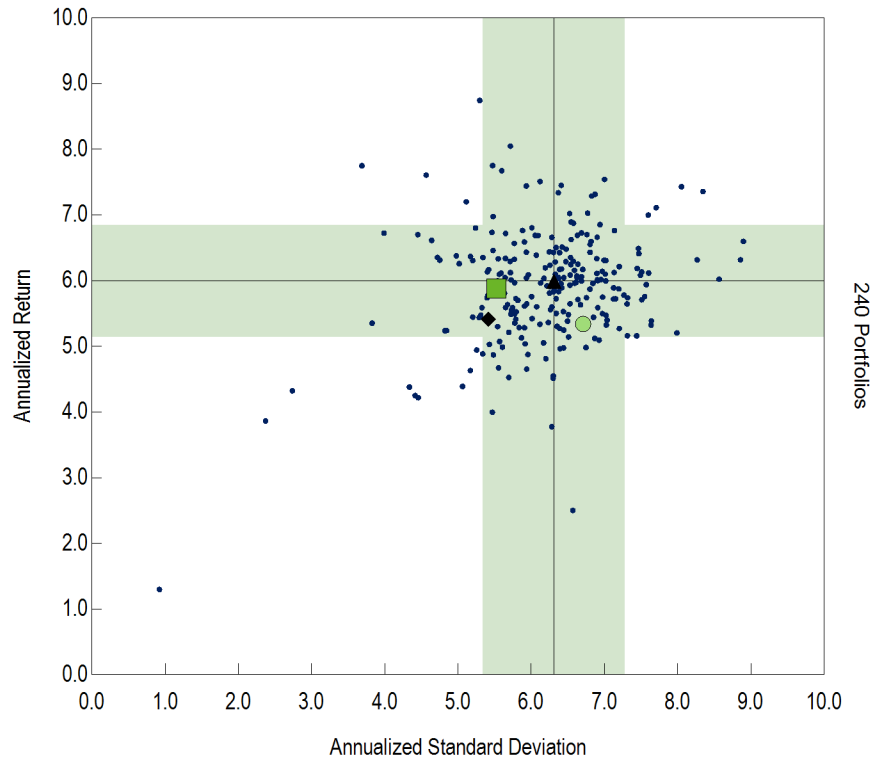


Returns are gross of manager fees.



# TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending December 31, 2018



- OK POLICE
- ◆ POLICE Allocation Index
- POLICE Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

3 Years Ending December 31, 2018

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK POLICE	5.88%	57	5.52%	19
POLICE Allocation Index	5.41%	77	5.42%	15
POLICE Policy Index	5.34%	80	6.71%	73

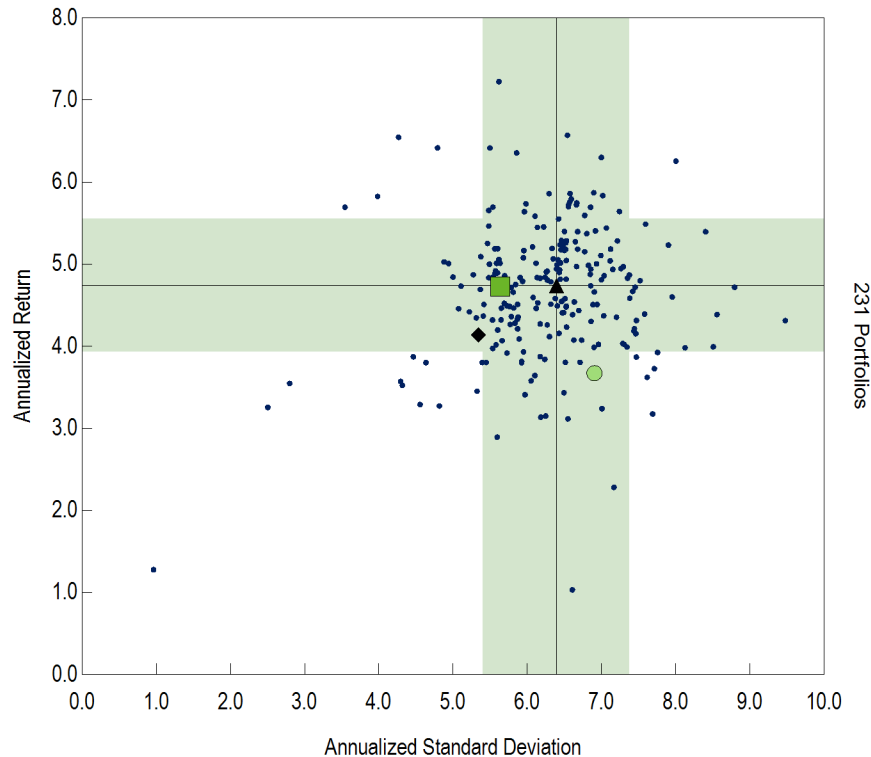
3 Years Ending December 31, 2018

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK POLICE	0.88	25	1.05	34
POLICE Allocation Index	0.81	39	0.98	45
POLICE Policy Index	0.64	87	0.83	80



# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending December 31, 2018



- OK POLICE
- ◆ POLICE Allocation Index
- POLICE Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

5 Years Ending December 31, 2018

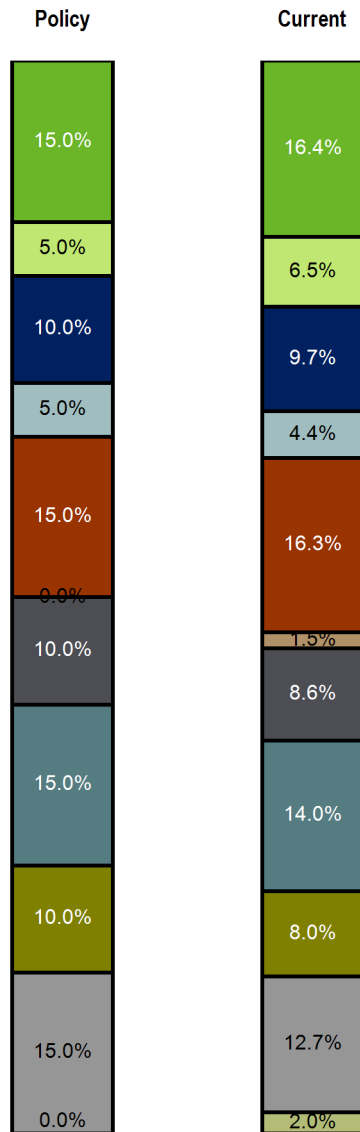
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK POLICE	4.72%	52	5.63%	22
POLICE Allocation Index	4.14%	78	5.34%	10
POLICE Policy Index	3.67%	92	6.91%	78

5 Years Ending December 31, 2018

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK POLICE	0.73	26	1.10	23
POLICE Allocation Index	0.66	52	0.93	62
POLICE Policy Index	0.44	93	0.74	87



# TOTAL FUND ASSET ALLOCATION VS. POLICY



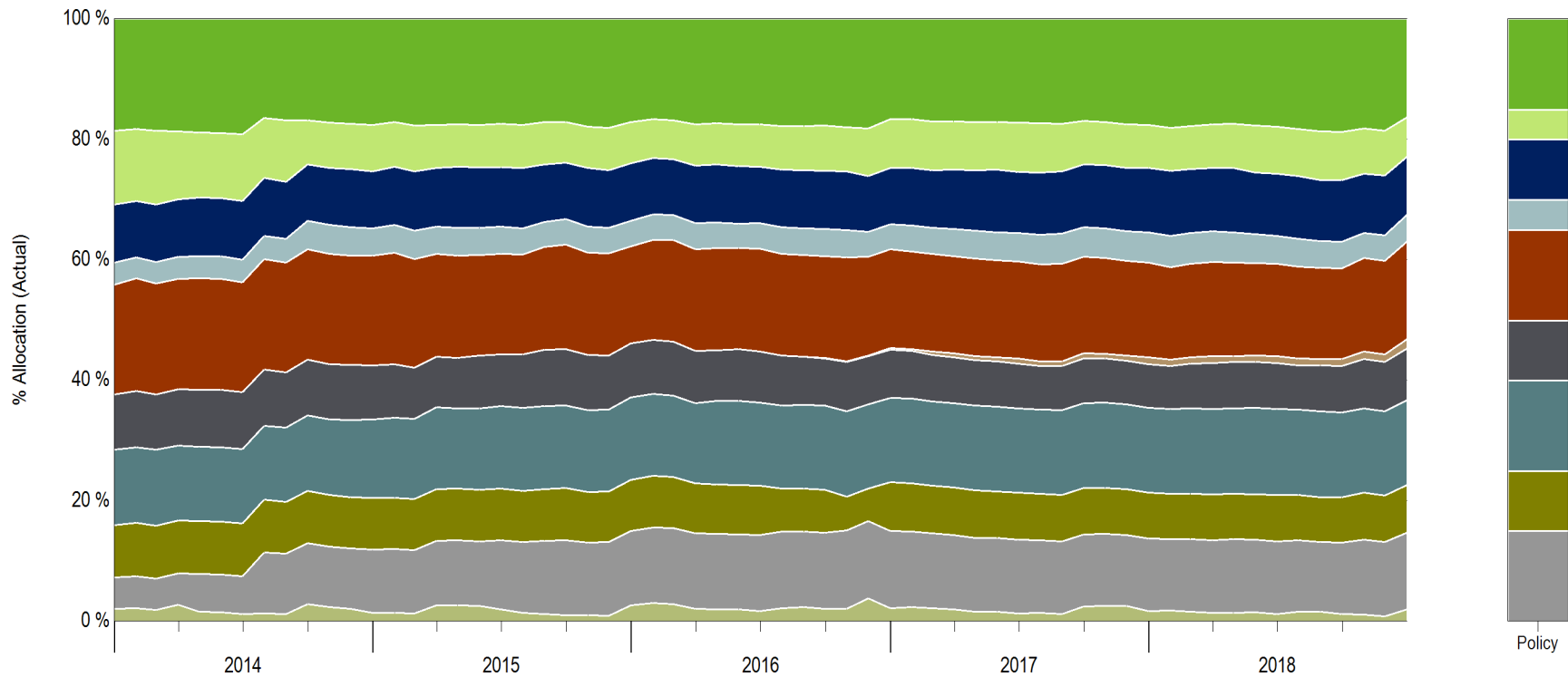
Asset Allocation vs. Target							
	Current	Policy	Current	Difference*	Policy Range	Within Range	
Large Cap Equity	\$391,678,161	15.0%	16.4%	1.4%	10.0% - 20.0%	Yes	
Small/Mid Cap Equity	\$156,627,971	5.0%	6.5%	1.5%	0.0% - 15.0%	Yes	
International Equity	\$232,927,408	10.0%	9.7%	-0.3%	5.0% - 15.0%	Yes	
Emerging Markets Equity	\$104,649,966	5.0%	4.4%	-0.6%	0.0% - 10.0%	Yes	
Global Bonds	\$389,079,813	15.0%	16.3%	1.3%	10.0% - 20.0%	Yes	
Private Credit	\$36,312,061	0.0%	1.5%	1.5%	0.0% - 5.0%	Yes	
Private Equity	\$205,286,859	10.0%	8.6%	-1.4%	5.0% - 15.0%	Yes	
Long/Short Equity	\$336,134,943	15.0%	14.0%	-1.0%	10.0% - 20.0%	Yes	
Low Volatility Equity	\$191,067,831	10.0%	8.0%	-2.0%	5.0% - 15.0%	Yes	
Real Assets	\$303,319,521	15.0%	12.7%	-2.3%	0.0% - 30.0%	Yes	
Cash	\$46,796,471	0.0%	2.0%	2.0%	0.0% - 5.0%	Yes	
<b>Total</b>	<b>\$2,393,881,006</b>	<b>100.0%</b>	<b>100.0%</b>				

\*Difference between Policy and Current Allocation



# TOTAL FUND ASSET ALLOCATION HISTORY

Asset Allocation History



- Large Cap Equity
- Emerging Markets Equity
- Private Credit
- Long/Short Equity
- Real Assets
- Small/Mid Cap Equity
- Global Bonds
- Private Equity
- Low Volatility Equity
- Cash
- International Equity



## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK POLICE</b>	<b>2,393,881,006</b>	<b>100.0</b>	<b>-7.2</b>	<b>43</b>	<b>-4.5</b>	<b>41</b>	<b>-2.5</b>	<b>13</b>	<b>5.9</b>	<b>57</b>	<b>4.7</b>	<b>52</b>	<b>7.9</b>	<b>67</b>
<i>POLICE Allocation Index</i>			<u>-6.7</u>	27	<u>-4.8</u>	52	<u>-3.5</u>	36	<u>5.4</u>	77	<u>4.1</u>	78	<u>8.7</u>	34
Over/Under			-0.5		0.3		1.0		0.5		0.6		-0.8	
<i>POLICE Policy Index</i>			-7.9	61	-5.4	69	-5.4	87	5.3	80	3.7	92	8.1	57
<i>InvestorForce Public DB Gross Median</i>			-7.5		-4.8		-4.0		6.0		4.7		8.3	
<b>Equity Composite</b>	<b>885,883,506</b>	<b>37.0</b>	<b>-14.2</b>	<b>64</b>	<b>-10.2</b>	<b>58</b>	<b>-8.6</b>	<b>47</b>	<b>7.5</b>	<b>32</b>	<b>5.2</b>	<b>47</b>	<b>9.8</b>	<b>70</b>
<i>Russell 3000</i>			<u>-14.3</u>	66	<u>-8.2</u>	36	<u>-5.2</u>	22	<u>9.0</u>	16	<u>7.9</u>	11	<u>13.2</u>	14
Over/Under			0.1		-2.0		-3.4		-1.5		-2.7		-3.4	
<i>eV All Global Equity Gross Median</i>			-13.2		-9.6		-9.0		6.6		5.0		10.5	
<b>Domestic Equity Composite</b>	<b>548,306,132</b>	<b>22.9</b>	<b>-15.7</b>	<b>49</b>	<b>-10.1</b>	<b>48</b>	<b>-5.3</b>	<b>41</b>	<b>9.2</b>	<b>34</b>	<b>7.1</b>	<b>47</b>	<b>13.4</b>	<b>50</b>
<i>S&amp;P 500</i>			<u>-13.5</u>	26	<u>-6.9</u>	22	<u>-4.4</u>	33	<u>9.3</u>	32	<u>8.5</u>	24	<u>13.1</u>	58
Over/Under			-2.2		-3.2		-0.9		-0.1		-1.4		0.3	
<i>eV All US Equity Gross Median</i>			-15.8		-10.5		-6.8		8.1		6.7		13.4	
Northern Trust Russell 1000 Index Fund	391,678,161	16.4	-13.8	55	-7.4	51	-4.8	45	9.1	40	8.2	44	13.3	37
<i>Russell 1000</i>			<u>-13.8</u>	55	<u>-7.4</u>	51	<u>-4.8</u>	45	<u>9.1</u>	40	<u>8.2</u>	44	<u>13.3</u>	38
Over/Under			0.0		0.0		0.0		0.0		0.0		0.0	
<i>eV US Large Cap Core Equity Gross Median</i>			-13.6		-7.4		-5.1		8.5		8.0		12.9	
Boston Partners	74,519,456	3.1	-19.5	79	-18.9	85	-18.5	91	4.6	70	3.1	71	12.6	55
<i>Russell 2500 Value</i>			<u>-17.1</u>	30	<u>-14.9</u>	42	<u>-12.4</u>	39	<u>6.6</u>	42	<u>4.2</u>	51	<u>11.6</u>	82
Over/Under			-2.4		-4.0		-6.1		-2.0		-1.1		1.0	
<i>eV US Small-Mid Cap Value Equity Gross Median</i>			-17.9		-15.7		-13.3		5.7		4.4		12.8	

Northern Trust Russell 1000 Index fund was Mellon Capital Passive Index fund before 10/30/2014.

Returns are gross of manager fees.





## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Cortina Small Cap Growth	82,108,515	3.4	-20.5	44	-14.1	42	5.5	10	14.7	15	--	--	--	--
<i>Russell 2000 Growth</i>			<u>-21.7</u>	65	<u>-17.3</u>	84	<u>-9.3</u>	80	<u>7.2</u>	80	<u>5.1</u>	74	<u>13.5</u>	82
Over/Under			1.2		3.2		14.8		7.5					
<i>eV US Small Cap Growth Equity Gross Median</i>			-20.8		-14.8		-3.8		9.7		6.7		15.2	
<b>International Equity Composite</b>	<b>337,577,374</b>	<b>14.1</b>	<b>-11.4</b>	<b>20</b>	<b>-10.5</b>	<b>20</b>	<b>-13.7</b>	<b>34</b>	<b>4.5</b>	<b>48</b>	<b>2.0</b>	<b>47</b>	<b>5.0</b>	<b>99</b>
<i>MSCI ACWI ex USA</i>			<u>-11.5</u>	22	<u>-10.8</u>	25	<u>-14.2</u>	41	<u>4.5</u>	47	<u>0.7</u>	78	<u>6.6</u>	84
Over/Under			0.1		0.3		0.5		0.0		1.3		-1.6	
<i>eV All ACWI ex-US Equity Gross Median</i>			-13.2		-12.7		-15.1		4.3		1.8		8.8	
Mondrian Int'l Value	127,461,607	5.3	-9.8	14	-7.9	11	-11.2	8	4.3	49	1.5	46	6.1	59
<i>MSCI ACWI ex USA</i>			<u>-11.5</u>	42	<u>-10.8</u>	41	<u>-14.2</u>	36	<u>4.5</u>	48	<u>0.7</u>	62	<u>6.6</u>	52
Over/Under			1.7		2.9		3.0		-0.2		0.8		-0.5	
<i>eV ACWI ex-US Value Equity Gross Median</i>			-12.5		-11.4		-15.2		4.0		1.4		7.1	
Baring Focused Intl Equity	105,465,801	4.4	-15.5	78	-13.0	54	-13.7	34	4.3	50	2.4	40	--	--
<i>MSCI ACWI ex USA</i>			<u>-11.5</u>	22	<u>-10.8</u>	25	<u>-14.2</u>	41	<u>4.5</u>	47	<u>0.7</u>	78	<u>6.6</u>	84
Over/Under			-4.0		-2.2		0.5		-0.2		1.7			
<i>eV All ACWI ex-US Equity Gross Median</i>			-13.2		-12.7		-15.1		4.3		1.8		8.8	
Wasatch EM Small Cap	31,775,068	1.3	-6.2	40	-12.5	58	-16.7	51	3.7	86	0.8	82	--	--
<i>MSCI Emerging Markets Small Cap</i>			<u>-7.2</u>	44	<u>-11.1</u>	43	<u>-18.6</u>	68	<u>3.7</u>	86	<u>1.0</u>	81	<u>9.9</u>	96
Over/Under			1.0		-1.4		1.9		0.0		-0.2			
<i>eV Emg Mkts Small Cap Equity Gross Median</i>			-7.4		-11.9		-16.7		6.8		3.4		13.3	
AB EM Strategic Core Equity	72,874,898	3.0	-10.1	--	-10.1	--	-16.2	--	--	--	--	--	--	--
<i>MSCI Emerging Markets</i>			<u>-7.5</u>	--	<u>-8.5</u>	--	<u>-14.6</u>	--	<u>9.2</u>	--	<u>1.6</u>	--	<u>8.0</u>	--
Over/Under			-2.6		-1.6		-1.6							
<b>Fixed Income Composite</b>	<b>389,079,813</b>	<b>16.3</b>	<b>-0.6</b>	<b>47</b>	<b>0.0</b>	<b>43</b>	<b>-1.1</b>	<b>40</b>	<b>3.9</b>	<b>41</b>	<b>2.7</b>	<b>44</b>	<b>6.0</b>	<b>37</b>
<i>BBgBarc US Aggregate TR</i>			<u>1.6</u>	8	<u>1.7</u>	6	<u>0.0</u>	24	<u>2.1</u>	86	<u>2.5</u>	47	<u>3.5</u>	70
Over/Under			-2.2		-1.7		-1.1		1.8		0.2		2.5	
<i>eV All Global Fixed Inc Gross Median</i>			-0.7		-0.4		-1.7		3.5		2.3		4.6	

Returns are gross of manager fees.



## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Oaktree	120,339,353	5.0	-4.2	93	-2.3	95	-2.3	85	5.9	11	3.6	29	9.5	11
BBgBarc US Aggregate TR			<u>1.6</u>	14	<u>1.7</u>	22	<u>0.0</u>	61	<u>2.1</u>	67	<u>2.5</u>	61	<u>3.5</u>	68
Over/Under			-5.8		-4.0		-2.3		3.8		1.1		6.0	
Agincourt	172,421,460	7.2	1.4	22	1.8	15	0.0	61	2.6	50	2.9	49	4.7	45
BBgBarc US Aggregate TR			<u>1.6</u>	14	<u>1.7</u>	22	<u>0.0</u>	61	<u>2.1</u>	67	<u>2.5</u>	61	<u>3.5</u>	68
Over/Under			-0.2		0.1		0.0		0.5		0.4		1.2	
eV All US Fixed Inc Gross Median			0.7		1.2		0.6		2.6		2.8		4.3	
Loomis Sayles	96,319,000	4.0	0.7	23	-0.3	49	-1.8	52	4.0	37	1.4	68	4.1	59
FTSE WGBI TR			<u>1.8</u>	7	<u>0.1</u>	40	<u>-0.8</u>	35	<u>2.7</u>	73	<u>0.8</u>	80	<u>1.5</u>	97
Over/Under			-1.1		-0.4		-1.0		1.3		0.6		2.6	
eV All Global Fixed Inc Gross Median			-0.7		-0.4		-1.7		3.5		2.3		4.6	
<b>Total Long/Short</b>	<b>336,134,943</b>	<b>14.0</b>	<b>-8.5</b>	<b>53</b>	<b>-7.4</b>	<b>46</b>	<b>-4.5</b>	<b>42</b>	<b>3.1</b>	<b>56</b>	<b>3.2</b>	<b>49</b>	<b>--</b>	<b>--</b>
HFRI FOF: Strategic Index			<u>-6.5</u>	37	<u>-7.1</u>	45	<u>-6.7</u>	50	<u>1.2</u>	69	<u>1.2</u>	67	<u>3.3</u>	93
Over/Under			-2.0		-0.3		2.2		1.9		2.0			
eV Alt Fundamental - Long/Short Equity Median			-8.1		-8.1		-6.9		3.8		3.1		8.4	
Grosvenor	336,134,943	14.0	-8.5	53	-7.4	46	-4.5	42	3.1	56	3.2	49	5.8	78
HFRI FOF: Strategic Index			<u>-6.5</u>	37	<u>-7.1</u>	45	<u>-6.7</u>	50	<u>1.2</u>	69	<u>1.2</u>	67	<u>3.3</u>	93
Over/Under			-2.0		-0.3		2.2		1.9		2.0		2.5	
eV Alt Fundamental - Long/Short Equity Median			-8.1		-8.1		-6.9		3.8		3.1		8.4	
<b>Total Real Assets</b>	<b>303,319,521</b>	<b>12.7</b>	<b>-1.1</b>	<b>--</b>	<b>0.1</b>	<b>--</b>	<b>4.3</b>	<b>--</b>	<b>6.4</b>	<b>--</b>	<b>5.5</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Total Core Real Estate</b>	<b>174,721,676</b>	<b>7.3</b>	<b>2.1</b>	<b>--</b>	<b>4.2</b>	<b>--</b>	<b>8.7</b>	<b>--</b>	<b>9.0</b>	<b>--</b>	<b>10.6</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			0.3		0.3		0.4		0.8		0.2			
Columbus Square	4,641,614	0.2	1.6	--	5.3	--	8.0	--	11.1	--	13.7	--	14.8	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			-0.2		1.4		-0.3		2.9		3.3		7.8	

\*The Private Real Estate returns are time weighted.

Returns are gross of manager fees.



## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

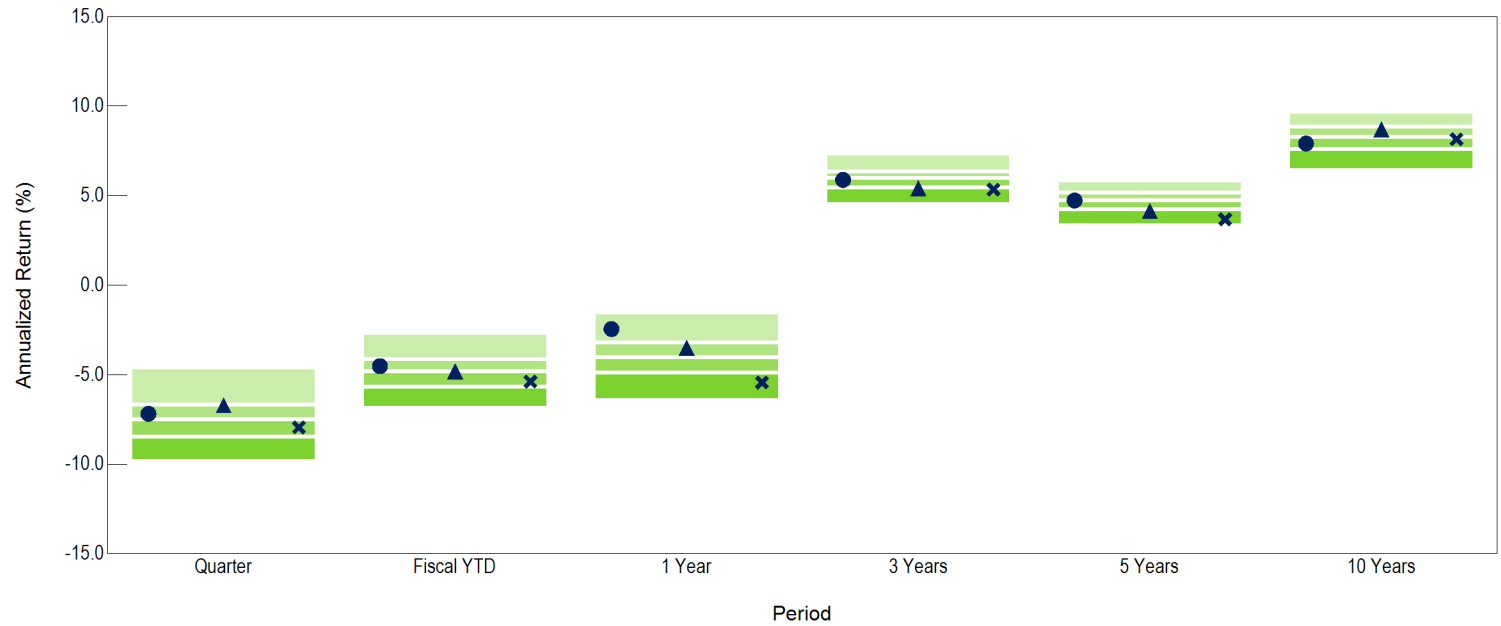
	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
JP Morgan	127,948,083	5.3	1.8	--	3.7	--	8.0	--	7.9	--	10.0	--	7.3	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			0.0		-0.2		-0.3		-0.3		-0.4		0.3	
Blackstone Property Partners	42,131,980	1.8	3.0	--	5.6	--	10.8	--	12.0	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			1.2		1.7		2.5		3.8					
<b>Private Real Estate</b>	<b>53,725,595</b>	<b>2.2</b>	<b>6.1</b>	<b>--</b>	<b>6.1</b>	<b>--</b>	<b>12.3</b>	<b>--</b>	<b>9.1</b>	<b>--</b>	<b>12.8</b>	<b>--</b>	<b>--</b>	<b>--</b>
Siguler Guff Distressed RE	4,213,268	0.2	3.9	--	2.2	--	10.2	--	13.8	--	19.7	--	--	--
TA Associates Realty X	11,431,665	0.5	3.9	--	6.6	--	12.6	--	10.6	--	11.5	--	--	--
Cerberus Real Estate Fund III	11,936,765	0.5	9.9	--	4.9	--	10.0	--	5.7	--	11.1	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			8.1		1.0		1.7		-2.5		0.7			
Hall Capital Fund III	5,228,395	0.2	1.2	--	2.2	--	4.3	--	8.6	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			-0.6		-1.7		-4.0		0.4					
Siguler Guff Distressed RE II	6,815,686	0.3	3.9	--	7.1	--	19.3	--	14.8	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			2.1		3.2		11.0		6.6					
Cerberus Real Estate Partners IV	7,660,382	0.3	2.7	--	6.1	--	6.7	--	--	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			0.9		2.2		-1.6							
Siguler Guff Dist. Real Estate Opp. II B	6,439,434	0.3	22.9	--	24.9	--	39.0	--	--	--	--	--	--	--
NCREIF ODCE			<u>1.8</u>	--	<u>3.9</u>	--	<u>8.3</u>	--	<u>8.2</u>	--	<u>10.4</u>	--	<u>7.0</u>	--
Over/Under			21.1		21.0		30.7							
Mt Lucas Peak	28,601,075	1.2	-11.6	--	-9.3	--	-5.1	--	-1.8	--	2.6	--	0.4	--
Gresham Tap Fund	46,271,175	1.9	-12.2	--	-13.0	--	-11.3	--	1.0	--	--	--	--	--

\*Returns are gross of manager fees.



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK POLICE vs. InvestorForce Public DB Gross

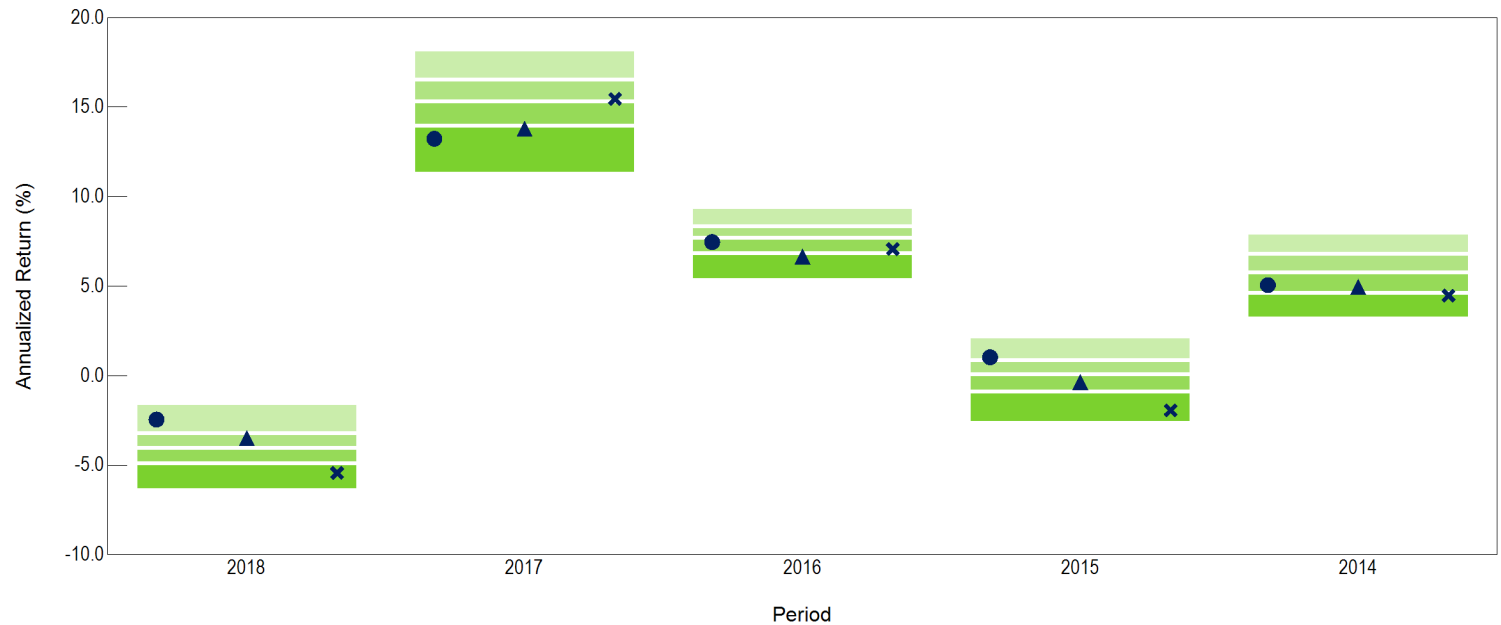


	Return (Rank)											
5th Percentile	-4.6		-2.7		-1.5		7.3		5.8		9.7	
25th Percentile	-6.7		-4.1		-3.2		6.4		5.2		8.9	
Median	-7.5		-4.8		-4.0		6.0		4.7		8.3	
75th Percentile	-8.4		-5.7		-4.9		5.5		4.2		7.6	
95th Percentile	-9.8		-6.8		-6.4		4.5		3.4		6.4	
# of Portfolios	251		251		251		240		231		197	
● OK POLICE	-7.2	(43)	-4.5	(41)	-2.5	(13)	5.9	(57)	4.7	(52)	7.9	(67)
▲ POLICE Allocation Index	-6.7	(27)	-4.8	(52)	-3.5	(36)	5.4	(77)	4.1	(78)	8.7	(34)
× POLICE Policy Index	-7.9	(61)	-5.4	(69)	-5.4	(87)	5.3	(80)	3.7	(92)	8.1	(57)



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK POLICE vs. InvestorForce Public DB Gross



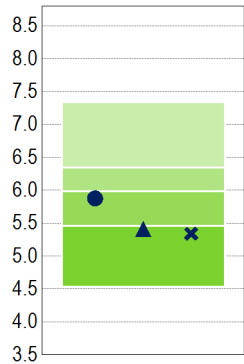
	Return (Rank)									
5th Percentile	-1.5	18.2	9.4	2.2	8.0					
25th Percentile	-3.2	16.5	8.4	0.9	6.8					
Median	-4.0	15.3	7.7	0.1	5.8					
75th Percentile	-4.9	14.0	6.9	-0.9	4.6					
95th Percentile	-6.4	11.3	5.3	-2.6	3.2					
# of Portfolios	251	304	305	316	248					
● OK POLICE	-2.5	(13)	13.2	(86)	7.5	(57)	1.0	(21)	5.1	(68)
▲ POLICE Allocation Index	-3.5	(36)	13.8	(77)	6.7	(80)	-0.4	(63)	5.0	(70)
× POLICE Policy Index	-5.4	(87)	15.5	(48)	7.1	(70)	-1.9	(89)	4.5	(79)



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

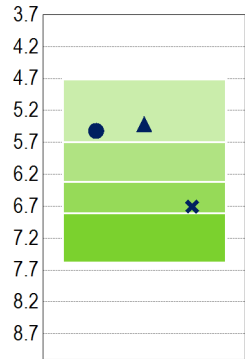
## OK POLICE vs. InvestorForce Public DB Gross 3 Years

### Anlzd Return



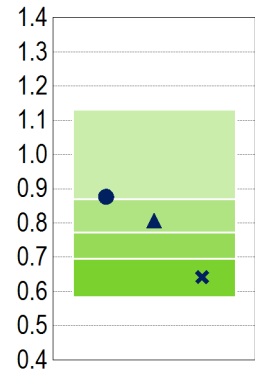
● OK POLICE	
Value	5.88
Rank	57
▲ POLICE Allocation Index	
Value	5.41
Rank	77
× POLICE Policy Index	
Value	5.34
Rank	80
Universe	
5th %tile	7.34
25th %tile	6.36
Median	5.99
75th %tile	5.46
95th %tile	4.55

### Anlzd Standard Deviation



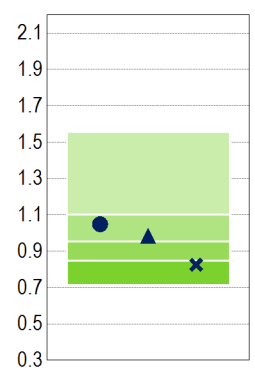
● OK POLICE	
Value	5.52
Rank	19
▲ POLICE Allocation Index	
Value	5.42
Rank	15
× POLICE Policy Index	
Value	6.71
Rank	73
Universe	
5th %tile	4.72
25th %tile	5.69
Median	6.31
75th %tile	6.80
95th %tile	7.57

### Sharpe Ratio



● OK POLICE	
Value	0.88
Rank	25
▲ POLICE Allocation Index	
Value	0.81
Rank	39
× POLICE Policy Index	
Value	0.64
Rank	87
Universe	
5th %tile	1.13
25th %tile	0.87
Median	0.77
75th %tile	0.70
95th %tile	0.58

### Sortino Ratio



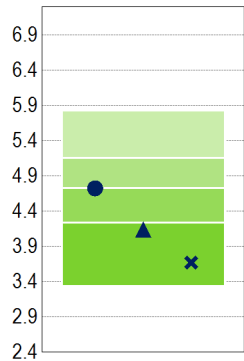
● OK POLICE	
Value	1.05
Rank	34
▲ POLICE Allocation Index	
Value	0.98
Rank	45
× POLICE Policy Index	
Value	0.83
Rank	80
Universe	
5th %tile	1.56
25th %tile	1.10
Median	0.96
75th %tile	0.85
95th %tile	0.72



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

## OK POLICE vs. InvestorForce Public DB Gross 5 Years

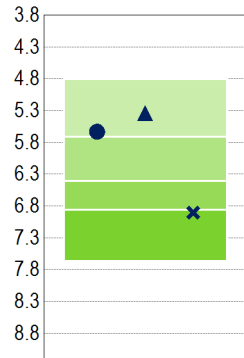
Anlzd Return



● OK POLICE	
Value	4.72
Rank	52
▲ POLICE Allocation Index	
Value	4.14
Rank	78
× POLICE Policy Index	
Value	3.67
Rank	92

Universe	
5th %tile	5.83
25th %tile	5.17
Median	4.74
75th %tile	4.25
95th %tile	3.35

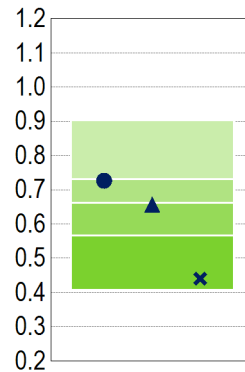
Anlzd Standard Deviation



● OK POLICE	
Value	5.63
Rank	22
▲ POLICE Allocation Index	
Value	5.34
Rank	10
× POLICE Policy Index	
Value	6.91
Rank	78

Universe	
5th %tile	4.80
25th %tile	5.70
Median	6.39
75th %tile	6.85
95th %tile	7.65

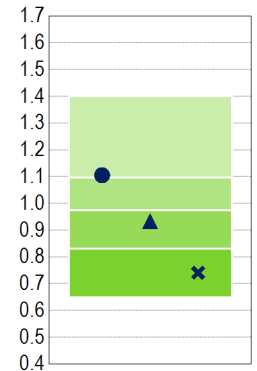
Sharpe Ratio



● OK POLICE	
Value	0.73
Rank	26
▲ POLICE Allocation Index	
Value	0.66
Rank	52
× POLICE Policy Index	
Value	0.44
Rank	93

Universe	
5th %tile	0.90
25th %tile	0.73
Median	0.66
75th %tile	0.57
95th %tile	0.41

Sortino Ratio



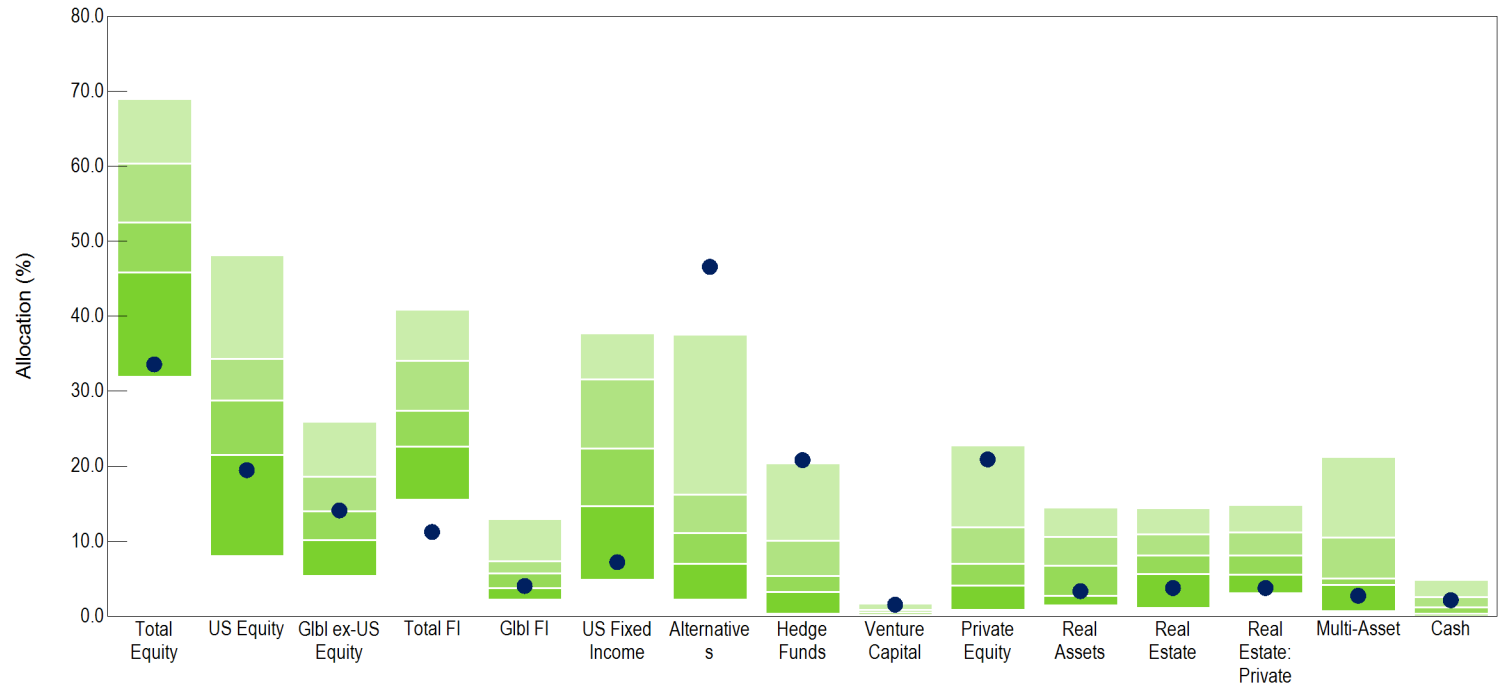
● OK POLICE	
Value	1.10
Rank	23
▲ POLICE Allocation Index	
Value	0.93
Rank	62
× POLICE Policy Index	
Value	0.74
Rank	87

Universe	
5th %tile	1.40
25th %tile	1.10
Median	0.98
75th %tile	0.83
95th %tile	0.65



# TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE

Total Plan Allocation vs. InvestorForce Public DB Gross



	Allocation (Rank)															
5th Percentile	68.9	48.1	25.9	40.9	13.0	37.7	37.6	20.4	1.7	22.8	14.5	14.4	14.8	21.2	4.8	--
25th Percentile	60.4	34.4	18.6	34.1	7.4	31.6	16.3	10.1	0.9	11.9	10.7	11.0	11.2	10.5	2.6	--
Median	52.6	28.8	14.0	27.5	5.8	22.4	11.2	5.5	0.5	7.1	6.8	8.2	8.2	5.1	1.3	--
75th Percentile	45.9	21.6	10.3	22.7	3.8	14.8	7.1	3.3	0.3	4.2	2.8	5.7	5.6	4.2	0.4	--
95th Percentile	32.0	8.1	5.5	15.6	2.3	5.0	2.2	0.4	0.1	0.9	1.5	1.2	3.1	0.8	0.0	--
# of Portfolios	210	145	178	209	28	133	133	66	23	96	56	141	108	68	192	--
● OK POLICE	33.6 (95)	19.5 (83)	14.1 (50)	11.2 (99)	4.0 (71)	7.2 (91)	46.6 (3)	20.8 (5)	1.5 (10)	20.9 (7)	3.3 (73)	3.8 (91)	3.8 (93)	2.7 (89)	2.1 (35)	--





# TOTAL FUND ATTRIBUTION ANALYSIS

Performance Attribution		
	Last 3 Mo.	1 Yr
Wtd. Actual Return	-7.3%	-2.6%
Wtd. Index Return *	-7.9%	-5.4%
<b>Excess Return</b>	<b>0.6%</b>	<b>2.8%</b>
Selection Effect	1.9%	4.0%
Allocation Effect	0.0%	0.0%
Interaction Effect	-1.3%	-1.2%
Asset Class Returns		
OK POLICE	-7.2%	-2.5%
Equity Composite	-14.2%	-8.6%
Domestic Equity Composite	-15.7%	-5.3%
International Equity Composite	-11.4%	-13.7%
Fixed Income Composite	-0.6%	-1.1%
Total Long/Short	-8.5%	-4.5%
Total Real Assets	-1.1%	4.3%
Total Core Real Estate	2.1%	8.7%
Private Real Estate	6.1%	12.3%
Total Low Volatility Strategies	-1.7%	1.8%
Private Credit	2.8%	9.7%
Private Equity	2.4%	15.0%
Cash	0.6%	2.1%

\*Calculated from benchmark returns and weightings of each component.



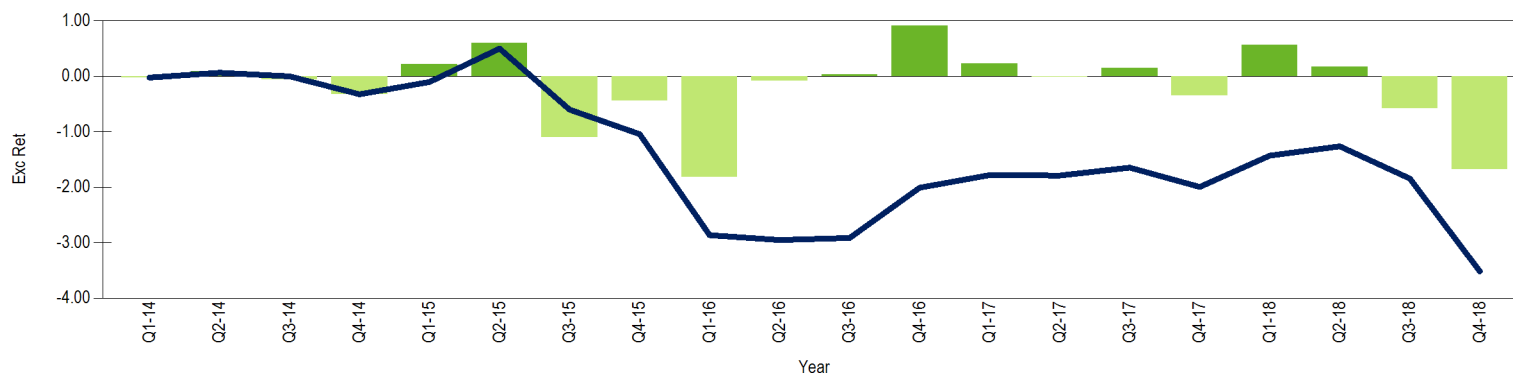
# OKLAHOMA LAW



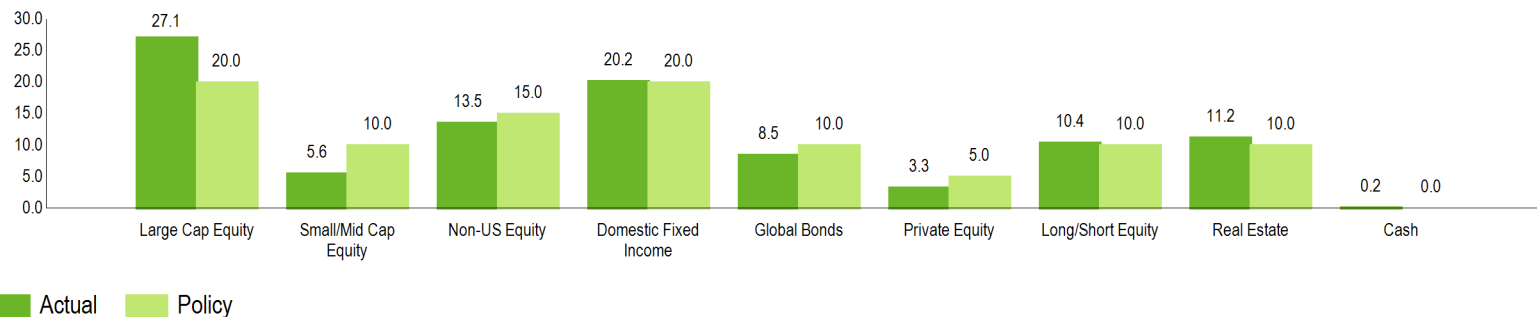
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK LAW</b>	<b>\$917,376,909</b>	<b>-8.7%</b>	<b>80</b>	<b>-6.6%</b>	<b>90</b>	<b>-5.0%</b>	<b>79</b>	<b>5.3%</b>	<b>82</b>	<b>4.4%</b>	<b>67</b>	<b>8.3%</b>	<b>52</b>
LAW Allocation Index		-7.0%	38	-4.4%	35	-3.4%	33	6.2%	34	5.2%	24	8.5%	44
LAW Policy Index		-7.9%	60	-5.2%	66	-3.6%	39	5.9%	56	5.1%	27	8.4%	45
InvestorForce Public DB Gross Median		-7.5%		-4.8%		-4.0%		6.0%		4.7%		8.3%	

## Quarterly and Cumulative Excess Performance



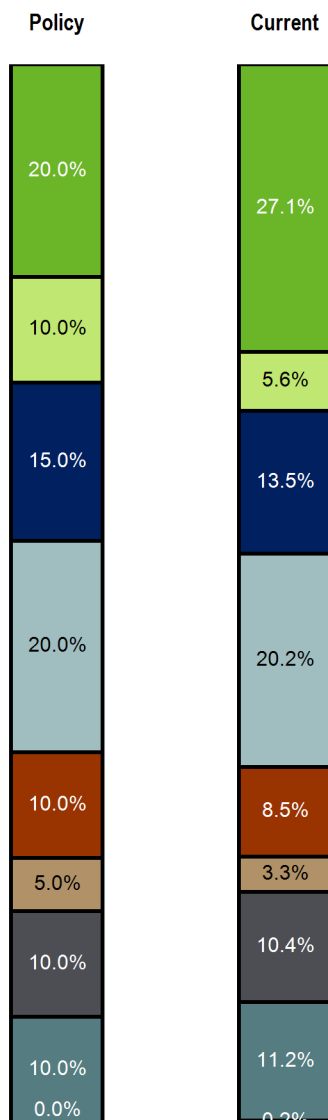
## Actual vs Target Allocation (%)



Returns are gross of manager fees.



# TOTAL FUND ASSET ALLOCATION VS. POLICY



Asset Allocation vs. Target							
	Current	Policy	Current	Difference*	Policy Range	Within Range	
Large Cap Equity	\$248,626,414	20.0%	27.1%	7.1%	15.0% - 25.0%	No	
Small/Mid Cap Equity	\$51,086,361	10.0%	5.6%	-4.4%	5.0% - 15.0%	Yes	
Non-US Equity	\$124,253,303	15.0%	13.5%	-1.5%	5.0% - 15.0%	Yes	
Domestic Fixed Income	\$185,160,568	20.0%	20.2%	0.2%	15.0% - 25.0%	Yes	
Global Bonds	\$77,701,771	10.0%	8.5%	-1.5%	5.0% - 15.0%	Yes	
Private Equity	\$30,560,767	5.0%	3.3%	-1.7%	0.0% - 5.0%	Yes	
Long/Short Equity	\$95,495,549	10.0%	10.4%	0.4%	5.0% - 15.0%	Yes	
Real Estate	\$102,863,770	10.0%	11.2%	1.2%	2.0% - 12.0%	Yes	
Cash	\$1,628,406	0.0%	0.2%	0.2%	0.0% - 5.0%	Yes	
<b>Total</b>	<b>\$917,376,909</b>	<b>100.0%</b>	<b>100.0%</b>				



# OKLAHOMA JUDGES

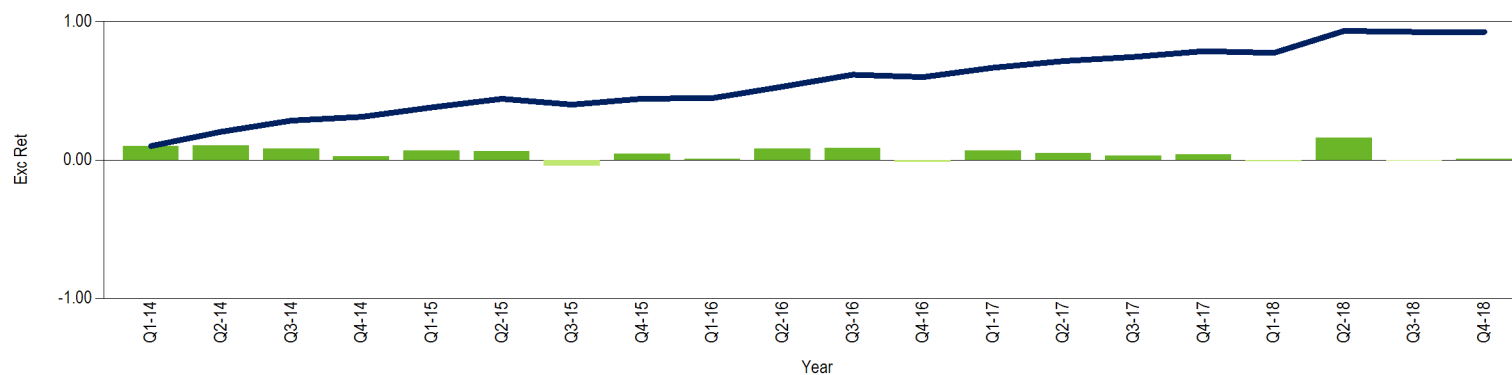


## Oklahoma Judges

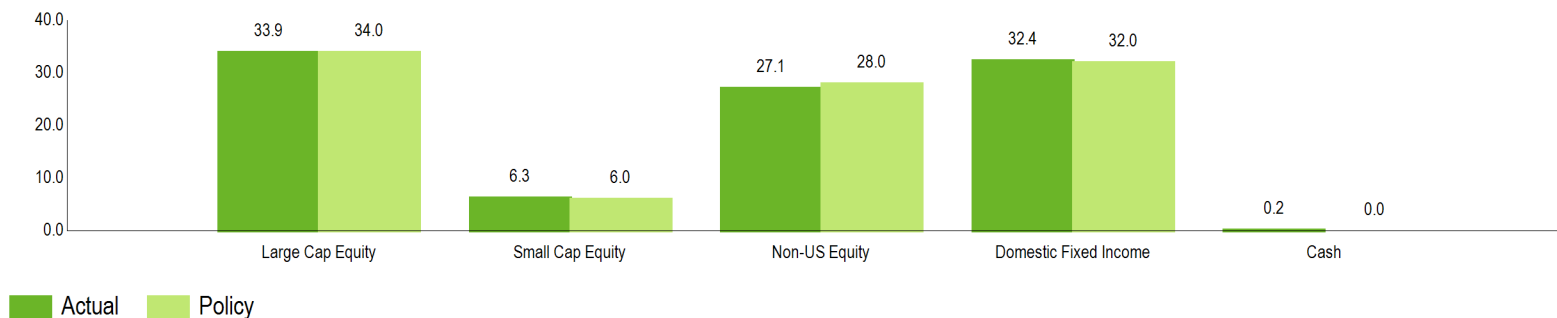
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK JUDGES</b>	<b>\$310,728,061</b>	<b>-9.1%</b>	<b>87</b>	<b>-6.5%</b>	<b>88</b>	<b>-6.4%</b>	<b>95</b>	<b>5.7%</b>	<b>63</b>	<b>4.6%</b>	<b>57</b>	<b>8.5%</b>	<b>45</b>
<i>JUDGES Allocation Index</i>		-9.1%	87	-6.5%	88	-6.5%	96	5.6%	71	4.4%	67	8.0%	65
<i>JUDGES Policy Index</i>		-8.7%	80	-6.1%	82	-6.1%	94	5.9%	58	4.7%	54	8.3%	50
<i>InvestorForce Public DB Gross Median</i>		-7.5%		-4.8%		-4.0%		6.0%		4.7%		8.3%	

### Quarterly and Cumulative Excess Performance



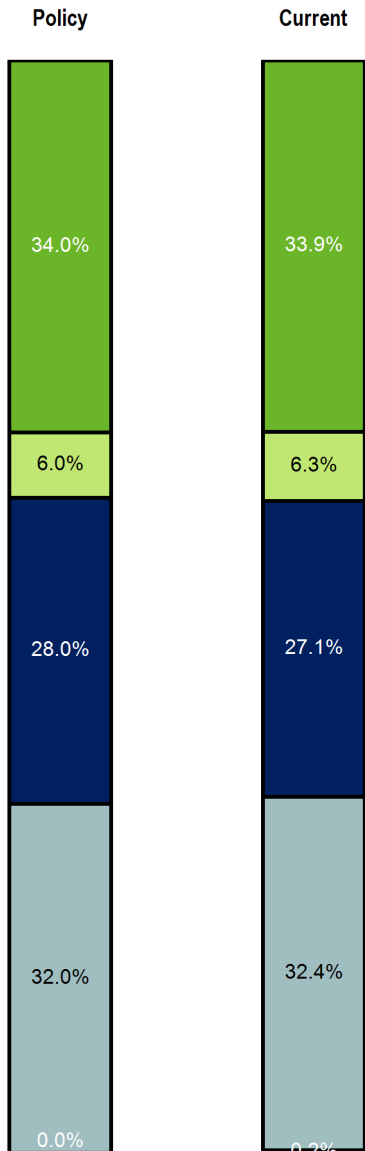
### Actual vs Target Allocation (%)



Returns are gross of manager fees.



# TOTAL FUND ASSET ALLOCATION VS. POLICY



Asset Allocation vs. Target						
	Current	Policy	Current Difference*	Policy Range	Within Range	
Large Cap Equity	\$105,454,352	34.0%	33.9%	-0.1%	31.2% - 36.8%	Yes
Small Cap Equity	\$19,714,760	6.0%	6.3%	0.3%	3.2% - 8.8%	Yes
Non-US Equity	\$84,234,771	28.0%	27.1%	-0.9%	25.0% - 31.0%	Yes
Domestic Fixed Income	\$100,578,945	32.0%	32.4%	0.4%	27.5% - 36.5%	Yes
Cash	\$745,233	0.0%	0.2%	0.2%	0.0% - 5.0%	Yes
<b>Total</b>	<b>\$310,728,061</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation



# OKLAHOMA WILDLIFE

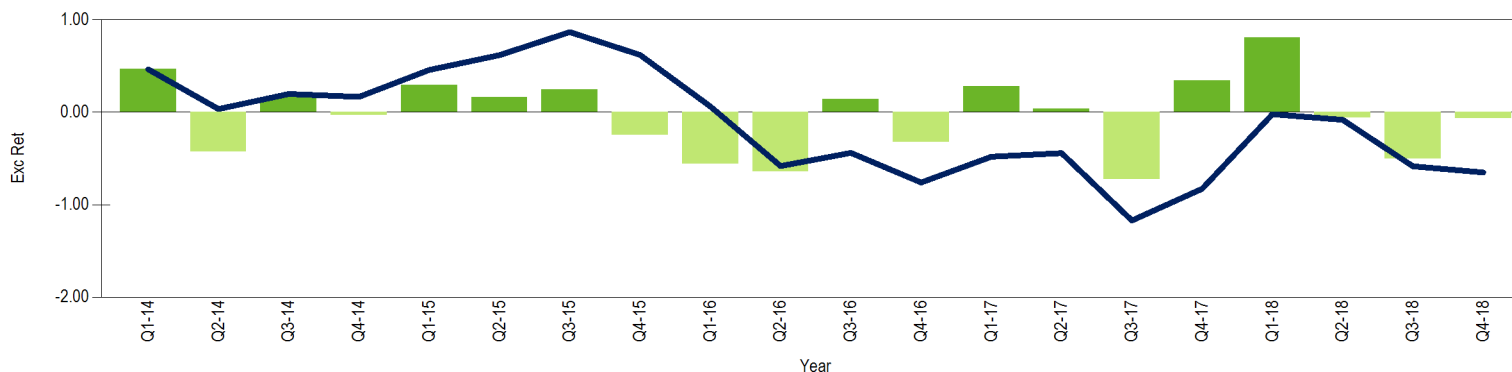




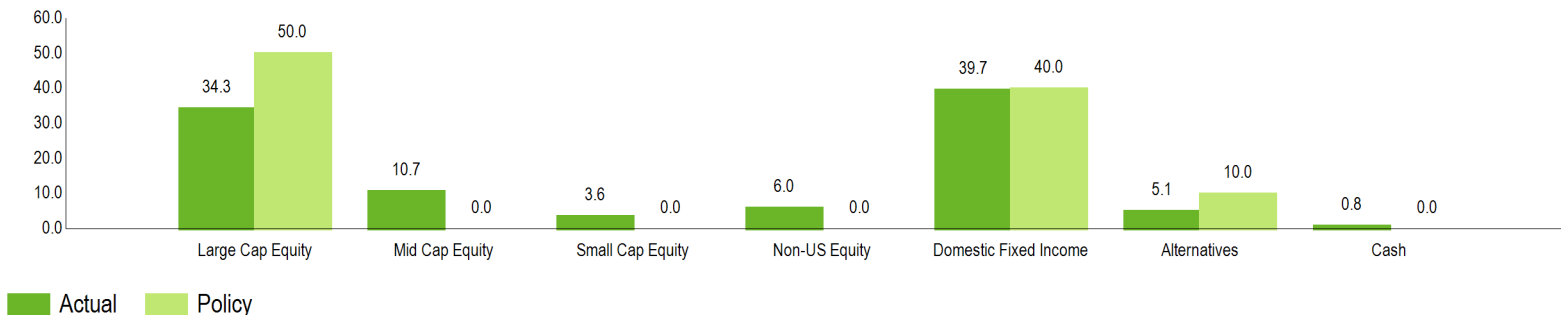
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK WILDLIFE</b>	<b>\$106,480,630</b>	<b>-7.9%</b>	<b>64</b>	<b>-4.9%</b>	<b>63</b>	<b>-3.5%</b>	<b>45</b>	<b>5.5%</b>	<b>66</b>	<b>4.9%</b>	<b>36</b>	<b>7.7%</b>	<b>61</b>
<i>WILDLIFE Allocation Index</i>		-7.8%	63	-4.4%	45	-3.7%	49	6.0%	48	5.0%	30	7.7%	61
<i>WILDLIFE Policy Index</i>		-7.7%	59	-5.5%	74	-4.7%	72	4.8%	82	5.0%	34	8.2%	49
<i>InvestorForce Public DB Gross Median</i>		-7.1%		-4.6%		-3.8%		5.9%		4.7%		8.1%	

## Quarterly and Cumulative Excess Performance



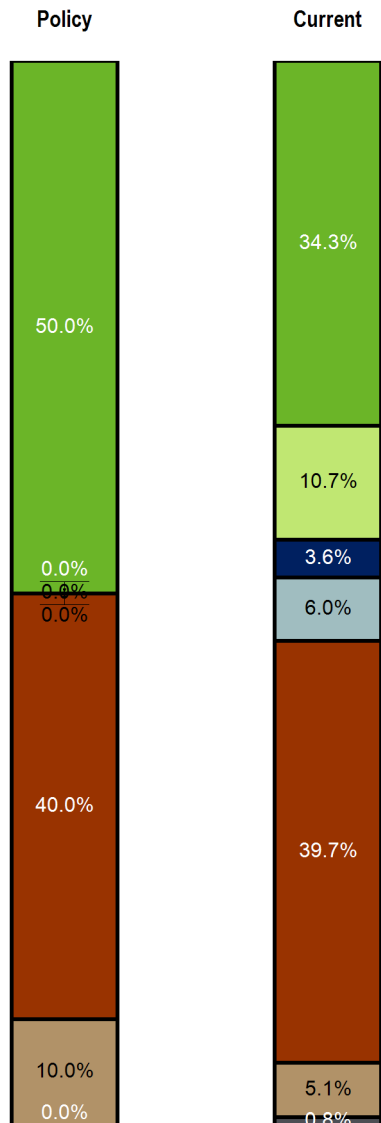
## Actual vs Target Allocation (%)



Returns are gross of manager fees.



# TOTAL FUND ASSET ALLOCATION VS. POLICY



Asset Allocation vs. Target						
	Current	Policy	Current	Difference*	Policy Range	Within Range
Large Cap Equity	\$36,471,044	50.0%	34.3%	-15.7%	40.0% - 65.0%	No
Mid Cap Equity	\$11,389,386	0.0%	10.7%	10.7%	0.0% - 10.0%	No
Small Cap Equity	\$3,780,187	0.0%	3.6%	3.6%	0.0% - 10.0%	Yes
Non-US Equity	\$6,338,188	0.0%	6.0%	6.0%	0.0% - 15.0%	Yes
Domestic Fixed Income	\$42,235,957	40.0%	39.7%	-0.3%	35.0% - 55.0%	Yes
Alternatives	\$5,438,967	10.0%	5.1%	-4.9%	0.0% - 10.0%	Yes
Cash	\$826,902	0.0%	0.8%	0.8%	0.0% - 5.0%	Yes
<b>Total</b>	<b>\$106,480,630</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation



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- Past performance is no guarantee of future results.
- All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.
- NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.
- Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may be preliminary and subject to change.
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### **Reporting Methodology**

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.
- Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.
- For managers funded in the middle of a month, the "since inception" return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.
- This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.

