



# IAC Performance Review

November 16, 2016



North Carolina Department of State Treasurer  
Investment Management

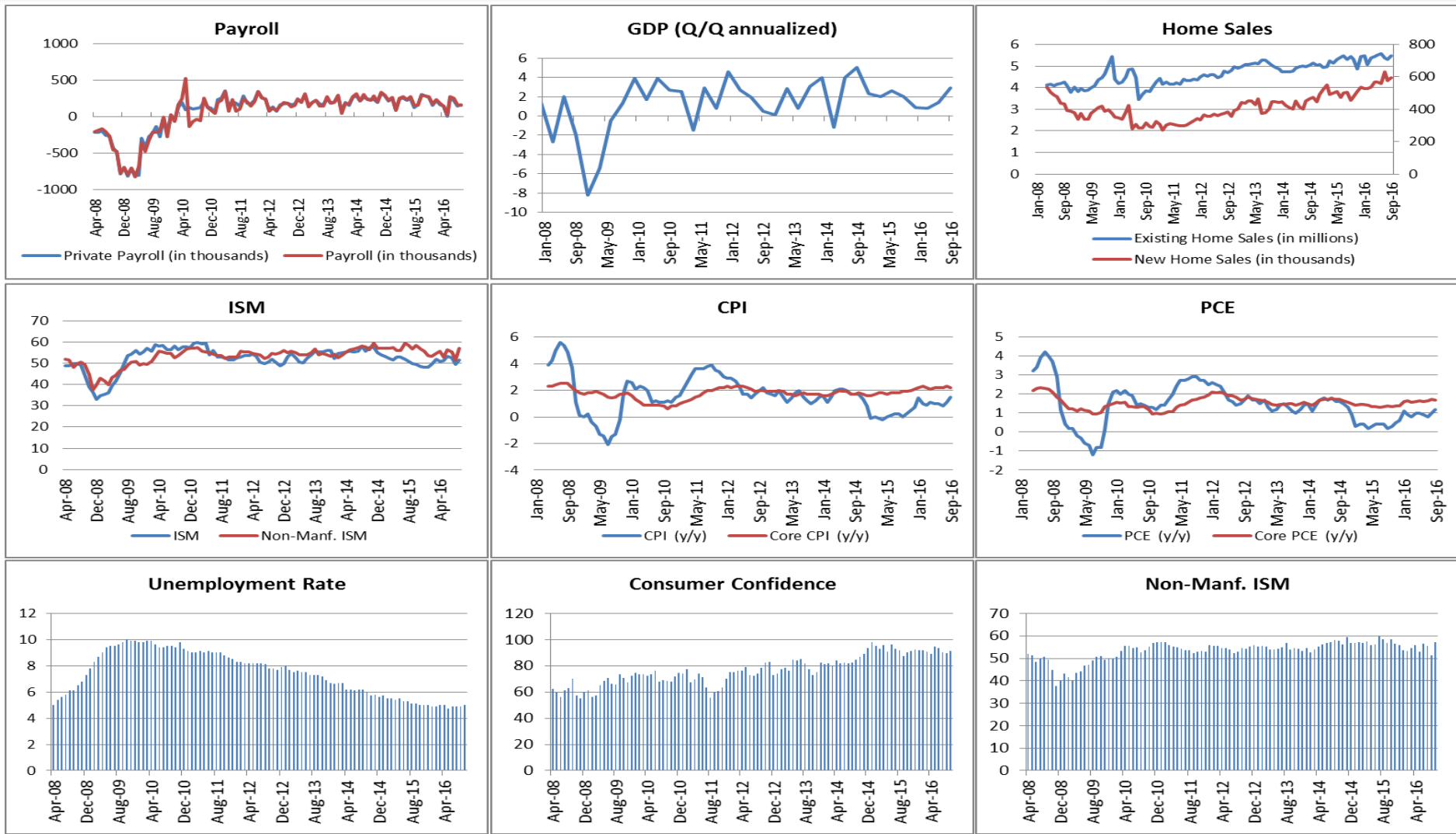
Learn. Invest. Grow. Prosper.

# Good Progress on Major IMD Initiatives

1. Research and develop ESG policies and strategies
2. Transition oversight of Ancillary Funds, including establish a new long-term fixed income product for certain clients and facilitate movement of assets
3. Evaluate restructuring/exiting Fund of Funds and legacy low-conviction funds/managers
4. Implement Managed Accounts Program and initial components of direct Hedged Equity program
5. Develop internal equity index fund implementation plan
6. Update asset-liability study and support review of the NCRS discount rate/investment return assumption
7. Institute 360 degree feedback for senior management and career development program for team leaders, portfolio managers, and analysts
8. Implement BNY Mellon Private Investment Asset Service processes
9. New IMD role with unbundled Supplemental Retirement Plan
10. Implement Venture Capital Multiplier Fund (Escheats Fund)
11. Conduct third-party review of budget practices, fees, incentives and policy compliance



# U.S. Economic Environment



Source: Bloomberg; Data as of 09/30/16



# Global Economic Environment

Countries	Real GDP YoY		Unemployment		CPI YoY		Countries	Real GDP YoY		Unemployment		CPI YoY	
	Date	Value	Date	Value	Date	Value		Date	Value	Date	Value	Date	Value
<b>U.S.</b>	09/16	1.5	09/16	5.0	09/16	1.5	<b>Asia/Pacific/Latam</b>						
<b>Europe</b>							China	09/16	6.7			09/16	1.9
Germany	06/16	1.8	09/16	6.1	09/16	0.7	India	06/16	7.1			09/16	4.1
France	09/16	1.1	08/16	10.5	09/16	0.4	Japan	06/16	0.8	09/16	3	09/16	-0.5
U.K	09/16	2.3	08/16	4.9	09/16	1	Indonesia	06/16	5.2			09/16	3.1
Italy	06/16	0.7	08/16	11.4	09/16	0.1	Brazil	06/16	-3.8			09/16	8.5
Spain	09/16	3.2	08/16	19.5	09/16	0.2	Australia	06/16	3.3	09/16	5.6	09/16	1.3

Source: Bloomberg; Data as of 09/30/16

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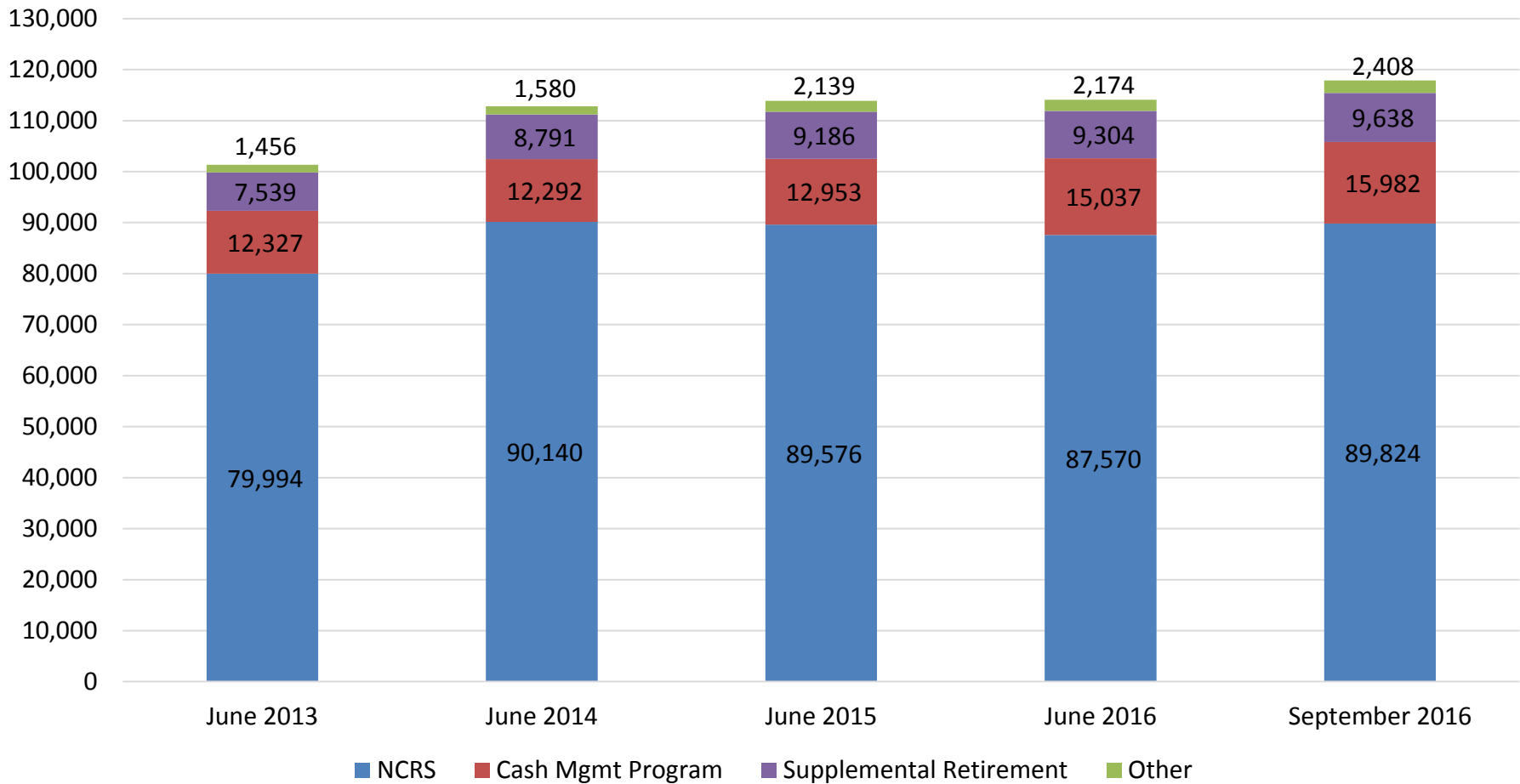


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# Assets Under Management (\$mil)

\$117.9 Billion as of September 30, 2016



Note: The Cash Management Program does not include Assets with Fiscal Agent which are reflected in the Bond Proceeds Fund. These funds which may have been reported in the Cash Management Program previously have now been removed for all years shown in this report to more accurately reflect the Cash Management Program balance.



# NCRS Asset Allocation

As of September 30, 2016

	Market Value (\$000)	%	Target	Range		Relative %	Relative \$ (\$000)
				Minimum	Maximum		
<b>Growth</b>	<b>\$52,391,145</b>	<b>58.33%</b>	<b>58.00%</b>	<b>37.00%</b>	<b>71.00%</b>	<b>0.33%</b>	<b>\$293,179</b>
Public Equity	38,833,287	43.23%	42.00%	37.00%	47.00%	1.23%	1,107,174
Non Core Real Estate	3,890,464	4.33%	3.00%	0.00%	8.00%	1.33%	1,195,742
Opportunistic Fixed Income	5,231,697	5.82%	7.00%	0.00%	7.50%	-1.18%	(1,055,989)
Private Equity	4,435,697	4.94%	6.00%	0.00%	8.75%	-1.06%	(953,747)
<b>Inflation Sensitive &amp; Diversifiers</b>	<b>9,977,673</b>	<b>11.11%</b>	<b>11.00%</b>	<b>4.00%</b>	<b>16.00%</b>	<b>0.11%</b>	<b>97,024</b>
Core Real Estate	4,454,747	4.96%	5.00%	2.00%	10.00%	-0.04%	(36,457)
Inflation Sensitive	5,522,926	6.15%	6.00%	2.00%	7.50%	0.15%	133,481
<b>Multi-Strategy</b>	<b>1,586,151</b>	<b>1.77%</b>	<b>2.00%</b>	<b>0.00%</b>	<b>4.00%</b>	<b>-0.23%</b>	<b>(210,331)</b>
<b>Rates &amp; Liquidity</b>	<b>25,869,110</b>	<b>28.80%</b>	<b>29.00%</b>	<b>24.00%</b>	<b>42.00%</b>	<b>-0.20%</b>	<b>(179,872)</b>
Cash	1,054,000	1.17%	1.00%	0.00%	10.00%	0.17%	155,759
Investment Grade Fixed Income	24,815,111	27.63%	28.00%	24.00%	32.00%	-0.37%	(335,631)
<b>Grand Total</b>	<b>\$89,824,079</b>	<b>100.00%</b>					





# NCRS Unaudited Asset Allocation

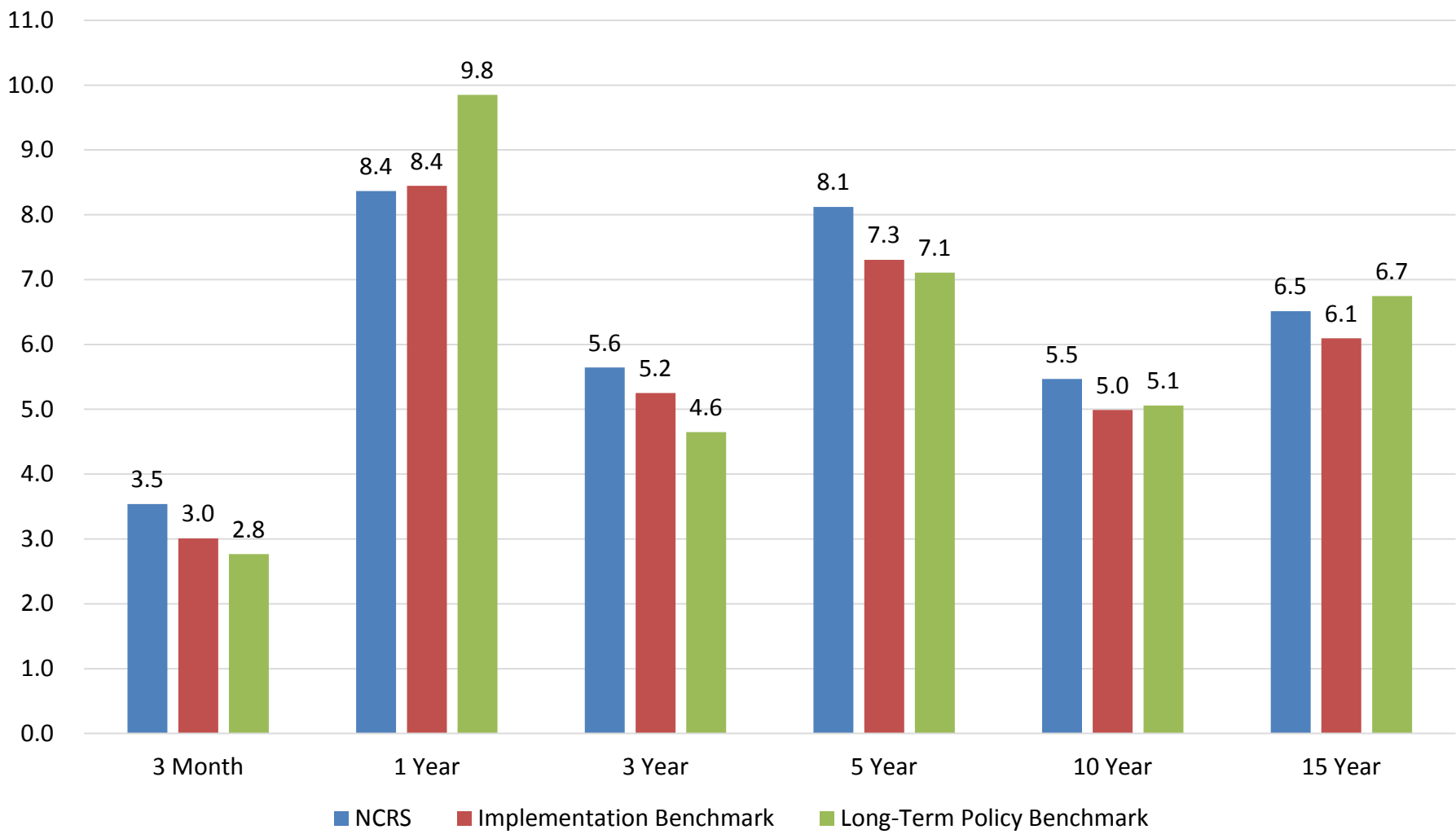
As of November 9, 2016

	Market Value (\$000)	%	Target	Range		Relative %	Relative \$ (\$000)
				Minimum	Maximum		
<b>Growth</b>	<b>\$51,218,122</b>	<b>58.15%</b>	<b>58.00%</b>	<b>37.00%</b>	<b>71.00%</b>	<b>0.15%</b>	<b>\$131,545</b>
Public Equity	37,743,783	42.85%	42.00%	37.00%	47.00%	0.85%	750,055
Non Core Real Estate	3,798,308	4.31%	3.00%	0.00%	8.00%	1.31%	1,155,899
Opportunistic Fixed Income	5,201,430	5.91%	7.00%	0.00%	7.50%	-1.09%	(964,191)
Private Equity	4,474,601	5.08%	6.00%	0.00%	8.75%	-0.92%	(810,218)
<b>Inflation Sensitive &amp; Diversifiers</b>	<b>10,253,148</b>	<b>11.64%</b>	<b>11.00%</b>	<b>4.00%</b>	<b>16.00%</b>	<b>0.64%</b>	<b>564,315</b>
Core Real Estate	4,457,616	5.06%	5.00%	2.00%	10.00%	0.06%	53,601
Inflation Sensitive	5,795,532	6.58%	6.00%	2.00%	7.50%	0.58%	510,714
<b>Multi-Strategy</b>	<b>1,583,868</b>	<b>1.80%</b>	<b>2.00%</b>	<b>0.00%</b>	<b>4.00%</b>	<b>-0.20%</b>	<b>(177,738)</b>
<b>Rates &amp; Liquidity</b>	<b>25,025,167</b>	<b>28.41%</b>	<b>29.00%</b>	<b>24.00%</b>	<b>42.00%</b>	<b>-0.59%</b>	<b>(518,121)</b>
Cash	796,855	0.90%	1.00%	0.00%	10.00%	-0.10%	(83,948)
Investment Grade Fixed Income	24,228,312	27.51%	28.00%	24.00%	32.00%	-0.49%	(434,173)
<b>Grand Total</b>	<b>\$88,080,305</b>	<b>100.00%</b>					



# NCRS Total Net Portfolio Return vs. Benchmarks

As of September 30, 2016



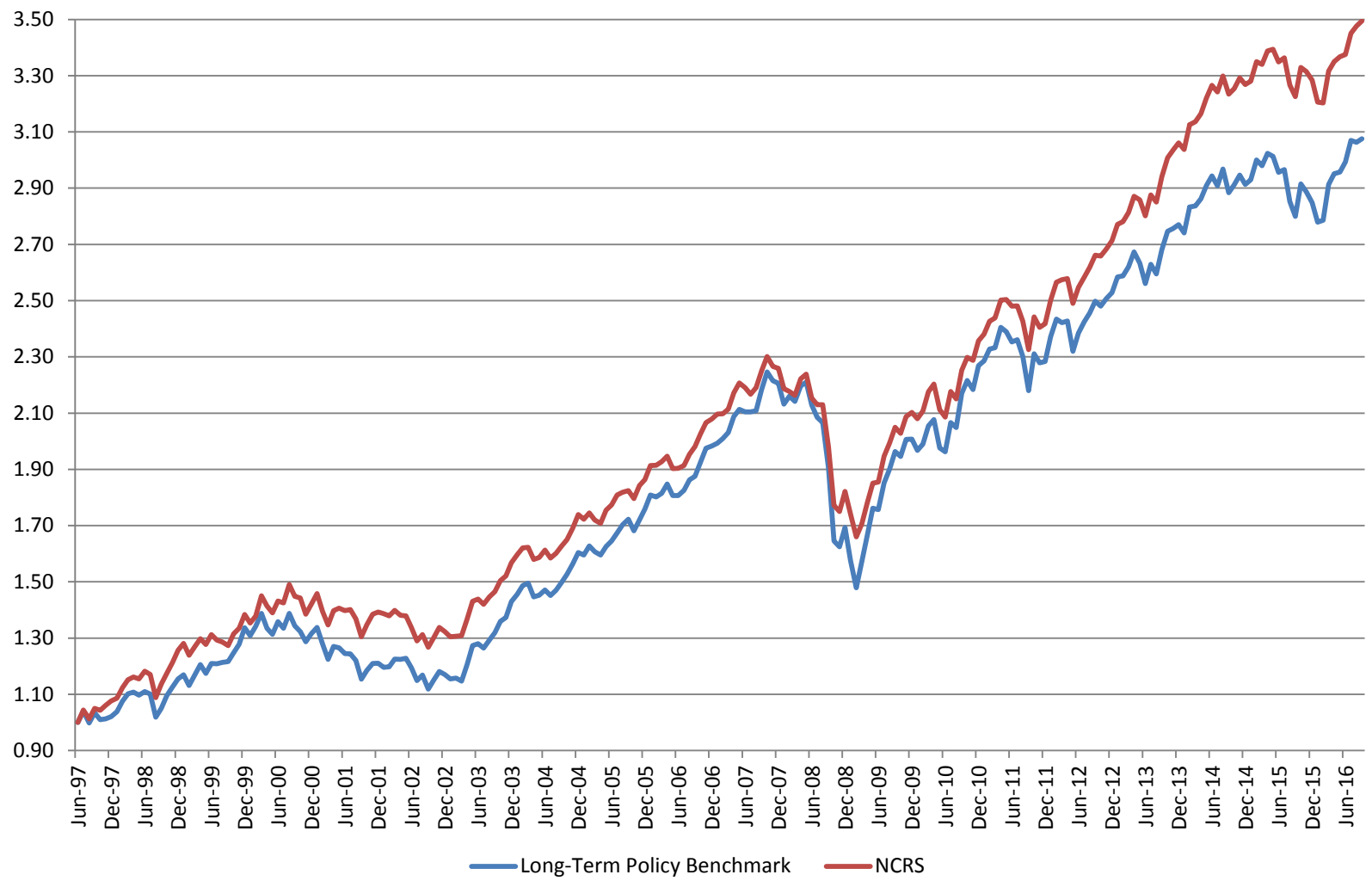
Note: Returns for periods greater than one year are annualized.





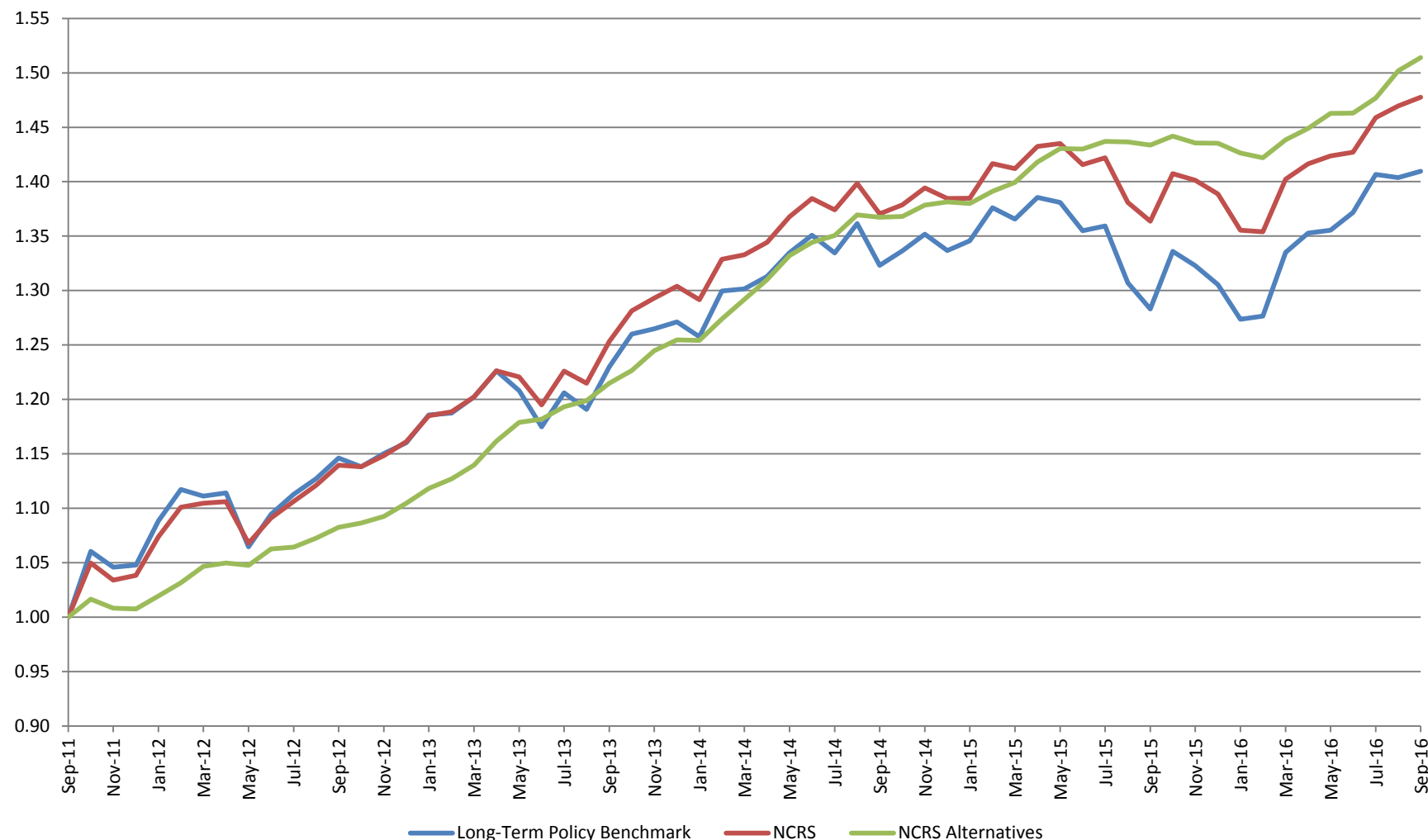
# Growth of a Dollar

As of September 30, 2016



# Growth of a Dollar

## 5 Years Ending September 30, 2016



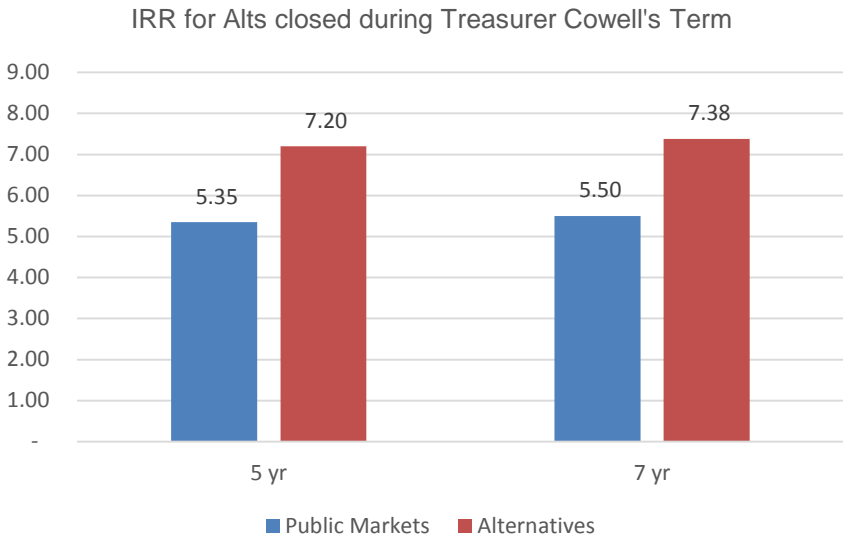
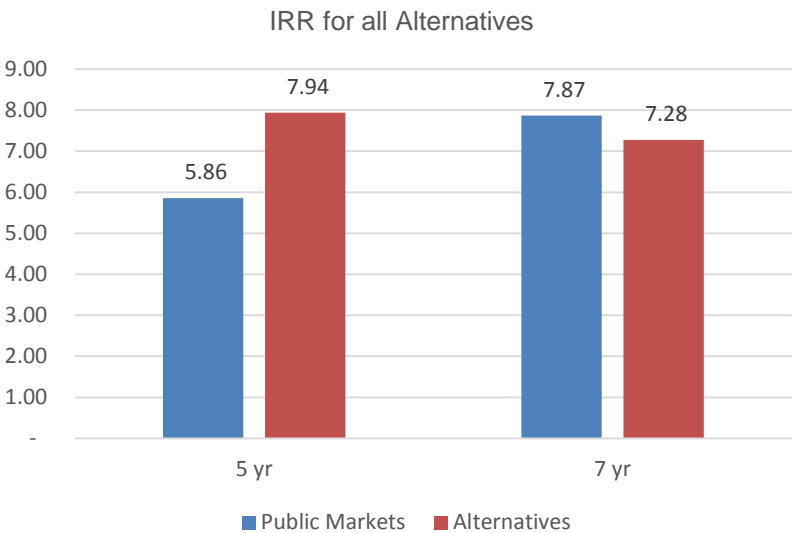
Note: NCRS Alternatives includes the following: Core Real Estate, Inflation Sensitive - Private Natural Resources, Inflation Sensitive – Real Assets and Other, Multi-Strategy Investments, Non Core Real Estate, Opportunistic Fixed Income, Private Equity, Equity Hedge Strategies and the Blackstone Granite Fund (Class B).



# NCRS Alternatives' Value Add Net of Fees (\$mil)

As of June 30, 2016

- Analysis compares the return in Alternatives versus what NCRS could have returned had we invested those dollars in our “Long-only Public Equity” and Rates & Liquidity” portfolios on a pro-rata basis.
- Analysis was run twice to evaluate:
  - All Alternatives
  - Alternatives closed during Treasurer Cowell's term



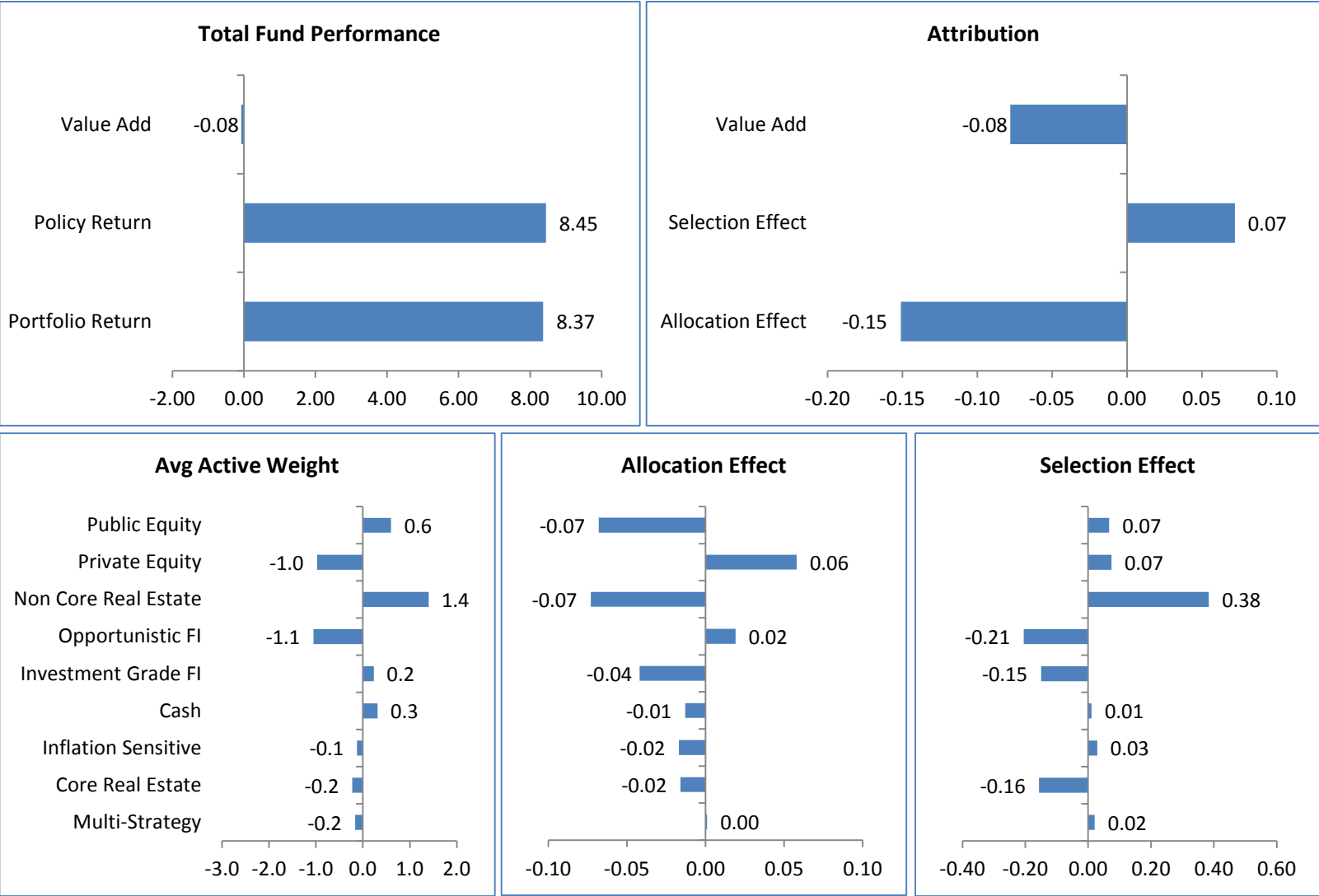
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# NCRS Net Return Attribution

## Total Fund Performance vs. Implementation Benchmark

1 Year Ending September 30, 2016



# NCRS Net Return Attribution

## Total Fund Performance vs. Implementation Benchmark

5 Years Ending September 30, 2016



NCRS Gross of Fees Return and Risk  
 BNY Mellon Universe: Public Funds > \$1B  
 As of September 30, 2016

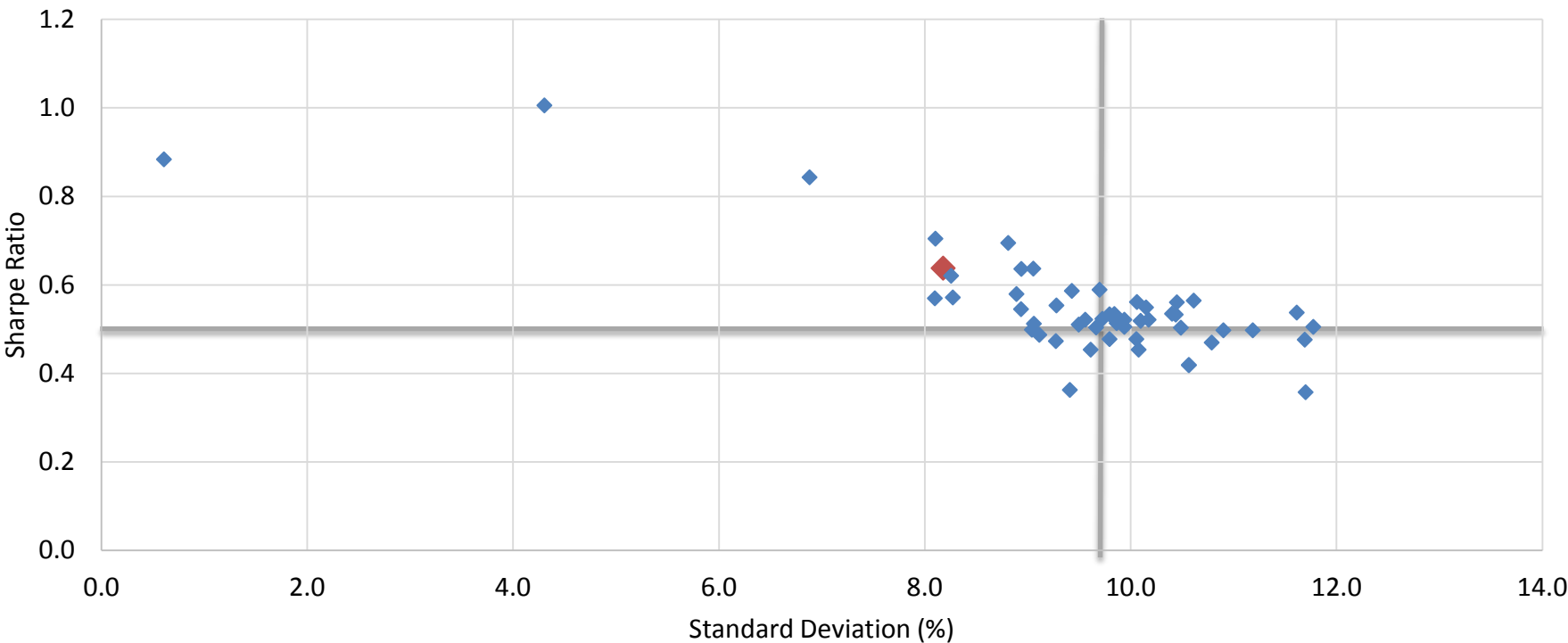
<b>Returns</b>	<b><u>3 Years</u></b>	<b><u>5 Years</u></b>	<b><u>10 Years</u></b>	<b><u>15 Year</u></b>
25th percentile	6.78	10.15	6.13	7.29
<b>Median</b>	<b>6.10</b>	<b>8.96</b>	<b>5.76</b>	<b>6.91</b>
75th percentile	5.52	8.21	5.30	6.51
<b>NCRS</b>	<b>6.28</b>	<b>8.70</b>	<b>5.95</b>	<b>6.86</b>
Percentile Rank (1 <sup>st</sup> percentile = highest performance)	47	65	33	56
<b>Risk</b>	<b><u>3 Years</u></b>	<b><u>5 Years</u></b>	<b><u>10 Years</u></b>	<b><u>15 Year</u></b>
25th percentile	6.73	7.05	10.41	9.67
<b>Median</b>	<b>5.84</b>	<b>6.56</b>	<b>9.79</b>	<b>9.25</b>
75th percentile	5.54	5.91	9.02	8.42
<b>NCRS</b>	<b>5.09</b>	<b>5.67</b>	<b>8.18</b>	<b>7.63</b>
Percentile Rank (99 <sup>th</sup> percentile = lowest risk)	85	80	89	93



# NCRS Gross of Fees Sharpe Ratio

## BNY Mellon Universe: Public Funds > \$1B

As of September 30, 2016

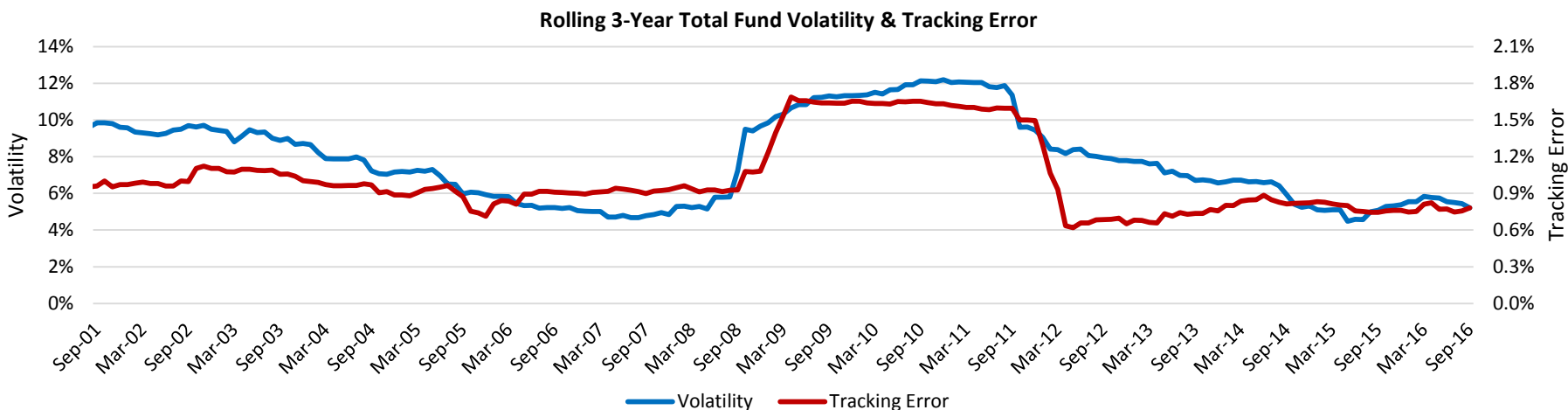


<u>Sharpe Ratio</u>	<u>3 Years</u>	<u>5 Years</u>	<u>10 Years</u>	<u>15 Year</u>
25th percentile	1.15	1.44	0.58	0.70
<b>Median</b>	<b>0.98</b>	<b>1.32</b>	<b>0.52</b>	<b>0.64</b>
75th percentile	0.89	1.27	0.50	0.59
<b>NCRS</b>	<b>1.20</b>	<b>1.49</b>	<b>0.64</b>	<b>0.73</b>
Percentile Rank	22	18	12	18

Note: Scatter plot shows Sharpe Ratio and Volatility for 10 years ending September 30, 2016



## NCRS Rolling 3 Year Total Fund Volatility & Tracking Error\*



## NCRS Risk and Return Metrics\*

Program	POSITION		36-MONTH					60-MONTH				
	\$ Bil	% Wgt	Return	St. Dev	Active Return	TE	IR	Return	St. Dev	Active Return	TE	IR
<b>Total NCRS</b>	<b>89.8</b>	<b>100.0</b>	<b>5.6</b>	<b>5.2</b>	<b>0.4</b>	<b>0.8</b>	<b>0.5</b>	<b>8.1</b>	<b>5.8</b>	<b>0.8</b>	<b>0.8</b>	<b>1.1</b>
<b>Growth</b>	52.4	58.3	6.4	8.5	1.0	0.9	1.1	11.1	9.4	1.3	0.8	1.6
Public Equity	38.8	43.2	5.5	11.0	0.3	0.5	0.6	11.7	12.2	0.9	0.7	1.3
Private Equity	4.4	4.9	10.6	3.5	1.6	4.0	0.4	8.9	3.1	0.2	4.4	0.0
Non-Core Real Estate	3.9	4.3	16.0	3.3	7.3	4.4	1.7	13.1	3.1	4.2	3.7	1.1
Opportunistic Fixed Income	5.2	5.8	2.8	3.4	1.5	3.9	0.4	6.5	3.4	3.7	4.0	0.9
<b>Rates &amp; Liquidity</b>	25.9	28.8	5.0	3.2	-0.5	0.6	-0.9	4.1	3.7	0.0	0.6	0.1
IG Fixed Income	24.8	27.6	5.1	3.3	-0.5	0.6	-0.9	4.2	3.7	0.1	0.6	0.1
Cash	1.1	1.2	0.6	0.1	0.5	0.1	6.3	--	--	--	--	--
<b>Inflation Sensitive &amp; Diversifiers</b>	10.0	11.1	2.4	3.0	-1.5	2.5	-0.6	3.4	4.1	-0.9	2.4	-0.4
Inflation Sensitive	5.5	6.1	-1.9	5.0	0.2	3.3	0.1	-1.2	5.9	0.3	2.9	0.1
Core Real Estate	4.5	5.0	8.4	2.4	-3.0	2.2	-1.4	10.4	4.1	-1.6	2.8	-0.6
<b>Multi-Strategy</b>	1.6	1.8	4.9	8.0	1.2	0.9	1.3	11.0	9.7	1.6	1.3	1.2

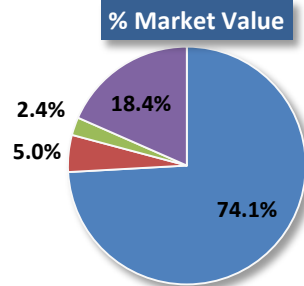
Note: Active Return= Net Managed less benchmark returns; TE=Tracking Error; IR = Information Ratio

\*As of September 30, 2016

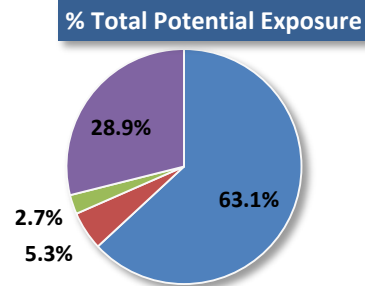


# NCRS Liquidity Profile

As of September 30, 2016



Level 1 Level 2 Level 3 Level 4



Level 1 Level 2 Level 3 Level 4

## Liquidity Levels

**Level 1:** Highly Liquid (T+3)

**Level 2:** T+3 to 12 Months

**Level 3:** 12 to 24 Months

**Level 4:** Greater than 24 Months

## Current Exposure (Market Value)

	Global Public Equity	Private Equity	Non Core Real Estate	Opportunistic Fixed Income	Investment Grade Fixed Income	Pension Cash	Inflation Sensitive	Core Real Estate	Multi-Strategy	Total \$	Total %
Level 1	\$37,532	\$31	\$0	\$470	\$24,815	\$1,054	\$559	\$656	\$1,460	\$66,578	74.1%
Level 2	\$768	\$0	\$0	\$1,909	\$0	\$0	\$784	\$1,055	\$0	\$4,516	5.0%
Level 3	\$166	\$0	\$0	\$1,033	\$0	\$0	\$0	\$984	\$7	\$2,190	2.4%
Level 4	\$368	\$4,404	\$3,890	\$1,819	\$0	\$0	\$4,180	\$1,759	\$119	\$16,540	18.4%
<b>Total \$</b>	<b>\$38,833</b>	<b>\$4,436</b>	<b>\$3,890</b>	<b>\$5,232</b>	<b>\$24,815</b>	<b>\$1,054</b>	<b>\$5,523</b>	<b>\$4,455</b>	<b>\$1,586</b>	<b>\$89,824</b>	<b>100.0%</b>
<b>Total %</b>	<b>43.23%</b>	<b>4.94%</b>	<b>4.33%</b>	<b>5.82%</b>	<b>27.63%</b>	<b>1.17%</b>	<b>6.15%</b>	<b>4.96%</b>	<b>1.77%</b>		

## Total Potential Exposure (Market Value + Unfunded Commitments)

	Global Public Equity	Private Equity	Non Core Real Estate	Opportunistic Fixed Income	Investment Grade Fixed Income	Pension Cash	Inflation Sensitive	Core Real Estate	Multi-Strategy	Total	Total %
Level 1	\$30,910	\$31	\$0	\$470	\$21,539	\$1,054	\$559	\$656	\$1,460	\$56,680	63.1%
Level 2	\$768	\$0	\$0	\$1,949	\$0	\$0	\$784	\$1,281	\$0	\$4,782	5.3%
Level 3	\$166	\$0	\$0	\$1,033	\$0	\$0	\$0	\$1,181	\$7	\$2,387	2.7%
Level 4	\$368	\$7,687	\$6,447	\$2,563	\$0	\$0	\$6,243	\$2,459	\$209	\$25,975	28.9%
<b>Total \$</b>	<b>\$32,211</b>	<b>\$7,718</b>	<b>\$6,447</b>	<b>\$6,015</b>	<b>\$21,539</b>	<b>\$1,054</b>	<b>\$7,586</b>	<b>\$5,578</b>	<b>\$1,676</b>	<b>\$89,824</b>	<b>100.0%</b>
<b>Total %</b>	<b>35.86%</b>	<b>8.59%</b>	<b>7.18%</b>	<b>6.70%</b>	<b>23.98%</b>	<b>1.17%</b>	<b>8.45%</b>	<b>6.21%</b>	<b>1.87%</b>		



# NCRS Public Equity Net Performance

As of September 30, 2016

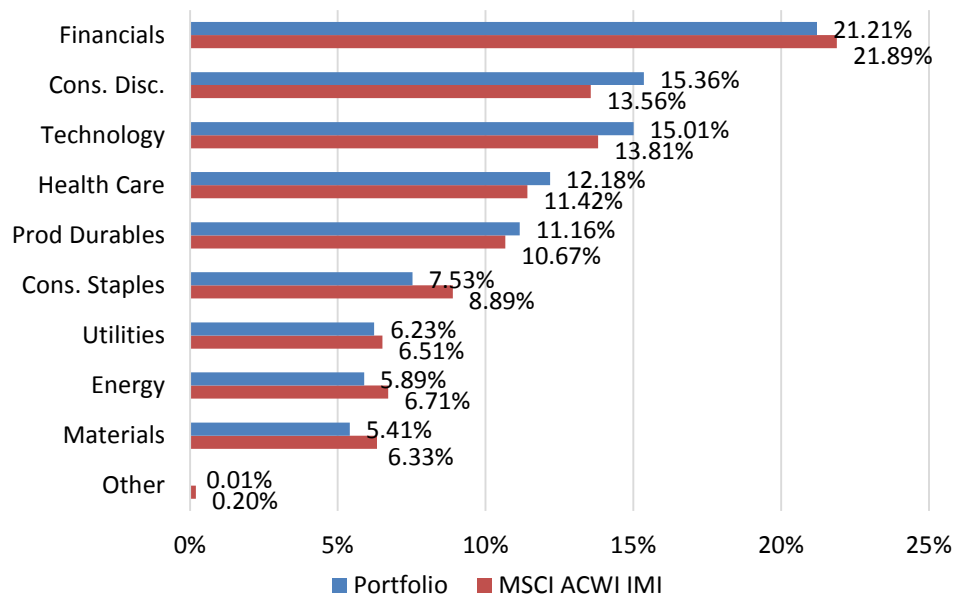
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
<b>Public Equity*</b>	<b>\$38,833</b>	<b>5.69</b>	<b>11.84</b>	<b>5.48</b>	<b>11.70</b>	<b>4.79</b>
Benchmark <sup>2</sup>		5.33	11.70	5.17	10.81	4.20
<b>Domestic Portfolio</b>	<b>\$16,899</b>	<b>4.68</b>	<b>13.49</b>	<b>9.89</b>	<b>16.24</b>	<b>7.38</b>
Russell 3000		4.40	14.96	10.44	16.36	7.37
<b>Non-US Portfolio</b>	<b>\$15,693</b>	<b>7.57</b>	<b>11.95</b>	<b>1.34</b>	<b>7.21</b>	<b>2.33</b>
Custom Benchmark		7.05	9.81	0.62	6.37	1.42
<b>Global Portfolio</b>	<b>\$2,560</b>	<b>4.96</b>	<b>8.18</b>	<b>7.34</b>	<b>14.50</b>	<b>-</b>
MSCI ACWI		5.30	11.96	5.17	10.63	4.34
<b>Equity Hedge</b>	<b>\$2,704</b>	<b>2.29</b>	<b>5.12</b>	<b>-</b>	<b>-</b>	<b>-</b>
MSCI ACWI (beta adjusted)		2.22	4.95	1.15	-	-

\*Public Equity segment returns also include transition and cash accounts, in the amount of roughly \$984 million, which do not fall under any specific sub-section.

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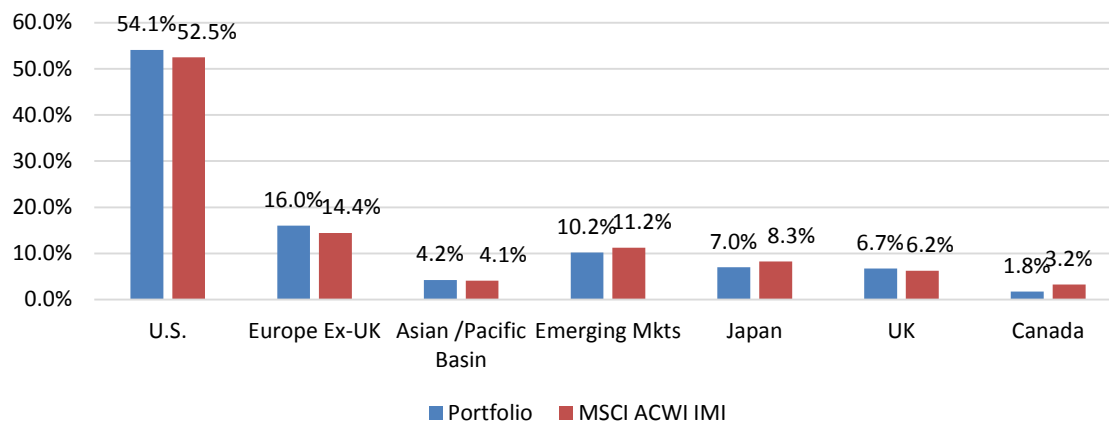
## Total Equity Sector Allocation



## Portfolio Characteristics

	Portfolio	MSCI ACWI IMI
Price/Earnings	22.2	22.4
Dividend Yield	2.26	2.46
Price/Book	3.00	2.86
Debt/Equity	0.94	0.97
Market Cap (\$B Weighted Median)	32.700	33.468
Return on Equity - 1 Year	14.9	14.3

## Total Equity Regional Allocation



As of September 30, 2016



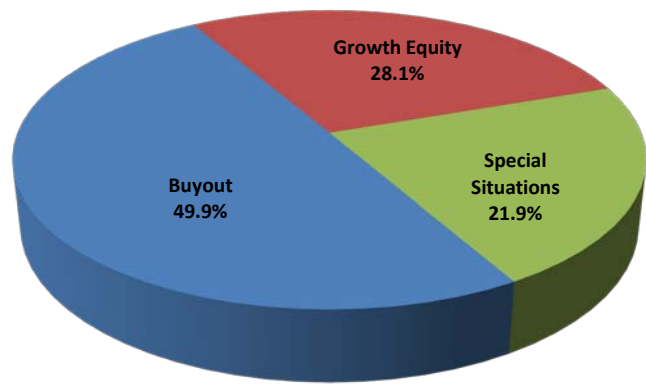
# Private Equity

As of September 30, 2016

Net Performance						
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Private Equity*	\$4,436	2.47	2.97	10.57	8.91	7.27
Benchmark <sup>3</sup>		1.28	1.58	9.01	8.70	8.83
Buyout	\$1,852	2.32	6.69	9.16	7.78	7.59
Growth	\$951	2.99	(1.88)	15.56	11.55	7.10
Special Situations	\$622	3.14	1.42	3.16	4.38	5.51
Fund of Funds	\$980	2.03	2.31	13.59	11.44	6.76

IRR by Vintage Year															
	Pre-2004	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
NCRS	12.16	7.22	4.97	2.96	9.04	9.02	14.20	18.35	10.88	11.58	8.02	15.03	2.69	-31.39	7.45
# of Funds	28	3	11	21	15	17	3	1	6	6	9	4	9	7	139

Strategy Allocation (based on commitments)



\*Private Equity segment returns also include a stock distribution account, in the amount of roughly \$31 million, which does not fall under any specific sub-section.



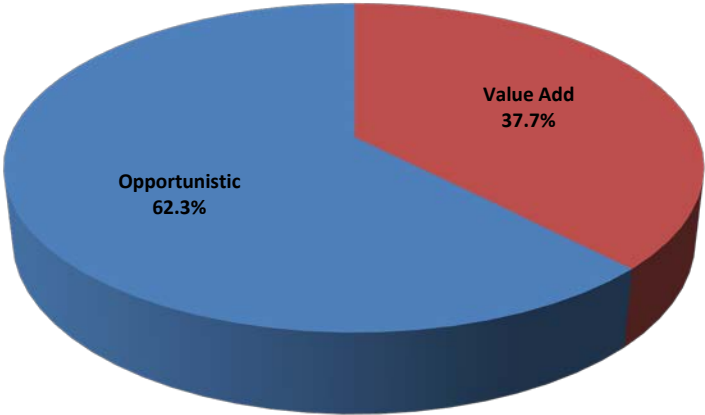
# Non-Core Real Estate

As of September 30, 2016

Net Performance						
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Non-Core Real Estate	\$3,890	3.21	12.58	16.02	13.09	3.65
Benchmark <sup>4</sup>		0.51	3.83	8.71	8.85	2.36
Opportunistic	\$2,423	2.03	10.10	14.92	11.71	2.39
Value Add	\$1,468	5.25	17.22	18.01	15.45	5.96

IRR by Vintage Year															
	<u>Pre-2004</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>Total</u>
NCRS	9.17	15.78	-1.20	2.36	1.83	17.24	1.40	18.11	17.52	10.99	13.64	1.75	2.18	N/A	5.66
# of Funds	17	3	15	13	8	6	1	5	7	5	7	7	6	5	105

Strategy Allocation (based on valuation)



# Opportunistic Fixed Income

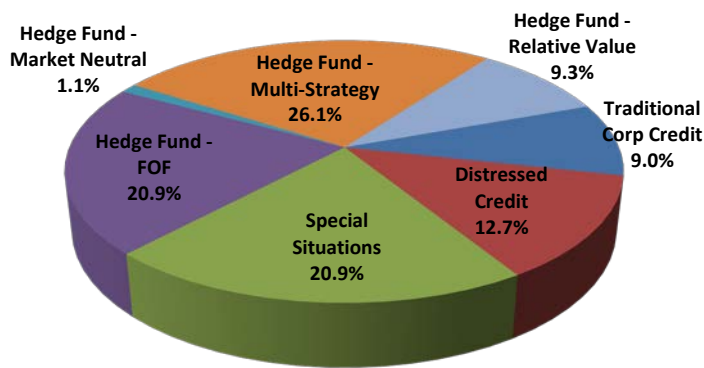
As of September 30, 2016

Net Performance						
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
<b>Opportunistic Fixed Income</b>	<b>\$5,232</b>	<b>3.66</b>	<b>1.84</b>	<b>2.85</b>	<b>6.51</b>	<b>6.22</b>
Benchmark <sup>5</sup>		4.46	5.15	1.33	2.79	0.48
<b>Traditional Corporate Credit</b>	<b>\$470</b>	<b>5.64</b>	<b>3.62</b>	<b>3.63</b>	<b>7.15</b>	<b>-</b>
<b>Distressed Credit</b>	<b>\$664</b>	<b>4.71</b>	<b>7.76</b>	<b>6.10</b>	<b>9.81</b>	<b>-</b>
<b>Special Situations</b>	<b>\$1,093</b>	<b>3.48</b>	<b>3.99</b>	<b>7.96</b>	<b>16.71</b>	<b>-</b>
<b>Hedged Fixed Income</b>	<b>\$3,004</b>	<b>3.18</b>	<b>(0.08)</b>	<b>1.00</b>	<b>4.12</b>	<b>-</b>

IRR by Vintage Year

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>Total</u>
NCRS	2.67	N/A	17.30	8.45	22.42	7.75	3.26	1.58	1.84	0.70	14.16	4.43	5.47
# of Funds	1	0	1	3	1	4	9	2	7	3	1	3	34

Strategy Allocation (based on valuation)





# Rates & Liquidity

As of September 30, 2016

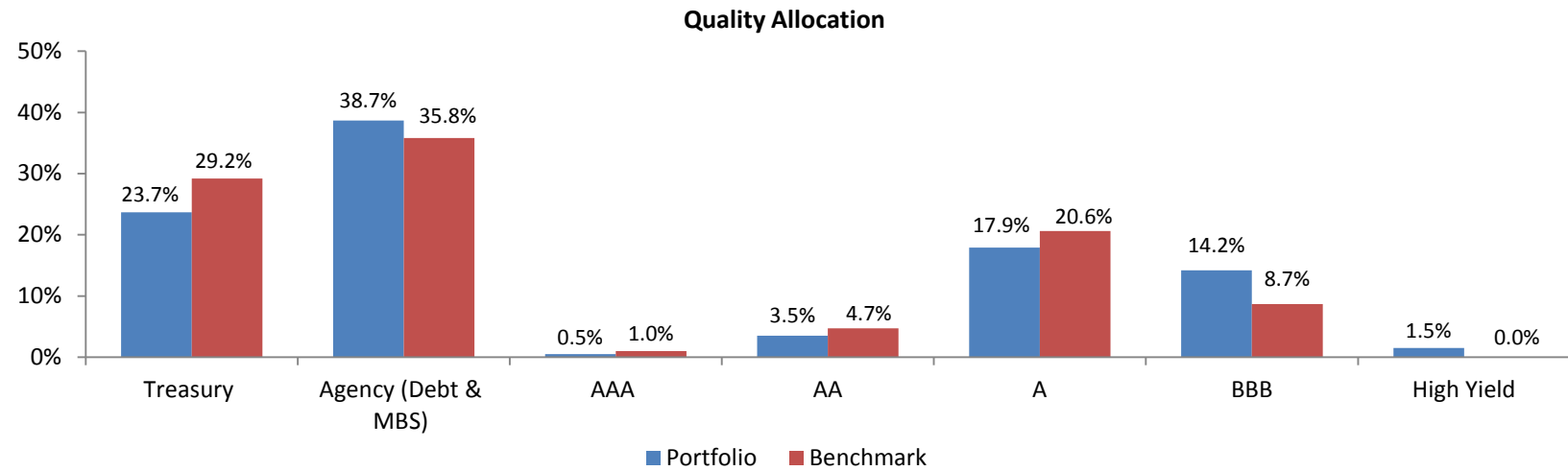
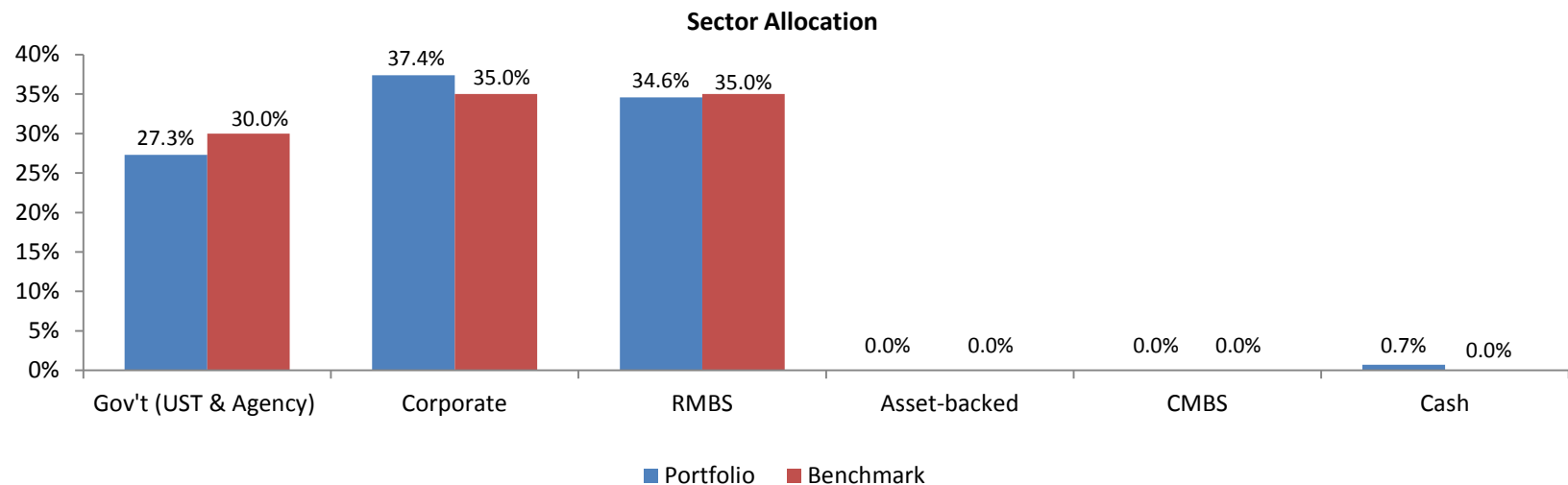
Net Performance						
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
<b>Rates &amp; Liquidity</b>	<b>\$25,869</b>	<b>0.61</b>	<b>6.26</b>	<b>4.99</b>	<b>4.09</b>	<b>6.16</b>
Benchmark <sup>6</sup>		0.58	6.76	5.52	4.04	5.92
<b>IG Fixed Income</b>	<b>\$24,815</b>	<b>0.62</b>	<b>6.51</b>	<b>5.12</b>	<b>4.17</b>	<b>6.20</b>
Core Fixed Income	\$22,308	0.67	7.20	5.46	4.28	6.31
IG Fixed Income Cash	\$2,507	0.24	0.79	-	-	-
<b>Cash</b>	<b>\$1,054</b>	<b>0.22</b>	<b>0.91</b>	<b>0.63</b>	<b>-</b>	<b>-</b>

Core Fixed Income Portfolio Characteristics			
	<u>Avg. Coupon</u>	<u>Yield to Maturity</u>	<u>Duration</u>
Government (Treasury & Agency)	4.95%	1.84%	11.2
Corporate	4.82%	3.38%	9.1
Mortgage	3.99%	2.09%	2.9
<b>Total</b>	<b>4.57%</b>	<b>2.51%</b>	<b>7.5</b>



# Core Fixed Income

As of September 30, 2016



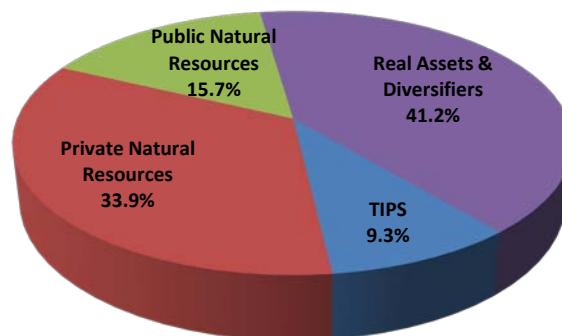
# Inflation Sensitive

As of September 30, 2016

Net Performance						
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
<b>Inflation Sensitive</b>	<b>\$5,523</b>	<b>4.27</b>	<b>1.81</b>	<b>(1.90)</b>	<b>(1.20)</b>	<b>(0.78)</b>
Benchmark <sup>10</sup>		0.42	1.46	(2.11)	(1.49)	1.77
<b>Private Natural Resources</b>	<b>\$1,901</b>	<b>10.24</b>	<b>(3.59)</b>	<b>(1.03)</b>	<b>0.83</b>	<b>1.18</b>
<b>Public Natural Resources</b>	<b>\$865</b>	<b>(3.76)</b>	<b>(4.47)</b>	<b>(11.39)</b>	<b>(8.19)</b>	<b>-</b>
<b>TIPS</b>	<b>\$206</b>	<b>0.20</b>	<b>2.21</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Real Assets &amp; Other Diversifiers</b>	<b>\$2,246</b>	<b>3.77</b>	<b>9.42</b>	<b>7.67</b>	<b>-</b>	<b>-</b>

IRR by Vintage Year												
	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>Total</u>
NCRS	-0.38	7.99	-1.52	N/A	-12.03	-8.18	4.06	2.18	4.40	1.71	1.39	-3.09
# of Funds	3	2	2	0	3	9	7	11	12	4	3	55

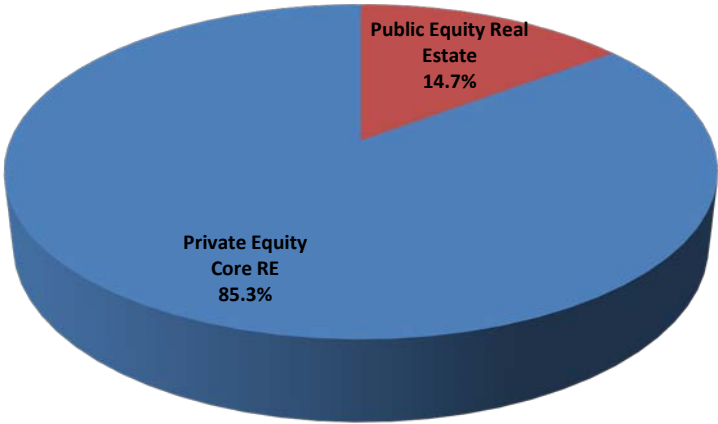
Strategy Allocation (based on valuation)



Net Performance						
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Core Real Estate	\$4,455	2.64	8.69	8.43	10.42	4.64
Benchmark <sup>11</sup>		1.95	12.06	11.40	12.05	5.21
Public Equity Real Estate	\$656	1.84	12.77	9.36	14.02	-
Private Equity Core Real Estate	\$3,798	2.78	8.07	8.20	9.74	5.58

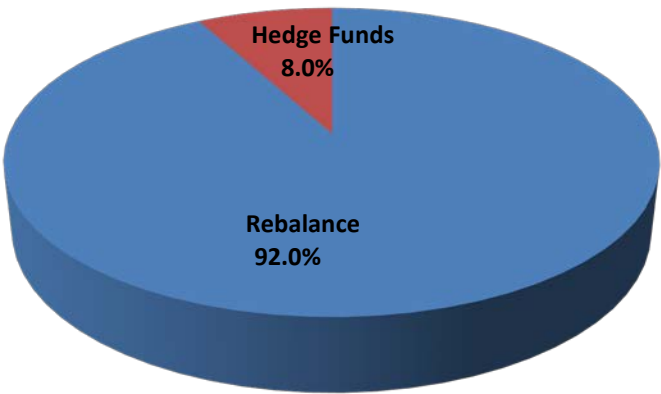
IRR by Vintage Year															
	Pre-2004	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
NCRS	7.65	9.70	-10.26	5.66	1.39	10.03	N/A	23.62	N/A	N/A	7.13	5.53	0.21	15.70	7.16
# of Funds	5	1	1	2	3	1	0	1	0	0	2	6	1	8	31

Strategy Allocation (based on valuation)



Net Performance						
	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Multi-Strategy	\$1,586	3.83	8.83	4.89	10.96	5.30
Benchmark <sup>12</sup>		3.94	7.68	3.73	9.32	5.86
Rebalance Strategy	\$1,460	4.38	10.71	5.74	13.22	-
Hedge Funds	\$126	0.54	(1.96)	0.11	1.16	0.82

Strategy Allocation (based on valuation)



# New and Incremental Investment Commitments

## Since September 21, 2016 IAC Meeting

<u>Fund Name</u>	<u>Firm Name</u>	<u>Commitment</u>	<u>Closing Date</u>
<b><u>Public Equity</u></b>			
ECM Bespoke Fund	Effissimo Capital management Pte Ltd	\$25,000,000	09/20/2016
ONSHE Marshall Wace	Marshall Wace	\$200,000,000	10/10/2016
<b><u>Private Equity</u></b>			
Trident VII	Stone Point	\$125,000,000	10/04/2016
Francisco Partners	Francisco Agility	\$75,000,000	09/20/2016
Blackstone Core Equity Partners - NC L.P.	Blackstone Core Equity Management	\$250,000,000	10/31/2016
<b><u>Non-Core Real Estate</u></b>			
AG Asia Realty Fund, III	Angelo Gordon	\$100,000,000	10/31/2016
<b><u>Core Real Estate</u></b>			
Rockwood Income and Credit Partners, LP.	Rockwood Capital	\$100,000,000	11/10/2016
<b><u>Opportunistic Fixed Income</u></b>			
Marathon Currituck Fund – Series D	Marathon Asset Management	\$100,000,000	10/14/2016
<b><u>Inflation Sensitive</u></b>			
NC Garnet Fund	BlackRock	\$500,000,000	10/07/2016
Campbell Timber Fund III, LLC	Campbell Global	\$268,000,000	10/26/2016
<b><u>Multi Strategy</u></b>			
None	--	--	--



# Appendix: NCRS Asset Class Net Performance

As of September 30, 2016

	Market Value (\$MM)	1 Year	3 Years	5 Years	10 Years	15 Years
<b>Growth</b>	<b>\$52,391</b>	<b>10.03</b>	<b>6.39</b>	<b>11.14</b>	<b>4.78</b>	<b>6.49</b>
Benchmark <sup>1</sup>		9.53	5.43	9.82	4.25	5.92
<b>Public Equity</b>	<b>\$38,833</b>	<b>11.84</b>	<b>5.48</b>	<b>11.70</b>	<b>4.79</b>	<b>6.51</b>
Benchmark <sup>2</sup>		11.70	5.17	10.81	4.20	5.76
<b>Private Equity</b>	<b>\$4,436</b>	<b>2.97</b>	<b>10.57</b>	<b>8.91</b>	<b>7.27</b>	<b>5.58</b>
Benchmark <sup>3</sup>		1.58	9.01	8.70	8.83	9.33
<b>Non-Core Real Estate</b>	<b>\$3,890</b>	<b>12.58</b>	<b>16.02</b>	<b>13.09</b>	<b>3.65</b>	<b>5.27</b>
Benchmark <sup>4</sup>		3.83	8.71	8.85	2.36	6.75
<b>Opportunistic Fixed Income</b>	<b>\$5,232</b>	<b>1.84</b>	<b>2.85</b>	<b>6.51</b>	<b>6.22</b>	<b>-</b>
Benchmark <sup>5</sup>		5.15	1.33	2.79	0.48	-
<b>Rates &amp; Liquidity</b>	<b>\$25,869</b>	<b>6.26</b>	<b>4.99</b>	<b>4.09</b>	<b>6.16</b>	<b>6.11</b>
Benchmark <sup>6</sup>		6.76	5.52	4.04	5.92	5.92
<b>IG Fixed Income</b>	<b>\$24,815</b>	<b>6.51</b>	<b>5.12</b>	<b>4.17</b>	<b>6.20</b>	<b>6.14</b>
Benchmark <sup>7</sup>		7.00	5.65	4.11	5.95	5.94
<b>Cash</b>	<b>\$1,054</b>	<b>0.91</b>	<b>0.63</b>	<b>-</b>	<b>-</b>	<b>-</b>
Benchmark <sup>8</sup>		0.21	0.09	0.07	-	-
<b>Inflation Sensitive &amp; Diversifiers</b>	<b>\$9,978</b>	<b>4.76</b>	<b>2.38</b>	<b>3.40</b>	<b>0.98</b>	<b>3.55</b>
Benchmark <sup>9</sup>		6.20	3.85	4.31	0.46	3.72
<b>Inflation Sensitive</b>	<b>\$5,523</b>	<b>1.81</b>	<b>(1.90)</b>	<b>(1.20)</b>	<b>(0.78)</b>	<b>2.69</b>
Benchmark <sup>10</sup>		1.46	(2.11)	(1.49)	1.77	3.73
<b>Core Real Estate</b>	<b>\$4,455</b>	<b>8.69</b>	<b>8.43</b>	<b>10.42</b>	<b>4.64</b>	<b>6.04</b>
Benchmark <sup>11</sup>		12.06	11.40	12.05	5.21	6.96
<b>Multi-Strategy</b>	<b>\$1,586</b>	<b>8.83</b>	<b>4.89</b>	<b>10.96</b>	<b>5.30</b>	<b>-</b>
Benchmark <sup>12</sup>		7.68	3.73	9.32	5.86	-





# NOTES:

All data presented are based on currently available information at time of publication and may be revised subsequently

1. The Growth Benchmark is a blend of the Public Equity Benchmark, Private Equity Benchmark, Non-Core Real Estate Benchmark, & Opportunistic FI Benchmark at policy weights.
2. The Public Equity Benchmark is the dynamically weighted combination of the MSCI ACWI IMI Net (Long-Only) and a beta adjusted MSCI ACWI IMI Net (Hedged Equity).
3. The Private Equity Benchmark is comprised of the following Burgiss Group Private iQ indices: 50% Buyout, 20% Venture Capital, and 30% Special Situations and Distressed Securities.
4. The Non-Core Real Estate Benchmark is comprised of the following Burgiss Group Private iQ indices: 80% U.S. Non-Core Real Estate (Opportunistic and Value-Added) and 20% Non-U.S. Non-Core Real Estate (Opportunistic and Value-Added).
5. The Opportunistic Fixed Income Benchmark is comprised of 50% HFRX Distressed Securities Index, 20% HFRX Relative Value Index, 15% Credit Suisse Leveraged Loan Index, and 15% BOAML High Yield Index\*.
6. The Rates & Liquidity Benchmark is a blend of the IG Fixed Income Benchmark and the Cash Benchmark at policy weights.
7. The IG Fixed Income Benchmark is comprised 10% iMoneyNet First Tier Institutional Money Market Funds Net Index and 90% custom BOAML Core Investment Grade Index\*. The custom BOAML core index comprised of the following weightings: 30% BOAML 5+ Years Governments, 35% BOAML 5+ Years Investment Grade Corporates, and 35% BOAML Mortgage Master.
8. The Cash Benchmark is the iMoneyNet First Tier Institutional Money Market Funds Net Index.
9. The Inflation Sensitive & Diversifiers Benchmark is a blend of the Inflation Sensitive Benchmark and the Core Real Estate Benchmark at policy weights.
10. The Inflation Sensitive Benchmark is the dynamically weighted combination of the Bank of America Merrill Lynch 1-3 Years U.S. Inflation-Linked Treasury Index (TIPS)\*, the Bloomberg Commodities Index (Commodities), and a combination of the benchmarks of investments classified within Private Natural Resources or Other Real Assets and Diversifiers.
11. The Core Real Estate Benchmark is comprised of 80% NCREIF ODCE Net and 20% FTSE EPRA NAREiT Global Index.
12. The Multi-Strategy Benchmark is comprised of a dynamically weighted combination of the HFRX ED: Multi-Strategy Index, net of fees, and the market value weighted benchmarks for any other total fund strategies within the Portfolio.

\*Source: BofA Merrill Lynch , used with permission. See disclaimer on page.



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