

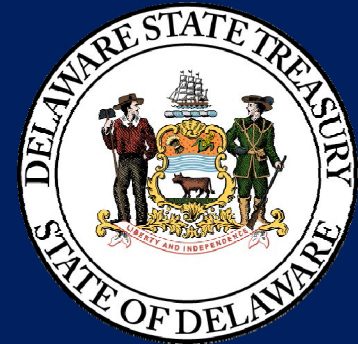
# INVESTMENT PERFORMANCE SUMMARY QUARTER ENDING DECEMBER 31, 2018

## OFFICE OF THE STATE TREASURER & CASH MANAGEMENT POLICY BOARD

December 31, 2018

John Krimmel, CPA, CFA, Partner

Kevin M. Leonard, Partner



BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

# MARKET ENVIRONMENT

NEPC, LLC

---

# MARKET ENVIRONMENT

## Introduction

The new year couldn't come quickly enough for investors. Not only did most major asset classes end 2018 in the red, but also US equities suffered their worst December since the 1930s. This wave of risk aversion was felt broadly as safe-haven fixed income rallied with Treasury yields declining in the final weeks of last year.

Still, those looking to 2019 for respite may be disappointed. We believe investors, accustomed to the extended period of calm in the markets, need to reset their expectations and brace for higher levels of volatility. In addition, the US economy has entered the late stage of its expansionary cycle, negatively skewing the range of market outcomes in the coming years. As a result, our investment outlook reflects a more risk-averse posture. That said, the late stage of an expansionary economic cycle does not imply the end of the cycle. For now, we see scant evidence to suggest a recession is imminent in the United States. To this end we caution investors from shunning equities as stocks can still offer positive returns in the near term.

We believe equities offer an attractive entry point with the potential of rebounding from their December lows. We encourage investors to rebalance their developedmarket equity exposure and increase US stocks closer to index target weights. At the same time, we maintain our overweight position in emerging-market stocks. Despite the negative sentiment related to emerging economies in 2018, we see trade relations potentially improving between the United States and China, offering a tail wind for investors this year.

Looking back, investors had few places to hide in 2018. Using a proxy of 10 major asset classes, core bonds were the only ones to avoid negative territory, finishing a rounding error above zero. While the magnitude of losses for 2018 was far less than 2008 or 2000, the breadth of asset classes performing poorly was unparalleled over the last 30 years.



# MARKET ENVIRONMENT

## Introduction Continued

While we believe the widespread selloff in equities in December presents an appealing rebalancing opportunity, our longer-term view underscores our more defensive stance. The US economy being in the late phase of a market cycle will be a focal point for investors, with economic risks and credit defaults likely becoming more pronounced in the years to come. As such, we have reset our outlook relative to the start of 2018 with a bias towards selling low-quality credit and increasing safe-haven fixed-income exposure. Economic trends suggest higher levels of volatility are in the offing, a common occurrence during the late phase of a market cycle. Where there is volatility, there is not only higher risk, but also greater tactical opportunities for investors. Investors should be prepared to take advantage of these dynamic opportunities in a volatile market environment by deploying safe-haven debt back into US equities and other risky assets.

## Global Equities

Stocks across the board took a severe beating in the fourth quarter with the MSCI ACWI Index down 12.8%; energy, the worst performing sector, lost 20.2%. The MSCI EAFE Index was in the red at 12.5%.

In the US, stocks recorded their worst quarter in more than seven years with the S&P 500 bleeding 13.5% as investors fretted over the trade dispute between the United States and China, and the pace of interest rate increases. Domestic equities also posted their worst December since the 1930's as large-cap equities outperformed small caps and value bested growth.

Emerging market stocks, which underwent a correction earlier in the year, outperformed developed markets with the MSCI EM Index falling 7.47% for the quarter. Brazil was the best performing country, buoyed by President-elect Jair Bolsonaro's pick for chief economic advisor and his pledge to sell state-owned companies. Asia lagged, pulled down by declines in China, Korea and Taiwan. Healthcare and information technology were among the worst performing sectors, losing 15.4% and 15.1%, respectively.



# MARKET ENVIRONMENT

## **Global Fixed Income**

In the US, high-yield spreads— particularly in the lower-rated CCC segment—widened significantly in the fourth quarter. The burgeoning BBB-rated segment is a concern for investment-grade and high-yield debt investors. Double the size of the high-yield market, the growth in the BBB-segment has been driven largely by issuance, an increase in mergers and acquisitions, and credit downgrades from A to BBB. Widespread downgrades among BBBs could lead to an oversupply in high-yield securities and pressure prices.

For the three months ended December 31, the Bloomberg Barclays Aggregate rose 1.6% and the Bloomberg Barclays US Long Treasury was up 4.2%. The Bloomberg Barclays High Yield fell 4.5% and the S&P LSTA Leveraged Loan Index lost 3.5% during the same period.

Within hedge funds, distressed and restructuring strategies were down 5.6% in the fourth quarter, losing 1.6% in 2018, according to the HFRI ED: Distressed/Restructuring Index. The HFRI ED: Credit Arbitrage Index declined 2.1% in the fourth quarter, but was up 2.1% for the year.

Outside the US, emerging markets were in the red for 2018 with local debt, the worst performing, down 6.2% for the year. However, local currency debt proved to be one of the few bright spots for the quarter, posting a gain of 2.1%. We believe the cyclical growth of credit markets, deteriorating quality and high leverage are creating opportunities for distressed debt investors. Safe-haven fixed-income assets are also becoming increasingly appealing, given the lack of adequate compensation for taking on credit risk. However, select opportunities may exist in niche lending and collateralized loan obligations (CLOs).



# MARKET ENVIRONMENT

## Real Assets

The Bloomberg Commodity Index declined 9.4% in the fourth quarter and 11.2% for the year. Most commodities (and the index) remain in contango—when the futures price of a commodity is above the expected future spot price—resulting in negative roll yield. We maintain a neutral view on commodities. Energy was the worst performing sub-sector, as oil prices were pressured by concerns of oversupply fueled by high inventories and stronger-than-expected production in Iran. Natural gas posted losses of 2.3% in a volatile quarter marked by low inventory levels and fluctuating weather forecasts. Precious metals strengthened towards the end of 2018, bolstered by the selloff in equities and expectations for higher real interest rates.

We remain positive on natural resource equities, believing they offer a more efficient exposure to commodity markets. However, they are also not immune to market volatility, losing 16.8% and 12.6% for the fourth quarter and year, respectively. The lack of recent investment in energy and mining has constrained supply; however, demand forecasts remain solid. For both sectors, we believe there are attractive opportunities for private equity and debt investment, though implementation options remain limited in the mining sector.

Meanwhile, in real estate, real estate investment trusts (REITs) were down 6.0% in the fourth quarter. There is meaningful dispersion across property types in both valuation levels and capital flows. Broadly speaking, REITs, hurt by rising interest rates, are trading at discounts to their private-market counterparts.

In private core real estate, the NCREIF ODCE Index posted another year of stable returns, generating 8.4% in 2018. As yield spreads continue to tighten, we still favor managers capable of growing income at the property level, rather than relying on general market appreciation (which we expect will slow). We also prefer certain core-plus, real estate debt, or tactical core strategies to augment existing core real estate allocations. In the non-core real estate space, we believe that demographically-driven sectors (healthcare, data centers, workforce housing) and select international exposures offer the potential to outperform the broad market.



# MARKET ENVIRONMENT

## **Final Thoughts**

While 2019 may prove to be a challenging year, investment opportunities can be found in emerging markets and US equities should we see a selloff like the one in December. However, on balance, we encourage investors to adopt a more risk-averse stance by raising their holdings of safe-haven fixed income and reducing lower-quality credit exposure. While we do not believe a recession is imminent, the potential for adverse economic outcomes has expanded. As such, we are evaluating the movement of market metrics, such as the Treasury yield curve, which would warrant a more defensive position; should the curve invert, we are likely to encourage investors to materially increase holdings of safe-haven fixed income. We hope to expand on these thoughts and themes at NEPC's 24th Annual Investment Conference on May 7-8 in Boston. We plan to explore a wide variety of topics through the prism of this year's theme, Transitions. In addition, we are excited to bring you a roster of accomplished external speakers. We hope you can join us and we look forward to seeing you in May.



# CALENDAR YEAR INDEX PERFORMANCE

	2013	2014	2015	2016	2017	Q1	Q2	Q3	Oct	Nov	Dec	Q4	YTD	5yr	10yr
Reserve Custom Index	0.12%	1.1%	0.86%	1.15%	1.00%	-0.26%	-0.05%	0.21%	-0.22%	0.48%	1.42%	1.68%	1.59%	1.14%	1.52%
Endowment Custom Index	14.46%	5.43%	-0.07%	5.71%	14.52%	-1.28%	0.98%	2.98%	-4.72%	0.92%	-3.83%	-7.53%	-5.07%	3.9%	7.43%
Citi 3 Mo Treasury Bill	0.05%	0.03%	0.27%	0.84%	0.31%	0.35%	0.40%	0.50%	0.18%	0.18%	0.20%	0.57%	1.86%	0.6%	0.35%
BAML 1-3 Yr Govt/Credit A+	0.55%	0.72%	0.66%	1.07%	0.70%	-0.17%	0.30%	0.27%	0.14%	0.32%	0.78%	1.24%	1.65%	0.96%	1.34%
BAML 1-5 Yr Govt/Credit A+	0.10%	1.42%	1.07%	1.30%	1.02%	-0.45%	0.20%	0.19%	0.10%	0.41%	1.06%	1.58%	1.50%	1.26%	1.85%
BAML 5-10 Yr Govt/Credit A+	-3.80%	6.60%	1.90%	2.00%	3.00%	-1.80%	-0.20%	-0.13%	-0.32%	0.89%	2.16%	2.73%	0.59%	2.8%	3.78%
BBrg Barclays US Aggregate	-2.02%	5.97%	0.55%	2.65%	3.54%	-1.46%	-0.20%	0.00%	-0.80%	0.30%	1.84%	1.64%	0.01%	2.52%	3.48%
BC Municipal Bond	-2.60%	9.10%	3.30%	0.20%	5.40%	-1.10%	0.90%	-0.20%	-0.60%	1.10%	1.2%	1.69%	1.28%	3.82%	4.85%
BC US Corp High Yield	7.40%	2.50%	-4.50%	17.10%	7.50%	-0.90%	1.00%	2.40%	-1.60%	-0.90%	-2.14%	-4.53%	-2.08%	3.83%	11.12%
BC Long Treasuries	-12.70%	25.10%	-1.20%	1.30%	8.50%	-3.30%	0.30%	-2.90%	-3.00%	1.90%	5.50%	4.20%	-1.80%	5.93%	4.09%
BC US Long Credit	-6.60%	16.40%	-4.60%	10.20%	12.20%	-3.80%	-2.70%	1.30%	-3.60%	-0.40%	2.50%	-1.60%	-6.80%	5.08%	7.4%
MSCI World Index	26.68%	4.94%	0.87%	7.51%	22.40%	-1.28%	1.73%	4.29%	-7.34%	1.14%	-7.6%	-13.42%	-8.71%	4.56%	9.67%

Source: Bloomberg, Barclays, Alerian, Nareit, MSCI, JP Morgan, Credit Suisse, Thomson One





# EXECUTIVE SUMMARY

NEPC, LLC

---

Delaware Office of the State Treasurer

# TOTAL FUND PERFORMANCE SUMMARY

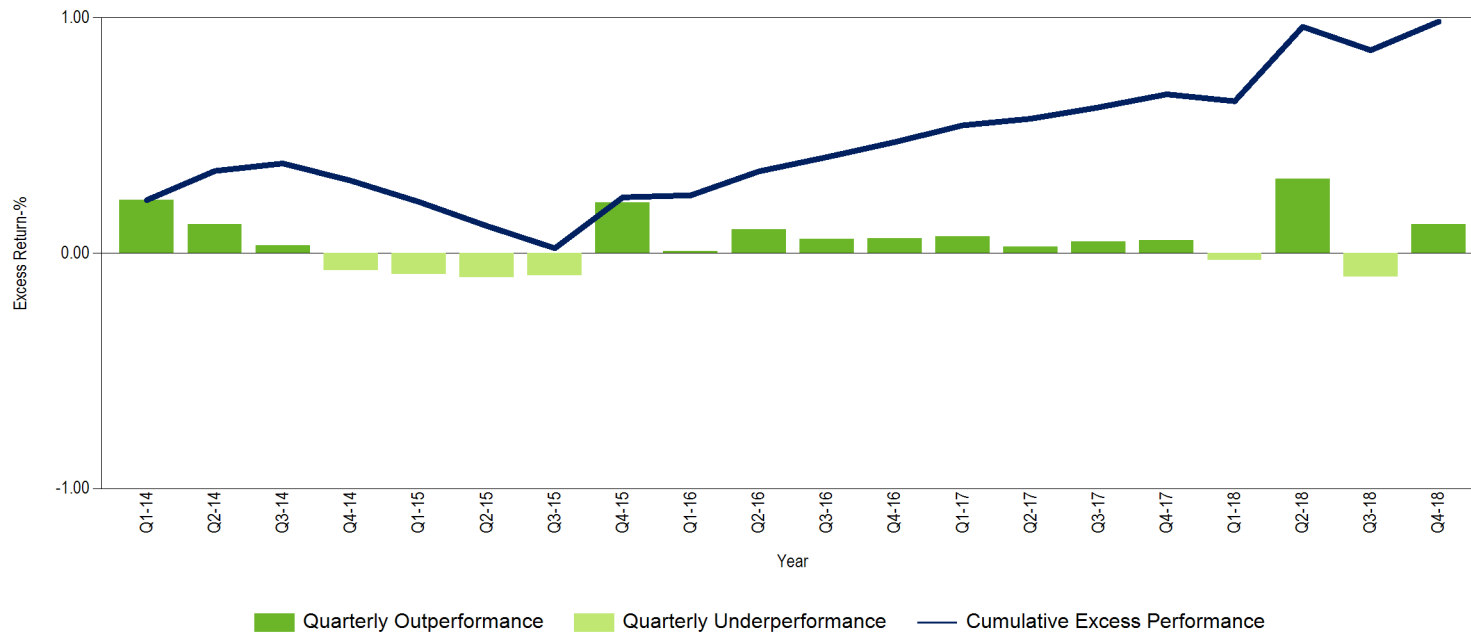
	Market Value	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	Inception	Inception Date
<b>Delaware Total Consolidation</b>	<b>\$2,126,144,207</b>	<b>0.97%</b>	<b>1.31%</b>	<b>1.58%</b>	<b>1.51%</b>	<b>1.22%</b>	<b>1.91%</b>	<b>Jan-05</b>
<b>Total Liquidity &amp; Reserve</b>	<b>\$2,060,912,459</b>	<b>1.30%</b>	<b>1.58%</b>	<b>1.89%</b>	<b>--</b>	<b>--</b>	<b>1.29%</b>	<b>Jan-16</b>
<b>Total Liquidity</b>	<b>\$822,353,586</b>	<b>0.64%</b>	<b>1.18%</b>	<b>1.95%</b>	<b>1.36%</b>	<b>0.97%</b>	<b>1.75%</b>	<b>Jan-05</b>
<i>eV US Cash Management Net Median</i>		<i>0.56%</i>	<i>1.07%</i>	<i>1.90%</i>	<i>1.16%</i>	<i>0.78%</i>	<i>1.47%</i>	<i>Jan-05</i>
<b>Total Reserve</b>	<b>\$1,238,558,873</b>	<b>1.80%</b>	<b>1.92%</b>	<b>1.90%</b>	<b>1.50%</b>	<b>1.34%</b>	<b>2.20%</b>	<b>Jan-05</b>
<i>Reserve Custom Index</i>		<i>1.68%</i>	<i>1.90%</i>	<i>1.59%</i>	<i>1.24%</i>	<i>1.14%</i>	<i>2.39%</i>	<i>Jan-05</i>
<i>eV US Interm Duration Fixed Inc Net Median</i>		<i>1.31%</i>	<i>1.63%</i>	<i>0.61%</i>	<i>1.72%</i>	<i>1.88%</i>	<i>3.61%</i>	<i>Jan-05</i>
<b>Total Endowment</b>	<b>\$65,231,748</b>	<b>-7.87%</b>	<b>-5.86%</b>	<b>-6.80%</b>	<b>4.99%</b>	<b>--</b>	<b>3.06%</b>	<b>Aug-15</b>
<i>Endowment Custom Index</i>		<i>-7.53%</i>	<i>-4.77%</i>	<i>-5.07%</i>	<i>4.74%</i>	<i>3.90%</i>	<i>3.24%</i>	<i>Aug-15</i>
<i>eV Global Balanced Net Median</i>		<i>-8.61%</i>	<i>-7.03%</i>	<i>-7.79%</i>	<i>4.94%</i>	<i>3.97%</i>	<i>3.00%</i>	<i>Aug-15</i>

Fiscal year ends June 30.



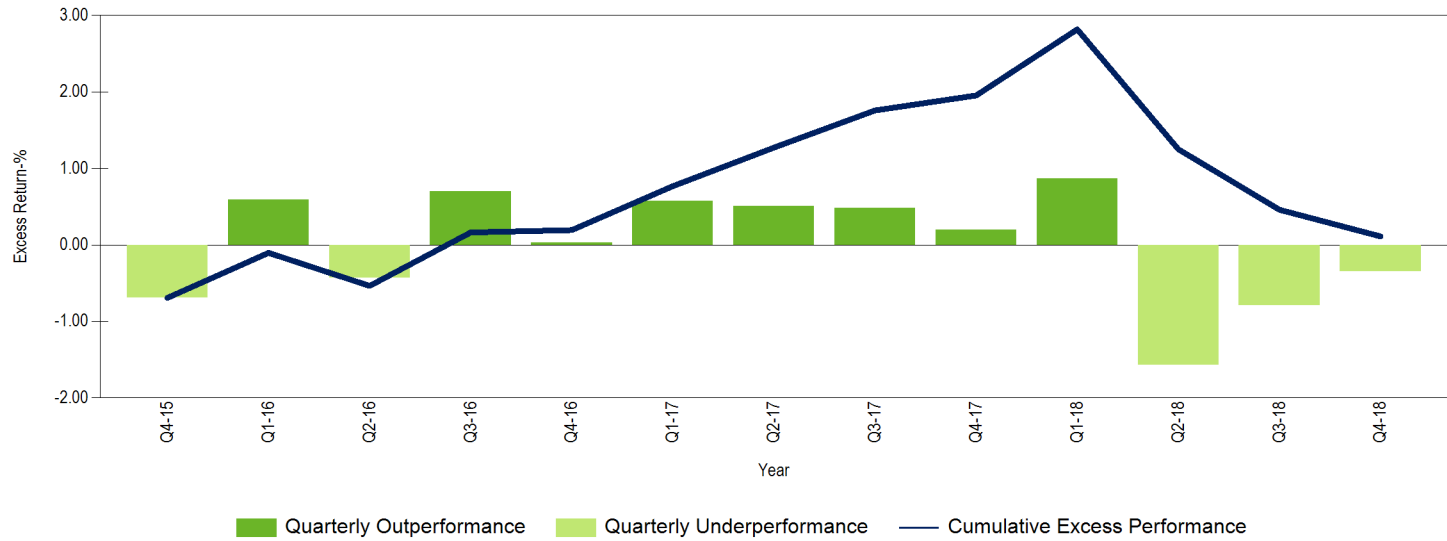
# TOTAL FUND PERFORMANCE SUMMARY

Quarterly and Cumulative Excess Performance  
Total Reserve vs. Reserve Custom Index

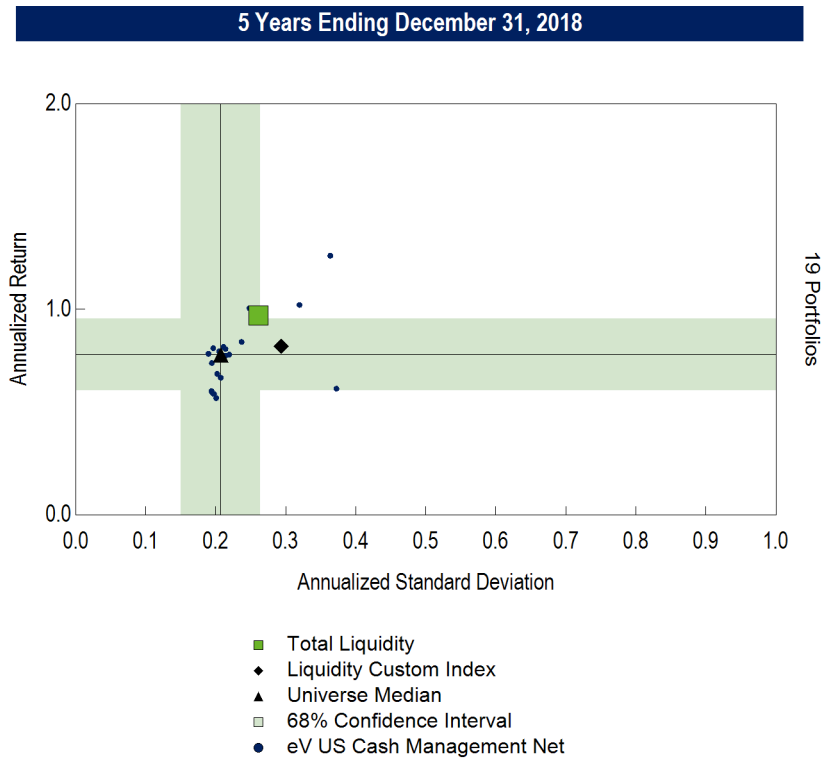
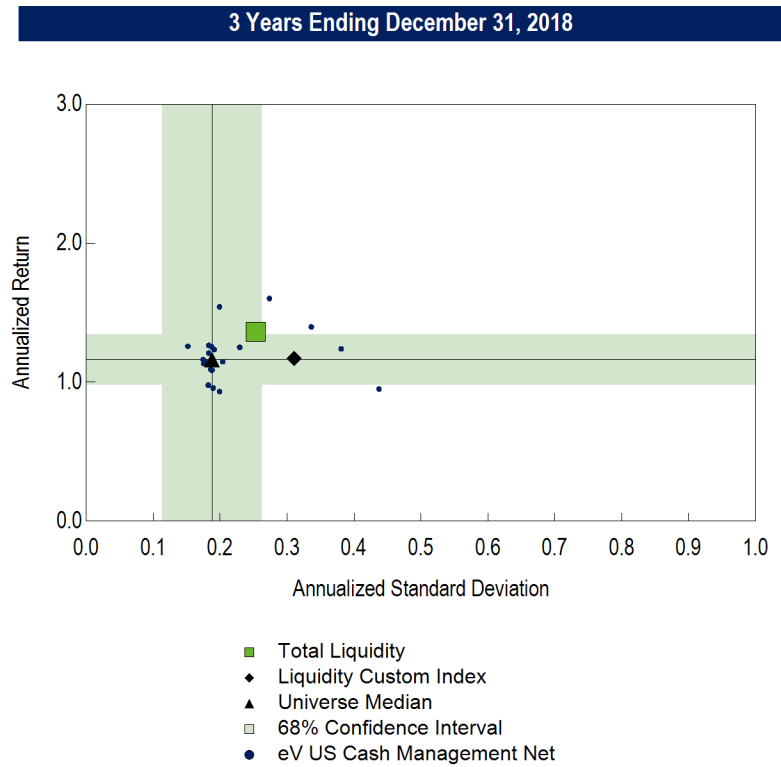


# TOTAL FUND PERFORMANCE SUMMARY

Quarterly and Cumulative Excess Performance  
Total Endowment vs. Endowment Custom Index



# LIQUIDITY RISK/RETURN - 3 & 5 YEARS



**3 Years Ending December 31, 2018**

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio
Total Liquidity	1.36%	0.25%	1.29
Liquidity Custom Index	1.17%	0.31%	0.43

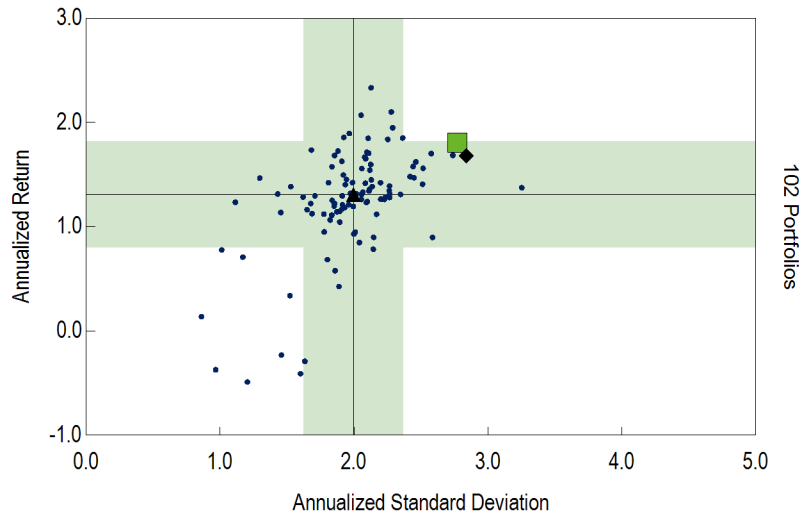
**5 Years Ending December 31, 2018**

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio
Total Liquidity	0.97%	0.26%	1.28
Liquidity Custom Index	0.82%	0.29%	0.64



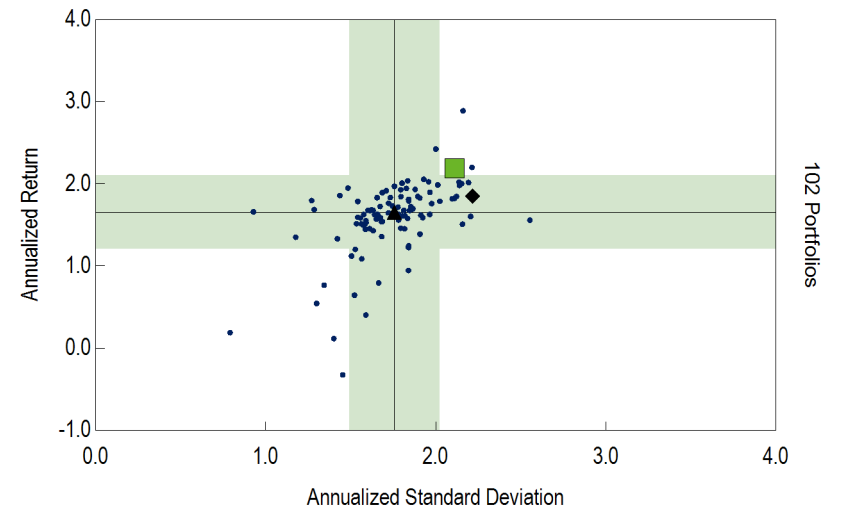
# RESERVE RISK/RETURN - 3 & 9 MONTHS

3 Months Ending December 31, 2018



- Total Reserve
- ◆ Reserve Custom Index
- ▲ Universe Median
- 68% Confidence Interval
- eV US Interm Duration Fixed Inc Net

9 Months Ending December 31, 2018



- Total Reserve
- ◆ Reserve Custom Index
- ▲ Universe Median
- 68% Confidence Interval
- eV US Interm Duration Fixed Inc Net

3 Months Ending December 31, 2018

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio
Total Reserve	1.80%	2.77%	0.45
Reserve Custom Index	1.68%	2.84%	0.39

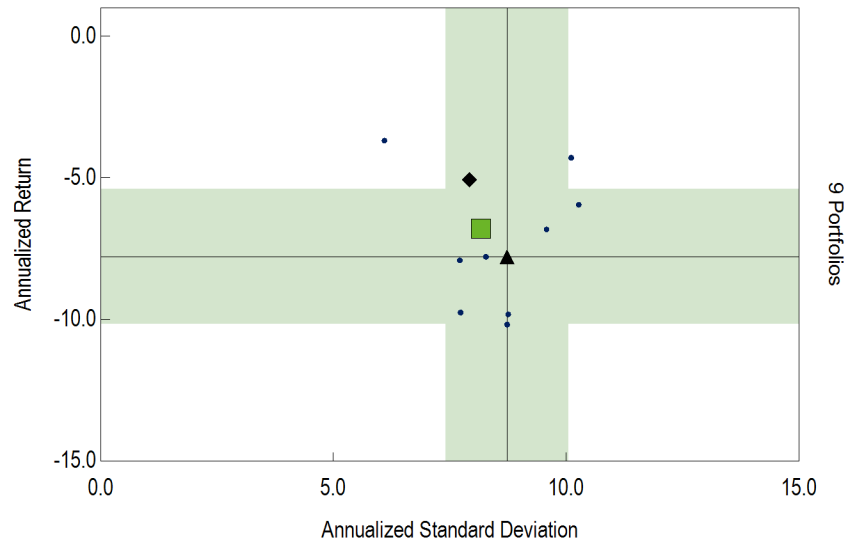
9 Months Ending December 31, 2018

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio
Total Reserve	2.19%	2.11%	0.34
Reserve Custom Index	1.85%	2.22%	0.17



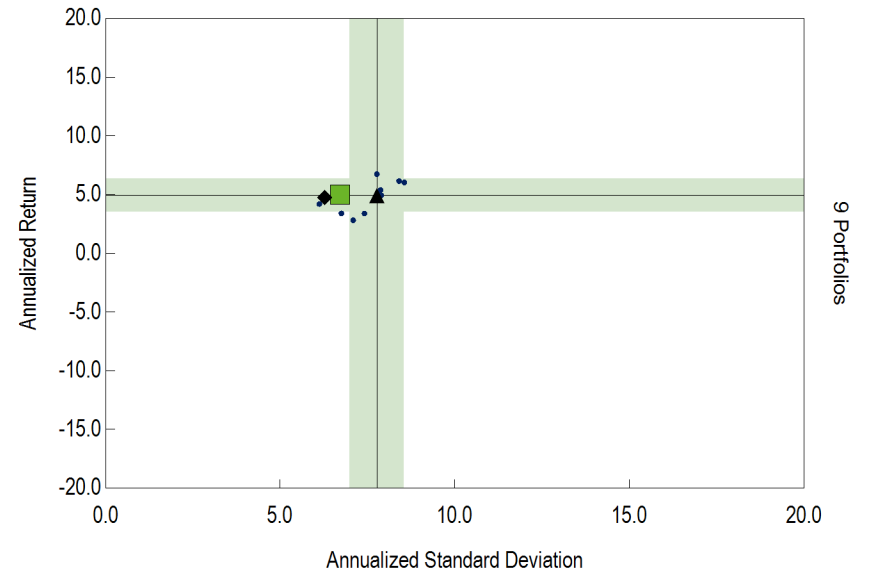
# ENDOWMENT RISK/RETURN - 1 YEAR & 3 YEAR

1 Year Ending December 31, 2018



- Total Endowment
- ◆ Endowment Custom Index
- ▲ Universe Median
- 68% Confidence Interval
- eV Global Balanced Net

3 Years Ending December 31, 2018



- Total Endowment
- ◆ Endowment Custom Index
- ▲ Universe Median
- 68% Confidence Interval
- eV Global Balanced Net

1 Year Ending December 31, 2018

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio
Total Endowment	-6.80%	8.17%	-1.06
Endowment Custom Index	-5.07%	7.93%	-0.88

3 Years Ending December 31, 2018

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio
Total Endowment	4.99%	6.72%	0.59
Endowment Custom Index	4.74%	6.27%	0.59



## Delaware Office of the State Treasurer

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Delaware Total Consolidation</b>	<b>2,126,144,207</b>	<b>100.00</b>	<b>0.97</b>	<b>--</b>	<b>1.31</b>	<b>--</b>	<b>1.58</b>	<b>--</b>	<b>1.51</b>	<b>--</b>	<b>1.22</b>	<b>--</b>	<b>1.91</b>	<b>Jan-05</b>
<i>BBgBarc US High Yield TR</i>			-4.53	--	-2.24	--	-2.08	--	7.23	--	3.83	--	6.71	Jan-05
<b>Total Liquidity &amp; Reserve</b>	<b>2,060,912,459</b>	<b>96.93</b>	<b>1.30</b>	<b>--</b>	<b>1.58</b>	<b>--</b>	<b>1.89</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>1.29</b>	<b>Jan-16</b>
<b>Total Liquidity</b>	<b>822,353,586</b>	<b>38.68</b>	<b>0.64</b>	<b>4</b>	<b>1.18</b>	<b>5</b>	<b>1.95</b>	<b>24</b>	<b>1.36</b>	<b>12</b>	<b>0.97</b>	<b>13</b>	<b>1.75</b>	<b>Jan-05</b>
<i>eV US Cash Management Net Median</i>			0.56		1.07		1.90		1.16		0.78		1.47	Jan-05
PFM Asset Management	412,453,094	19.40	0.58	38	1.10	34	2.00	20	1.43	9	1.06	5	1.00	Jun-13
Wilmington Liquidity	409,900,492	19.28	0.69	1	1.25	1	1.92	37	1.25	29	0.89	15	4.20	Jan-85
<b>Total Reserve</b>	<b>1,238,558,873</b>	<b>58.25</b>	<b>1.80</b>	<b>9</b>	<b>1.92</b>	<b>9</b>	<b>1.90</b>	<b>1</b>	<b>1.50</b>	<b>76</b>	<b>1.34</b>	<b>97</b>	<b>2.20</b>	<b>Jan-05</b>
<i>Reserve Custom Index</i>			1.68	14	1.90	11	1.59	2	1.24	96	1.14	99	2.39	Jan-05
<i>eV US Interm Duration Fixed Inc Net Median</i>			1.31		1.63		0.61		1.72		1.88		3.61	Jan-05
JPM Intermediate	307,141,423	14.45	1.07	25	1.50	14	1.53	33	1.36	59	1.19	57	1.10	Jun-13
<i>J.P. Morgan Custom Index</i>			1.24	10	1.54	10	1.56	30	1.24	72	1.13	65	1.03	Jun-13
Blackrock Financial Mangement	309,205,415	14.54	1.38	5	1.65	7	--	--	--	--	--	--	2.23	Mar-18
<i>Blackrock Custom Index</i>			1.58	2	1.78	1	1.70	12	1.28	66	1.16	62	2.19	Mar-18
Chandler Asset Management	313,525,893	14.75	2.24	11	2.26	1	2.26	1	1.63	99	1.55	99	1.28	Jun-13
Lazard Financial Management	308,686,142	14.52	2.52	11	2.25	1	--	--	--	--	--	--	2.69	Mar-18
<i>Chandler/Lazard Custom Index</i>			2.73	11	2.58	1	2.13	1	1.43	99	1.25	99	2.63	Mar-18
<b>Total Endowment</b>	<b>65,231,748</b>	<b>3.07</b>	<b>-7.87</b>	<b>37</b>	<b>-5.86</b>	<b>35</b>	<b>-6.80</b>	<b>38</b>	<b>4.99</b>	<b>49</b>	<b>--</b>	<b>--</b>	<b>3.06</b>	<b>Aug-15</b>
<i>Endowment Custom Index</i>			-7.53	33	-4.77	27	-5.07	19	4.74	54	3.90	73	3.24	Aug-15
<i>eV Global Balanced Net Median</i>			-8.61		-7.03		-7.79		4.94		3.97		3.00	Aug-15
SEI Funds	22,439,621	1.06	-8.45	47	-6.16	37	-6.93	39	5.97	27	--	--	4.09	Aug-15
MSIFT Global Strategist	21,304,667	1.00	-6.72	13	-5.16	30	-6.26	30	4.90	51	--	--	2.68	Aug-15
JP Morgan Diversified	21,487,460	1.01	-9.00	65	-6.59	43	-7.83	55	4.89	51	--	--	3.08	Aug-15
Cash Account	0	0.00	0.33	99	0.77	99	1.44	99	0.77	99	--	--	0.68	Aug-15

Notes: Net of Fees. Results for periods longer than one year are annualized.

Performance history through 12/2015 is from BNY Mellon. NEPC Performance start date is January 2016. Fiscal Year end is June 30.

Endowment Custom Index consists of 60% MSCI World Index/40% BBgBarc US Aggregate.

Post 3/1/2018 Reserve Custom Index is comprised of 25% BBgBarc US Govt/Credit 1-3 Yr, BBgBarc US Govt/Credit 1-5 Yr, and BBgBarc US Govt/Credit 5-10 Yr.

Blackrock Custom Index consists of 100% BofA Merrill Lynch 1-5 year Corporate/Gov A+ or Better and 75% BofA Merrill Lynch 1-5 year Govt/Corporate A+ or Better/ 25% 6 Month Treasury Bill prior to 4/1/2018.

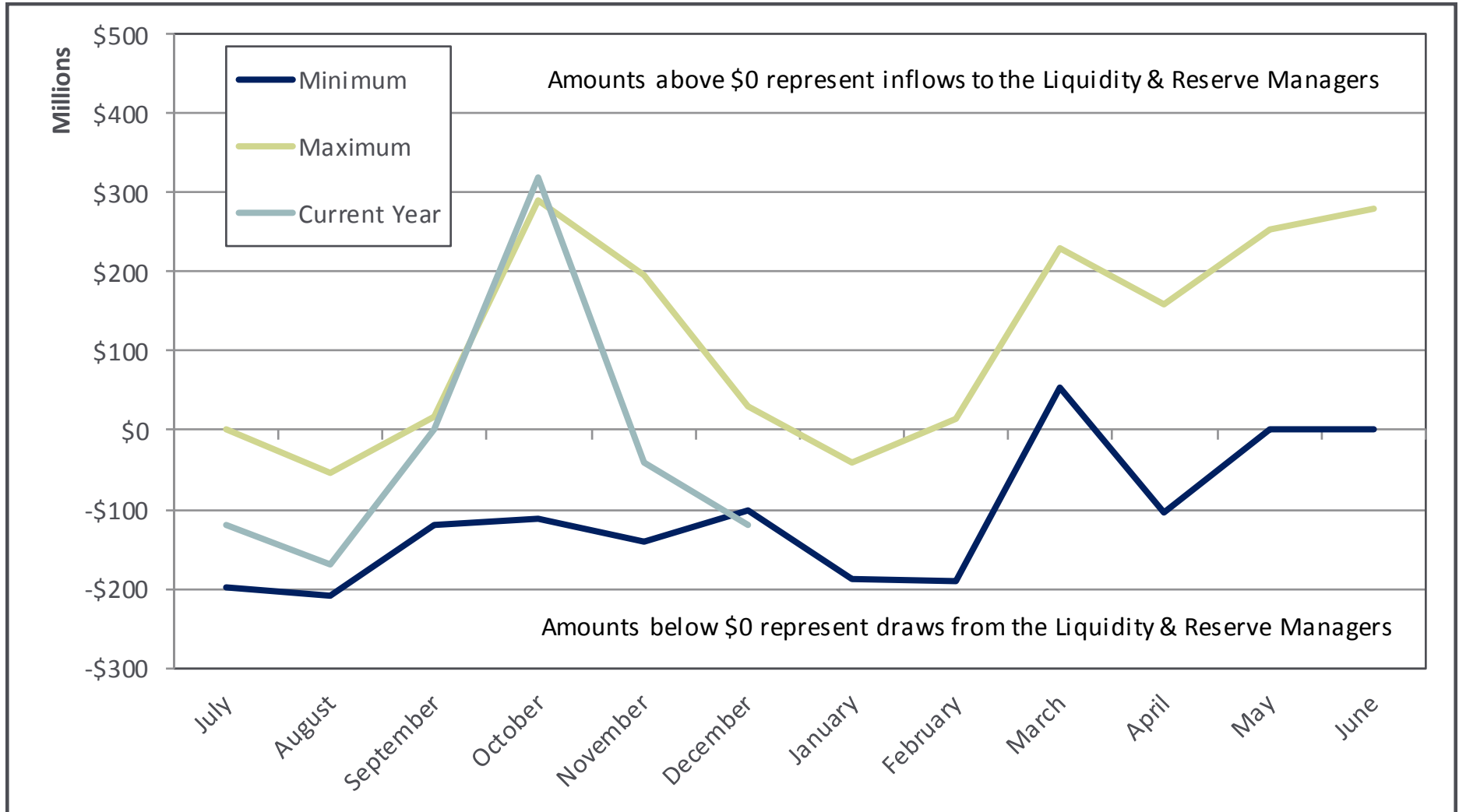
J.P Morgan Custom Index consists of 100% BofA Merrill Lynch 1-3 year Corporate/Gov A+ or Better and 75% BofA Merrill Lynch 1-5 year Govt/Corporate A+ or Better/ 25% 6 Month Treasury Bill prior to 4/1/2018.

Chandler/Lazard Custom Index consists of 100% BofA Merrill Lynch 5-10 year Gov/Credit A+ or Better and 75% BofA Merrill Lynch 1-5 year Govt/Corporate A+ or Better/ 25% 6 Month Treasury Bill prior to 4/1/2018.





# CASH FLOWS – FISCAL YEAR 2019



The minimum and maximum bands are the historical high and low amounts over the preceding 10 fiscal years.



# MONTH ENDED DECEMBER 31, 2018

Change in Market Value Month Ending December 31, 2018										
	Beginning Market Value	Contributions	Withdrawals	Fees	Income	Unrealized Gain (Loss)	Realized Gain (Loss)	Amortization / Accretion	Ending Market Value	
<b>Liquidity Managers</b>										
PFM Asset Management	\$ 471,425,934	\$ -	\$ (60,000,000)	\$ -	\$ 725,285	\$ 102,055	\$ 6,700	\$ 193,120	\$ 412,453,094	
Wilmington Liquidity	\$ 468,649,356	\$ -	\$ (60,000,000)	\$ -	\$ 390,382	\$ 520,922	\$ 63,152	\$ 276,680	\$ 409,900,492	
<b>Total Liquidity Managers</b>	<b>\$ 940,075,290</b>	<b>\$ -</b>	<b>\$ (120,000,000)</b>	<b>\$ -</b>	<b>\$ 1,115,667</b>	<b>\$ 622,977</b>	<b>\$ 69,852</b>	<b>\$ 469,800</b>	<b>\$ 822,353,586</b>	
<b>Reserve Managers</b>										
BlackRock Financial Management	\$ 306,164,295	\$ -	\$ -	\$ -	\$ 568,458	\$ 2,637,155	\$ (193,794)	\$ 29,302	\$ 309,205,415	
Chandler Asset Management	\$ 307,531,591	\$ -	\$ -	\$ -	\$ 685,326	\$ 5,272,730	\$ -	\$ 36,246	\$ 313,525,893	
JPM Intermediate	\$ 305,023,144	\$ -	\$ -	\$ -	\$ 624,554	\$ 1,459,868	\$ (7,048)	\$ 40,906	\$ 307,141,423	
Lazard Asset Management	\$ 302,549,362	\$ 314	\$ -	\$ -	\$ 674,233	\$ 5,720,463	\$ (282,397)	\$ 24,168	\$ 308,686,142	
<b>Total Reserve Managers</b>	<b>\$ 1,221,268,392</b>	<b>\$ 314</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,552,571</b>	<b>\$ 15,090,215</b>	<b>\$ (483,239)</b>	<b>\$ 130,621</b>	<b>\$ 1,238,558,873</b>	
<b>Land &amp; Water Endowment</b>										
SEI Funds	\$ 23,459,268	\$ 1,962	\$ -	\$ -	\$ 200,126	\$ (1,564,632)	\$ 342,896	\$ -	\$ 22,439,621	
MSIFT Global Strategist	\$ 22,049,418	\$ 1,829	\$ -	\$ -	\$ 776,608	\$ (3,472,518)	\$ 1,949,330	\$ -	\$ 21,304,667	
JP Morgan Diversified	\$ 22,610,750	\$ 1,890	\$ -	\$ -	\$ 178,301	\$ (3,016,262)	\$ 1,712,781	\$ -	\$ 21,487,460	
Cash Account	\$ 5,680	\$ -	\$ (5,680)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
<b>Total Land &amp; Water Endowment</b>	<b>\$ 68,125,116</b>	<b>\$ 5,681</b>	<b>\$ (5,680)</b>	<b>\$ -</b>	<b>\$ 1,155,035</b>	<b>\$ (8,053,412)</b>	<b>\$ 4,005,008</b>	<b>\$ -</b>	<b>\$ 65,231,748</b>	
<b>Total</b>	<b>\$ 2,229,468,798</b>	<b>\$ 5,995</b>	<b>\$ (120,005,680)</b>	<b>\$ -</b>	<b>\$ 4,823,273</b>	<b>\$ 7,659,780</b>	<b>\$ 3,591,621</b>	<b>\$ 600,421</b>	<b>\$ 2,126,144,207</b>	

Footnotes:

Values provided by Northern Trust and are reconciled to the audited custodian reports.

Income is a product of income received during the month plus accrued income.

Numbers may not add due to rounding.



# FISCAL YEAR TO DATE

	Change in Market Value Fiscal Year-to-Date Through December 31, 2018								
	Beginning Market Value	Contributions	Withdrawals	Fees	Income	Unrealized Gain (Loss)	Realized Gain (Loss)	Amortization / Accretion	Ending Market Value
<b>Liquidity Managers</b>									
PFM Asset Management	\$ 492,906,444	\$ 200,000,000	\$ (285,000,000)	\$ (150,692)	\$ 3,372,323	\$ 197,296	\$ 49,910	\$ 1,077,812	\$ 412,453,094
Wilmington Liquidity	\$ 489,669,700	\$ 298,885,000	\$ (383,885,000)	\$ (152,669)	\$ 3,558,025	\$ 471,825	\$ 58,998	\$ 1,294,613	\$ 409,900,492
<b>Total Liquidity Managers</b>	<b>\$ 982,576,144</b>	<b>\$ 498,885,000</b>	<b>\$ (668,885,000)</b>	<b>\$ (303,361)</b>	<b>\$ 6,930,349</b>	<b>\$ 669,122</b>	<b>\$ 108,908</b>	<b>\$ 2,372,425</b>	<b>\$ 822,353,586</b>
<b>Reserve Managers</b>									
BlackRock Financial Management	\$ 304,178,445	\$ -	\$ -	\$ (116,523)	\$ 3,418,379	\$ 2,657,897	\$ (1,166,450)	\$ 233,668	\$ 309,205,415
Chandler Asset Management	\$ 306,602,083	\$ -	\$ -	\$ (116,578)	\$ 4,025,540	\$ 2,614,458	\$ (106,933)	\$ 507,325	\$ 313,525,893
JPM Intermediate	\$ 302,598,195	\$ -	\$ -	\$ (177,040)	\$ 3,438,911	\$ 2,871,406	\$ (1,870,332)	\$ 280,283	\$ 307,141,423
Lazard Asset Management	\$ 301,883,237	\$ 314	\$ -	\$ (181,022)	\$ 3,992,773	\$ 2,964,393	\$ (550,748)	\$ 577,196	\$ 308,686,142
<b>Total Reserve Managers</b>	<b>\$ 1,215,261,960</b>	<b>\$ 314</b>	<b>\$ -</b>	<b>\$ (591,163)</b>	<b>\$ 14,875,603</b>	<b>\$ 11,108,154</b>	<b>\$ (3,694,463)</b>	<b>\$ 1,598,472</b>	<b>\$ 1,238,558,873</b>
<b>Total Liquidity &amp; Reserve Managers</b>	<b>\$ 2,197,838,104</b>	<b>\$ 498,885,314</b>	<b>\$ (668,885,000)</b>	<b>\$ (894,524)</b>	<b>\$ 21,805,952</b>	<b>\$ 11,777,275</b>	<b>\$ (3,585,555)</b>	<b>\$ 3,970,897</b>	<b>\$ 2,060,912,459</b>
<b>Land &amp; Water Endowment</b>									
SEI Funds	\$ 22,673,974	\$ 1,259,163	\$ (44,310)	\$ (40,651)	\$ 395,934	\$ (2,280,505)	\$ 476,017	\$ -	\$ 22,439,621
MSIFT Global Strategist	\$ 21,282,497	\$ 1,184,469	\$ (24,184)	\$ -	\$ 778,989	\$ (3,868,251)	\$ 1,951,148	\$ -	\$ 21,304,667
JP Morgan Diversified	\$ 21,816,446	\$ 1,212,542	\$ (45,269)	\$ -	\$ 251,706	\$ (3,461,770)	\$ 1,713,806	\$ -	\$ 21,487,460
Cash Account	\$ 3,571,583	\$ 103,765	\$ (3,702,173)	\$ -	\$ 26,825	\$ -	\$ -	\$ -	\$ 0
<b>Total Land &amp; Water Endowment</b>	<b>\$ 69,344,500</b>	<b>\$ 3,759,939</b>	<b>\$ (3,815,936)</b>	<b>\$ (40,651)</b>	<b>\$ 1,453,454</b>	<b>\$ (9,610,527)</b>	<b>\$ 4,140,971</b>	<b>\$ -</b>	<b>\$ 65,231,748</b>
<b>Total</b>	<b>\$ 2,267,182,604</b>	<b>\$ 502,645,253</b>	<b>\$ (672,700,936)</b>	<b>\$ (935,175)</b>	<b>\$ 23,259,406</b>	<b>\$ 2,166,749</b>	<b>\$ 555,416</b>	<b>\$ 3,970,897</b>	<b>\$ 2,126,144,207</b>

## Footnotes:

Values provided by Northern Trust and are reconciled to the audited custodian reports.

Income is a product of income received during the month plus accrued income.

Numbers may not add due to rounding.



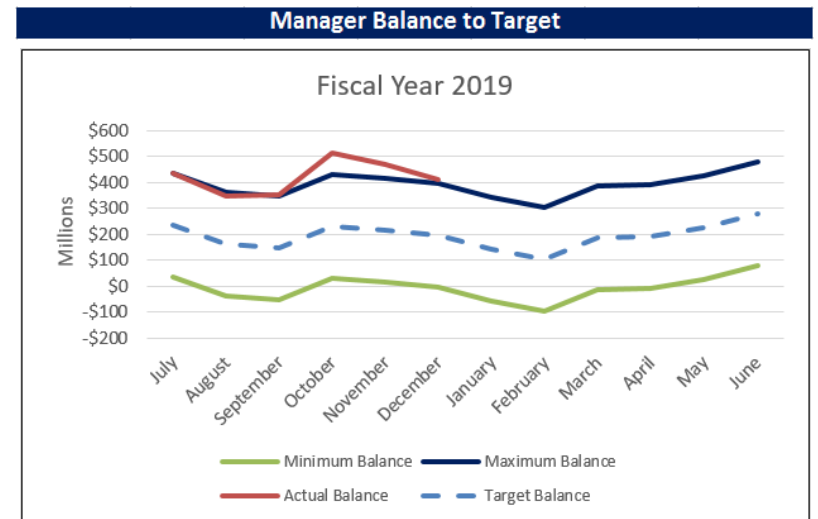
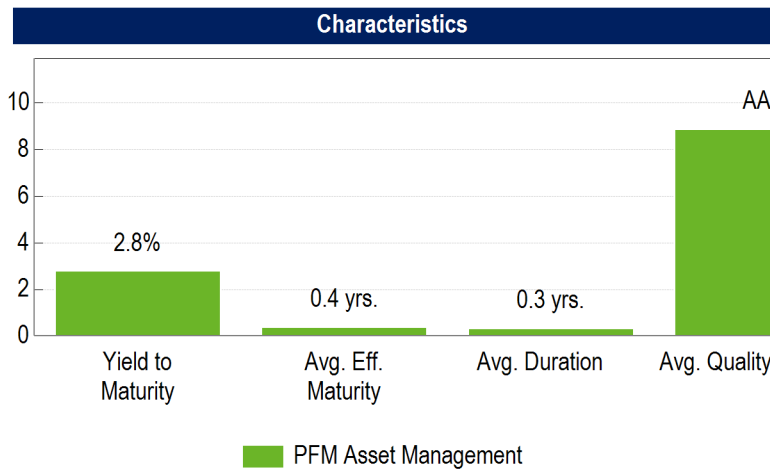
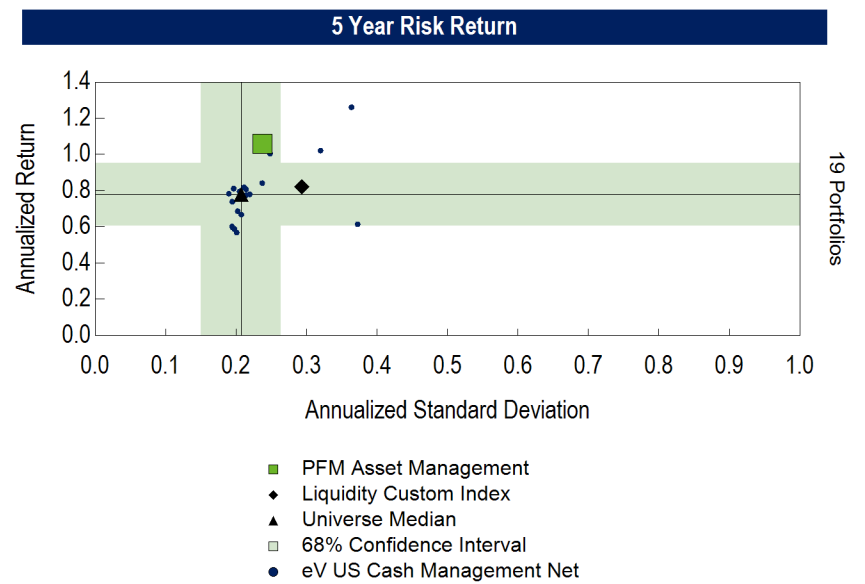
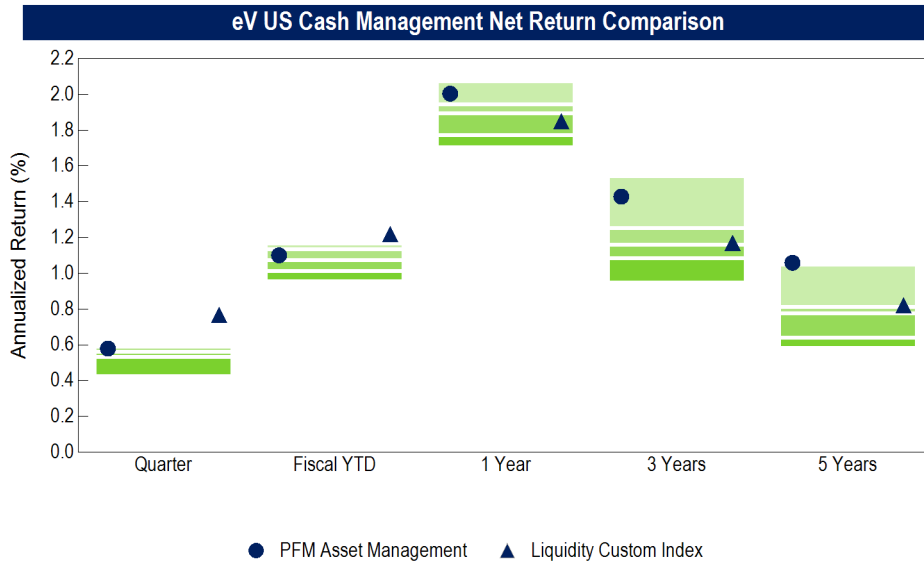
# LIQUIDITY MANAGER REVIEW

NEPC, LLC

---

# Delaware Office of the State Treasurer

## PFM ASSET MANAGEMENT

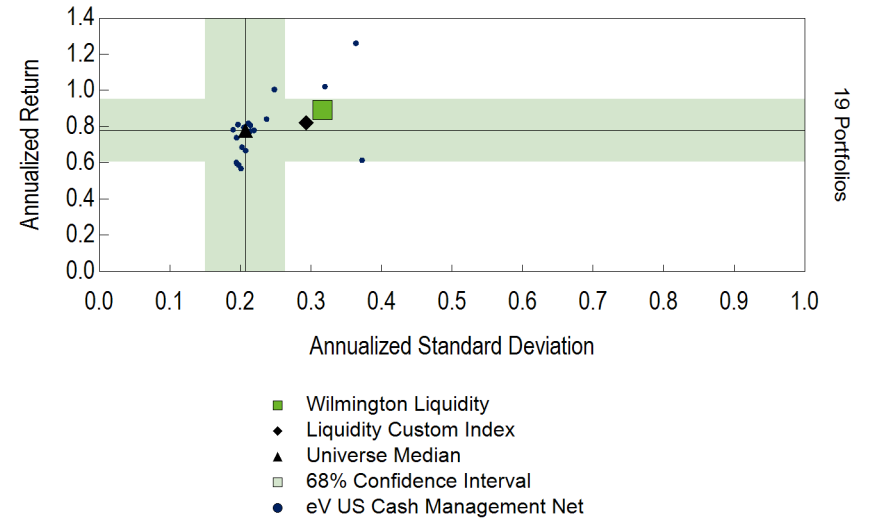


# WILMINGTON LIQUIDITY

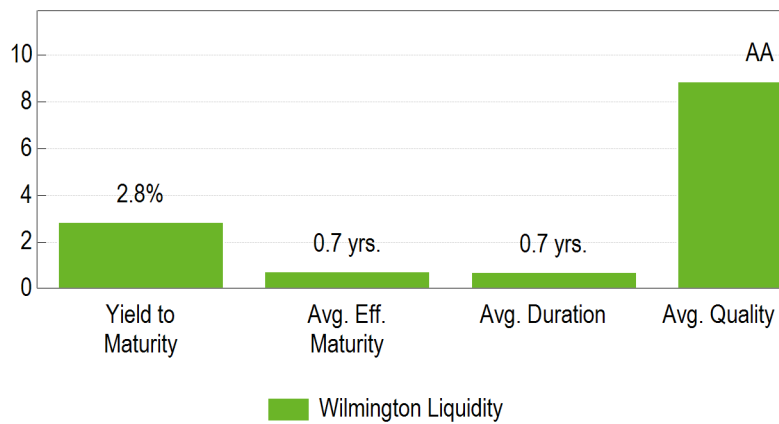
**eV US Cash Management Net Return Comparison**



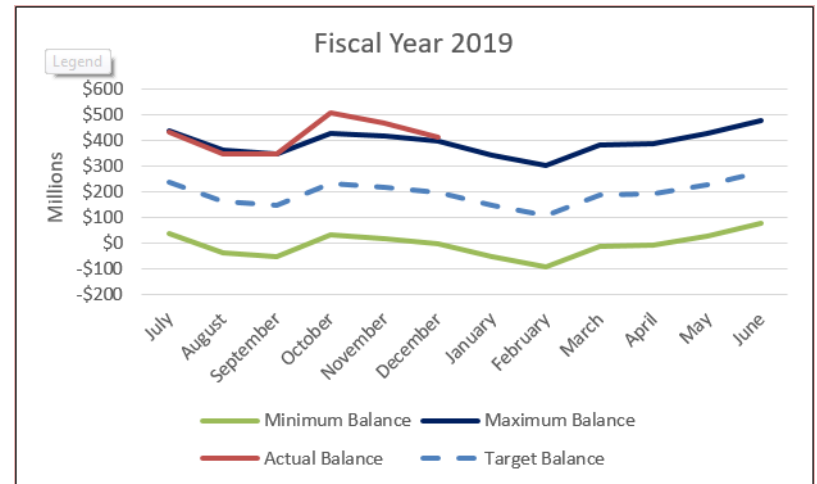
**5 Year Risk Return**



**Characteristics**



**Manager Balance to Target**



# RESERVE MANAGER REVIEW

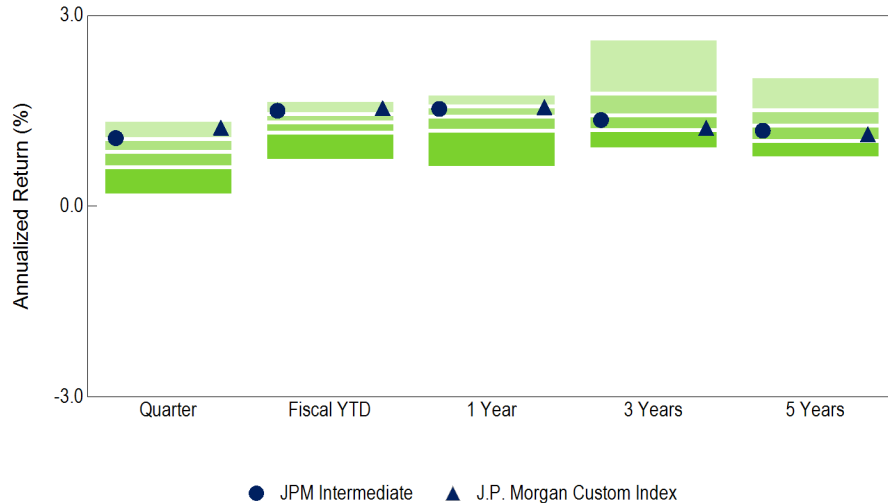
NEPC, LLC

---

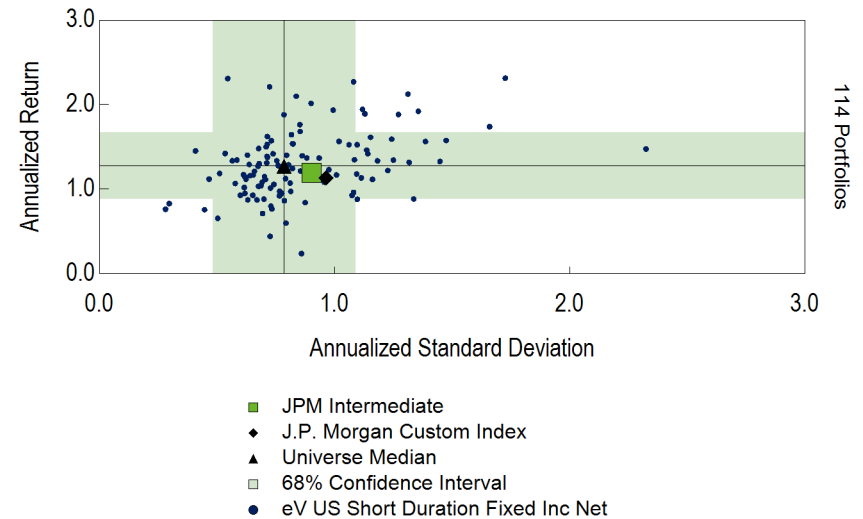
# Delaware Office of the State Treasurer

## JPM INTERMEDIATE

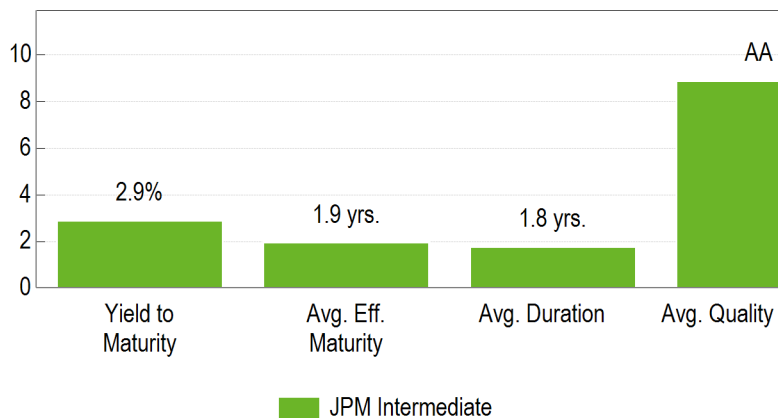
eV US Short Duration Fixed Inc Net Return Comparison



5 Year Risk Return



Characteristics



Qualitative Attribution

**Duration and Yield Positioning** – the portfolio remained marginally short duration with a yield advantage relative to the benchmark. **Result:** Value detracted as the front end of the curve declined at the end of the quarter.

**Credit Positioning** – the portfolio had an overweight to corporate and an underweight to Treasuries. **Result:** Value detracted as corporate rates widened.

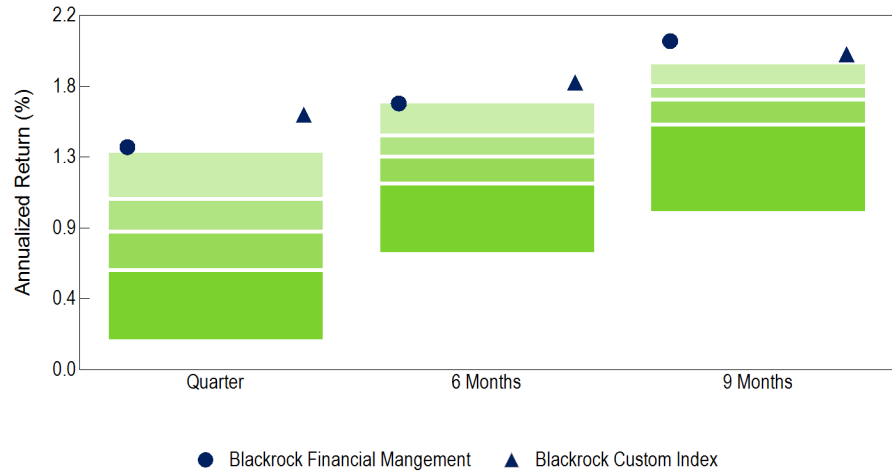
**Other Positioning** – the portfolio was positioned defensively at the beginning of the quarter. When corporate spreads widened towards the end of the quarter, the portfolio added increased spread duration. The portfolio will maintain a short duration position as the firm's view is that a mid-year interest rate increase is still viable. If that view changes, the portfolio duration may move to a neutral duration position.



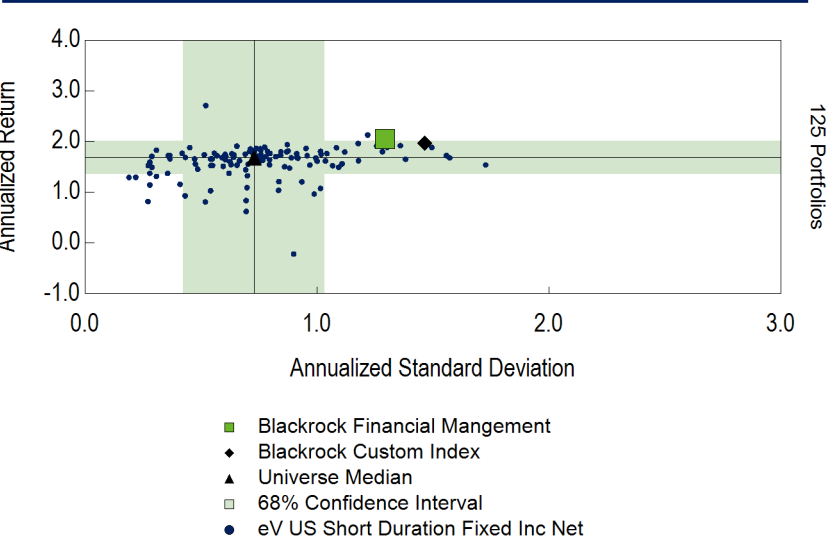


# BLACKROCK FINANCIAL MANAGEMENT

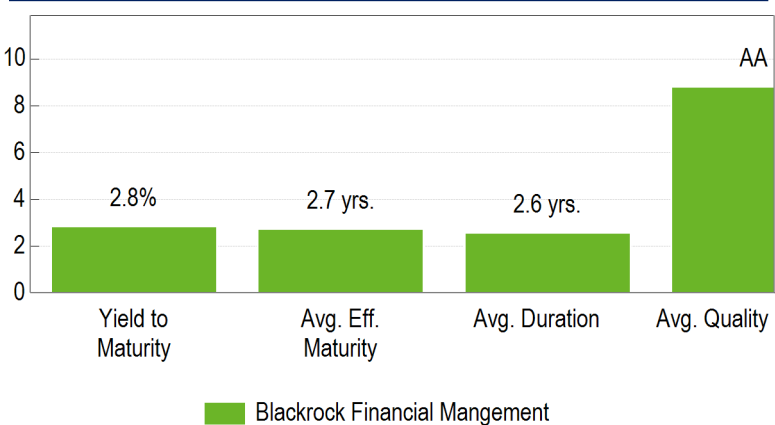
**eV US Short Duration Fixed Inc Net Return Comparison**



**9 Month Risk Return**



**Characteristics**



**Qualitative Attribution**

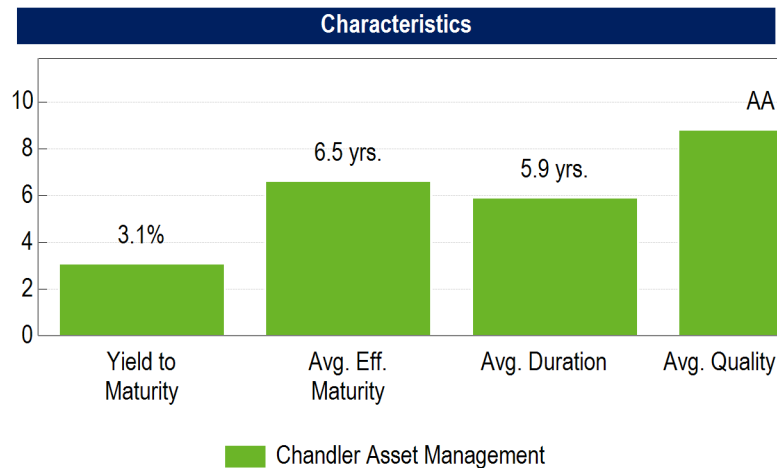
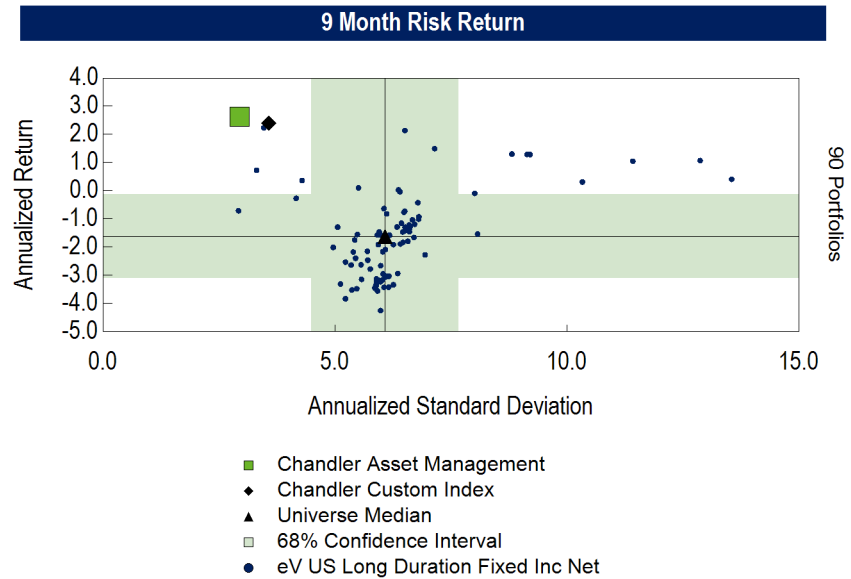
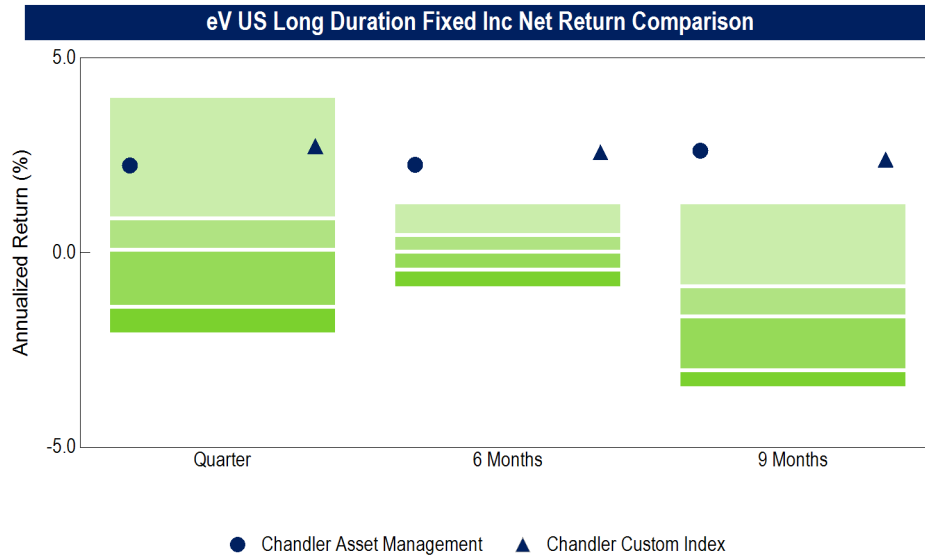
**Duration Positioning** – the portfolio was positioned short relative to the benchmark during the quarter. **Result:** Value detracted as the interest rates declined during the quarter.

**Credit Positioning** – the portfolio was underweight Treasuries, agency mortgages and sovereign issues, overweight corporates, agencies and taxable municipals. The portfolio also held out-of-benchmark positions in mortgages, asset-backed securities. **Result:** Negative as the overweight to corporate credit and underweight positions in Treasuries detracted from the portfolio’s return.

**Other Positioning** – as corporate spreads widened early in the quarter, the portfolio’s allocation to corporates was increased from 33% to 39% as the team maintains a positive fundamental view of the sector. The increase in allocation detracted from performance towards the end of the quarter. The firm does not view the widening in rates as permanent, but rather a reaction to the equity market sell off in December.



# CHANDLER ASSET MANAGEMENT



### Qualitative Attribution

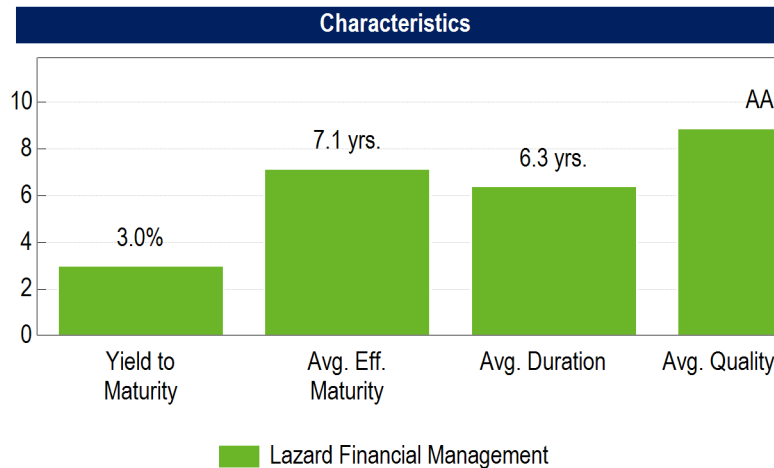
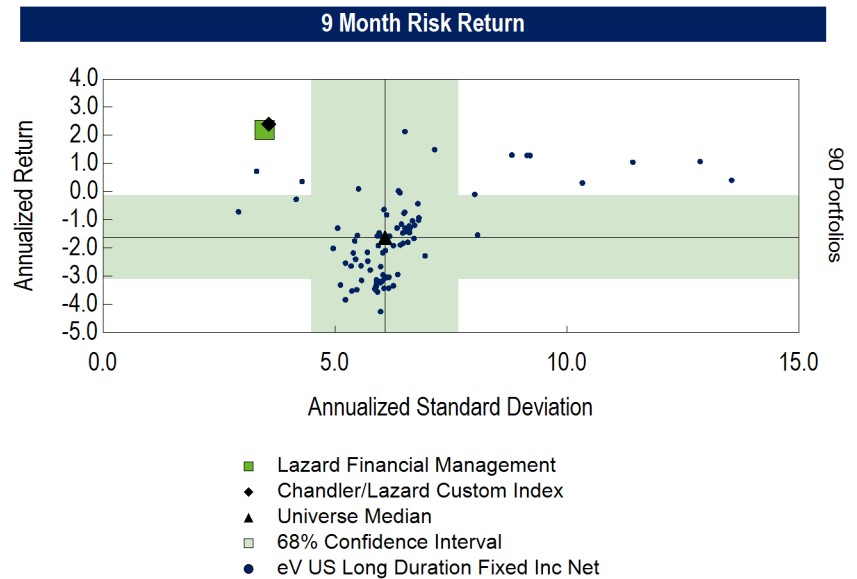
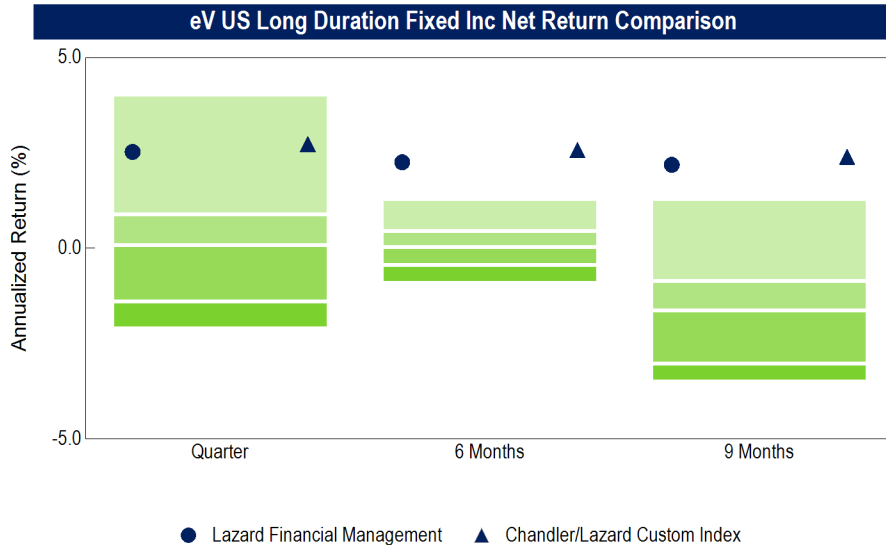
**Duration Positioning** – the portfolio’s duration position remained stable during the quarter, but was modestly short relative to the benchmark’s duration. **Result:** Modestly negative as interest rates moved lower during the quarter.

**Credit Positioning** – the portfolio was underweight Treasuries which rallied amidst the equity market sell off in November and December. The overall mix of corporate credits remain high quality and reflects the defensive positioning of the portfolio. The portfolio is positioned to add spread product both in the corporate and MBS sectors. **Result:** Value detracted as the underweight positions to Treasury securities more than offset the strong relative performance of the credit positions.

**Other Positioning** – the portfolio continues to hold securities with maturities of below five years. The team believes that these securities will become a source of funds as the portfolio becomes seasoned, and additional rebalancing is required.



# LAZARD FINANCIAL MANAGEMENT



### Qualitative Attribution

**Duration Positioning** – the portfolio moved to a neutral duration position during the quarter. The yield curve positioning was defensive in anticipation of a flattening. The portfolio held an underweight to the five-year segment of the curve. **Result:** Minor value detractor as the Treasury curve steepened during the quarter.

**Credit Positioning** – the portfolio remained defensively positioned with an underweight to credit, specifically BBB rated securities and Non-US Yankees. **Result:** Value added as corporate credit sold off sharply during the quarter.

**Other Positioning** – the portfolio continued to hold its position in 1.5 to 2.0-year AAA rated asset-backed securities, an out of index position. **Result:** Value added as high quality, short duration asset backed securities outperformed corporate securities during the quarter.



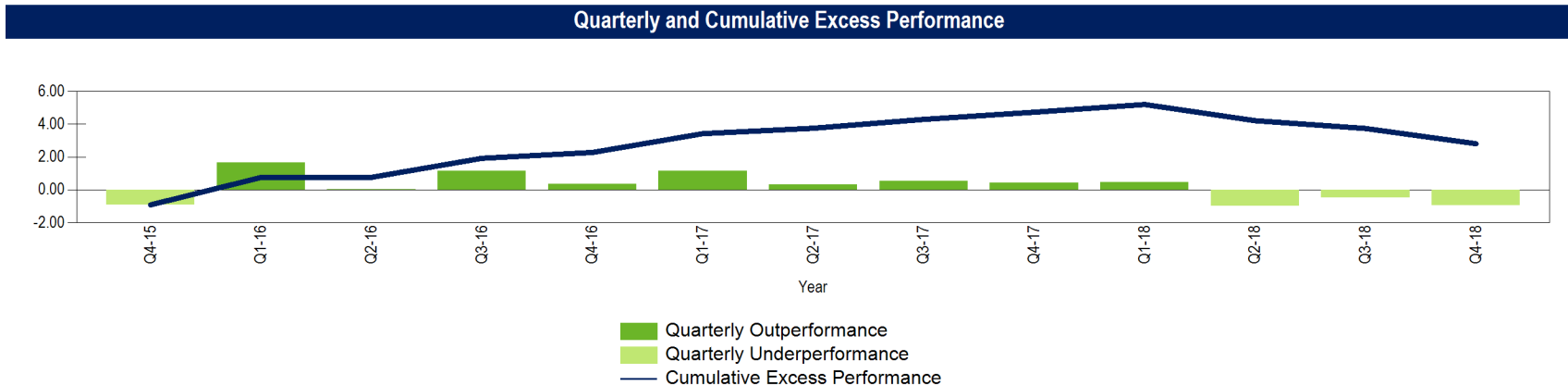
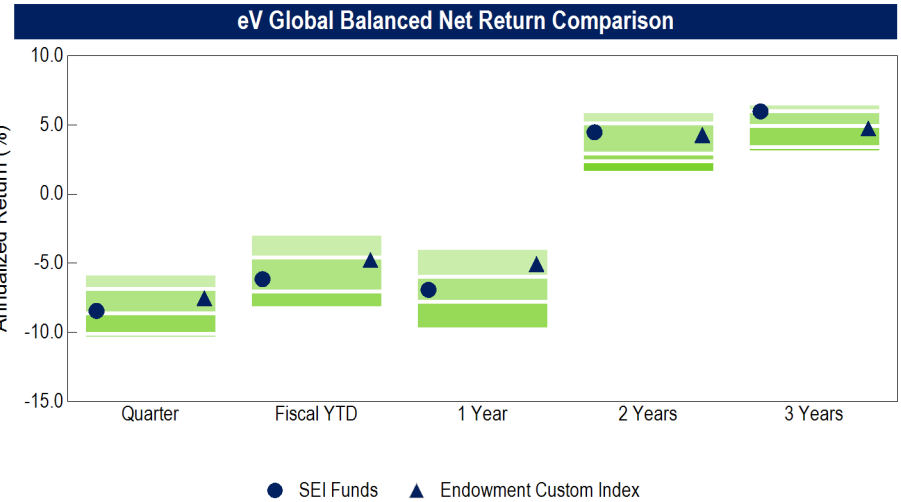
# ENDOWMENT MANAGER REVIEW

NEPC, LLC

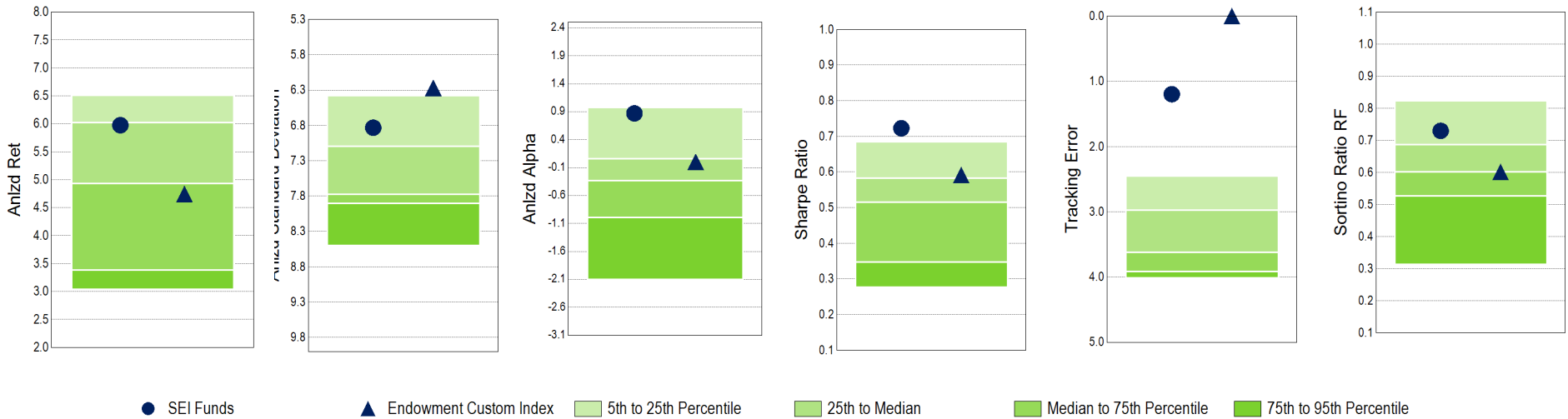
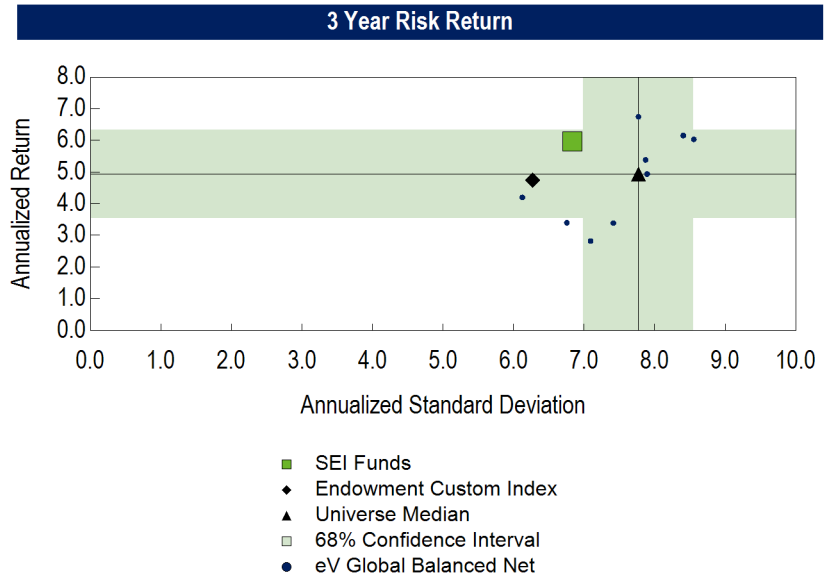
---

# SEI FUNDS

SEI Funds manages a multi-asset class portfolio subject to a 60% target equity allocation which will be held in a range of 45% to 75%, with international equities not to exceed 35% of the equity allocation. A combination of fixed income, alternative investments, and cash will account for the remaining 40% target allocation. Funds will be managed by the following SEI strategies: SEI US Managed Volatility Strategy, SEI S&P 500 Index Strategy, SEI Extended Markets Index Strategy, SEI Small Cap II Equity Strategy, SEI World Equity ex-US Strategy, SEI Core Fixed Income Strategy, SEI High Yield Strategy, and SEI Emerging Markets Debt Strategy.

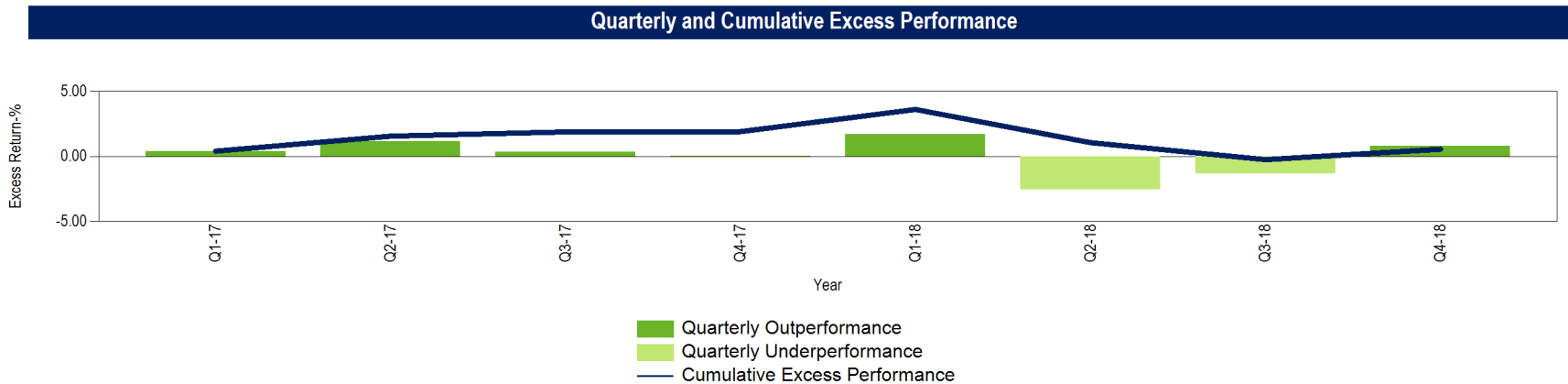
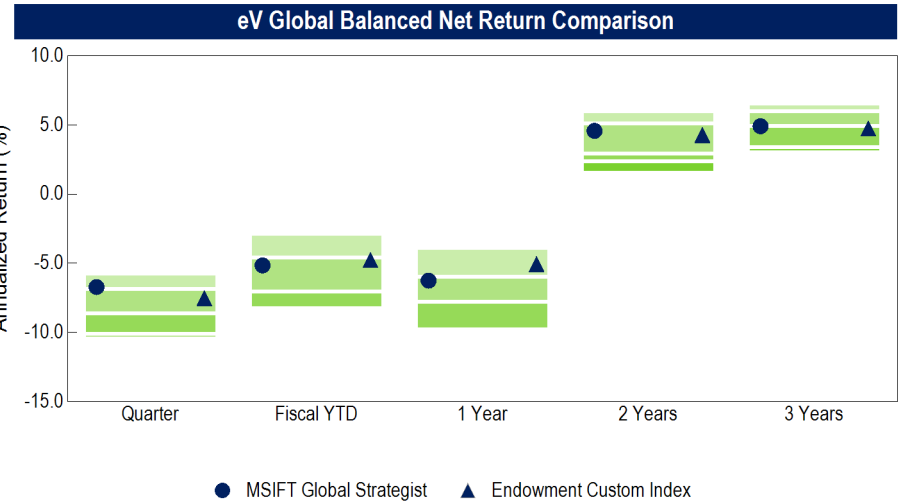


# SEI FUNDS

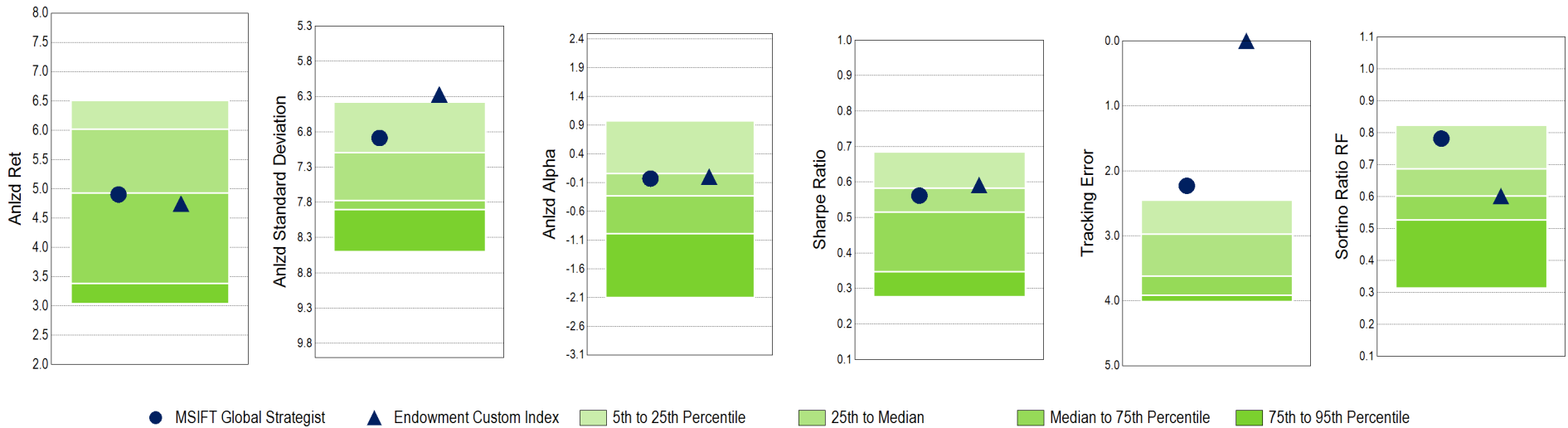
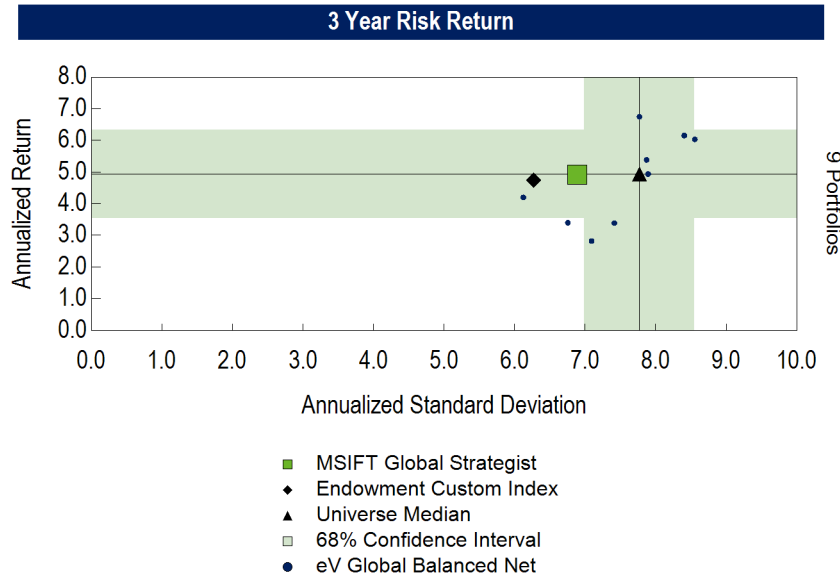


# MSIFT GLOBAL STRATEGIST

Morgan Stanley manages a multi-asset class portfolio. The portfolio seeks to achieve its investment objective by investing primarily in a blend of equity and fixed income securities of U.S. and non-U.S. issuers. The equity portfolio will be diversified by types of securities (i.e. common and preferred shares of equity), issuer, industry and sectors. The fixed income portfolio will be diversified by security types (i.e government, agency and corporate bonds), issuer, duration and yield characteristics.



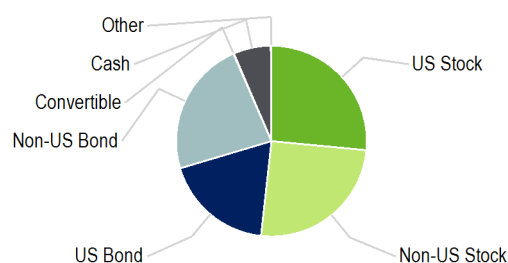
# MSIFT GLOBAL STRATEGIST





# MSIFT GLOBAL STRATEGIST

## Mutual Fund Allocation as of September 30, 2018



## Top Holdings as of September 30, 2018

S+P500 EMINI FUT DEC18 XCME 20181221	12.38%
MS INST. FUND TRUST GLBL STRATEGIST CAYMAN POR LTD	8.41%
UNITED STATES TREASURY NOTES 0.5%	6.09%
1264433 TRS USD P V 03MLIBOR II3546010180122 EQUITYTRS	5.75%
1264433 TRS USD R E II3562940180122 EQUITYTRS	5.71%
1264567 TRS USD R E II1027310180206 EQUITYTRS	4.42%
1264567 TRS USD P V 03MLIBOR II1025160180206 EQUITYTRS	4.26%
US 10YR ULTRA FUT DEC18 XCBT 20181219	3.15%
US 2YR NOTE (CBT) DEC18 XCBT 20181231	2.64%
EURO-BUND FUTURE DEC18 XEUR 20181206	2.26%

## Portfolio Fund Information as of September 30, 2018

Ticker	MPBAX
Morningstar Category	World Allocation
Average Market Cap (\$mm)	63,811.07
Net Assets (\$mm)	63.03
% Assets in Top 10 Holdings	55.07
Total Number of Holdings	1,466
Manager Name	Mark A. Bavoso
Manager Tenure	8
Expense Ratio	0.75%
Closed to New Investors	No

## Fund Characteristics as of September 30, 2018

Sharpe Ratio (3 Year)	1.11
Average Market Cap (\$mm)	63,811.07
Price/Earnings	15.03
Price/Book	2.15
Price/Sales	1.71
Price/Cash Flow	5.63
Dividend Yield	2.64
Number of Equity Holdings	1,165
R-Squared (3 Year)	0.88
Alpha (3 Year)	-0.11%

## Sector Allocation as of September 30, 2018

BASIC MATERIALS	4.53%
COMMUNICATION SERVICES	4.21%
CONSUMER CYCLICAL	9.60%
CONSUMER DEFENSIVE	9.14%
ENERGY	6.89%
FINANCIAL SERVICES	25.50%
HEALTHCARE	11.08%
INDUSTRIALS	10.44%
REAL ESTATE	2.30%
TECHNOLOGY	13.36%
UTILITIES	2.95%

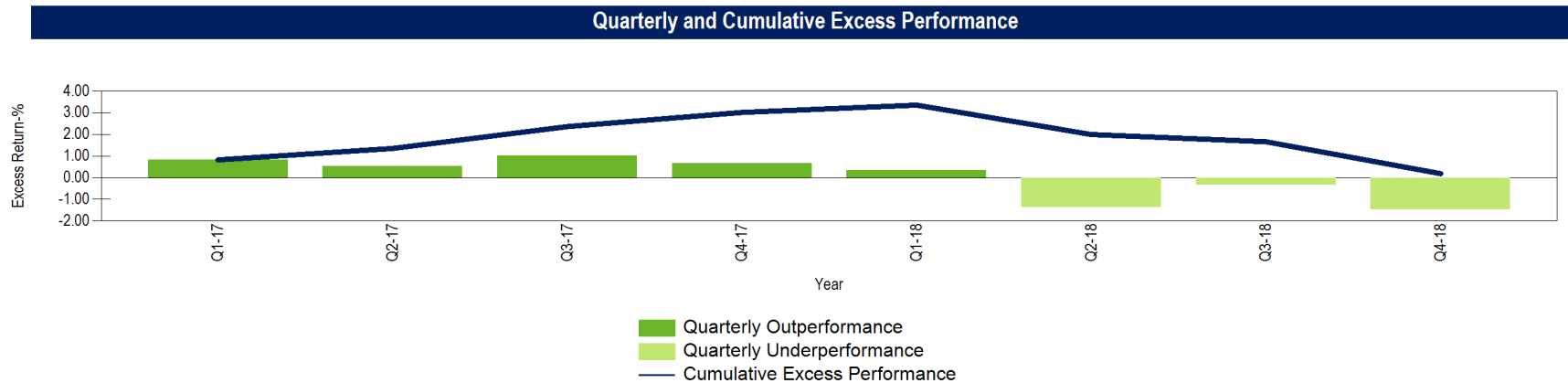
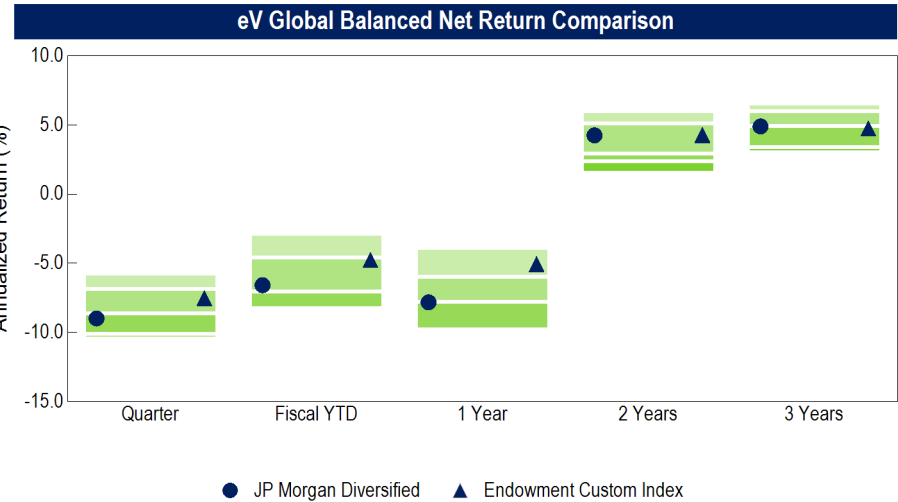
Characteristics have not been released for the fourth quarter.



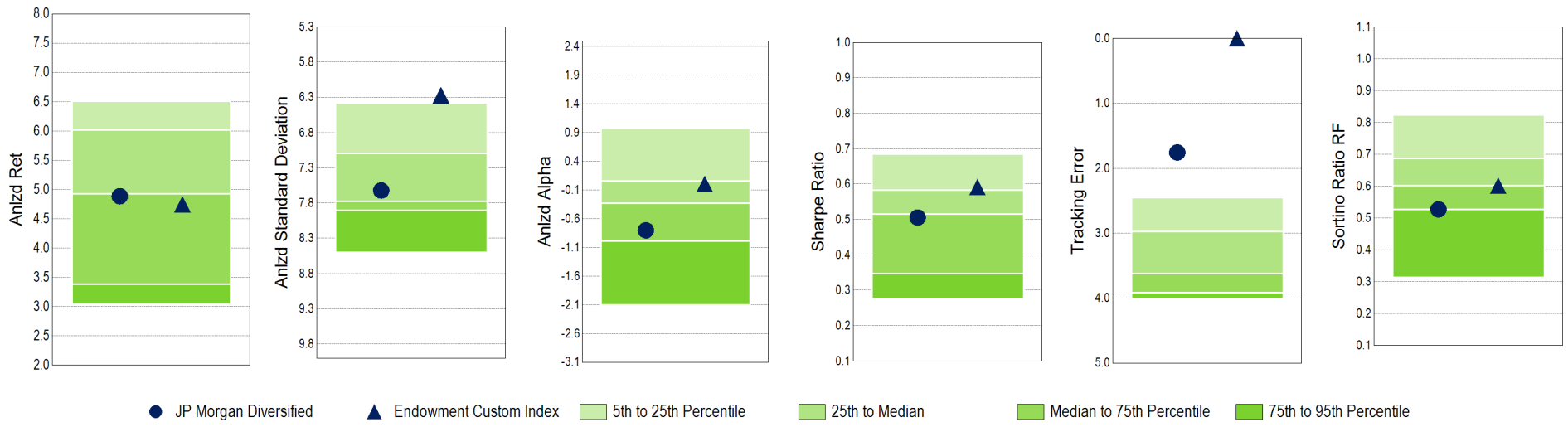
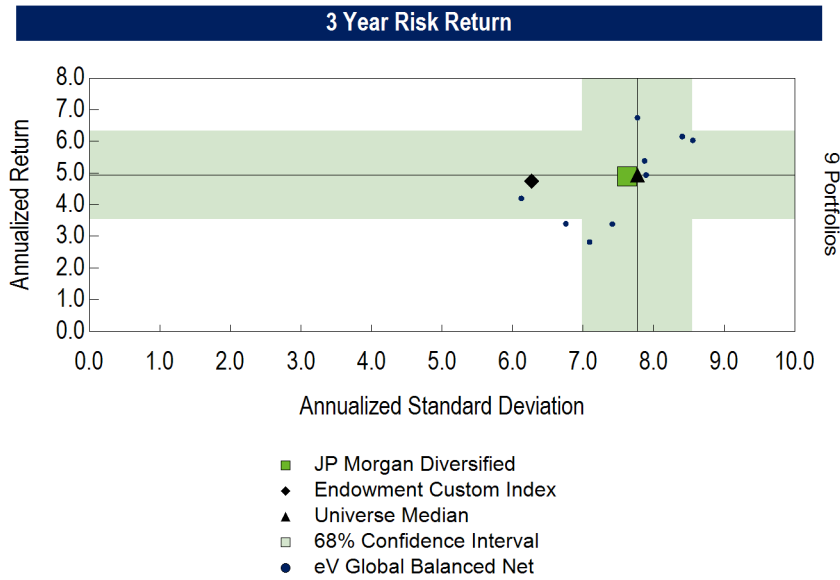
# Delaware Office of the State Treasurer

## JP MORGAN DIVERSIFIED

J.P Morgan manages a diversified multi-asset class portfolio. The strategy seeks to provide a high total return from a diversified portfolio of equity and fixed income investments based on a model allocation. JP Morgan may periodically increase or decrease the Fund's actual asset allocation according to the relative attractiveness of each asset class. Within its equity allocations, the Fund primarily invests in the common stock and convertible securities of U.S. and foreign companies. Within its fixed income allocations, the Fund primarily invests in corporate bonds, mortgage-backed securities, mortgage "dollar rolls" and U.S. government securities.

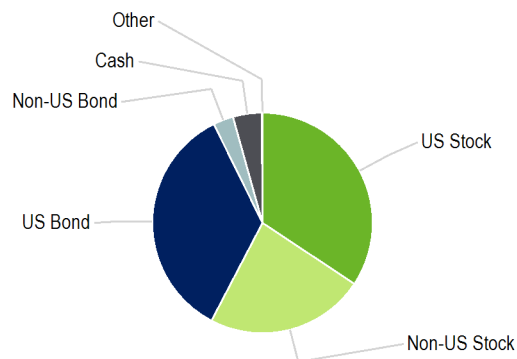


# JP MORGAN DIVERSIFIED



# JP MORGAN DIVERSIFIED

Mutual Fund Allocation as of December 31, 2018



Portfolio Fund Information as of December 31, 2018

Ticker	JPDVX
Morningstar Category	Allocation--50% to 70% Equity
Average Market Cap (\$mm)	38,389.63
Net Assets (\$mm)	215.73
% Assets in Top 10 Holdings	22.63
Total Number of Holdings	2,744
Manager Name	Michael Schoenhaut
Manager Tenure	9
Expense Ratio	0.75%
Closed to New Investors	No

Fund Characteristics as of December 31, 2018

Sharpe Ratio (3 Year)	0.51
Average Market Cap (\$mm)	38,389.63
Price/Earnings	13.54
Price/Book	2.04
Price/Sales	1.55
Price/Cash Flow	7.31
Dividend Yield	2.54
Number of Equity Holdings	1,172
R-Squared (3 Year)	0.97
Alpha (3 Year)	-0.06%

Top Holdings as of December 31, 2018

JPMORGAN CORE PLUS BOND R6	6.06%
JPMORGAN FLOATING RATE INCOME R6	4.15%
JPMORGAN EMERGING MARKETS EQUITY R6	3.75%
JPMORGAN MANAGED INCOME L	2.70%
JPMORGAN MID CAP EQUITY R6	1.98%
MICROSOFT CORP	1.15%
AMAZON.COM INC	0.93%
APPLE INC	0.70%
UNITEDHEALTH GROUP INC	0.61%
PFIZER INC	0.60%

Sector Allocation as of December 31, 2018

BASIC MATERIALS	4.16%
COMMUNICATION SERVICES	2.64%
CONSUMER CYCLICAL	13.55%
CONSUMER DEFENSIVE	6.18%
ENERGY	5.22%
FINANCIAL SERVICES	19.70%
HEALTHCARE	10.84%
INDUSTRIALS	10.52%
REAL ESTATE	7.61%
TECHNOLOGY	16.93%
UTILITIES	2.65%

Characteristics have not been released for the second quarter.



# APPENDIX

NEPC, LLC

---

# GLOSSARY OF INVESTMENT TERMINOLOGY

**# Of Portfolios/Observations<sup>1</sup>** - The total number of data points that make up a specified universe

**Allocation Index<sup>3</sup>** - The allocation index measures the value added (or subtracted) to each portfolio by active management. It is calculated monthly: The portfolio asset allocation to each category from the prior month-end is multiplied by a specified market index.

**Asset Allocation Effect<sup>2</sup>** - Measures an investment manager's ability to effectively allocate their portfolio's assets to various sectors. The allocation effect determines whether the overweighting or underweighting of sectors relative to benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is over weighted in a sector that outperforms the benchmark and underweighted in a sector that underperforms the benchmark. Negative allocation occurs when the portfolio is over weighted in a sector that underperforms the benchmark and under weighted in a sector that outperforms the benchmark.

**Agency Bonds (Agencies)<sup>3</sup>** - The full faith and credit of the United States government is normally not pledged to payment of principal and interest on the majority of government agencies issuing these bonds, with maturities of up to ten years. Their yields, therefore, are normally higher than government and their marketability is good, thereby qualifying them as a low risk-high liquidity type of investment. They are eligible as security for advances to the member banks by the Federal Reserve, which attests to their standing.

**Asset Backed Securities (ABS)<sup>3</sup>** - Bonds which are similar to mortgage-backed securities but are collateralized by assets other than mortgages; commonly backed by credit card receivables, auto loans, or other types of consumer financing.

**Attribution<sup>3</sup>** - Attribution is an analytical technique that allows us to evaluate the performance of the portfolio relative to the benchmark. A proper attribution tells us where value was added or subtracted as a result of the manager's decisions.

**Average Effective Maturity<sup>4</sup>** - For a single bond, it is a measure of maturity that takes into account the possibility that a bond might be called back to the issuer.

For a portfolio of bonds, average effective maturity is the weighted average of the maturities of the underlying bonds. The measure is computed by weighing each bond's maturity by its market value with respect to the portfolio and the likelihood of any of the bonds being called. In a pool of mortgages, this would also account for the likelihood of prepayments on the mortgages.

**Batting Average<sup>1</sup>** - A measurement representing an investment manager's ability to meet or beat an index.

*Formula: Divide the number of days (or months, quarters, etc.) in which the manager beats or matches the index by the total number of days (or months, quarters, etc.) in the period of question and multiply that factor by 100.*

**Brinson Fachler (BF) Attribution<sup>1</sup>** - The BF methodology is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance. The main advantage of the BF methodology is that rather than using the overall return of the benchmark, it goes a level deeper than BHB and measures whether the benchmark sector, country, etc. outperformed/or underperformed the overall benchmark.

**Brinson Hood Beebower (BHB) Attribution<sup>1</sup>** - The BHB methodology shows that excess return must be equal to the sum of all other factors (i.e., allocation effect, selection effect, interaction effect, etc.). The advantage to using the BHB methodology is that it is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance.

**Corporate Bond (Corp)<sup>4</sup>** - A debt security issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations. In some cases, the company's physical assets may be used as collateral for bonds.

**Correlation<sup>1</sup>** - A range of statistical relationships between two or more random variables or observed data values. A correlation is a single number that describes the degree of relationship between variables.

*Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net*



# GLOSSARY OF INVESTMENT TERMINOLOGY

**Coupon<sup>4</sup>** – The interest rate stated on a bond when it is issued. The coupon is typically paid semiannually. This is also referred to as the “coupon rate” or “coupon percent rate.”

**Currency Effect<sup>1</sup>** – Is the effect that changes in currency exchange rates over time affect excess performance.

**Derivative Instrument<sup>2</sup>** – A financial obligation that derives its precise value from the value of one or more other instruments (or assets) at the same point of time. For example, the relationship between the value of an S&P 500 futures contract (the derivative instrument in this case) is determined by the value of the S&P 500 Index and the value of a U.S. Treasury bill that matures at the expiration of the futures contract.

**Downside Deviation<sup>1</sup>** – Equals the standard deviation of negative return or the measure of downside risk focusing on the standard deviation of negative returns.

*Formula:*

*Annualized Standard Deviation (Fund Return - Average Fund Return) where average fund return is greater than individual fund returns, monthly or quarterly.*

**Duration<sup>3</sup>** – Duration is a measure of interest rate risk. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates. A bond’s duration is inversely related to interest rates and directly related to time to maturity.

**Equity/Debt/Cash Ratio<sup>1</sup>** – The percentage of an investment or portfolio that is in Equity, Debt, and/or Cash (i.e. A 7/89/4 ratio represents an investment that is made up of 7% Equity, 89% Debt, and 4% Cash).

**Foreign Bond<sup>3</sup>** – A bond that is issued in a domestic market by a foreign entity, in the domestic market’s currency. A foreign bond is most often issued by a foreign firm to raise capital in a domestic market that would be most interested in purchasing the firm’s debt. For foreign firms doing a large amount of business in the domestic market, issuing foreign bonds is a common practice.

**Hard Hurdle<sup>5</sup>** – is a hurdle rate that once beaten allows a fund manager to charge a performance fee on only the funds above the specified hurdle rate.

**High-Water Mark<sup>4</sup>** – The highest peak in value that an investment fund/account has reached. This term is often used in the context of fund manager compensation, which is performance based. Some performance-based fees only get paid when fund performance exceeds the high-water mark. The high-water mark ensures that the manager does not get paid large sums for poor performance.

**Hurdle Rate<sup>4</sup>** – The minimum rate of return on an investment required, in order for a manager to collect incentive fees from the investor, which is usually tied to a benchmark.

**Interaction Effects<sup>2</sup>** – The interaction effect measures the combined impact of an investment manager’s selection and allocation decisions within a sector. For example, if an investment manager had superior selection and over weighted that particular sector, the interaction effect is positive. If an investment manager had superior selection, but underweighted that sector, the interaction effect is negative. In this case, the investment manager did not take advantage of the superior selection by allocating more assets to that sector. Since many investment managers consider the interaction effect to be part of the selection or the allocation, it is often combined with the either effect.

**Median<sup>3</sup>** – The value (rate of return, market sensitivity, etc.) that exceeds one-half of the values in the population and that is exceeded by one-half of the values. The median has a percentile rank of 50.

**Modified Duration<sup>3</sup>** – The percentage change in the price of a fixed income security that results from a change in yield.

**Mortgage Backed Securities (MBS)<sup>3</sup>** – Bonds which are a general obligation of the issuing institution but are also collateralized by a pool of mortgages.

**Municipal Bond (Muni)<sup>4</sup>** – A debt security issued by a state, municipality or county to finance its capital expenditures.

**Net Investment Change<sup>1</sup>** – Is the change in an investment after accounting for all Net Cash Flows.

**Performance Fee<sup>4</sup>** – A payment made to a fund manager for generating positive returns. The performance fee is generally calculated as a percentage of investment profits, often both realized and unrealized.

*Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net*



# GLOSSARY OF INVESTMENT TERMINOLOGY

**Policy Index<sup>3</sup>** - A custom benchmark designed to indicate the returns that a passive investor would earn by consistently following the asset allocation targets set forth in this investment policy statement.

**Price to Book (P/B)<sup>4</sup>** - A ratio used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share, also known as the "price-equity ratio".

**Price to Earnings (P/E)<sup>3</sup>** - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

**Price to Sales (P/S)<sup>4</sup>** - A ratio for valuing a stock relative to its own past performance, other companies, or the market itself. Price to sales is calculated by dividing a stock's current price by its revenue per share for the trailing 12 months.

**Return on Equity (ROE)<sup>4</sup>** - The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

**Selection (or Manager) Effect<sup>2</sup>** - Measures the investment manager's ability to select securities within a given sector relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by the manager's allocation to the sector. The weight of the sector in the portfolio determines the size of the effect—the larger the sector, the larger the effect is, positive or negative.

**Soft Hurdle rate<sup>5</sup>** - is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

**Tiered Fee<sup>1</sup>** - A fee structure that is paid to fund managers based on the size of the investment (i.e. 1.00% fee on the first \$10M invested, 0.90% on the next \$10M, and 0.80% on the remaining balance).

**Total Effects<sup>2</sup>** - The active management (total) effect is the sum of the selection, allocation, and interaction effects. It is also the difference between the total portfolio return and the total benchmark return. You can use the active management effect to determine the amount the investment manager has added to a portfolio's return.

**Total Return<sup>1</sup>** - The actual rate of return of an investment over a specified time period. Total return includes interest, capital gains, dividends, and distributions realized over a defined time period.

**Universe<sup>3</sup>** - The list of all assets eligible for inclusion in a portfolio.

**Upside Deviation<sup>1</sup>** - Standard Deviation of Positive Returns

**Weighted Avg. Market Cap.<sup>4</sup>** - A stock market index weighted by the market capitalization of each stock in the index. In such a weighting scheme, larger companies account for a greater portion of the index. Most indexes are constructed in this manner, with the best example being the S&P 500.

**Yield (%)<sup>3</sup>** - The current yield of a security is the current indicated annual dividend rate divided by current price.

**Yield to Maturity<sup>3</sup>** - The discount rate that equates the present value of cash flows, both principal and interest, to market price.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net





### **Information Disclaimer**

- 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.
- This report is provided as a management aid for the client's internal use only. Information contained in this report does not constitute a recommendation by NEPC.
- This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

### **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.

