

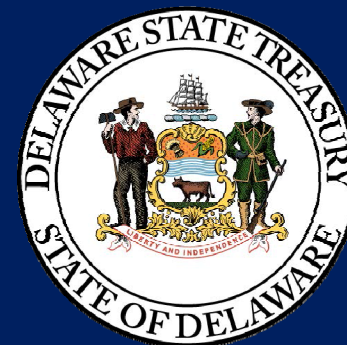
# INVESTMENT PERFORMANCE SUMMARY

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

Month Ending December 31, 2018

John Krimmel, CPA, CFA, Partner

Kevin M. Leonard, Partner



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

# 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



# Delaware Office of the State Treasurer

## TOTAL FUND PERFORMANCE DETAIL-NET OF FEES

	Market Value (\$)	% of Portfolio	1 Mo (%)	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	2 Yrs (%)	3 Yrs (%)	4 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Delaware Total Consolidation</b>	<b>2,126,144,207</b>	<b>100.00</b>	<b>0.77</b>	<b>0.97</b>	<b>1.31</b>	<b>1.58</b>	<b>1.67</b>	<b>1.51</b>	<b>1.29</b>	<b>1.22</b>	<b>1.07</b>	<b>1.91</b>	<b>Jan-05</b>
<b>Total Liquidity &amp; Reserve</b>	<b>2,060,912,459</b>	<b>96.93</b>	<b>0.93</b>	<b>1.30</b>	<b>1.58</b>	<b>1.89</b>	<b>1.52</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>0.26</b>	<b>0.64</b>	<b>1.18</b>	<b>1.95</b>	<b>1.54</b>	<b>1.36</b>	<b>1.13</b>	<b>0.97</b>	<b>0.86</b>	<b>1.75</b>	<b>Jan-05</b>
PFM Asset Management	412,453,094	19.40	0.23	0.58	1.10	2.00	1.56	1.43	1.20	1.06	--	1.00	Jun-13
Wilmington Liquidity	409,900,492	19.28	0.29	0.69	1.25	1.92	1.42	1.25	1.06	0.89	0.94	4.20	Jan-85
<b>Total Reserve</b>	<b>1,238,558,873</b>	<b>58.25</b>	<b>1.42</b>	<b>1.80</b>	<b>1.92</b>	<b>1.90</b>	<b>1.55</b>	<b>1.50</b>	<b>1.32</b>	<b>1.34</b>	<b>1.45</b>	<b>2.20</b>	<b>Jan-05</b>
<i>Reserve Custom Index</i>			<u>1.42</u>	<u>1.68</u>	<u>1.90</u>	<u>1.59</u>	<u>1.29</u>	<u>1.24</u>	<u>1.15</u>	<u>1.14</u>	<u>1.52</u>	<u>2.39</u>	<i>Jan-05</i>
Over/Under			0.00	0.12	0.02	0.31	0.26	0.26	0.17	0.20	-0.07	-0.19	
JPM Intermediate	307,141,423	14.45	0.69	1.07	1.50	1.53	1.37	1.36	1.24	1.19	--	1.10	Jun-13
<i>J.P. Morgan Custom Index</i>			<u>0.78</u>	<u>1.24</u>	<u>1.54</u>	<u>1.56</u>	<u>1.28</u>	<u>1.24</u>	<u>1.14</u>	<u>1.13</u>	<u>1.52</u>	<u>1.03</u>	<i>Jun-13</i>
Blackrock Financial Mangement	309,205,415	14.54	0.99	1.38	1.65	--	--	--	--	--	--	2.23	Mar-18
<i>Blackrock Custom Index</i>			<u>1.06</u>	<u>1.58</u>	<u>1.78</u>	<u>1.70</u>	<u>1.35</u>	<u>1.28</u>	<u>1.18</u>	<u>1.16</u>	<u>1.53</u>	<u>2.19</u>	<i>Mar-18</i>
Chandler Asset Management	313,525,893	14.75	1.95	2.24	2.26	2.26	1.75	1.63	1.43	1.55	--	1.28	Jun-13
Lazard Financial Management	308,686,142	14.52	2.03	2.52	2.25	--	--	--	--	--	--	2.69	Mar-18
<i>Chandler/Lazard Custom Index</i>			<u>2.16</u>	<u>2.73</u>	<u>2.58</u>	<u>2.13</u>	<u>1.57</u>	<u>1.43</u>	<u>1.28</u>	<u>1.25</u>	<u>1.58</u>	<u>2.63</u>	<i>Mar-18</i>
<b>Total Endowment</b>	<b>65,231,748</b>	<b>3.07</b>	<b>-4.25</b>	<b>-7.87</b>	<b>-5.86</b>	<b>-6.80</b>	<b>4.19</b>	<b>4.99</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.06</b>	<b>Aug-15</b>
<i>Endowment Custom Index</i>			<u>-3.83</u>	<u>-7.53</u>	<u>-4.77</u>	<u>-5.07</u>	<u>4.27</u>	<u>4.74</u>	<u>3.52</u>	<u>3.90</u>	<u>7.43</u>	<u>3.24</u>	<i>Aug-15</i>
Over/Under			-0.42	-0.34	-1.09	-1.73	-0.08	0.25				-0.18	
SEI Funds	22,439,621	1.06	-4.35	-8.45	-6.16	-6.93	4.46	5.97	--	--	--	4.09	Aug-15
MSIFT Global Strategist	21,304,667	1.00	-3.39	-6.72	-5.16	-6.26	4.57	4.90	--	--	--	2.68	Aug-15
JP Morgan Diversified	21,487,460	1.01	-4.98	-9.00	-6.59	-7.83	4.24	4.89	--	--	--	3.08	Aug-15
Cash Account	0	0.00	0.00	0.33	0.77	1.44	1.00	0.77	--	--	--	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.

Prior to 03/01/2018 Reserve Custom Index is comprised of 75% BofA Merrill Lynch 1-5 year Govt/Corporate A+ or Better/ 25% 6 Month Treasury Bill.

Endowment Custom Index is comprised of 60% MSCI World Index/40% Barclays Capital Aggregate.

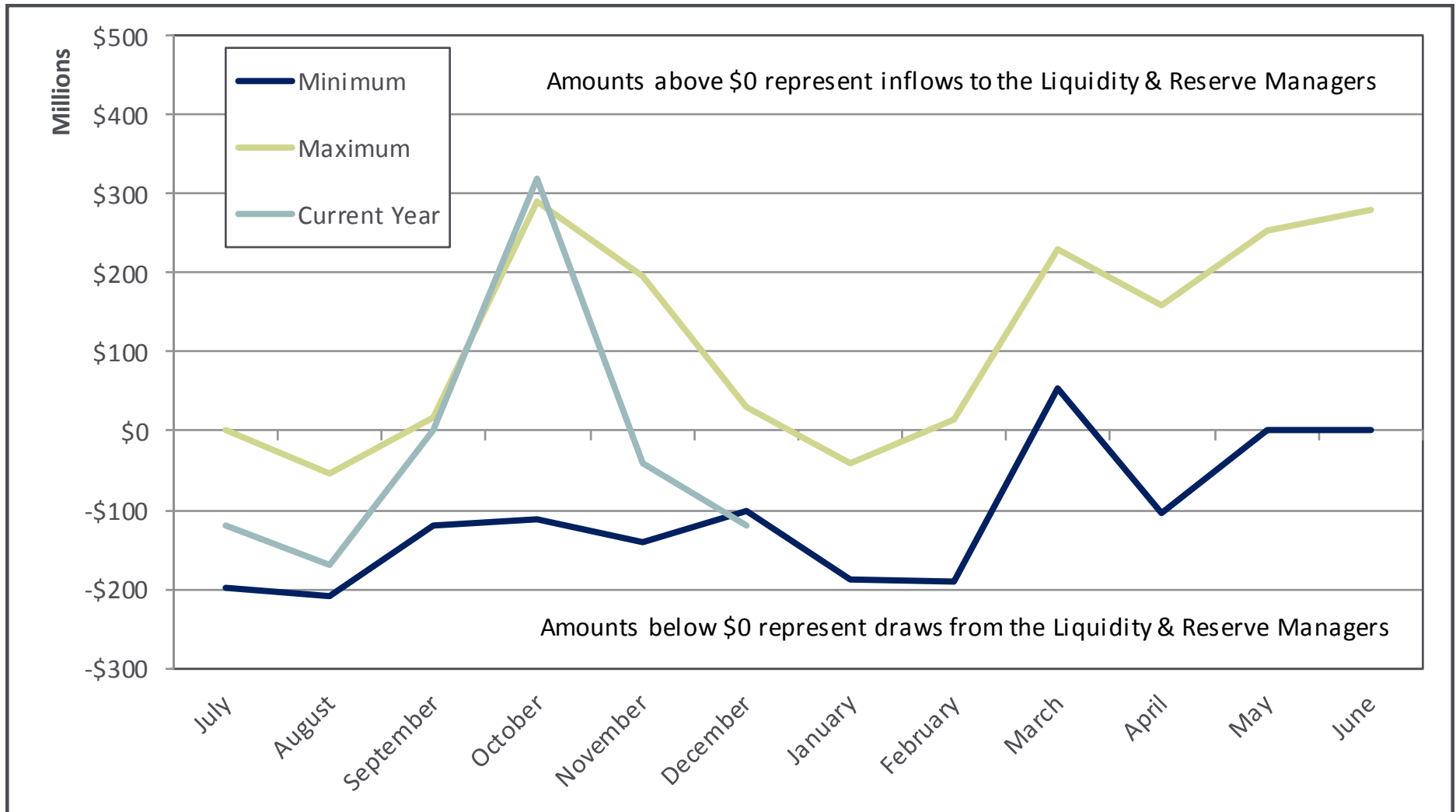
Blackrock Custom Index consists of 100% BofA Merrill Lynch 1-5 year Corporate/Gov A+ or Better and 75% BofA Merrill Lynch 1-5 year Govt/Corporate A+ or Better/ 25% 6 Month Treasury Bill prior to 4/1/2018.

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		
Liquidity Managers											
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		
Total Liquidity Managers	\$ 940,075,290	\$ -	\$ (120,000,000)	\$ -	\$ 1,115,667	\$ 622,977	\$ 69,852	\$ 469,800	\$ 822,353,586		
Reserve Managers											
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		
Total Reserve Managers	\$ 1,221,268,392	\$ 314	\$ -	\$ -	\$ 2,552,571	\$ 15,090,215	\$ (483,239)	\$ 130,621	\$ 1,238,558,873		
Land & Water Endowment											
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)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Total Land & Water Endowment	\$ 68,125,116	\$ 5,681	\$ (5,680)	\$ -	\$ 1,155,035	\$ (8,053,412)	\$ 4,005,008	\$ -	\$ 65,231,748		
Total	\$ 2,229,468,798	\$ 5,995	\$ (120,005,680)	\$ -	\$ 4,823,273	\$ 7,659,780	\$ 3,591,621	\$ 600,421	\$ 2,126,144,207		

## 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	
Liquidity Managers										
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	
Total Liquidity Managers	\$ 982,576,144	\$ 498,885,000	\$ (668,885,000)	\$ (303,361)	\$ 6,930,349	\$ 669,122	\$ 108,908	\$ 2,372,425	\$ 822,353,586	
Reserve Managers										
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	
Total Reserve Managers	\$ 1,215,261,960	\$ 314	\$ -	\$ (591,163)	\$ 14,875,603	\$ 11,108,154	\$ (3,694,463)	\$ 1,598,472	\$ 1,238,558,873	
Total Liquidity & Reserve Managers	\$ 2,197,838,104	\$ 498,885,314	\$ (668,885,000)	\$ (894,524)	\$ 21,805,952	\$ 11,777,275	\$ (3,585,555)	\$ 3,970,897	\$ 2,060,912,459	
Land & Water Endowment										
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	
Total Land & Water Endowment	\$ 69,344,500	\$ 3,759,939	\$ (3,815,936)	\$ (40,651)	\$ 1,453,454	\$ (9,610,527)	\$ 4,140,971		\$ 65,231,748	
Total	\$ 2,267,182,604	\$ 502,645,253	\$ (672,700,936)	\$ (935,175)	\$ 23,259,406	\$ 2,166,749	\$ 555,416	\$ 3,970,897	\$ 2,126,144,207	

## 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.



# DEFAC PROJECTION

	DEFAC Current Year	Δ From Previous Observation	FY 20	FY 20 Δ From Previous Observation	FY 21	FY 21 Δ From Previous Observation	FY 22	FY 22 Δ From Previous Observation	FY 23	FY 23 Δ From Previous Observation
	<u>Totals</u>		<u>Totals</u>		<u>Totals</u>		<u>Totals</u>		<u>Totals</u>	
<b>Total Interest</b>	\$40,376,452	(\$4,188,472)	\$50,614,421	(\$4,084,774)	\$49,535,382	(\$4,646,042)	\$48,254,819	(\$5,218,234)	\$46,967,582	(\$5,794,987)
<b>Total Sweep Income</b>	\$2,121,434	(\$10,951)	\$1,958,000	-	\$1,958,000	-	\$1,958,000	-	\$1,958,000	-
<b>Change in Market Value</b>	(\$4,020,771)	\$9,928,742	\$2,640,559	\$7,661,661	\$4,476,646	\$1,955,006	\$4,487,321	\$1,962,363	\$4,498,502	\$1,969,965
<b>Less: School Special Fund Interest Payments</b>	(\$14,123,462)	(\$375,850)	(\$25,000,000)	-	(\$25,000,000)	-	(\$25,000,000)	-	(\$25,000,000)	-
<b>Less: Banking Services</b>	(\$3,975,096)	-	(\$4,173,851)	-	(\$4,382,543)	-	(\$4,601,671)	-	(\$4,831,754)	-
<b>Less: Investment Manager Fees</b>	(\$1,733,142)	(\$1,911)	(\$1,583,847)	(\$14,178)	(\$1,583,847)	(\$14,178)	(\$1,583,847)	(\$14,178)	(\$1,583,847)	(\$14,178)
<b>DEFAC Projection</b>	<b>\$18,645,415</b>	<b>\$5,351,558</b>	<b>\$24,455,282</b>	<b>\$3,562,709</b>	<b>\$25,003,638</b>	<b>(\$2,705,213)</b>	<b>\$23,514,622</b>	<b>(\$3,270,049)</b>	<b>\$22,008,483</b>	<b>(\$3,839,200)</b>

As of 12/31/2018

\*An estimate was used for the December School and Special Fund Interest payment, which was unavailable at the time of publishing.

## Interest rates declined, reflecting broad risk-off sentiment during the month, causing the current year DEFAC projection to increase

The composite yield declined 24 basis points to 2.76%, while duration remained relatively constant



# ASSUMPTIONS FOR DEFAC PROJECTION

- ***Net Cash Flows – Assumed to be net neutral over the course of each fiscal year and follow historical seasonality patterns, FY 20 through FY 23 each follow the previous year's cash flow pattern***
- ***Changes in Yield – Actual changes reflected as they are realized, projected changes based on forward yield curve at 1 year and 5 year forward points***
- ***Interest – Actual interest reflected as it is realized, projected interest calculated as projected yield times projected market value***
- ***Banking Services – Flat estimate of \$331,258 per month; projected to increase 5% annually***
- ***School and Special Fund Interest Payments – Actual payments reflected as realized, projected payments calculated based on \$1B average balance and a range-bound rate as implied by the trailing 12M liquidity and liquidity & reserve returns***
- ***Investment manager fees – Estimated as 8.8 bps per year of assets under management***



### **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.

