



STATE RETIREMENT AGENCY  
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Baltimore, MD 21202-6700

MARYLAND  
STATE RETIREMENT  
and PENSION SYSTEM

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**Testimony for House Bill 1101  
State Retirement and Pension System – Financial Reporting  
House Appropriations Committee  
March 10, 2020  
1:00 P.M.**

**R. Dean Kenderdine  
Executive Director  
State Retirement Agency**

**Andrew C. Palmer  
Chief Investment Officer  
State Retirement Agency**

The Board of Trustees for the State Retirement and Pension System (System) wishes to express its opposition to House Bill 1101, State Retirement and Pension System – Financial Reporting.

House Bill 1101 would require the Board to prepare a second Comprehensive Annual Financial Report (CAFR) which would include numerous reports, most of which are duplicative of reports already prepared and made available to the public by either the State Retirement Agency (Agency) or the Department of Legislative Services (DLS). Additionally, this bill would require the Board to submit quarterly performance reports for the System that are already required under other provisions of the State Personnel and Pensions Article of the Annotated Code of Maryland. Finally, House Bill 1101 would require the Board to hire an additional consultant to review any capital market assumptions made by the Investment Division staff or any of the Board's existing consultants. The Board currently has access to the assumptions generated by several other third party firms.

*Second CAFR*

House Bill 1101 would, in part, require the Board to prepare a CAFR on or before December 15 of each year that would include numerous investment reports and subjective analysis of these reports. Currently, § 21-120 of the State Personnel and Pensions Article requires that on or before December 15 of each year, the Executive Director of the Agency shall submit a report to the Board about the operation and performance of the Agency during the fiscal year that ended on the preceding June 30. This report is the Agency's existing CAFR. The requirement for the Board to publish a second CAFR, as provided in this proposed legislation, is drafted to a new section of the State Personnel and Pensions Article, § 21-120.1, immediately following the

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R. Dean Kenderdine, *Secretary to the Board*

existing CAFR provisions, suggesting this would be an additional CAFR. This reasoning is further supported by the various new reports that are required to be published in this second CAFR that focus exclusively on the System's investment program. Accordingly, staff believes that publishing this second CAFR could result in additional costs between \$4,000 and \$5,000, annually.

Several of the reports required to be included in the second CAFR are already included in other public documents. The requirement to show the median performance of public plans with assets exceeding \$25 billion, as reported by Wilshire Trust Universe Comparison Service (TUCS) is included each year in the DLS Investment Overview presented to the Joint Committee on Pensions. The annual Joint Committee report summarizing its interim work, includes the Investment Overview and is available to the public on the General Assembly website. House Bill 1101 also requires the Board to include in the second CAFR "an analysis of the impact on system revenues, in a dollar amount, the system's investment performance has caused." This information is currently included in the System's existing CAFR and its actuarial valuation. Both reports are available to the public on the Agency's website. An additional reporting requirement includes a description of how the Board determines the System's internal benchmarks that were applicable during the previous fiscal year. The Board, in consultation with its investment consultant, annually confirms that the asset class benchmarks are well-established and accepted as industry standards. This annual discussion takes place at an Investment Committee meeting that is open to the public. The minutes of the meeting summarizing the discussion are posted to the Agency's website, as required under provisions of the Maryland Public Information Act and are available to the public. The benchmarks utilized by the Board are included in the Board's Investment Policy Manual, which is posted to the Agency's website and available to the public. The second CAFR would also require an explanation of the System's investment performance relative to the fund's internal benchmarks during the previous fiscal year. Similar to the TUCS reporting, this information is included in the annual DLS Investment Overview to the Joint Committee, which, as previously stated is included in the final Joint Committee report and posted to the General Assembly website.

In addition to the redundancy of the reports included in the second CAFR, this section of House Bill 1101, presents two additional issues. One of the reports included would require the Board to compare the returns and volatility of the System's hedge fund investments relative to the investment performance the System would have experienced if the funds allocated to hedge funds were instead allocated with 60% invested in the Russell 3000 Index and 40% invested in the Bloomberg Barclays Aggregate Bond Index. It is important for the Committee to understand that the goals of hedge fund investments are very different from the goals of a 60% public equity/40% bond portfolio. Therefore, we do not believe this comparison would provide meaningful data to the legislature or the public.

The second problem with the additional CAFR is that many of the required reports to be included contain subjective components. We have consulted the Agency's auditor who is responsible for reviewing the Agency's existing CAFR and asked the auditor to review the reporting requirements included in House Bill 1101. The greatest concern that was raised was that the purpose of a CAFR is to present objective data regarding the System. Requiring the Board to prepare a report for a CAFR that included the Board's opinions, explanations, and deliberations, fly counter to the basic mission of the CAFR.

### *Quarterly Performance Reports*

The second section of House Bill 1101 requires the Board to submit quarterly reports to the General Assembly comparing the actual performance of the System's investments to the System's investment benchmarks. This report is currently required under § 21-122 of the State Personnel and Pensions Article. We believe it is also important to note that the reporting deadlines included in House Bill 1101 for the quarterly performance reports are unworkable. Each report is required to be submitted within 15 days following the end of each quarter. However, the Agency does not receive final quarterly performance data until approximately 45 days following the end of each quarter. The existing reporting requirements included in § 21-122, currently take this delay into account by requiring that on or before October 1, January 1, March 1, and July 1 of each year, the Board shall submit quarterly performance reports on System investment returns for *the preceding fiscal quarter*.

### *Additional Consultant*

The third component of House Bill 1101 would require the Board to hire an additional consultant to review any capital market assumptions made by the Investment Division or any one of the System's investment consultants. We believe that as this provision is drafted, this additional consultant would be, in effect, on retainer with the Board. Moreover, any investment consulting firm that would be qualified to perform such a review would need to have very specific industry experience, background, and skills. It is likely that such a consultant would cost the System between \$100,000 and \$200,000, annually. Yet, as we reported above with regard to the reporting requirements for the second CAFR, we do not believe this additional consultant is necessary, as the Board currently has access to the assumptions generated by several other third party firms. When conducting the annual analysis of capital market assumptions and asset allocation, the Board typically compares the projections of other qualified firms to those of the System's consultant to ensure that the assumptions are reasonable and consistent with industry norms.

We appreciate being given the opportunity to raise these issues with the Committee and stand ready to provide any further information or services the Committee might request.



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February 27, 2020

The Honorable Guy J. Guzzone  
Chair, Budget & Taxation Committee  
Miller Senate Office Building, 3 West  
11 Bladen Street  
Annapolis, MD 21401

The Honorable Maggie McIntosh  
Chair, Appropriations Committee  
House Office Building, Room 121  
6 Bladen Street  
Annapolis, MD 21401

The Honorable Sarah K. Elfreth  
Senate Chair, Joint Committee on Pensions  
103 James Senate Office Building  
11 Bladen Street  
Annapolis, MD 21401

The Honorable Michael A. Jackson  
House Chair, Joint Committee on Pensions  
House Office Building, Room 121  
6 Bladen Street  
Annapolis, MD 21401

Re: Report required by State Personnel and Pensions Article § 21-122(f)(4) (MSAR #11742)

Dear Chairmen Guzzone, McIntosh, Elfreth, and Jackson:

On behalf of the Board of Trustees for the State Retirement and Pension System, I am submitting the investment returns for the State Retirement and Pension System for the quarter ending December 31, 2019. The returns are reported as follows:

1. investment performance by asset class, including performance relative to asset class benchmarks; and
2. investment performance of assets under the direction of each Investment Division employee.

The attached exhibits include:

- Exhibit A – Summary of Plan Performance by Asset Class
- Exhibit B – Expanded Performance Report by Manager and Asset Class
- Exhibit C – Investment Division Organizational Chart by Asset Class

Should you require additional information, please call me at (410) 625-5600.

Sincerely,

R. Dean Kenderdine  
Secretary to the Board of Trustees

cc: The Honorable William C. Ferguson  
The Honorable Adrienne A. Jones  
Victoria L. Gruber  
Sara Albert  
Board of Trustees



# EXHIBIT A



## SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>TOTAL PLAN</b>	56,121,551,423	100.0	1.73	3.98	14.99	5.17	14.99	9.16	6.65	7.53	8.06	07/01/86
TOTAL PLAN POLICY INDEX <sup>(1)</sup>			1.60	3.87	15.93	5.18	15.93	9.03	6.68	7.03		07/01/86
Excess			0.13	0.11	-0.94	-0.01	-0.94	0.13	-0.03	0.50		
<b>TOTAL GROWTH EQUITY</b>	28,435,830,982	50.7	3.08	7.39	20.94	7.76	20.94	13.11	9.42	10.02	6.31	01/01/98
GROWTH EQUITY CUSTOM BENCHMARK <sup>(2)</sup>			2.77	7.00	20.40	7.30	20.40	12.46				01/01/98
Excess			0.31	0.40	0.54	0.45	0.54	0.65				
<b>TOTAL RATE SENSITIVE</b>	10,180,300,681	18.1	-1.19	-1.48	12.26	3.17	12.26	5.67	4.15	4.67	6.98	07/01/86
CUSTOM RATE SENSITIVE BENCHMARK <sup>(3)</sup>			-1.32	-1.78	12.49	3.21	12.49	5.61	4.15	4.04		07/01/86
Excess			0.13	0.30	-0.23	-0.04	-0.23	0.06	0.00	0.63		
<b>TOTAL CREDIT/DEBT STRATEGIES</b>	5,011,426,224	8.9	1.48	2.42	10.55	3.52	10.55	6.23	5.03	7.01	8.89	03/01/09
MSRA CUSTOM CREDIT BENCHMARK <sup>(4)</sup>			1.99	2.60	12.68	3.60	12.68	6.29	5.22	6.05	7.87	03/01/09
Excess			-0.50	-0.18	-2.13	-0.08	-2.13	-0.06	-0.19	0.96	1.02	
<b>TOTAL REAL ASSETS</b>	6,869,679,089	12.2	1.28	1.82	7.07	1.43	7.07	5.78	3.17	3.76	4.23	02/01/06
CUSTOM REAL ASSETS BENCHMARK <sup>(5)</sup>			1.74	3.10	11.13	2.87	11.13	6.84	4.82	3.37	3.67	02/01/06
Excess			-0.47	-1.28	-4.06	-1.44	-4.06	-1.05	-1.65	0.39	0.56	
<b>TOTAL ABSOLUTE RETURN</b>	4,238,026,019	7.6	0.69	0.79	4.03	1.51	4.03	2.60	1.73	3.39	3.20	04/01/08
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(6)</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19	3.17	1.90	04/01/08
Excess			-0.42	-1.13	-3.37	-0.61	-3.37	-1.58	-1.46	0.22	1.30	
<b>TOTAL MULTI ASSET</b>	655,807,791	1.2	1.94	3.35	15.87	4.71	15.87			6.10		07/01/18
TOTAL PLAN POLICY INDEX <sup>(1)</sup>			1.60	3.87	15.93	5.18	15.93			8.24		07/01/18
Excess			0.35	-0.52	-0.06	-0.47	-0.06			-2.14		

**State Retirement Agency of Maryland**  
 Rates of Return - Net Mgr  
 Periods Ending December 31, 2019



**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TOTAL CASH	730,480,637	1.3	0.94	1.75	8.34	1.84	8.34	7.71	5.88	4.29	4.07	07/01/08
FTSE 3 MONTH T-BILL			0.14	0.46	2.25	1.03	2.25	1.65	1.05	0.56	0.56	07/01/08
Excess			0.80	1.29	6.09	0.81	6.09	6.06	4.83	3.73	3.51	

# State Retirement Agency of Maryland

## Rates of Return -

### Periods Ending December 31, 2019



#### ENDNOTES

- [1] Since 07/01/2008: Calculated monthly using transitional weights and asset class benchmarks. Prior to 07/01/2008: MSRA TOTAL PLAN STATIC POLICY.
- [2] Benchmark is a dynamic blend of the Public Equity Benchmark and the State Street Private Equity Index based off of sub-asset class weights used in the policy benchmark.
- [3] Since 10/01/2017: 53% Barclays Long-Term Government, 13% Barclays Securitized, 13% Barclays Corporate, 21% Barclays U.S. TIPS  
 From 07/01/2016 to 09/30/2017: 48% Barclays Long-Term Government, 14% Barclays Securitized, 14% Barclays Corporate, 24% Barclays U.S. TIPS  
 From 11/01/2015 to 06/30/2016: 50% Barclays Long-Term Government, 15% Barclays Securitized, 15% Barclays Corporate, 20% Barclays U.S. TIPS  
 From 07/01/2013 to 10/31/2015: 80% BC Aggregate Intermediate, 20% BC Global Aggregate 1-10 Year Hedged  
 From 07/01/2010 to 06/30/2013: 80% BC Aggregate, 20% BC Global Bond Aggregate Hedged  
 From 01/01/2010 to 06/30/2010: 80% BC Aggregate, 20% BC Global Bond Aggregate Unhedged  
 From 07/01/2009 to 12/31/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks  
 Prior to 07/01/2009: Benchmark is BC US Universal.  
 Formerly named "Custom Fixed Income Benchmark" prior to 11/01/2015.
- [4] Since 10/01/2017: 78% US Credit Benchmark, 22% non-U.S. Credit Benchmark.  
 From 01/01/2016 to 09/30/2017: 67% US Credit Benchmark, 33% non-U.S. Credit Benchmark.  
 From 11/01/2015 to 12/31/2015: 75% US Credit Benchmark, 25% non-U.S. Credit Benchmark.  
 From 07/01/2013 to 10/31/2015: 50% BC High Yield / 20% BC Credit / 20% JP Morgan GBI EM Global Diversified/ 10% S&P/LSTA Leveraged Loan Index  
 From 01/01/2010 to 06/30/2013: 50% BC Credit / 50% BC High Yield  
 Prior to 01/01/2010: 75% BC Credit / 25% BC High Yield
- [5] Since 10/01/2017: Benchmark is dynamically calculated using the beginning market values of the Real Estate and Natural Resource/Infrastructure sub-asset classes and their corresponding benchmarks.  
 From 11/01/2015 to 09/30/2017: Benchmark is dynamically calculated using the beginning market values of the Real Estate, Commodities and Natural Resource/Infrastructure sub-asset classes and their corresponding benchmarks.  
 From 12/01/2012 to 10/31/2015: 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max, 60% - 50% BC US TIPS Index/50% BC World Inflat-Linked Bond Index  
 From 07/01/2011 to 11/30/2012: 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max, 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index  
 From 07/01/2009 to 06/30/2011: 20% - DJ UBS Commodities Index (Total Return), 20% - CPI + 5%; 8% Max, 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index  
 07/01/2008 to 06/30/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks Prior to 07/01/2008: 100% Barclays US TIPS Index  
 Prior to 07/01/2008: 100% Barclays US TIPS Index  
 Formerly named "Custom Real Return Benchmark" prior to 11/01/2015.
- [6] Since 11/01/2015: HFRI Fund of Funds Conservative + 100 bps.  
 From 07/01/2014 to 10/31/2015: HFRI FOF: Conservative Index.  
 From 07/01/2008 to 06/30/2014 benchmark was HFRI Fund of Funds index.  
 Prior to 07/01/2008 benchmark was the Citigroup 3-Month T-bill + 500 bps.



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# EXHIBIT B



## SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>GROWTH EQUITY</b>												
<b>U.S. EQUITY</b>												
RHUMBLINE RUSSELL 1000	2,547,513,458	4.5	2.84	8.95	31.19	10.45	31.19	14.98	11.45		14.49	11/01/12
Russell 1000			2.89	9.04	31.43	10.59	31.43	15.05	11.48		14.53	11/01/12
Excess			-0.05	-0.09	-0.23	-0.14	-0.23	-0.06	-0.03		-0.03	
RHUMBLINE S&P 600 INDEX	504,419,195	0.9	2.97	8.18	22.73	7.96	22.73				8.41	03/01/17
S&P SMALLCAP 600			2.99	8.21	22.78	8.00	22.78				8.41	03/01/17
Excess			-0.02	-0.04	-0.05	-0.04	-0.05				0.00	
<b>TOTAL US EQUITY PASSIVE</b>	<b>3,051,982,445</b>	<b>5.4</b>	<b>2.86</b>	<b>8.85</b>	<b>29.95</b>	<b>10.11</b>	<b>29.95</b>	<b>14.27</b>			<b>12.80</b>	<b>11/01/15</b>
D.E. SHAW ALL CAP CORE ENHANCED	1,094,694,131	2.0	2.82	9.14	31.82	10.91	31.82	15.27	11.99		13.72	04/01/13
D.E. Shaw All Cap Custom Benchmark <sup>(1)</sup>			2.89	9.04	31.43	10.59	31.43	15.05	11.50		13.36	04/01/13
Excess			-0.07	0.10	0.39	0.32	0.39	0.22	0.49		0.36	
T. ROWE PRICE ENHANCED	1,034,459,963	1.8	2.91	9.58	33.20	11.14	33.20	16.57	12.59	13.89	9.75	05/01/06
S&P 500			3.02	9.07	31.49	10.92	31.49	15.27	11.70	13.56	9.09	05/01/06
Excess			-0.11	0.51	1.71	0.22	1.71	1.30	0.89	0.33	0.66	
RHUMBLINE US SCIENTIFIC BETA	946,805,881	1.7	2.69	5.63	28.39	8.32	28.39	12.71			12.71	01/01/17
SciBeta USA Multi-Beta MStrat 4F-EW TR			2.74	5.69	28.61	8.41	28.61	12.86			12.86	01/01/17
Excess			-0.04	-0.06	-0.22	-0.09	-0.22	-0.15			-0.15	
DURABLE CAPITAL PARTNERS	135,000,000	0.2										12/01/19



**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>TOTAL U.S. EQUITY ACTIVE</b>	3,214,152,018	5.7	2.75	8.11	31.12	10.11	31.12	14.96	11.45	12.76		06/01/94
ACTIVE US EQ BM <sup>[2]</sup>			2.89	7.99	30.57	10.02	30.57	14.40	11.17	13.39		06/01/94
Excess			-0.14	0.12	0.56	0.09	0.56	0.56	0.29	-0.63		
<b>CAPITAL PROSPECTS US SMALL CAP (TM)</b>	412,529,604	0.7	2.48	9.12	25.84	6.43	25.84				8.90	04/01/17
S&P 600 Small Cap USD NET			2.93	8.07	22.20	7.73	22.20				8.25	04/01/17
Excess			-0.44	1.05	3.64	-1.31	3.64				0.65	
<b>ACUITAS US MICRO CAP (TM)</b>	100,280,110	0.2	3.67	6.37	12.59	5.44	12.59				0.38	02/01/17
RUSSELL MICROCAP INDEX (DAILY)			5.70	13.45	22.43	7.26	22.43				7.14	02/01/17
Excess			-2.03	-7.08	-9.84	-1.82	-9.84				-6.76	
<b>US EQUITY TERRA MARIA</b>	512,819,919	0.9	2.72	8.58	23.03	6.24	23.03	7.78	5.96	10.60	7.81	04/01/07
TERRA MARIA US EQUITY BENCHMARK <sup>[3]</sup>			3.35	10.09	24.36	7.41	24.36	9.02	8.23	12.20	8.12	04/01/07
Excess			-0.64	-1.52	-1.34	-1.17	-1.34	-1.24	-2.27	-1.61	-0.31	
<b>TOTAL US EQUITY TM + U.S. EQUITY ACTIVE</b>	3,723,971,937	6.6	2.75	8.18	29.91	9.55	29.91	13.66	10.15	12.41	9.92	07/01/08
TM US EQ + ACTIVE US EQ BM <sup>[2]</sup>			2.95	8.29	29.63	9.63	29.63	13.44	10.71	13.31	10.57	07/01/08
Excess			-0.20	-0.11	0.28	-0.09	0.28	0.22	-0.56	-0.90	-0.66	
<b>U.S. EQUITY EX OVERLAY</b>	6,775,954,383	12.1	2.81	8.53	29.93	9.84	29.93	13.98	10.58	12.79	9.18	04/01/94
MSRA CUSTOM US EQUITY INDEX <sup>[4]</sup>			2.89	9.10	31.02	10.37	31.02	14.57	11.24	13.42		04/01/94
Excess			-0.08	-0.57	-1.09	-0.52	-1.09	-0.59	-0.67	-0.63		
<b>US Equity Tactical</b>	34,640,164	0.1										10/01/18
<b>US Equity Structural</b>	29,754,344	0.1										02/01/17



**State Retirement Agency of Maryland**  
Rates of Return - Net Mgr  
Periods Ending December 31, 2019



**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>U.S. EQUITY OVERLAY</b>												
	64,394,508	0.1										02/01/17
<b>U.S. EQUITY</b>												
MSRA CUSTOM US EQUITY INDEX <sup>(4)</sup>	6,840,348,891	12.2	2.64	7.67	30.02	9.19	30.02	14.00	10.59	12.79	9.18	04/01/94
Excess			2.89	9.10	31.02	10.37	31.02	14.57	11.24	13.42		04/01/94
			-0.25	-1.43	-1.00	-1.17	-1.00	-0.57	-0.65	-0.62		
<b>INTERNATIONAL DEVELOPED MARKETS</b>												
SSGA INTERNATIONAL FUND	1,312,174	0.0										05/01/03
<b>INTERNATIONAL DEVELOPED EQUITY PASSIVE</b>												
	1,312,174	0.0										11/01/15
<b>ARTISAN PARTNERS, L.P.</b>												
ARTISAN CUSTOM BENCHMARK <sup>(5)</sup>	657,876,395	1.2	2.53	6.93	30.46	7.60	30.46	15.52	6.43	7.90	8.92	11/01/03
Excess			3.19	7.86	22.49	6.85	22.49	9.34	5.42	5.57	7.11	11/01/03
			-0.66	-0.93	7.96	0.75	7.96	6.19	1.01	2.33	1.81	
<b>AQR ENHANCED ACWI EX-US</b>												
AQR Enhanced Custom Benchmark <sup>(6)</sup>	545,523,984	1.0	3.39	8.45	19.62	5.45	19.62	7.11	4.05		3.09	12/01/13
Excess			3.19	7.86	22.49	6.85	22.49	9.34	5.18		3.71	12/01/13
			0.20	0.59	-2.87	-1.40	-2.87	-2.23	-1.13		-0.62	
<b>BROWN CAPITAL MANAGEMENT INT'L</b>												
Brown Capital Management International Custom Benchmark <sup>(7)</sup>	600,464,525	1.1	1.82	7.31	23.13	5.67	23.13	10.67	6.97	7.29	11.57	12/01/08
Excess			3.40	8.36	22.91	7.45	22.91	9.49	5.26	4.98	8.51	12/01/08
			-1.57	-1.05	0.22	-1.78	0.22	1.18	1.70	2.31	3.05	
<b>DFA INTERNATIONAL CORE EQUITY</b>												
MSCI WORLD EX US (NET)	440,311,667	0.8	3.93	9.71	22.01	8.22	22.01	9.01	6.43		6.01	05/01/13
Excess			3.19	7.86	22.49	6.85	22.49	9.34	5.42		4.92	05/01/13
			0.74	1.86	-0.48	1.36	-0.48	-0.32	1.01		1.10	

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RHUMBLINE SCI BETA INTL EX-US	691,821,508	1.2	3.70	9.03	18.61	7.30	18.61				7.12	03/01/17
SciBeta Developed ex USA Value Div MS			3.72	9.09	19.04	7.40	19.04				7.63	03/01/17
Excess			-0.03	-0.06	-0.43	-0.10	-0.43				-0.52	
INTERNATIONAL DEVELOPED EQUITY ACTIVE <sup>[8]</sup>	2,936,136,801	5.2	3.02	8.19	22.73	6.82	22.73	10.19	5.14	5.05		01/01/95
CUSTOM INTL DEV EQ ACTIVE BENCHMARK <sup>[9]</sup>			3.36	8.25	21.73	7.10	21.73	9.27	5.29	4.94		01/01/95
Excess			-0.33	-0.06	1.00	-0.29	1.00	0.92	-0.15	0.11		
ATTUCKS INTL DEVELOPED (TM)	465,097,197	0.8	3.57	9.46	22.94	8.60	22.94	9.06	6.85	9.16	11.73	12/01/08
MSCI WORLD EX US NET (DAILY)			3.19	7.86	22.49	6.85	22.49	9.34	5.42	5.32	8.06	12/01/08
Excess			0.38	1.60	0.45	1.75	0.45	-0.28	1.43	3.84	3.66	
FIS INTL SMALL CAP (TM)	329,354,686	0.6	4.98	13.10	25.35	10.17	25.35				8.20	04/01/17
MSCI WORLD EX US SMALL CAP (NET)			4.63	11.40	25.41	11.10	25.41				8.48	04/01/17
Excess			0.35	1.70	-0.06	-0.93	-0.06				-0.28	
LEADING EDGE INTL DEVELOPED (TM)	456,938,990	0.8	3.53	9.75	26.70	8.39	26.70	9.42	6.21	7.52	10.80	12/01/08
MSCI WORLD EX US NET (DAILY)			3.19	7.86	22.49	6.85	22.49	9.34	5.42	5.32	8.06	12/01/08
Excess			0.34	1.89	4.21	1.54	4.21	0.09	0.79	2.21	2.74	
INTL DEVELOPED EQUITY TERRA MARIA <sup>[9]</sup>	1,251,493,807	2.2	3.92	10.50	24.91	8.93	24.91	10.51	6.13	5.96	3.38	11/01/07
TERRA MARIA INTL DEVELOPED EQ BM <sup>[10]</sup>			3.57	8.94	22.98	8.03	22.98	9.83	5.52	5.15	2.05	11/01/07
Excess			0.35	1.56	1.93	0.90	1.93	0.69	0.61	0.81	1.33	
INTL DEVELOPED EQUITY ACTIVE AND TM <sup>[9]</sup>	4,187,630,608	7.5	3.29	8.87	23.38	7.44	23.38	10.28	5.41	5.25	3.28	07/01/08
TM INTL DEV EQ + ACTIVE INTL DEV EQ BM <sup>[9]</sup>			3.42	8.45	22.11	7.38	22.11	9.46	5.36	5.01	3.03	07/01/08
Excess			-0.13	0.42	1.27	0.06	1.27	0.83	0.05	0.25	0.26	



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<b>INTL EQUITY TRANSITION ACCOUNT</b>												
	27,346	0.0										11/01/04
<b>TOTAL INTL DEV EQUITY EX RECORD CURRENCY <sup>[B]</sup></b>	<b>4,188,970,128</b>	<b>7.5</b>	<b>3.29</b>	<b>8.87</b>	<b>23.40</b>	<b>7.44</b>	<b>23.40</b>	<b>9.97</b>	<b>5.18</b>	<b>4.95</b>		<b>01/01/95</b>
MSRA CUSTOM INTERNATIONAL INDEX <sup>[11]</sup>			3.19	7.86	22.49	6.85	22.49	9.34	4.97	4.77		01/01/95
Excess			0.10	1.01	0.91	0.58	0.91	0.64	0.21	0.18		
<b>RECORD CURRENCY MANAGEMENT</b>												
	-2,782,880	-0.0										05/01/09
<b>TOTAL INTL DEVELOPED EQUITY EX OVERLAY <sup>[B]</sup></b>	<b>4,186,187,248</b>	<b>7.5</b>	<b>3.05</b>	<b>8.39</b>	<b>23.55</b>	<b>7.53</b>	<b>23.55</b>	<b>9.39</b>	<b>5.06</b>	<b>5.30</b>	<b>6.36</b>	<b>01/01/95</b>
MSRA CUSTOM INTERNATIONAL INDEX <sup>[11]</sup>			3.19	7.86	22.49	6.85	22.49	9.34	4.97	4.77	5.42	01/01/95
Excess			-0.14	0.53	1.06	0.68	1.06	0.05	0.10	0.52	0.94	
<b>International Equity Tactical</b>												
	5,805,608	0.0										01/01/17
<b>International Equity Structural</b>												
	38,115,086	0.1										02/01/17
<b>TOTAL INTL DEVELOPED EQUITY OVERLAY</b>	<b>43,920,694</b>	<b>0.1</b>										<b>12/01/16</b>
<b>TOTAL INTL DEVELOPED EQUITY</b>	<b>4,230,107,943</b>	<b>7.5</b>	<b>3.22</b>	<b>8.80</b>	<b>24.16</b>	<b>7.99</b>	<b>24.16</b>	<b>9.56</b>	<b>5.16</b>	<b>5.35</b>	<b>6.38</b>	<b>01/01/95</b>
MSRA CUSTOM INTERNATIONAL INDEX <sup>[11]</sup>			3.19	7.86	22.49	6.85	22.49	9.34	4.97	4.77	5.42	01/01/95
Excess			0.03	0.94	1.66	1.13	1.66	0.22	0.19	0.57	0.96	
<b>EMERGING MARKETS</b>												
SSGA EMERGING MARKETS INDEX FUND	138,818,844	0.2	7.44	11.75	18.20	6.98	18.20	11.13	5.13		4.64	06/01/12
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57	5.61		5.29	06/01/12
Excess			-0.02	-0.09	-0.22	-0.11	-0.22	-0.44	-0.48		-0.65	



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	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>EMERGING MARKETS EQUITY PASSIVE</b>	<b>138,818,844</b>	<b>0.2</b>	<b>7.44</b>	<b>11.75</b>	<b>18.27</b>	<b>6.98</b>	<b>18.27</b>	<b>12.13</b>			<b>9.64</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			9.34	11/01/15
Excess			-0.02	-0.09	-0.15	-0.11	-0.15	0.55			0.29	
<b>BAILLIE GIFFORD EMERGING MARKETS</b>	<b>846,644,825</b>	<b>1.5</b>	<b>8.24</b>	<b>12.99</b>	<b>28.20</b>	<b>9.16</b>	<b>28.20</b>	<b>18.74</b>			<b>13.24</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			9.34	11/01/15
Excess			0.78	1.15	9.77	2.07	9.77	7.16			3.89	
<b>DFA EMERGING MARKETS</b>	<b>1,035,292,161</b>	<b>1.8</b>	<b>7.04</b>	<b>10.55</b>	<b>16.04</b>	<b>5.93</b>	<b>16.04</b>	<b>10.32</b>			<b>12.43</b>	<b>02/01/16</b>
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			13.67	02/01/16
Excess			-0.42	-1.28	-2.38	-1.16	-2.38	-1.25			-1.24	
<b>ACADIAN EMRG MKTS MANAGED VOLATILITY EQ</b>	<b>266,423,600</b>	<b>0.5</b>	<b>5.90</b>	<b>5.72</b>	<b>9.20</b>	<b>1.20</b>	<b>9.20</b>	<b>9.79</b>			<b>7.51</b>	<b>04/01/16</b>
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			10.62	04/01/16
Excess			-1.56	-6.12	-9.22	-5.89	-9.22	-1.78			-3.11	
<b>POLUNIN CAPITAL PARTNERS</b>	<b>441,515,981</b>	<b>0.8</b>	<b>6.57</b>	<b>12.49</b>	<b>17.34</b>	<b>7.05</b>	<b>17.34</b>	<b>9.59</b>			<b>11.10</b>	<b>04/01/16</b>
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			10.62	04/01/16
Excess			-0.89	0.65	-1.08	-0.04	-1.08	-1.98			0.48	
<b>AXIOM INTERNATIONAL INVESTORS</b>	<b>885,309,420</b>	<b>1.6</b>	<b>7.19</b>	<b>12.23</b>	<b>25.32</b>	<b>10.04</b>	<b>25.32</b>	<b>14.24</b>			<b>12.58</b>	<b>05/01/16</b>
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			10.71	05/01/16
Excess			-0.27	0.39	6.90	2.95	6.90	2.67			1.87	



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WESTWOOD GLOBAL INVESTMENTS	626,121,628	1.1	7.06	10.88	12.71	9.78	12.71	9.41	5.64	5.69	11.88	12/01/08
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57	5.61	3.68	9.60	12/01/08
Excess			-0.40	-0.96	-5.71	2.69	-5.71	-2.16	0.03	2.01	2.29	
MARSHALL WACE TOPS CHINA A	283,574,586	0.5	9.40	13.42	46.38	10.99	46.38				34.87	11/01/18
MSCI China A Share Net			8.36	10.34	37.48	7.17	37.48				29.47	11/01/18
Excess			1.03	3.08	8.89	3.82	8.89				5.40	
TT INTERNATIONAL EMERGING MARKETS	429,720,760	0.8	8.23	14.21							9.39	08/01/19
MSCI Emerging Markets IMI Index (Net)			7.32	11.59							8.16	08/01/19
Excess			0.91	2.63							1.23	
RWC PARTNERS EMERGING MARKETS	319,331,400	0.6	6.44								6.44	12/01/19
MSCI EMERGING MARKETS			7.46								7.46	12/01/19
Excess			-1.02								-1.02	
TRANSITION ACCOUNT EMERGING MARKETS	0	0.0										05/01/16
TOTAL EMERGING MARKET ACTIVE	5,134,105,409	9.1	7.35	11.68	20.66	8.02	20.66	12.54	6.86		4.43	07/01/10
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57	5.61		4.57	07/01/10
Excess			-0.11	-0.16	2.24	0.93	2.24	0.96	1.25		-0.15	
EMERGING MARKETS EQUITY TERRA MARIA	378,942,630	0.7	6.80	10.46	18.18	4.53	18.18					11/01/15
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42					11/01/15
Excess			-0.66	-1.38	-0.24	-2.56	-0.24					

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	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>EMERGING MARKETS ACTIVE AND TM</b>	5,513,048,040	9.8	7.31	11.60	20.49	7.77	20.49	12.36			10.23	11/01/15
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			9.34	11/01/15
Excess			-0.15	-0.24	2.07	0.68	2.07	0.79			0.89	
<b>TOTAL EMERGING MARKETS EQUITY EX OVERLAY</b>	5,651,866,883	10.1	7.32	11.60	20.43	7.75	20.43	12.44			9.85	11/01/15
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			9.34	11/01/15
Excess			-0.14	-0.24	2.01	0.66	2.01	0.87			0.50	
Emrg Mkts Structural Overlay	-343	-0.0										02/01/17
Emrg Mkts Tactical Overlay	49,170,032	0.1										10/01/17
<b>TOTAL EMERGING MARKETS OVERLAY</b>	49,169,689	0.1										02/01/17
<b>TOTAL EMERGING MARKETS EQUITY</b>	5,701,036,572	10.2	7.69	12.34	21.69	8.04	21.69	12.78			10.09	11/01/15
MSCI EMERGING MARKETS			7.46	11.84	18.42	7.09	18.42	11.57			9.34	11/01/15
Excess			0.23	0.50	3.26	0.95	3.26	1.21			0.74	
<b>GLOBAL EQUITY</b>												
BALLIE GIFFORD	745,983,356	1.3	5.91	19.91	34.78	12.68	34.78	27.06	17.67	15.02	11.31	02/01/08
MSCI AC WORLD INDEX NET			3.52	8.95	26.60	8.92	26.60	12.44	8.41	8.79	5.85	02/01/08
Excess			2.39	10.96	8.18	3.75	8.18	14.62	9.26	6.23	5.46	
<b>LONGVIEW PRTRRS GLOBAL EQUITY</b>	789,498,406	1.4	2.67	10.59	25.03	11.99	25.03	14.39	10.70	12.93	13.14	10/01/09
MSCI AC WORLD INDEX NET			3.52	8.95	26.60	8.92	26.60	12.44	8.41	8.79	9.04	10/01/09
Excess			-0.85	1.64	-1.57	3.07	-1.57	1.95	2.29	4.14	4.10	



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AQR CAPITAL - GLOBAL EQUITY	1,040,571,475	1.9	3.50	9.43	22.23	8.00	22.23	9.63	6.79		9.53	08/01/10
MSCI AC WORLD INDEX NET			3.52	8.95	26.60	8.92	26.60	12.44	8.41		9.59	08/01/10
Excess			-0.03	0.48	-4.37	-0.92	-4.37	-2.81	-1.61		-0.06	
D.E. SHAW INV - GLOBAL EQUITY	980,050,467	1.7	2.95	8.21	24.67	8.40	24.67	12.37	8.82		11.02	08/01/10
MSCI WORLD INDEX			3.00	8.56	27.67	9.14	27.67	12.57	8.74		10.38	08/01/10
Excess			-0.05	-0.35	-3.00	-0.74	-3.00	-0.20	0.08		0.63	
TOTAL GLOBAL EQUITY ACTIVE	3,556,581,307	6.3	3.65	11.38	26.00	9.94	26.00	14.11	9.57	10.24	7.76	10/01/05
MSCI AC WORLD INDEX NET			3.52	8.95	26.60	8.92	26.60	12.44	8.41	8.79	6.70	10/01/05
Excess			0.13	2.43	-0.60	1.02	-0.60	1.67	1.17	1.46	1.06	
MARSHALL WACE EUREKA FUND	603,248,479	1.1	2.24	4.65	13.36	5.31	13.36	8.76	8.18		10.35	10/01/12
HFRI Equity Hedge (Total) Index			2.46	5.64	13.66	4.06	13.66	6.14	4.54		5.55	10/01/12
Excess			-0.22	-0.99	-0.30	1.25	-0.30	2.62	3.64		4.80	
HOPLITE ONSHORE	3,400,678	0.0										02/01/13
INDUS PACIFIC OPPORTUNITIES FUND	5,930,203	0.0										06/01/13
TOTAL EQUITY HEDGE FUND	612,579,360	1.1	2.03	4.38	11.31	3.47	11.31	4.21	2.44		4.41	07/01/12
HFRI Equity Hedge (Total) Index			2.46	5.64	13.66	4.06	13.66	6.14	4.54		5.84	07/01/12
Excess			-0.44	-1.26	-2.35	-0.59	-2.35	-1.93	-2.11		-1.43	
TOTAL GLB EQ TM + GLB EQ ACTIVE + HF	4,169,160,667	7.4	3.41	10.36	23.39	9.12	23.39	11.50	7.74	8.97	6.40	07/01/08
TM GLOBAL + ACTIVE GLOBAL BM + EQ HF <sup>(2)</sup>			3.24	8.32	24.17	8.09	24.17	10.92	7.50	8.19	5.81	07/01/08
Excess			0.17	2.04	-0.78	1.02	-0.78	0.58	0.23	0.78	0.59	

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GLOBAL EQUITY TRANSITION ACCOUNT	4,574,091	0.0										06/01/11
<b>TOTAL GLOBAL EQUITY EX RECORD CURRENCY</b>	<b>4,173,734,758</b>	<b>7.4</b>	<b>3.41</b>	<b>10.35</b>	<b>23.39</b>	<b>9.11</b>	<b>23.39</b>	<b>11.57</b>	<b>7.80</b>	<b>9.08</b>	<b>6.96</b>	<b>10/01/05</b>
MSRA CUSTOM GLOBAL INDEX <sup>(12)</sup>			3.52	8.95	26.60	8.92	26.60	12.44	8.41	8.87	6.79	10/01/05
Excess			-0.11	1.40	-3.21	0.19	-3.21	-0.88	-0.61	0.20	0.17	
RECORD CURRENCY - GLOBAL	968,733	0.0										05/01/09
<b>TOTAL GLOBAL EQUITY EX OVERLAY</b>	<b>4,174,703,491</b>	<b>7.4</b>	<b>3.33</b>	<b>10.13</b>	<b>23.45</b>	<b>9.17</b>	<b>23.45</b>	<b>11.45</b>	<b>7.79</b>	<b>9.21</b>	<b>7.05</b>	<b>10/01/05</b>
MSRA CUSTOM GLOBAL INDEX <sup>(12)</sup>			3.52	8.95	26.60	8.92	26.60	12.44	8.41	8.87	6.79	10/01/05
Excess			-0.19	1.18	-3.15	0.25	-3.15	-0.99	-0.61	0.33	0.26	
<b>PUBLIC EQUITY</b>												
<b>TOTAL PUBLIC EQUITY EX OVERLAY</b>	<b>20,788,712,005</b>	<b>37.0</b>	<b>4.15</b>	<b>9.64</b>	<b>24.87</b>	<b>8.75</b>	<b>24.87</b>	<b>11.88</b>	<b>8.01</b>	<b>9.11</b>		<b>04/01/94</b>
PUBLIC EQ BM 2 <sup>(13)</sup>			4.33	9.61	24.94	8.49	24.94	12.15	8.34	8.97		04/01/94
Excess			-0.18	0.04	-0.07	0.26	-0.07	-0.27	-0.32	0.13		
<b>TOTAL PUBLIC EQUITY OVERLAY</b>	<b>157,484,891</b>	<b>0.3</b>										<b>12/01/16</b>
<b>TOTAL PUBLIC EQUITY</b>	<b>20,946,196,897</b>	<b>37.3</b>	<b>4.23</b>	<b>9.61</b>	<b>25.34</b>	<b>8.69</b>	<b>25.34</b>	<b>12.02</b>	<b>8.09</b>	<b>9.15</b>		<b>04/01/94</b>
PUBLIC EQ BM 2 <sup>(13)</sup>			4.33	9.61	24.94	8.49	24.94	12.15	8.34	8.97		04/01/94
Excess			-0.10	0.01	0.40	0.20	0.40	-0.13	-0.24	0.18		
<b>PRIVATE EQUITY</b>												
<b>TOTAL PRIVATE EQUITY</b>	<b>7,489,634,086</b>	<b>13.3</b>	<b>0.18</b>	<b>2.01</b>	<b>10.31</b>	<b>5.49</b>	<b>10.31</b>	<b>16.31</b>	<b>14.46</b>	<b>14.43</b>	<b>8.27</b>	<b>03/01/94</b>
Custom MD/SS PEI Index <sup>(14)</sup>			-0.98	0.82	8.03	4.40	8.03	12.67	10.47	12.12		03/01/94
Excess			1.17	1.19	2.29	1.09	2.29	3.64	3.99	2.31		



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<b>TOTAL GROWTH EQUITY</b>	<b>28,435,830,982</b>	<b>50.7</b>	<b>3.08</b>	<b>7.39</b>	<b>20.94</b>	<b>7.76</b>	<b>20.94</b>	<b>13.11</b>	<b>9.42</b>	<b>10.02</b>	<b>6.31</b>	<b>01/01/98</b>
GROWTH EQUITY CUSTOM BENCHMARK <sup>(15)</sup>			2.77	7.00	20.40	7.30	20.40	12.46				01/01/98
Excess			0.31	0.40	0.54	0.45	0.54	0.65				
<b>RATE SENSITIVE</b>												
<b>NOMINAL FIXED INCOME</b>												
SSGA US GOVT LONG BOND INDEX	1,319,855,186	2.4	-2.74	-4.06	14.78	3.48	14.78	6.91			3.79	11/01/16
BBG BARC US Gov Lg Idx			-2.76	-4.06	14.75	3.45	14.75	6.95			3.86	11/01/16
Excess			0.01	0.01	0.03	0.03	0.03	-0.04			-0.08	
SSGA US SECURITIZED INDEX	446,490,988	0.8	0.19	0.52	6.29	1.91	6.29	3.06			2.31	11/01/16
BBG BARC Sec Idx			0.24	0.63	6.44	2.04	6.44	3.29			2.55	11/01/16
Excess			-0.05	-0.11	-0.15	-0.14	-0.15	-0.23			-0.24	
SSGA US LONG INVEST GRADE CORP INDEX	93,766,176	0.2	0.11	1.28	24.33	7.13	24.33	8.88			7.17	11/01/16
BBG BARC Lg Corp			0.11	1.33	23.89	7.01	23.89	8.81			7.25	11/01/16
Excess			-0.00	-0.05	0.44	0.12	0.44	0.08			-0.09	
SSGA US INTERM INVEST GRADE INDEX	100,531,461	0.2	0.45	1.16	10.30	2.94	10.30	4.63			3.84	11/01/16
BBG BARC US Corp Int Inv Grd Idx			0.43	1.10	10.14	2.86	10.14	4.52			3.76	11/01/16
Excess			0.02	0.06	0.16	0.08	0.16	0.11			0.08	
<b>SSGA PASSIVE FIXED INCOME</b>	<b>1,960,643,812</b>	<b>3.5</b>	<b>-1.80</b>	<b>-2.56</b>	<b>13.15</b>	<b>3.31</b>	<b>13.15</b>	<b>6.27</b>	<b>4.26</b>	<b>4.21</b>	<b>4.39</b>	<b>05/01/03</b>
SSGA Aggregate Bond Custom Benchmark <sup>(16)</sup>			-1.74	-2.42	13.44	3.44	13.44	6.20	4.37	4.24		05/01/03
Excess			-0.06	-0.14	-0.29	-0.13	-0.29	0.07	-0.10	-0.04		

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<b>US NOMINAL FIXED INCOME PASSIVE</b>												
	1,960,643,812	3.5	-1.80	-2.56	13.15	3.31	13.15	6.27			4.75	11/01/15
<b>US NOMINAL FI PASSIVE BENCHMARK <sup>(17)</sup></b>												
			-1.74	-2.42	13.44	3.44	13.44	6.20			4.84	11/01/15
<i>Excess</i>			-0.06	-0.14	-0.29	-0.13	-0.29	0.07			-0.10	
<b>PIMCO</b>												
	1,513,565,509	2.7	-1.43	-1.78	13.39	3.19	13.39	6.61	4.60	4.50		06/01/84
<b>PIMCO Custom Blended Index <sup>(18)</sup></b>												
			-1.74	-2.42	13.44	3.44	13.44	6.20	4.37	4.24		06/01/84
<i>Excess</i>			0.32	0.65	-0.05	-0.25	-0.05	0.42	0.23	0.25		
<b>WESTERN ASSET MANAGEMENT</b>												
	2,655,373,946	4.7	-1.54	-2.19	15.12	3.76	15.12	7.09	5.14	5.81	6.07	09/01/03
<b>WESTERN ASSET MANAGEMENT CUSTOM BM <sup>(19)</sup></b>												
			-1.74	-2.42	13.44	3.44	13.44	6.20	4.33	4.22	4.57	09/01/03
<i>Excess</i>			0.21	0.23	1.68	0.32	1.68	0.89	0.81	1.59	1.51	
<b>DOUBLELINE US SECURITIZED</b>												
	433,264,164	0.8	0.17	0.39	6.39	1.71	6.39				3.42	10/01/17
<b>BBG BARC Sec Diy</b>												
			0.24	0.63	6.44	2.04	6.44				3.34	10/01/17
<i>Excess</i>			-0.07	-0.25	-0.05	-0.33	-0.05				0.09	
<b>GARDA FIRVO</b>												
	329,800,000	0.6	1.07	1.98	10.26	4.30	10.26	6.10			6.17	04/01/16
<b>CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup></b>												
			1.11	1.92	7.40	2.12	7.40	4.18			4.64	04/01/16
<i>Excess</i>			-0.04	0.06	2.86	2.18	2.86	1.91			1.54	
<b>DODGE &amp; COX - FI CORE</b>												
	348,144,912	0.6	0.39	1.49	15.63	4.58	15.63	6.69	5.35	5.22	5.94	03/01/09
<b>CORE BOND CUSTOM BENCHMARK <sup>(21)</sup></b>												
			0.32	1.18	14.54	4.27	14.54	5.93	4.28	4.20	4.55	03/01/09
<i>Excess</i>			0.07	0.31	1.09	0.32	1.09	0.76	1.06	1.02	1.39	
<b>WESTERN ASSET - ISRAEL BD</b>												
	23,124,626	0.0	0.17	0.70	5.73	1.60	5.73	3.32	1.45	1.99	2.69	06/01/05
<b>WESTERN ASSET ISRAEL BOND INDEX</b>												
			-0.02	0.11	8.10	1.99	8.10	3.97	3.25	3.08	1.49	06/01/05
<i>Excess</i>			0.19	0.59	-2.37	-0.39	-2.37	-0.65	-1.80	-1.10	1.20	



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	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>US NOMINAL FIXED INCOME ACTIVE</b>												
	5,303,273,159	9.4	-1.08	-1.36	13.54	3.51	13.54	6.57	4.79	4.97	5.19	07/01/08
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>[21]</sup>			-1.74	-2.42	13.44	3.44	13.44	6.20	4.36	4.15	4.48	07/01/08
Excess			0.67	1.06	0.11	0.06	0.11	0.37	0.43	0.82	0.70	
<b>US NOMINAL FIXED INCOME TERRA MARIA</b>												
	596,541,057	1.1	0.03	0.31	8.09	2.24	8.09	3.74	2.99	3.82	5.30	11/01/08
TERRA MARIA FI BENCHMARK <sup>[23]</sup>			0.05	0.34	7.77	2.21	7.77	3.52	2.77	3.44	5.97	11/01/08
Excess			-0.02	-0.03	0.32	0.04	0.32	0.23	0.22	0.37	-0.67	
<b>TOTAL RATE SENSITIVE (CP)</b>												
	596,541,057	1.1	0.03	0.31	8.09	2.24	8.09	3.74	3.07	4.08	5.17	11/01/08
RATE SENSITIVE (CP) BENCHMARK <sup>[23]</sup>			0.05	0.34	7.77	2.21	7.77	3.52	2.84	3.54	4.43	11/01/08
Excess			-0.02	-0.03	0.32	0.04	0.32	0.22	0.23	0.54	0.73	
<b>TOTAL US NOMINAL FI ACTIVE + TM</b>												
	5,899,814,215	10.5	-0.97	-1.20	12.99	3.38	12.99	6.29	4.61	4.86	5.10	07/01/08
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>[22]</sup>			-1.74	-2.42	13.44	3.44	13.44	6.20	4.36	4.15	4.48	07/01/08
Excess			0.78	1.22	-0.45	-0.06	-0.45	0.09	0.26	0.71	0.61	
<b>US NOMINAL FIXED INCOME</b>												
	7,860,458,028	14.0	-1.18	-1.54	13.01	3.36	13.01	6.28	4.56	4.74	5.17	07/01/08
US NOMINAL FIXED INCOME BENCHMARK <sup>[24]</sup>			-1.74	-2.42	13.44	3.44	13.44	6.20	4.37	4.24	4.56	07/01/08
Excess			0.57	0.88	-0.43	-0.08	-0.43	0.08	0.20	0.50	0.61	
<b>NOMINAL FIXED INCOME EX OVERLAY</b>												
	7,860,458,134	14.0	-1.18	-1.54	13.01	3.36	13.01	6.28	4.54	4.86	7.04	07/01/86
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>[22]</sup>			-1.74	-2.42	13.44	3.44	13.44	6.20	4.36	4.15		07/01/86
Excess			0.57	0.88	-0.43	-0.08	-0.43	0.08	0.18	0.72		
<b>Nominal FI Tactical</b>												
	76,290,196	0.1										01/01/17

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Nominal FI Structural	22,964,114	0.0										01/01/17
<b>NOMINAL FIXED INCOME OVERLAY</b>	<b>99,254,309</b>	<b>0.2</b>										<b>01/01/17</b>
<b>NOMINAL FIXED INCOME</b>	<b>7,959,712,444</b>	<b>14.2</b>	<b>-1.61</b>	<b>-2.09</b>	<b>13.35</b>	<b>3.44</b>	<b>13.35</b>	<b>6.35</b>	<b>4.58</b>	<b>4.89</b>	<b>7.04</b>	<b>07/01/86</b>
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>(2)</sup>			-1.74	-2.42	13.44	3.44	13.44	6.20	4.36	4.15		07/01/86
Excess			0.14	0.33	-0.09	-0.00	-0.09	0.15	0.22	0.74		
<b>INFLATION SENSITIVE</b>												
SSGA PASSIVE US TIPS	99,882,185	0.2	0.33	0.72	8.71	2.15	8.71	3.41	2.65		0.95	12/01/12
BBG BARC US TIPS Idx			0.31	0.74	8.75	2.23	8.75	3.44	2.66		1.00	12/01/12
Excess			0.01	-0.02	-0.04	-0.07	-0.04	-0.03	-0.02		-0.05	
MD TIPS	2,120,706,084	3.8	0.32	0.77		2.20					2.20	07/01/19
BBG Barc US Gov Infl-Lkd All Maturities			0.31	0.74		2.23					2.23	07/01/19
Excess			0.01	0.03		-0.02					-0.02	
<b>TOTAL U.S. TIPS</b>	<b>2,220,588,269</b>	<b>4.0</b>	<b>0.32</b>	<b>0.76</b>	<b>8.74</b>	<b>2.20</b>	<b>8.74</b>	<b>3.42</b>	<b>2.65</b>	<b>3.33</b>	<b>4.08</b>	<b>02/01/06</b>
CUSTOM US TIPS MD BM <sup>(2)</sup>			0.31	0.74	8.75	2.23	8.75	3.44	2.66	3.38	3.89	02/01/06
Excess			0.01	0.02	-0.01	-0.03	-0.01	-0.02	-0.01	-0.06	0.19	
<b>INFLATION SENSITIVE FI EX OVERLAY</b>	<b>2,220,588,269</b>	<b>4.0</b>	<b>0.32</b>	<b>0.77</b>	<b>8.72</b>	<b>2.21</b>	<b>8.72</b>	<b>3.41</b>	<b>2.75</b>	<b>3.68</b>	<b>3.81</b>	<b>07/01/08</b>
CUSTOM INFLATION SENSITIVE BENCHMARK <sup>(2)</sup>			0.31	0.74	8.75	2.23	8.75	3.44	2.76	3.73	3.61	07/01/08
Excess			0.01	0.03	-0.03	-0.02	-0.03	-0.03	-0.02	-0.05	0.20	
Inflation Sensitive FI Tactical	-32	-0.0										07/01/17



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<b>INFLATION SENSITIVE FIXED INCOME OVERLAY</b>	-32	-0.0										07/01/17
<b>INFLATION SENSITIVE FIXED INCOME</b>	2,220,588,238	4.0	0.33	0.79	8.76	2.24	8.76	3.37	2.72	3.66	3.80	07/01/08
<b>CUSTOM INFLATION SENSITIVE BENCHMARK <sup>[26]</sup></b>			0.31	0.74	8.75	2.23	8.75	3.44	2.76	3.73	3.61	07/01/08
<i>Excess</i>			0.02	0.05	0.01	0.01	0.01	-0.07	-0.04	-0.06	0.19	
<b>TOTAL RATE SENSITIVE EX OVERLAY</b>	10,081,046,404	18.0	-0.85	-1.04	12.00	3.10	12.00	5.62	4.12	4.65	6.97	07/01/86
<b>CUSTOM RATE SENSITIVE BENCHMARK <sup>[27]</sup></b>			-1.32	-1.78	12.49	3.21	12.49	5.61	4.15	4.04		07/01/86
<i>Excess</i>			0.47	0.74	-0.49	-0.11	-0.49	0.01	-0.03	0.61		
<b>TOTAL RATE SENSITIVE OVERLAY</b>	99,254,278	0.2										01/01/17
<b>TOTAL RATE SENSITIVE</b>	10,180,300,681	18.1	-1.19	-1.48	12.26	3.17	12.26	5.67	4.15	4.67	6.98	07/01/86
<b>CUSTOM RATE SENSITIVE BENCHMARK <sup>[27]</sup></b>			-1.32	-1.78	12.49	3.21	12.49	5.61	4.15	4.04		07/01/86
<i>Excess</i>			0.13	0.30	-0.23	-0.04	-0.23	0.06	0.00	0.63		
<b>CREDIT/DEBT</b>												
<i>US CREDIT</i>												
<b>PIMCO HIGH QUALITY HY</b>	1,579,906,198	2.8	1.63	2.63	15.58	4.54	15.58			8.94		07/01/18
<b>BBG BARC Ba to B US HY Idx</b>			1.52	2.52	15.18	4.42	15.18			8.84		07/01/18
<i>Excess</i>			0.11	0.11	0.40	0.12	0.40			0.10		
<b>CREDIT SUISSE US BANK LOANS</b>	460,655,922	0.8	1.35	1.69	8.76	3.02	8.76			6.37		07/01/18
<b>S&amp;P/LSTA Leverage Loan Index</b>			1.60	1.73	8.64	2.74	8.64			4.48		07/01/18
<i>Excess</i>			-0.25	-0.04	0.12	0.28	0.12			1.89		



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PINE BRIDGE HIGH QUALITY HY	672,549,911	1.2	1.58	2.31	15.86	3.77	15.86				7.88	07/01/18
BBG BARC Ba to B US HY Idx			1.52	2.52	15.18	4.42	15.18				8.84	07/01/18
Excess			0.06	-0.21	0.68	-0.65	0.68				-0.96	
KKR BANK LOANS	16,547,143	0.0										09/01/10
CREDIT/DEBT TRANSITION ACCOUNT	0	0.0										02/01/09
CREDIT/DEBT TERRA MARIA <sup>(29)</sup>	52,939,370	0.1	1.07	1.72		3.02						01/01/10
HIGH YIELD/BANK LOAN EX OVERLAY	2,782,984,698	5.0	1.60	2.42	14.18	4.11	14.18	5.58			5.83	11/01/15
HIGH YIELD CUSTOM BENCHMARK <sup>(29)</sup>			1.92	2.44	13.17	3.74	13.17	5.96			6.89	11/01/15
Excess			-0.32	-0.02	1.00	0.37	1.00	-0.38			-1.05	
TOTAL DISTRESSED DEBT	611,014,855	1.1	0.23	0.15	0.98	0.61	0.98	7.59	6.98	8.51	8.51	01/01/10
TOTAL MEZZANINE DEBT	443,780,071	0.8	-0.16	3.08	3.36	3.84	3.36	8.03	7.37	7.88	7.88	01/01/10
PERELLA WEINBERG	51,237,743	0.1	0.00	-0.42	-4.87	-0.68	-4.87	-3.55	-3.16		3.95	07/01/10
HFR1 ED: Distressed/Restructuring Index			0.87	-0.41	2.61	-2.11	2.61	2.33	2.56		4.24	07/01/10
Excess			-0.87	-0.02	-7.48	1.43	-7.48	-5.88	-5.71		-0.29	
TOTAL CREDIT HEDGE FUND	51,237,743	0.1	0.00	-0.42	-4.72	-0.68	-4.72	1.49	1.13		5.38	07/01/10
HFR1 ED: Distressed/Restructuring Index			0.87	-0.41	2.61	-2.11	2.61	2.33	2.56		4.24	07/01/10
Excess			-0.87	-0.02	-7.32	1.43	-7.32	-0.85	-1.43		1.14	

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	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>US CREDIT EX OVERLAY</b>												
	3,889,017,367	6.9	1.15	2.06	9.98	3.41	9.98	6.62	5.70	7.05	8.99	03/01/09
U.S. CREDIT CUSTOM BENCHMARK <sup>[30]</sup>			1.92	2.44	13.17	3.74	13.17	5.96	5.79	6.66	8.44	03/01/09
Excess			-0.76	-0.37	-3.19	-0.33	-3.19	0.66	-0.09	0.40	0.55	
<b>NON US CREDIT</b>												
LOGAN CIRCLE HARD CURRENCY EM	562,383,014	1.0	2.59	3.48	16.50	4.40	16.50				11.02	07/01/18
Custom EM HC Benchmark <sup>[31]</sup>			1.73	2.44	12.59	2.96	12.59				8.92	07/01/18
Excess			0.86	1.04	3.91	1.44	3.91				2.10	
SSGA LOCAL CURRENCY EM	560,025,843	1.0	2.65	3.74	9.00	3.17	9.00				11.13	11/01/18
Custom EM Debt Benchmark <sup>[32]</sup>			2.73	3.91	9.14	3.26	9.14				11.16	11/01/18
Excess			-0.08	-0.17	-0.14	-0.09	-0.14				-0.02	
<b>NON US CREDIT EX OVERLAY</b>	1,122,408,856	2.0	2.62	3.61	12.54	3.78	12.54	6.21	2.43		0.71	10/01/10
NON-U.S. CREDIT CUSTOM BENCHMARK <sup>[33]</sup>			2.23	3.18	10.87	3.12	10.87	6.51	2.83		1.31	10/01/10
Excess			0.39	0.43	1.67	0.66	1.67	-0.30	-0.41		-0.60	
<b>TOTAL CREDIT/DEBT STRATEGIES EX OVERLAY</b>	5,011,426,224	8.9	1.48	2.41	10.52	3.49	10.52	6.22	5.03	7.00	8.88	03/01/09
MSRA CUSTOM CREDIT BENCHMARK <sup>[34]</sup>			1.99	2.60	12.68	3.60	12.68	6.29	5.22	6.05	7.87	03/01/09
Excess			-0.51	-0.20	-2.16	-0.11	-2.16	-0.07	-0.20	0.95	1.01	
<b>REAL ASSETS</b>												
<b>REAL ESTATE</b>												
<b>TOTAL REITS EX RECORD CURRENCY</b>	324,438	0.0										04/01/94
<b>RECORD CURRENCY MANAGEMENT-REITS</b>	261,042	0.0										07/01/11



**State Retirement Agency of Maryland**  
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**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>TOTAL REITS EX OVERLAY</b>	<b>585,480</b>	<b>0.0</b>										<b>04/01/94</b>
<b>TOTAL PRIVATE REAL ESTATE</b>	<b>4,690,765,576</b>	<b>8.4</b>	<b>0.21</b>	<b>1.59</b>	<b>5.44</b>	<b>2.03</b>	<b>5.44</b>	<b>7.63</b>	<b>9.51</b>	<b>10.96</b>	<b>9.05</b>	<b>03/01/94</b>
CUSTOM MD PRIVATE REAL ESTATE BM <sup>[35]</sup>			-0.07	1.31	5.59	2.32	5.59	7.30	9.34	10.49	9.48	03/01/94
Excess			0.28	0.28	-0.16	-0.28	-0.16	0.33	0.17	0.48	-0.43	
MSIM Cus FTSE EPRA NAREIT Dev ex US(Net) <sup>[36]</sup>			0.49	1.75	21.90	6.46	21.90	8.28	5.57	7.38		11/01/06
WILSHIRE RESI			-0.64	-1.07	25.79	6.70	25.79	7.88	7.21	12.11		01/01/78
<b>TOTAL REAL ESTATE</b>	<b>4,691,351,055</b>	<b>8.4</b>	<b>0.20</b>	<b>1.59</b>	<b>6.89</b>	<b>2.07</b>	<b>6.89</b>	<b>7.36</b>	<b>8.58</b>	<b>10.53</b>	<b>6.81</b>	<b>07/01/87</b>
REAL ESTATE CUSTOM INDEX <sup>[37]</sup>			-0.07	1.31	7.32	2.32	7.32	7.30	8.56	10.33	8.16	07/01/87
Excess			0.28	0.28	-0.44	-0.25	-0.44	0.06	0.02	0.21	-1.34	
<b>NATURAL RESOURCE AND INFRASTRUCTURE</b>												
TORTOISE CAPITAL DOMESTIC EQ	96,280,910	0.2	7.92	-1.70	8.24	-7.76	8.24	-3.23	-5.27	7.31	8.80	08/01/09
S&P MLP Total Return Index			7.99	-3.09	9.78	-7.01	9.78	-2.90	-6.23	5.10	6.56	08/01/09
Excess			-0.06	1.39	-1.54	-0.75	-1.54	-0.34	0.96	2.21	2.24	
<b>HARVEST FUND ADVISORS</b>	<b>257,195,058</b>	<b>0.5</b>	<b>7.77</b>	<b>-1.09</b>	<b>11.51</b>	<b>-6.20</b>	<b>11.51</b>	<b>-2.70</b>	<b>-5.18</b>	<b>9.71</b>	<b>10.05</b>	<b>11/01/09</b>
S&P MLP Total Return Index			7.99	-3.09	9.78	-7.01	9.78	-2.90	-6.23	5.10	6.32	11/01/09
Excess			-0.22	2.00	1.73	0.81	1.73	0.20	1.05	4.61	3.73	
<b>RHUMBLINE DJ BROOKFIELD GLOBAL INFRA</b>	<b>591,241,331</b>	<b>1.1</b>	<b>5.51</b>	<b>3.70</b>	<b>27.56</b>	<b>5.67</b>	<b>27.56</b>			<b>9.05</b>	<b>11/01/17</b>	
DJ Brookfield Global Infra Comp			5.47	3.52	26.53	5.26	26.53			7.52	11/01/17	
Excess			0.04	0.18	1.02	0.42	1.02			1.53		



**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>RHUMBLINE GLOBAL NATURAL RESOURCES</b>	322,803,085	0.6	5.92	9.46	16.92	2.83	16.92				4.18	11/01/17
S&P Global Natural Resources (Net)			5.89	9.38	16.41	2.62	16.41				3.36	11/01/17
Excess			0.03	0.08	0.51	0.21	0.51				0.82	
<b>TOTAL ENERGY FUNDS</b>	628,787,398	1.1	0.26	0.73	-6.83	-3.12	-6.83	6.26	-1.55	6.46	6.46	01/01/10
<b>TOTAL INFRASTRUCTURE</b>	81,432,984	0.1	0.07	0.89	-1.52	-0.39	-1.52	-3.54	1.50	3.06	2.80	10/01/09
<b>TIMBER LP FUNDS</b>	200,587,269	0.4	0.00	-0.30	0.72	1.85	0.72	2.29	2.42		6.05	05/01/10
<b>NATURAL RESOURCE AND INFRA EX OVERLAY</b>	2,178,328,034	3.9	3.62	2.29	7.86	-0.00	7.86	4.25	-0.16	7.97	8.99	08/01/09
NATURAL RESOURCE AND INFRASTRUCTURE BM <sup>[38]</sup>			5.72	7.02	20.61	3.77	20.61	8.24	8.80	7.70	7.62	08/01/09
Excess			-2.10	-4.72	-12.75	-3.77	-12.75	-3.99	-8.96	0.26	1.37	
<b>TOTAL REAL ASSETS EX OVERLAY</b>	6,869,679,089	12.2	1.28	1.82	7.07	1.43	7.07	5.78	3.17	3.76	4.23	02/01/06
CUSTOM REAL ASSETS BENCHMARK <sup>[39]</sup>			1.74	3.10	11.13	2.87	11.13	6.84	4.82	3.37	3.67	02/01/06
Excess			-0.47	-1.28	-4.06	-1.44	-4.06	-1.05	-1.65	0.39	0.56	
<b>TOTAL REAL ASSETS OVERLAY</b>	0	0.0										01/01/17
<b>TOTAL REAL ASSETS</b>	6,869,679,089	12.2	1.28	1.82	7.07	1.43	7.07	5.78	3.17	3.76	4.23	02/01/06
CUSTOM REAL ASSETS BENCHMARK <sup>[39]</sup>			1.74	3.10	11.13	2.87	11.13	6.84	4.82	3.37	3.67	02/01/06
Excess			-0.47	-1.28	-4.06	-1.44	-4.06	-1.05	-1.65	0.39	0.56	





**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>ABSOLUTE RETURN</b>												
1977 MERGER ARBITRAGE FUND	184,856,842	0.3	1.17	2.29	8.99	5.51	8.99				11.01	01/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.11	1.92	7.40	2.12	7.40				3.70	01/01/18
Excess			0.06	0.37	1.59	3.39	1.59				7.31	
SHOALS FINANCIALS OPPORTUNITY FUND, LP	95,649,600	0.2	-1.11	-7.50	-7.35	-9.71	-7.35				-2.39	03/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.11	1.92	7.40	2.12	7.40				3.65	03/01/18
Excess			-2.22	-9.42	-14.75	-11.84	-14.75				-6.04	
KING STREET CAPITAL	201,119,478	0.4	1.02	1.35	1.98	-0.77	1.98	2.61	2.24		4.56	12/01/11
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19		3.91	12/01/11
Excess			-0.09	-0.57	-5.42	-2.89	-5.42	-1.58	-0.95		0.65	
EMPTYREAN CAPITAL FUND	302,631,600	0.5	0.80	-1.14	3.76	-0.27	3.76				0.55	06/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.11	1.92	7.40	2.12	7.40				3.37	06/01/18
Excess			-0.31	-3.06	-3.64	-2.39	-3.64				-2.82	
STANDARD GENERAL FUND II	188,718,200	0.3	1.03	0.77		-10.90					-3.79	02/01/19
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.11	1.92		2.12					5.38	02/01/19
Excess			-0.08	-1.15		-13.02					-9.17	
SGM CO-INVESTMENT FUND LP	9,775,010	0.0	2.30	-2.93							-2.93	10/01/19
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.11	1.92							1.92	10/01/19
Excess			1.19	-4.85							-4.85	
CONTRARIAN EMMA 2	100,000,000	0.2										12/01/19

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**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>EVENT DRIVEN STRATEGIES</b>	<b>1,082,750,730</b>	<b>1.9</b>	<b>0.71</b>	<b>-0.40</b>	<b>1.42</b>	<b>-2.69</b>	<b>1.42</b>					<b>07/01/17</b>
HFRI FoF CONSERVATIVE + 100 bps			1.11	1.92	7.40	2.12	7.40					07/01/17
Excess			<b>-0.40</b>	<b>-2.32</b>	<b>-5.98</b>	<b>-4.81</b>	<b>-5.98</b>					
<b>BRIDGEWATER PURE ALPHA</b>	<b>595,813,087</b>	<b>1.1</b>	<b>1.97</b>	<b>4.14</b>	<b>-1.64</b>	<b>3.69</b>	<b>-1.64</b>	<b>2.79</b>	<b>3.59</b>	<b>5.44</b>	<b>4.93</b>	<b>05/01/08</b>
CUSTOM ABSOLUTE RETURN BENCHMARK [20]			1.11	1.92	7.40	2.12	7.40	4.18	3.19	3.17	1.86	05/01/08
Excess			<b>0.86</b>	<b>2.22</b>	<b>-9.04</b>	<b>1.56</b>	<b>-9.04</b>	<b>-1.40</b>	<b>0.41</b>	<b>2.27</b>	<b>3.07</b>	
<b>GRAHAM TACTICAL TREND</b>	<b>299,811,497</b>	<b>0.5</b>	<b>-3.23</b>	<b>-0.81</b>	<b>18.27</b>	<b>6.14</b>	<b>18.27</b>	<b>1.85</b>			<b>-1.65</b>	<b>07/01/15</b>
CUSTOM ABSOLUTE RETURN BENCHMARK [20]			1.11	1.92	7.40	2.12	7.40	4.18			<b>3.05</b>	<b>07/01/15</b>
Excess			<b>-4.34</b>	<b>-2.73</b>	<b>10.86</b>	<b>4.02</b>	<b>10.86</b>	<b>-2.34</b>			<b>-4.70</b>	
<b>FORT GLOBAL CONTRARIAN</b>	<b>232,322,200</b>	<b>0.4</b>	<b>-0.54</b>	<b>-1.30</b>	<b>16.60</b>	<b>2.54</b>	<b>16.60</b>				<b>7.83</b>	<b>03/01/18</b>
CUSTOM ABSOLUTE RETURN BENCHMARK [20]			1.11	1.92	7.40	2.12	7.40				<b>3.65</b>	<b>03/01/18</b>
Excess			<b>-1.65</b>	<b>-3.22</b>	<b>9.20</b>	<b>0.42</b>	<b>9.20</b>				<b>4.18</b>	
<b>TUDOR MANIYAR MACRO FUND</b>	<b>200,373,800</b>	<b>0.4</b>	<b>1.69</b>	<b>1.63</b>							<b>0.19</b>	<b>08/01/19</b>
CUSTOM ABSOLUTE RETURN BENCHMARK [20]			1.11	1.92							<b>1.79</b>	<b>08/01/19</b>
Excess			<b>0.58</b>	<b>-0.29</b>							<b>-1.61</b>	
<b>GLOBAL MACRO/GTAA STRATEGIES</b>	<b>1,328,320,584</b>	<b>2.4</b>	<b>0.27</b>	<b>1.64</b>	<b>4.87</b>	<b>3.61</b>	<b>4.87</b>	<b>1.50</b>	<b>0.10</b>	<b>2.29</b>	<b>2.31</b>	<b>04/01/08</b>
CUSTOM ABSOLUTE RETURN BENCHMARK [20]			1.11	1.92	7.40	2.12	7.40	4.18	3.19	3.17	1.90	04/01/08
Excess			<b>-0.84</b>	<b>-0.28</b>	<b>-2.53</b>	<b>1.48</b>	<b>-2.53</b>	<b>-2.68</b>	<b>-3.09</b>	<b>-0.88</b>	<b>0.41</b>	
<b>NEPHILA PALMETTO FUND</b>	<b>184,904,370</b>	<b>0.3</b>	<b>0.70</b>	<b>-2.94</b>	<b>1.52</b>	<b>-0.69</b>	<b>1.52</b>	<b>-2.93</b>	<b>-0.23</b>		<b>0.92</b>	<b>01/01/14</b>
CUSTOM ABSOLUTE RETURN BENCHMARK [20]			1.11	1.92	7.40	2.12	7.40	4.18	3.19		<b>3.09</b>	<b>01/01/14</b>
Excess			<b>-0.41</b>	<b>-4.87</b>	<b>-5.89</b>	<b>-2.82</b>	<b>-5.89</b>	<b>-7.11</b>	<b>-3.42</b>		<b>-2.17</b>	



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**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
NIMBUS WEATHER FUND LTD	96,602,600	0.2	0.56	0.74	-2.77	1.93	-2.77				-2.41	06/01/17
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40				4.01	06/01/17
Excess			-0.55	-1.18	-10.17	-0.19	-10.17				-6.42	
PRIVATE MARKET FUNDS	66,199,461	0.1	0.02	-11.60	-13.94	-13.67	-13.94				2.87	06/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40				3.37	06/01/18
Excess			-1.09	-13.52	-21.34	-15.79	-21.34				-0.50	
HSCM BERMUDA FUND	203,743,361	0.4	-0.49	0.19		6.25					6.25	07/01/19
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92		2.12					2.12	07/01/19
Excess			-1.61	-1.73		4.12					4.12	
OPPORTUNISTIC	551,449,792	1.0	0.15	-2.54	-0.76	-0.82	-0.76	-2.30	0.16		1.25	01/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19		3.09	01/01/14
Excess			-0.96	-4.46	-8.17	-2.94	-8.17	-6.48	-3.03		-1.84	
HUDSON BAY FUND	473,694,000	0.8	1.46	2.11	8.23	3.74	8.23	8.36	5.78		4.71	10/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19		3.08	10/01/14
Excess			0.35	0.19	0.83	1.62	0.83	4.18	2.59		1.63	
ARISTEIA CAPITAL	370,695,000	0.7	1.78	2.05	6.15	2.61	6.15	6.01	4.59		4.51	12/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19		3.22	12/01/14
Excess			0.67	0.13	-1.25	0.49	-1.25	1.82	1.40		1.29	
ARISTEIA CO-INVEST	23,920,019	0.0	1.21	7.79	17.62	12.06	17.62	13.74			10.19	03/01/16
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40	4.18			4.60	03/01/16
Excess			0.10	5.87	10.21	9.94	10.21	9.55			5.59	



SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
EXODUS POINT	319,782,000	0.6	0.79	2.30	6.44	3.15	6.44				4.60	08/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40				3.53	08/01/18
Excess			-0.32	0.38	-0.97	1.03	-0.97				1.07	
RELATIVE VALUE STRATEGIES												
	1,188,091,019	2.1	1.37	2.25	7.08	3.37	7.08	4.74	3.17		3.36	01/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19		3.09	01/01/14
Excess			0.26	0.33	-0.32	1.25	-0.32	0.55	-0.01		0.26	
BLACKROCK ABSOLUTE RETURN STRUCTURAL	86,999,292	0.2	1.20	2.67	9.36	3.00	9.36				3.95	06/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40				3.37	06/01/18
Excess			0.09	0.75	1.96	0.88	1.96				0.58	
TOTAL ABSOLUTE RETURN	4,238,026,019	7.6	0.69	0.79	4.03	1.51	4.03	2.60	1.73		3.39	04/01/08
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>(20)</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19		3.17	04/01/08
Excess			-0.42	-1.13	-3.37	-0.61	-3.37	-1.58	-1.46		0.22	1.30
MULTI ASSET												
BRIDGEWATER ALL WEATHER	467,781,156	0.8	1.75	2.61	16.74	4.25	16.74	7.39	4.92		7.74	07/01/09
CUSTOM BRIDGEWATER BENCHMARK <sup>(40)</sup>			1.11	1.92	7.40	2.12	7.40	4.18	3.19		4.95	07/01/09
Excess			0.64	0.69	9.33	2.13	9.33	3.21	1.73		2.80	2.66
BLACKROCK CASH EQUITIZATION	188,026,635	0.3	2.41	5.24	22.23	6.14	22.23	9.23			10.68	12/01/16
FTSE 3 MONTH T-BILL			0.14	0.46	2.25	1.03	2.25	1.65			1.61	12/01/16
Excess			2.27	4.78	19.98	5.12	19.98	7.58			9.07	





**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<b>TOTAL MULTI ASSET</b>	655,807,791	1.2	1.94	3.35	15.87	4.71	15.87				6.10	07/01/18
TOTAL PLAN POLICY INDEX <sup>(41)</sup>			1.60	3.87	15.93	5.18	15.93				8.24	07/01/18
Excess			0.35	-0.52	-0.06	-0.47	-0.06				-2.14	
<b>CASH</b>												
MARYLAND MONEY MARKET ACCOUNT	601,330,052	1.1	0.18	0.49	2.31	1.07	2.31	1.86	1.25		0.72	01/01/11
FTSE 3 MONTH T-BILL			0.14	0.46	2.25	1.03	2.25	1.65	1.05		0.61	01/01/11
Excess			0.04	0.03	0.06	0.04	0.06	0.21	0.20		0.11	
SELF LIQUIDATING ACCOUNT	2,196,317	0.0	-1.80	0.08	12.01	3.65	12.01					06/01/84
<b>TOTAL CASH</b>	730,480,637	1.3	0.94	1.75	8.34	1.84	8.34	7.71	5.88	4.29	4.07	07/01/08
FTSE 3 MONTH T-BILL			0.14	0.46	2.25	1.03	2.25	1.65	1.05	0.56	0.56	07/01/08
Excess			0.80	1.29	6.09	0.81	6.09	6.06	4.83	3.73	3.51	
<b>TOTAL PLAN</b>	56,121,551,423	100.0	1.73	3.98	14.99	5.17	14.99	9.16	6.65	7.53	8.06	07/01/86
TOTAL PLAN POLICY INDEX <sup>(41)</sup>			1.60	3.87	15.93	5.18	15.93	9.03	6.68	7.03		07/01/86
Excess			0.13	0.11	-0.94	-0.01	-0.94	0.13	-0.03	0.50		
TOTAL PLAN CUSTOM STATIC INDEX <sup>(42)</sup>			1.65	3.95	15.98	5.21	15.98	9.12	6.83	7.30		07/01/08

# State Retirement Agency of Maryland Rates of Return - Periods Ending December 31, 2019



## ENDNOTES

- [1] Since 12/01/2016: 100% Russell 1000  
From 04/01/2013 to 11/30/2016: 100% Russell 3000
- [2] Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks
- [3] Since 11/01/2008: Benchmark is dynamically calculated using Average Balance (BMV+ Weighted Net Cash Flows) weights of the underlying portfolios and their corresponding indices. From 09/01/2008 - 10/31/2008: Benchmark was dynamically calculated based on the beginning weights of the underlying portfolios and their corresponding indices From 05/01/2008 - 08/31/2008: 11.1% S&P 500; 13.3% Russell 1000 Value; 33.3% Russell 1000 Growth; 16.7% Russell Mid Cap Growth; 25.6% Russell 2000 Value 11/01/2007 - 04/30/2008: 10.9% S&P 500; 13.1% Russell 1000 Value; 33.3% Russell 1000 Growth; 17.2% Russell Mid Cap Growth; 25.6 Russell 2000 Value Prior to 11/01/2007: 11% S&P 500; 13.1% Russell 1000 Value; 32% Russell 1000 Growth; 16.5% Russell Mid Cap Growth; 27.4% Russell 2000 Value
- [4] Since 07/01/2008: 100% Russell 3000  
From 01/01/2005 to 6/30/2008: 100% Dow Jones Willshire 5000  
Prior to 01/01/2005: 100% Russell 3000
- [5] From 11/01/2003: 100% of MSCI AC WORLD ex US (NET)  
From 07/01/2012: 100% of MSCI WORLD EX US (NET)
- [6] Since 04/01/2016: 100% MSCI WORLD EX US (NET).  
From 01/01/2013 to 03/31/2016: 100% MSCI AC World ex US Net.
- [7] Since 06/01/2016: 100% MSCI World Ex US IMI Net  
From 12/01/2008 to 05/31/2016: 100% MSCI All Country World ex US IMI Net
- [8] Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.
- [9] Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks. Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.
- [10] Since 11/01/2008: Benchmark is dynamically calculated using Average Balance (BMV+ Weighted Net Cash Flows) weights. Prior to 11/01/2008: 100% MSCI EAFE (net).  
Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.
- [11] Since 11/01/2015: 100% MSCI WORLD EX US (NET)  
From 07/01/2010 to 10/31/2015: 100% MSCI All Country World ex U.S.  
From 07/01/2009 to 06/30/2010: 100% MSCI All Country World ex U.S. IMI Net  
From 01/01/2003 to 06/30/2009: 100% MSCI All Country World ex U.S.  
Prior to 01/01/2003: 100% MSCI EAFE
- [12] Since 07/01/2010: 100% MSCI AC WORLD NET  
From 07/01/2009 to 06/30/2010: 100% MSCI ACWI IMI NET  
Prior to 07/01/2009: 100% MSCI AC WORLD NET
- [13] Since 10/01/2017: Weighted off Transitional Targets: 43.243% Russell 3000, 27.027% MSCI World ex U.S. (Net), 29.730% MSCI EM  
From 07/01/2016 to 09/30/2017: Weighted off Transitional Targets: 44.445% Russell 3000, 33.333% MSCI World ex U.S. (Net), 22.222% MSCI EM  
From 01/01/2016 to 06/30/2016: Weighted off Transitional Targets: 45.946% Russell 3000, 37.838% MSCI World ex U.S. (Net), 16.216% MSCI EM  
From 11/01/2015 to 12/31/2015: Weighted off Transitional Targets: 47.369% Russell 3000, 42.105% MSCI World ex U.S. (Net), 10.526% MSCI EM  
Prior to 11/01/2015: Benchmark is dynamically calculated using the weights of the US Equity, International Equity, and Global Equity aggregates and the corresponding asset class benchmarks
- [14] The Private Equity benchmark is the State Street Private Equity Index (1 quarter lag). However, in non-quarter end months, the actual Private Equity return will be applied. In the third month of the quarter, the return will be calculated so that when geometrically linked with months 1 and 2, the three month return equals the published SS PEI (1 quarter lag).



## ENDNOTES

- [15] Benchmark is a dynamic blend of the Public Equity Benchmark and the State Street Private Equity Index based off of sub-asset class weights used in the policy benchmark.
- [16] Since 10/01/2017: 66.67% Barclays US Government Long Bond Index, 16.67% Barclays US Investment Grade Corporate Index, 16.66% Barclays US Securitized Index  
 From 11/01/2015 to 09/30/2017: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index  
 Prior 07/01/2013: 100% Barclays Aggregate Bond
- [17] Since 10/01/2017: 66.67% Barclays US Government Long Bond Index, 16.67% Barclays US Investment Grade Corporate Index, 16.66% Barclays US Securitized Index  
 From 11/01/2015 to 09/30/2017: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
- [18] Since 10/01/2017: 66.67% Barclays US Government Long Bond Index, 16.67% Barclays US Investment Grade Corporate Index, 16.66% Barclays US Securitized Index  
 From 11/01/2015 to 09/30/2017: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index  
 From 07/01/2013 to 10/31/2015: 100% Barclays US Intermediate Aggregate Index  
 07/01/2009 to 06/30/2013: 100% Barclays Aggregate Bond  
 11/01/2003 to 06/30/2009: 100% Barclays US Universal Index  
 Prior to 11/01/2003: 100% Citigroup BIC
- [19] Since 10/01/2017: 66.67% Barclays US Government Long Bond Index, 16.67% Barclays US Investment Grade Corporate Index, 16.66% Barclays US Securitized Index  
 10/01/2015 to 09/30/2017: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index  
 07/01/2009 to 06/30/2013: 100% Barclays Aggregate Bond Index  
 Prior to 07/01/2009: 100% Barclays US Universal Index
- [20] Since 11/01/2015: HFRI Fund of Funds Conservative + 100 bps.  
 From 07/01/2014 to 10/31/2015: HFRI FOF: Conservative Index.  
 From 07/01/2008 to 06/30/2014 benchmark was HFRI Fund of Funds index.  
 Prior to 07/01/2008 benchmark was the Citigroup 3-Month T-bill + 500 bps.
- [21] Since 10/01/2017: 100% Barclays US Investment Grade Corporate Index  
 From 12/01/2015 to 09/30/2017: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index  
 From 07/01/2013 to 11/31/2015: 100% Barclays US Intermediate Aggregate Index  
 Prior 07/01/2013: 100% Barclays Aggregate Bond
- [22] Since 10/01/2017: 66.67% Barclays US Government Long Bond Index, 16.67% Barclays US Investment Grade Corporate Index, 16.66% Barclays US Securitized Index  
 From 11/01/2015 to 09/30/2017: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index  
 From 07/01/2013 to 10/31/2015: 80% BC Aggregate Intermediate, 20% BC Global Aggregate 1-10 Year Hedged  
 From 07/01/2010 to 06/30/2013: 80% BC Aggregate, 20% BC Global Bond Aggregate Hedged  
 From 01/01/2010 to 06/30/2010: 80% BC Global Bond Aggregate, 20% BC Global Bond Aggregate Unhedged  
 From 07/01/2009 to 12/31/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks  
 Prior to 07/01/2009: Benchmark is BC US Universal
- [23] Benchmark is dynamically calculated based on the Average Balance (BMV + Weighted Net Cash Flows) weights of the underlying portfolios and their corresponding indices
- [24] Since 11/01/2015: 66.67% Barclays US Government Long Bond Index, 16.67% Barclays US Investment Grade Corporate Index, 16.66% Barclays US Securitized Index  
 From 11/01/2015 to 09/30/2017: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index  
 From 07/01/2013 to 10/31/2015: 100% Barclays US Intermediate Aggregate Index  
 Prior 07/01/2013: 100% Barclays Aggregate Bond
- [25] As of 12/01/2012: 100% of Barclays US TIPS Index, B Series  
 From 02/01/2006 to 11/30/2012: 100% of Barclays Global Inflation Linked:US TIPS, L Series

## ENDNOTES

- [26] Since 11/01/2015: 100% Barclays US TIPS Index  
From 12/01/2012 to 10/31/2015: 50% Barclays Global Inflation Linked; US TIPS; 50% Barclays World Inflat-Linked Bond Index  
Prior to 11/30/2012: 65% Barclays Global Inflation Linked; US TIPS; 35% Barclays World Inflat-Linked Bond Index
- [27] Since 10/01/2017: 53% Barclays Long-Term Government, 13% Barclays Securitized, 13% Barclays Corporate, 21% Barclays U.S. TIPS  
From 07/01/2016 to 09/30/2017: 48% Barclays Long-Term Government, 14% Barclays Securitized, 14% Barclays Corporate, 24% Barclays U.S. TIPS  
From 11/01/2015 to 06/30/2016: 50% Barclays Long-Term Government, 15% Barclays Securitized, 15% Barclays Corporate, 20% Barclays U.S. TIPS  
From 07/01/2013 to 10/31/2015: 80% BC Aggregate Intermediate, 20% BC Global Aggregate 1-10 Year Hedged  
From 07/01/2010 to 06/30/2013: 80% BC Aggregate, 20% BC Global Bond Aggregate Hedged  
From 01/01/2010 to 06/30/2010: 80% BC Aggregate, 20% BC Global Bond Aggregate Unhedged  
From 07/01/2009 to 12/31/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks  
Prior to 07/01/2009: Benchmark is BC US Universal.  
Formerly named "Custom Fixed Income Benchmark" prior to 11/01/2015.
- [28] As of 01/01/2010 all high yield and convertible managers were moved out of the Fixed Income asset class and into the Credit/Debt asset class. Historical returns for high yield and convertible managers remain in Fixed Income composite.
- [29] 80% Barclays US High Yield, 20% S&P/LSTA Leveraged Loan
- [30] Since 11/01/2015: 80% Barclays US High Yield, 20% S&P/LSTA Leveraged Loan.  
From 07/01/2013 to 10/31/2015: 62.5% Barclays US High Yield, 25% Barclays Credit, 12.5% S&P/LSTA Leveraged Loan.  
From 01/01/2010 to 06/30/2013: 50% Barclays Credit, 50% Barclays Corp High Yield.  
From 03/01/2009 to 12/31/2009: 75% Barclays Credit, 25% Barclays Corp High Yield.
- [31] 50% BBG Barc EM Hard Cur Agg: Sovereign/50% BBG Barc EM USD Aggregate Corporate TR
- [32] Since 10/01/2017: 100% Bloomberg EMLocal Govt -30 BPS  
Prior to 10/01/2017: 100% JP Morgan GBI EM Global Diversified (G)
- [33] Since 10/01/2017: 50% BBG Barc EM Local Govt -30bps, 25% BBG Barc EM Hard Cur Agg: Sovereign, 25% BBG Barc EM USD Aggregate Corporate TR.  
From 11/01/2015 to 09/30/2017: 50% JP Morgan GBI EM Global Diversified, 25% JP Morgan EMBI Global Diversified, 25% JPMorgan CEMBI Broad.  
Prior to 11/01/2015: 100% JP Morgan GBI EM Global Diversified.
- [34] Since 10/01/2017: 78% US Credit Benchmark, 22% non-U.S. Credit Benchmark.  
From 01/01/2016 to 09/30/2017: 67% US Credit Benchmark, 33% non-U.S. Credit Benchmark.  
From 11/01/2015 to 12/31/2015: 75% US Credit Benchmark, 25% non-U.S. Credit Benchmark.  
From 07/01/2013 to 10/31/2015: 50% BC High Yield / 20% BC Credit / 20% JP Morgan GBI EM Global Diversified/ 10% S&P/LSTA Leveraged Loan Index  
From 01/01/2010 to 06/30/2013: 50% BC Credit / 50% BC High Yield  
Prior to 01/01/2010: 75% BC Credit / 25% BC High Yield
- [35] The Private Real Estate benchmark is the NCREIF ODCE (1 quarter lag) since 07/01/2013. However, in non-quarter end months, the actual Maryland Private Real Estate return will be applied. In the third month of the quarter, the return will be calculated so that when geometrically linked with months 1 and 2, the three month return equals the published NCREIF ODCE (1 quarter lag).  
Prior 07/01/2013, the Private Real Estate benchmark is the NCREIF PROPERTY INDEX QTR LAG.
- [36] Since 11/2007 benchmark is 100% FTSE EPRA NAREIT Developed Ex US (Net) index. Prior to 11/2007, the net version of the index was calculated by and provided to State Street by MSIM



**ENDNOTES**

- [37] Since 07/01/2019, 100% NCREIF ODCE (one qtr lag).  
 Prior to 07/01/2019, a static blend of 85% NCREIF ODCE (one qtr lag) and 15% FTSE EPRA/NAREIT Developed Net Index.  
 Prior to 07/01/2016, a dynamic blend of the NCREIF ODCE (one qtr lag), and the FTSE EPRA/NAREIT Developed Net Index.  
 Prior to 05/01/2014, a dynamic blend of the Wilshire RESI, NCREIF ODCE (one qtr lag), and the MSIM Custom EPRA/NAREIT Global ex US  
 Prior to 07/01/2013, a dynamic blend of the Wilshire RESI, NCREIF Property (one qtr lag), and the MSIM Custom EPRA/NAREIT Global ex US  
 Prior to 07/01/2008, 50% Wilshire RESI & 50% NCREIF Property (one qtr lag)
- [38] Since 10/01/2017, 60% S&P Global Natural Resources Index (Net); 40% DJ Brookfield Global Infra Comp.  
 From 07/01/2016 to 09/30/2017, 75% S&P Global Natural Resources Index (Net); 25% DJ Brookfield Global Infra Comp.  
 From 11/01/2015 to 06/30/2016, 100% of CPI + 5%; 10% Max.  
 From 08/01/2009 to 10/31/2015, 100% of CPI + 5%; 8% Max.
- [39] Since 10/01/2017, Benchmark is dynamically calculated using the beginning market values of the Real Estate and Natural Resource/Infrastructure sub-asset classes and their corresponding benchmarks.  
 From 11/01/2015 to 09/30/2017, Benchmark is dynamically calculated using the beginning market values of the Real Estate, Commodities and Natural Resource/Infrastructure sub-asset classes and their corresponding benchmarks.  
 From 12/01/2012 to 10/31/2015, 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max, 60% - 50% BC US TIPS Index/50% BC World Inflat-Linked Bond Index  
 From 07/01/2011 to 11/30/2012, 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max, 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index  
 From 07/01/2009 to 06/30/2011, 20% - DJ UBS Commodities Index (Total Return), 20% - CPI + 5%; 8% Max, 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index  
 07/01/2008 to 06/30/2009, Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks Prior to 07/01/2008, 100% Barclays US TIPS Index  
 Prior to 07/01/2008, 100% Barclays US TIPS Index  
 Formerly named "Custom Real Return Benchmark" prior to 11/01/2015.
- [40] Since 07/01/2014 Benchmark is 100% of Custom Absolute Return Benchmark.  
 From 07/01/2011 to 06/30/2014 Benchmark is composed of 100% 3 month T-Bill + 6.5%  
 From 07/01/2009 to 06/30/2011 Benchmark is composed of 75% Barclays Capital US TIPS, 10% DJ-AIG Commodities Total Return Index and 15% MSCI ACWI.
- [41] Since 07/01/2008: Calculated monthly using transitional weights and asset class benchmarks. Prior to 07/01/2008: MSRA TOTAL PLAN STATIC POLICY.
- [42] Calculated monthly using the strategic target weights and asset class benchmarks.

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EXHIBIT C

Andrew Palmer  
Chief Investment Officer

Executive Associate II  
Antionette Butcher

Associate  
Lever Hewlett

Deputy Chief Investment Officer  
Robert Burd

Senior Compliance Manager  
Toni Voglino

(vacant)

Admin. & Accounting  
Managing Director,  
Investment Operations  
(vacant)

Private Equity  
Managing Director  
David Feiguson

Real Assets  
Managing Director  
Stephen Reilly

Public Equity  
Managing Director  
Lawrence Katsafanas

Quantitative Strategies  
Managing Director  
Gregory Kasten

Rates/Credit  
Managing Director  
Dimitri Grechenko

Director-Accounting  
Victor Adekoye

Acct. Lead Specialized  
Charles Lee

Acct. Lead Specialized  
Jane Daniel

Director-Investment  
Administration  
Colleen Bower

Assistant Director  
Sathy Kavarakudy

Assistant Director  
Philip Tyler

Senior Portfolio Manager  
Kyongdo Min

Senior Portfolio Manager  
Stephen Muturi

Senior Portfolio Manager  
Dana Johns

Senior Investment Analyst  
Michael McCord

Senior Investment Analyst  
(vacant)

Senior Portfolio Manager  
Faina Kashteyan

Senior Portfolio Manager  
Ratnakar Kota

Senior Investment Analyst  
Daniel Schick

Senior Portfolio Manager  
Anish Bedi

Senior Risk Manager  
Frederick "Beau" Smith

Senior Portfolio Manager  
Eric Farris

Senior Portfolio Manager  
Ashu Pal

Senior Portfolio Manager  
Michael Fang

Investment Division

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