

## INVESTMENT COMMITTEE MEETING - CONFERENCE CALL

Maryland State Retirement and Pension System  
120 E. Baltimore Street, 16th Floor Board Room  
Baltimore, Maryland 21202

Tuesday, 9/22/2020  
9:30 AM - 1:00 PM ET

immediately following the Corporate Governance Committee meeting, but not earlier than 9:30 a.m.

- ACTION ITEM** 1. Ratification of the Open Session Minutes **9:30 a.m.**  
The Open Session Minutes of the June 16, 2020 Investment Committee meeting will be considered  
*June 16 2020\_OPEN SESSION minutes - Page 4*

**RATIFY..... AMEND.....DEFER**

- ACTION ITEM** 2. Investment Committee Roles and Responsibilities **9:35 a.m.**  
The committee will review its roles and responsibilities and consider the proposed updates to the committee's charter as part of the triennial review.  
*09-22-2020\_ Proposed Changes to Investment Committee Charter - Page 14*

**APPROVE.....DISAPPROVE.....DEFER**

- INFORMATION** 3. Gold Option for ORP **9:50 a.m.**  
FIRM will present an analysis of gold-related mutual funds, and other diversifying strategies, for possible inclusion in the core line-up of the ORP. Report is attached in EXHIBIT BOOK.  
*FIRM Reportplacehldermemo - Page 18*

- ACTION ITEM** 4. Investment Policy Manual **10:05 a.m.**  
The Committee will be asked to approve the recommended changes to the IPM to codify changes approved by the Board in the June meeting.  
*IPM Proposed Change - Page 20*

**APPROVE.....DISAPPROVE.....DEFER**

- ACTION ITEM** 5. Investment Division Fiscal Year 2022 Budget **10:20 a.m.**  
The Committee will be asked to approve the FY2022 Investment Division budget. Preliminary estimates that may be updated in February.  
*Investment Division Fiscal Year 2022 Budget - Page 24*

**APPROVE.....DISAPPROVE**

- INFORMATION** 6. Report from CIO **10:50 a.m.**  
Staff will present an update on Key Performance Objectives, division

activities, 2Q20 investment performance and a summary of portfolio characteristics.

*CIO's Report Openplaceholder memo - Page 30*

*MSRPS\_June 30 2020 CIO Portfolio Review and Update - Page 32*

**INFORMATION** 7. Meketa Reports **11:20 a.m.**

Meketa Investment Group will present a June 30, 2020 performance and market update. Report is attached in EXHIBIT BOOK.

*Meketa Report placeholder memo - Page 74*

**INFORMATION** 8. The Townsend Group Report **11:50 a.m.**

The Townsend Group will give an update on the Real Estate Program. Report is attached in EXHIBIT BOOK.

*Townsend Group Report placeholder memo - Page 76*

**INFORMATION** 9. Committee Led Discussion **12:10 p.m.**

The Committee members will discuss new items or other issues of their choosing.

*Committee Led Discussion memo - Page 78*

**INFORMATION** 10. Investment Reports **12:25 p.m.**

The Committee will receive the following reports:

- > State Street Performance Reports
  - > Terra Maria Performance Reports
  - > Private Markets Performance Reports
  - > Securities Lending Report
  - > TUCS Report
  - > Division's FY21 Travel Plan - Update
  - > Quarterly ORP Performance Report
  - > OPEB-PHBT Update
  - > New Hire Manager Report
- On the Directors Desk:
- > Broker Commission Reports
  - > Quarterly Manager Fee Report

*State Street Performance Reports - Net Mgr \_ Updated 09-03-20 - Page 80*

*Terra Maria Performance - Net Mgr - Page 122*

*Private Markets Performance Reports - Page 132*

*Securities Lending Report - Page 146*

*TUCS Report - Page 148*

*Division's FY21 Travel Plan - Update - Page 154*

*Quarterly ORP Performance Report - Page 156*

*OPEB-PHBT Update\_ Revised 09-14-20 - Page 166*

*New Hire Manager Report - Page 170*

**ACTION ITEM** 11. Motion by the Investment Committee to meet in Closed Session **12:30 p.m.**

for the purposes of:

(a) reviewing the closed session Investment Committee minutes, pursuant to General Provisions Art., § 3-103(a)(1)(i), the exercise of an administrative function, and General Provisions Art., § 3-305(b)(13), to comply with a specific statutory requirement that prevents public disclosure, namely, General Provisions Art., § 3-306(c)(3)(ii), requiring that the minutes of a closed session be sealed and not be open to public inspection; and

(b) conducting an evaluation of the CIO's performance pursuant to General Provisions Art., Section 3-305(b)(1), consideration of a personnel matter.

**APPROVE.....DISAPPROVE**

**CLOSED SESSION**

**ACTION ITEM** 12. Ratification of the Closed Session Minutes **12:35 p.m.**  
The Closed Session minutes of the June 16, 2020 Investment Committee meeting will be considered.

**RATIFY..... AMEND.....DEFER**

**ACTION ITEM** 13. CIO Performance Evaluation **12:40 p.m.**

**APPROVE.....DISAPPROVE**

**ACTION ITEM** 14. Motion by Investment Committee to adjourn closed session and return to open session **12:55 p.m.**

**APPROVE.....DISAPPROVE**

**OPEN SESSION**

**ACTION ITEM** 15. Motion by the Investment Committee to adjourn meeting **1:00 p.m.**

**APPROVE.....DISAPPROVE**

**INFORMATION** 16. NEXT INVESTMENT COMMITTEE MEETING - NOVEMBER 17, 2020 @ 9:00 a.m.

THE INVESTMENT COMMITTEE  
OF THE  
MARYLAND STATE RETIREMENT AND PENSION SYSTEM

MINUTES OF OPEN MEETING

June 16, 2020

The Investment Committee convened on Tuesday, June 16, 2020 at 9:08 a.m., via video-conference call with the host site at the Maryland State Retirement Agency, SunTrust Building, 120 East Baltimore Street, 16<sup>th</sup> Floor, Board Room, Baltimore, Maryland.

Committee Members	Michael K. Barry	Sheila Hill
Attending:	Thomas Brandt	F. Patrick Hughes, Chairman
	David Brinkley	Nancy K. Kopp
(1) On Site	Eric Brotman	Richard Norman
	Jamaal R. Craddock	Douglas Prouty
	Peter Franchot	Michael J. Stafford, Jr.
	Kenneth Haines	Lamont Tarbox
	David Hamilton	
	Linda A. Herman, Vice-Chair	
Also Attending:	Victor Adekoya	Ratna Kota
	Anish Bedi	Charles Lee
	Frank Benham (Meketa)	Michael McCord
	Robert Burd, Deputy CIO (1)	Matthew Michaels (Summer Intern)
	Antionette Butcher	Kyongdo Min
	Austin Cline (Summer Intern)	Matt Mullarkey (Aksia)
	Rachel Cohen, OAG	Mary Mustard (Meketa)
	Melody Countess	Stephen Muturi
	Mike Fang	Runya Nie (FIRM)
	Eric Farls	Kyle Olson (NFP)
	David Ferguson	Ashu Pal
	Kellen Foley (NFP)	Andrew Palmer, CIO
	Anne Gawthrop	Ishwarya Parameshawaran (FIRM)
	Michael Golden	Stephen Reilly (1)
	Dimitri Grechenko	David Rongione, Internal Auditing
	Alex Harisiadis, OAG	Dan Schick
	John Harris (Meketa)	Jody Shaw, OAG
	Philip Harris (FIRM)	Frederick "Beau" Smith
	Justin Hayes	Brad Taylor
	Levar Hewlett	Bill Tugaw (NFP)
	Angie Jenkins (1)	Toni Voglino
	Dana Johns	Jennifer Wildeman (Aksia)
	Faina Kashtelyan	Rui Zhang (FIRM)
	Greg Kasten	Anne Shelton
	Larry Katsafanas	
	Dean Kenderdine, Executive Director (1)	

Mr. Hughes, Chairman, called the Investment Committee meeting to order at 9:08 a.m.

Treasurer Kopp introduced the new Board of Trustee member (Thomas Brandt), who replaced Charles Johnson.

**Item 1: Open Session Minutes**

On a motion made by Mr. Brotman and seconded by Mr. Norman, the Investment Committee approved the May 19, 2020 open meeting minutes.

**Item 2: Optional Retirement Program Review**

Mr. Burd gave a brief explanation of the ORP, a 403(b) defined contribution retirement plan for eligible employees of Maryland's higher education institutions. The program's two approved vendors are Fidelity and TIAA-CREF. The System's ORP consultants, FIRM and NFP (sub-contractor), proposed the following changes based on their plan review, which they and Mr. Burd summarized for the Committee.

- Fidelity Recommendations
  - Change share class for Vanguard FTSE Social Index Fund from VFTAX to VFTNX to reduce expenses.
  - Replace AQR Global Equity Fund with Victory RS Global Fund for performance reasons.
  - Replace the Fidelity Freedom Target Date Series (active) with the Fidelity Freedom Target Date Index Series (passive) to improve performance and reduce expenses.
  - For all changes, map existing assets and future contributions.
- TIAA Recommendations
  - Change the share class for the Vanguard Institutional Index Fund from existing ticker VINIX to new ticker VIIIIX to reduce expenses.
  - Replace the existing CREF Stock Account with the Hartford Core Equity Fund (HAITX) for performance reasons.
  - Replace the existing CREF Growth Account with T. Rowe Price Institutional Large Cap Growth Fund (TRLGX) for performance reasons.
  - Replace the CREF Global Equities Account with the Victory RS Global Fund (RGGRX) for performance reasons.
  - For all changes, map existing, eligible assets and future contributions.

On a motion made by Mr. Stafford and seconded by Mr. Brotman, the Investment Committee unanimously approved the recommendation.

Mr. Brotman noted the results of the satisfaction survey. The ORP consultants explained that the survey was of benefits coordinators at each of the ORP's employing institutions. The consultants indicated that they had already discussed the survey results with the benefits' coordinators, and that the results were consistent with prior surveys.

Ms. Herman asked the percentage of assets participants may direct to their self-directed brokerage accounts. Mr. Burd responded that he believed the maximum was 90%, but would confirm this level as a follow-up item. Ms. Herman noted that some defined contributions have participants sign an acknowledgement form stating that the participant is responsible for the investment choices made within the self-directed brokerage account and that the Board does not evaluate or review the holdings in the self-directed brokerage accounts. She asked if the Board was requiring participants to sign such an acknowledgement and offered to send the sample Montgomery County is currently using. Staff noted they would evaluate the possibility of using an acknowledgement form.

Mr. Stafford made a motion for the consultants to present additional options that could potentially further diversify the funds available to ORP participants in the core investment line-up. The motion requested that the consultants return with an analysis of mutual funds focused on gold related stocks, and other potential diversifying strategies for the Board's consideration. Ms. Herman seconded the motion. The motion was approved by Mr. Brinkley, Treasurer Kopp, Comptroller Franchot, Mr. Haines, Ms. Hill, Mr. Craddock,

Mr. Norman, Mr. Hamilton, Ms. Herman, Mr. Brandt, Mr. Stafford and Mr. Barry. Voting against the motion were Mr. Prouty, Mr. Brotman, Mr. Tarbox and Mr. Hughes.

Mr. Brandt noted that the ORP is very similar to the State supplemental retirement plans and suggested that the various staff, Boards and consultants could share information.

### **Item 3: Asset Allocation and Benchmark Review**

Mr. Benham gave the Board an overview of public equity market, which has recovered in the U.S., and Federal government actions that have been implemented to re-energize the economy. Treasurer Kopp mentioned that most of the funds allocated by the Federal government had not been distributed yet. Mr. Benham agreed and said that they had not yet seen a recovery in the economy but that the public markets were moving in anticipation of the government stimulus. Mr. Benham continued to explain that short term and long term rates in the U.S. had declined across the yield curve and were likely to remain that way for an extended time period. Inflation has been around 2.0% over the past two decades and that was also likely to remain subdued.

Meketa did not make any recommended changes to the System's asset allocation policy. Mr. Benham indicated they would come back over the course of the year to review various themes that could potentially improve the risk-adjusted returns of the System's assets. These themes will include a further analysis of the implementation of private markets, the use of plan level leverage, climate change as an asset allocation factor and the convexity of the portfolio.

Meketa made two recommendations for benchmark changes. For real estate, they recommended changing the benchmark from NCRIF ODCE gross (one quarter lagged) to NCREIF ODCE net + 40 bps. For local currency emerging market debt, they recommended changing the benchmark from Bloomberg Barclays Emerging Markets Local Currency Government Index -30 bps to Bloomberg Barclays Emerging Markets Local Currency Liquid Government Index – 30 bps.

For real estate, Meketa noted that many peer plans used NCREIF ODCE net, with some using a plus spread approach. They also thought that the gross index presented an unreasonably high hurdle given that on average this approach has a 100 bps spread over the net version. Meketa believes that the NCRIF ODCE net benchmark is appropriate for the core portfolio and the NCRIF ODCE net + 200 is appropriate for the non-core real estate allocation.

For emerging markets debt, Meketa explained that the proposed benchmark was very similar to the current benchmark, but has two distinct differences. The first difference is that the proposed benchmark's holdings represent the more liquid portion of the market, which better aligns with the System's opportunity set. The second difference is that the country allocations are capped at 10%, which creates a more diversified index. The countries most affected by the cap are China and South Korea. Meketa recommended subtracting 30 bps from the benchmark return to account for taxes and transaction costs that are not captured by the index but are incurred by U.S. investors.

Mr. Palmer commented that for the System to begin the year with an unlagged real estate benchmark, the current fiscal year will make the adjustment to remove the lag but will retain the existing gross benchmark. State Street currently holds the System's benchmark open long enough to capture the unlagged benchmark as it waits for final adjustments to the absolute return benchmark.

Mr. Stafford asked for staff to provide him with the fees for the real estate portfolio.

Ms. Herman asked for additional information as to the use of the blended benchmark for real estate. Mr. Palmer commented that the System has always had a blended real estate benchmark, and that the Board has not made a separate allocation to closed-end private real estate funds. Ms. Mustard said that Meketa had looked at non-core benchmarks, but in the end, decided to recommend a reasonable spread over the NCRIF

ODCE net. Ms. Herman noted that since the private real estate values (in State Street) are lagged, but the public real assets are not, how that could impact the comparability to the benchmark. Ms. Mustard replied that the core values (85% of the assets) would be current going forward, but the non-core piece would still lag. She added that while the spread method was not perfect, it represented a reasonable and operationally simple improvement over the current method.

A motion to approve the benchmark changes was made by Mr. Stafford and seconded by Mr. Prouty. The Investment Committee unanimously approved the recommendations from Meketa summarized above.

Meketa went on to discuss one of their investment themes, private markets. Currently, the System has approximately 27% of its assets in illiquid investments across private equity, private debt, real estate, natural resources & infrastructure and absolute return. Adding exposure to private equity should increase the expected return of the portfolio. Adding to private real estate and infrastructure has the potential to both increase expected return and provide added diversification from equity risk, depending on how they are implemented. Private markets represent an area where Meketa feels that Staff has the opportunity to generate the most alpha via fund and manager selection, noting staff's strong track record of adding value in private equity.

Meketa also outlined the potential risks associated with increasing private markets exposure. Overall, fees will increase. Given the size of the System, there are some limits to its ability to deploy a larger amount of capital in private markets. Private markets make the portfolio more illiquid, which may inhibit the System from being able to meet its obligations in a worst-case scenario. Illiquid assets cannot be rebalanced quickly, which can lead to unintended deviations from the policy benchmark.

Meketa and Staff studied the impact of illiquid assets and rebalancing and found that it did not have a meaningful impact on long-term returns.

Mr. Stafford asked what the short term returns would be for private equity. Mr. Benham responded that over the long term they expect a 300 bps premium over public markets for private equity. They believe this comes from higher leverage, having a controlling interest, and from the investments working in a less efficient market.

Ms. Herman requested Meketa provide the impact on risk and return on the portfolio if private markets were increased. She also requested Meketa provide a peer ranking of the System's private equity portfolio.

Mr. Palmer provided context for the consideration of additional private assets and leverage, two of the discussion topics planned for the year. He referred to the February meeting presentation by Meketa that showed the best risk adjusted plans were characterized by either high allocations to private assets, which improved returns and lowered reported volatility, or plan level leverage which produced returns similar to the System but at lower volatility. Working toward next year's asset allocation review, the Committee will have the opportunity to consider both options.

#### **Item 4: Report from CIO**

Mr. Palmer provided follow up on some topics from previous meetings:

- Mr. Palmer gave an update to the Board about the System's securities lending program. A study of the System's program for the first quarter, showed that the System had a 27% utilization rate vs. 7% for the peer group and the System made \$5.5 million in revenue versus \$2.5 million for the peer group (adjusted for size and composition).
- He noted that in response to a request from the Committee, staff had included an estimate of the costs of internal management in the quarterly fee report.

Mr. Palmer gave an update on the internal management program. He noted that staff is implementing a trade order management system, and expects it to be operational this summer. Also, staff has recently begun internal management of a \$1.3 billion long government bond portfolio.

He clarified that the System's next Investment Committee meeting would be on September 22, 2020, not the 15<sup>th</sup> as noted in the original Agenda, which is now revised.

Mr. Palmer went on to discuss the plan's recent performance. Assets fell by 8.3% during the first quarter with asset class returns varying widely. Equities were down 20%, but fixed income was up 10%. Private market performance is lagged for the quarter, so results will be known next quarter. Over the last five years, the plan's performance was below the target rate of return. Only private equity and real estate hit the actuarial rate of return. Over the last three months, the delayed pricing of private assets in natural resources and credit portfolios overstated the relative performance of those asset classes. Within the infrastructure allocations, MLPs did not perform well. However, Mr. Palmer noted that the Board's 2015 change to focus the rate sensitive portfolio on long government bonds has improved the overall System's performance by 75 bps per year.

Ms. Herman asked about the performance of the absolute return portfolio for the quarter. Staff explained that misfit effect relating to manager benchmarks that were different from the asset class benchmark led to the difference.

Mr. Palmer reviewed the tear sheets for the performance in April and May, citing that the public equity markets had recovered much of their earlier losses, bringing the overall fund to a positive return of 1.65% for the year through May, which did not quite keep up with the outflows for benefits.

#### **Item 5: Absolute Return Review**

Mr. Kasten began with a summary of the absolute return portfolio. He discussed the asset class's objectives, performance, restructuring and current initiatives.

Ms. Herman questioned the turnover in the portfolio in response to Staff's comments that the portfolio was improving. Mr. Kasten responded that staff had made many tweaks to the portfolio to diversify the performance, which should result in a portfolio with lower volatility and beta.

Ms. Herman asked if the portfolio could achieve a cash plus 4% return target. Mr. Palmer responded that neither the portfolio nor the benchmark had achieved that return target, but the changes to the portfolio over the last two years have improved his confidence in achieving that goal.

Aksia presented a brief market overview and a review of the absolute return program. Aksia noted that for Q1 2020, the multi-strategy, relative value and event driven sectors outperformed Aksia's peer universe. Only the tactical trading sector underperformed. Over the one and three-year time periods, the relative value and multi-strategy sectors had outperformed their respective HFRI benchmarks. Aksia highlighted the portfolio changes over the past three years and noted the portfolio continues to get more diverse. Historically, the portfolio had been dominated by macro/CTA (commodities trading advisors), multi-strategy and fund of funds, but has been transitioning to more opportunistic strategies that should be able to participate in areas where they have recently seen significant market dislocation. Aksia also showed an average of the System's management fees and performance fees, which were below their universe of monitored funds. Aksia made some suggestions regarding some additional strategies that staff may want to add to the portfolio.

Treasurer Kopp asked why the portfolio did not have any long-short equity managers. Mr. Palmer responded that these strategies have significant exposure to stocks, and that the System had equity exposure elsewhere. Staff did not want this portfolio to have a significant amount of equity exposure. Staff has been



adding risk to the portfolio without adding long-short equity strategies, but was considering adding a modest amount of long-short strategies to help achieve the cash +4% long term target.

#### **Item 6: Meketa Reports**

Meketa reviewed the System's performance. They mentioned that private credit and energy had been significant outperformers in the short term because of their lagged performance. Meketa highlighted the System's performance vs. the InvMetrics DB greater than \$1 billion peer group, which showed that the System's performance was in the fifth percentile for the first quarter and one year. In the same database for the greater than \$25 billion peer group, the System was in the 17<sup>th</sup> percentile for the quarter and 32<sup>nd</sup> quartile for the 1 year.

#### **Item 7: Review and Revise Criteria for Frequency of Asset Allocation Reviews**

Mr. Palmer presented a recommendation of the Ad Hoc Committee on Governance to consider lengthening the interval between asset liability studies and evaluating the strategic asset allocation. The recommendation would increase the time in between asset allocation studies to every 5 years. Mr. Palmer anticipates that the study will be scheduled every four years to provide time for an extended discussion.

In response to the recommendation on moving the studies to once every 5 years, Ms. Herman asked Meketa whether there were significant changes to their return assumptions over the last several years that might support conducting valuations more frequently than every 5 years. Mr. Benham responded that there has been a gradual decline in return assumptions and sometimes there has been some market noise in their assumptions.

The recommendation provided for an annual review of the asset allocation and a number of potential triggers for conducting a comprehensive study.

A motion to approve was made by Mr. Prouty and seconded by Mr. Haines, the Investment Committee unanimously approved the recommendation.

#### **Item 8: Review of the Criteria for the Chief Investment Officer's Evaluation**

Mr. Kenderdine asked the Investment Committee to approve the content and questions of the CIO's evaluation.

Ms. Herman asked if there had been any recent changes to the evaluation. Mr. Kenderdine said there had not been any recent changes. Ms. Herman asked if there could be a section added to the leadership section relating to internal management. The Investment Committee agreed and Mr. Kenderdine will draft some recommendation language and circulate it to the Committee.

#### **Item 9: Investment Reports**

The Committee received the following investment reports:

- State Street Performance Reports
- Terra Maria Performance Reports
- Private Markets Performance Reports
- Securities Lending Report
- TUCS Report
- Division's FY20 Travel Plan - Update
- Quarterly ORP Performance Report
- OPEB-PHBT Update
- New Hire Manager Report
- Monthly Fund Summary Tearsheet

On the Directors Desk:

- Broker Commission Reports
- Quarterly Manager Fee Report

**Presentation of Resolution**

On behalf of the Board of Trustees, Treasurer Kopp wanted to present Mr. Stephen Kitsoulis with a resolution of the Board of Trustees in recognition of his years of service as a member of the Investment Committee. Mr. Kenderdine read the following resolution.

WHEREAS, Stephen M. Kitsoulis was appointed in 2017 to serve as a Public Advisor to the Investment Committee of the Board of Trustees of the Maryland State Retirement and Pension System;

WHEREAS, Stephen M. Kitsoulis, through his investment acumen and knowledge, keen market insight and unbiased advice, contributed greatly to the mission of the System's Investment Committee and earned him the appreciation and respect of his fellow committee members and investment staff;

WHEREAS, Stephen M. Kitsoulis, during his three years of dedicated service, provided valuable guidance to the committee on ways to improve governance and increase productivity of Investment Committee meetings;

WHEREAS, Stephen M. Kitsoulis arrived to every Investment Committee meeting fully prepared, having thoroughly read all meeting materials and formulated questions for consideration by the Investment Committee and investment staff;

WHEREAS, Stephen M. Kitsoulis was ever collegial, respectful of presenters, appreciative of staff and attentive to the comments of his fellow committee members;

WHEREAS, Stephen M. Kitsoulis performed all his responsibilities in an exemplary and professional manner and, by virtue of his commitment to public service, courteous nature and wise approach to fund management, will be missed by the Board of Trustees and System staff;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Trustees of the Maryland State Retirement and Pension System, that deep appreciation and gratitude are hereby expressed to Stephen M. Kitsoulis for his service that reflects great credit on the Maryland State Retirement and Pension System and the people of Maryland.

BE IT FURTHER RESOLVED that the Board of Trustees hereby records and gratefully acknowledges his valued service by the presentation of this resolution.

The resolution will be sent to Mr. Kitsoulis as he was not present for meeting.

Treasurer Kopp welcomed Anne Shelton who is the new appointed Public Advisor and who will be replacing Mr. Kitsoulis.

**Item 10: Motion by the Investment Committee to meet in Closed Session**

Ms. Herman requested that the Committee convene in closed session to discuss the performance and portfolio investments of a specific fund manager.

On a motion made by Treasurer Kopp and seconded by Mr. Brotman, the Investment Committee voted without objection to meet in Closed Session at 12:58 p.m. for the purposes of:

- (a) Reviewing the closed session Investment Committee minutes, pursuant to General Provisions Art., § 3-103(a)(1)(i), the exercise of an administrative function, and General Provisions Art., § 3-305(b)(13), to comply with a specific statutory requirement that prevents public disclosure,

- namely, General Provisions Art., § 3-306(c)(3)(ii), requiring that the minutes of a closed session be sealed and not be open to public inspection; and
- (b) Discussing performance of a specific manager, and details regarding the portfolio investments of the manager, pursuant to Md. Code Ann., General Provisions Sec. 3-305(b)(13), to comply with a specific law that prevents public disclosure about a particular proceeding or matter, and General Provisions Sec. 4-335, to protect confidential commercial information provided to the System by a third party.

**CLOSED SESSION**

Committee Members Attending:	Michael K. Barry Thomas Brandt David Brinkley Eric Brotman Jamaal R. Craddock Peter Franchot Kenneth Haines David Hamilton Linda A. Herman, Vice-Chair	Sheila Hill Nancy K. Kopp Richard Norman Douglas Prouty Anne Shelton Michael J. Stafford, Jr. Lamont Tarbox
(1) On Site		
Also Attending:	Frank Benham (Meketa) Robert Burd, Deputy CIO (1) Antionette Butcher Rachel Cohen, OAG Melody Countess Eric Farls David Ferguson Anne Gawthrop Dimitri Grechenko Alex Harisiadis, OAG John Harris (Meketa) Justin Hayes Angie Jenkins (1)	Faina Kashtelyan Greg Kasten Larry Katsafanas Dean Kenderdine, Exec. Director (1) Michael McCord Matthew Michaels (Summer Intern) Mary Mustard (Meketa) Ashu Pal Andrew Palmer, CIO Stephen Reilly (1) David Rongione, Internal Auditing Jody Shaw, OAG Brad Taylor

**Item 12: Motion by Investment Committee to adjourn closed session**

On a motion made by Treasurer Kopp and seconded by Mr. Norman, the Investment Committee voted to adjourn closed session and return to open session at 1:12 p.m.

During closed session, the Investment Committee discussed and took action on the following matters:

The Investment Committee approved the Closed Session minutes from the May 19, 2020 meeting.

Discussed performance of a specific manager, and details regarding the portfolio investments of the manager.

**OPEN SESSION**

Committee Members  
Attending:

(1) On Site

Michael K. Barry  
Thomas Brandt  
David Brinkley  
Eric Brotman  
Jamaal R. Craddock  
Peter Franchot  
Kenneth Haines  
David Hamilton

Linda A. Herman, Vice-Chair  
Sheila Hill  
Nancy K. Kopp  
Richard Norman  
Douglas Prouty  
Anne Shelton  
Michael J. Stafford, Jr.  
Lamont Tarbox

Also Attending:

Frank Benham (Meketa)  
Robert Burd, Deputy CIO (1)  
Antionette Butcher  
Rachel Cohen, OAG  
Melody Countess  
Eric Farls  
David Ferguson  
Anne Gawthrop  
Dimitri Grechenko  
Alex Harisiadis, OAG  
John Harris (Meketa)  
Justin Hayes  
Angie Jenkins (1)

Faina Kashtelyan  
Greg Kasten  
Larry Katsafanas  
Dean Kenderdine, Exec. Director (1)  
Michael McCord  
Matthew Michaels (Summer Intern)  
Mary Mustard (Meketa)  
Ashu Pal  
Andrew Palmer, CIO  
Stephen Reilly (1)  
David Rongione, Internal Auditing  
Jody Shaw, OAG  
Brad Taylor

**Item 13: Motion by Investment Committee to adjourn meeting**

Adjournment

There being no further business before the Investment Committee, on a motion made by Treasurer Kopp and seconded by Mr. Norman, the meeting adjourned at 1:12 p.m.

Respectfully submitted,

Andrew C. Palmer  
Chief Investment Officer

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**MARYLAND STATE RETIREMENT AND PENSION SYSTEM  
INVESTMENT COMMITTEE**

**Triennial Review of Governance Charters and Policies – Proposed Changes to Investment  
Committee Charter  
September 22, 2020**

**Issue:**

The Board’s policies call for the review and revision of the Governance Charters and Policies of the Board of Trustees every three years. Certain changes are proposed to the Charter for the Investment Committee.

**Discussion:**

The following proposed amendments to the Charter for the **Investment Committee** are offered for the Committee’s consideration, to address statutory changes since the last review:

- Add new item 9, providing for the Committee to review and recommend to the Board an annual operating budget for the personnel and operational expenses of the Investment Division of the Agency, and any modifications thereto, to be paid from the accumulation fund of each State System on a pro rata basis.
- Revise item 11, concerning criteria and the award of financial incentives for the Chief Investment Officer, to address statutory changes requiring that the incentives be based only on approved objective criteria adopted by the Board.

**Other Changes**

Proposed amendments have been made to conform the charter to current statutory citations, and to capitalize certain terms: Board of Trustees, System, State, Executive Director, and Chief Investment Officer. Also, Chairman is revised to “Chair.”

**Recommendation**

The Executive Director recommends that the Investment Committee consider these potential revisions to the Charter for the Investment Committee.

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**MARYLAND STATE RETIREMENT AND PENSION SYSTEM  
CHARTER FOR THE INVESTMENT COMMITTEE**

**DUTIES AND RESPONSIBILITIES**

1. The composition of the Investment Committee (“committee”) shall be consistent with SPP Article § 21-115.
2. The committee shall generally meet four times per year but may meet more or less frequently as needed, and is subject to the Open Meetings Act.
3. The committee shall advise the Board and make recommendations on:
  - a. The investment programs of the System;
  - b. Compliance of the investment programs with Board policies; and
  - c. Changes to this charter.
4. The committee shall be responsible for presenting an Investment Policy Manual for submission to the Board that shall detail all of those items set forth in the charter for the Board.
5. The committee shall be responsible for presenting and submitting any amendments to the Investment Policy Manual to the Board for approval.
6. The committee shall advise the Board and make recommendations with respect to the appointment of the following service providers:
  - a. General Investment Consultant;
  - b. Optional Retirement Program vendors;
  - c. The custodial bank(s) for the System; and
  - d. Recommend the appointment of human resource consultants hired to address matters involving the Chief Investment Officer or other investment staff.
7. The committee shall review written documentation prepared by the Chief Investment Officer explaining the Chief Investment Officer’s termination of any investment manager and report to the Board on such documentation.
8. The committee may recommend to the Board specific strategies to achieve the investment goals and objectives of the System, including active and passive investment strategies as well as external and internal investment strategies.
9. The committee shall recommend to the Board an annual operating budget for the personnel and operational expenses of the Investment Division of the Agency, and any modifications thereto, to be paid from the accumulation fund of each State System on a pro rata basis.

**Commented [RC1]:** New Item 9 addresses Board’s new statutory authority to establish budget for personnel and operational expenses of the Investment Division, and provides for the Investment Committee to recommend annual budget, plus any revisions.



10. The committee, along with the Executive Director, shall recommend to the Board the qualifications and appointment, as well as compensation and leave, for the Chief Investment Officer.
11. The committee shall recommend to the Board objective criteria for awarding financial incentives to the Chief Investment Officer and, subject to the restrictions set forth in SPP Article § 21-118.1, may recommend financial incentives to be awarded to the Chief Investment Officer based only on the approved objective criteria.
12. The committee may recommend to the Board that the Executive Director terminate the Chief Investment Officer.

**Commented [RC2]:** Amendments to address 2019 legislation modifying rules for awarding financial incentives to the CIO, requiring incentives to be based only on objective criteria, and subject to additional restrictions set forth in statute.

#### **MONITORING AND REPORTING**

13. The committee shall:
  - a. Receive and review reports from staff and consultants regarding:
    - i. Compliance with the Investment Policy Manual
    - ii. Asset allocation strategies utilized in the investment programs
    - iii. Active and passive and external and internal investment management strategies utilized in the investment programs
    - iv. The performance of each asset class within the investment programs
    - v. External and internal investment manager performance
    - vi. Staff travel necessary for asset manager compliance and due diligence
    - vii. Staff's due diligence activities concerning the selection and retention of investment managers, consultants, general partners, custodians, service providers, and internally managed assets
    - viii. The payment of investment management fees authorized by the Chief Investment Officer and the cost effectiveness of the investment program
  - b. Monitor compliance with the Board's annual operating budget for the personnel and operational expenses of the Investment Division;
  - c. Review the performance of the General and Specialty Investment Consultants; and
  - d. Keep minutes of its meetings and ensure the minutes are made available to all trustees. Open session minutes of the committee shall be open to public inspection in accordance with the Open Meetings Act.

**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

**TO:** Investment Committee

**FROM:** Investment Division Staff

**DATE:** September 14, 2020

**RE:** Analysis of Gold Options for the Optional Retirement Program

At the request of the Investment Committee, FIRM/NFP (the System's ORP consultants) will present an analysis of gold-related investment options, and other diversifying strategies, for possible inclusion in the core investment line-up of the ORP.

The report is attached in the EXHIBIT BOOK.

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**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

TO: The Investment Committee  
FROM: Andrew C. Palmer, CIO  
DATE: September 22, 2020  
RE: Proposed Investment Policy Manual Update

At the June 16, 2020 the Board of Trustees (the “Board”) meeting, the Board approved changes to the System’s benchmarks and the frequency of the asset liability study. Specifically, the Board approved the following changes to the benchmarks.

Real Estate:

Previous Benchmark: NCREIF ODCE gross (one-quarter lag)

Approved Benchmark: NCREIF ODCE net + 40 bp

Local Currency Emerging Market Debt:

Previous Benchmark: Bloomberg Barclays Emerging Markets Local Currency Government Index -30 bp

Approved Benchmark: Bloomberg Barclays Emerging Markets Local Currency Liquid Government Index -30 bp

In addition, the Board approved changes to the frequency of the asset liability study from a 2-year mandatory study frequency to a 5-year mandatory frequency. The Board also approved language that could trigger an off-calendar asset liability study.

Recommendation:

In order to ratify the approved changes to the benchmarks and the frequency of the asset liability study, staff recommends the following red-lined changes to the Investment Policy Manual (the “IPM”).

**Policy Benchmark Effective July 1, 2020 <sup>(1)</sup>**

**Deleted: 2019**

<u>Asset Category</u>	<u>Strategic Policy Benchmarks<sup>4</sup></u>	<u>Percentage Contribution to Benchmark</u>	<u>Policy Benchmarks<sup>(4)</sup></u>
<b>Growth/Equity</b>	<i>Public Equity</i>	43% Russell 3000 Index, 27% MCSI World Ex-U.S., 30% MSCI EM	37% <sup>(2)</sup>
	<i>Private Equity</i>	MSCI ACWI + 200 bp	13% <sup>(2)</sup>
<b>Rate Sensitive</b>		53% Barclays Long-Term Government, 13% Barclays Securitized, 13% Barclays Corporate, 21% Barclays U.S. TIPS	19% <sup>(3)</sup>
		78% U.S., 22% Non-U.S.	9%
<b>Credit</b>	<i>U.S. Credit</i>	80% Barclays U.S. High Yield, 20% S&P/LSTA Leveraged Loan	
		50% Bloomberg/Barclays EM Local Liquid Gov't - 30bp.	
	<i>Non-U.S. Credit</i>	25% Bloomberg/Barclays EM Hard Sovereign,	
		25% Bloomberg/Barclays EM USD Agg Corp	
		71% RE, 29% NR/IS	14% <sup>(3)</sup>
<b>Real Assets</b>	<i>Real Estate</i>	NCREIF ODCE (net) + 40bp	
	<i>Natural Resources &amp; Infrastructure</i>	CPI-U + 500 bps (10% cap)	
<b>Absolute Return</b>	3 Month T-Bill + 400 bps		8%
			Dynamically weighted: RE
			60% S&P Global Natural Resources, 40% DJ-Brookfield Infrastructure
			HFRI Fund of Funds Conservative + 100 bp

**Deleted: 1 quarter lag, gross).**

**Notes:**

1. These benchmarks are effective as of July 1, 2020. (The Real Estate benchmark will no longer reflect the period ending June 30, 2020 to begin the new benchmark and timeframe beginning July 1, 2020.)

**Deleted: 2019**

## I. ASSET ALLOCATION

### A. Strategic Asset Allocation Policy

#### Policy Statement:

The Board shall manage investment risk and provide strategic guidance through asset allocation.

#### Policy Guidelines:

1. The Board shall review the System's asset allocation on an annual basis in order to determine if it is necessary to conduct a formal asset allocation study.
2. The Board shall review whether there have been significant changes with regard to (1) the economic environment, (2) the Board's objectives, and (3) other considerations affecting the current asset allocation.
3. Factors that could recommend an off cycle asset allocation review could include:
  - The probability of achieving the actuarial target falls below 48%. The Committee might consider 50% to be a more logical trigger but these changes in probability are often the results of strong market rallies that often fade by the time any asset allocation change could be implemented.
  - The Board selects a new General Investment Consultant.
  - The actuarial assumption is reduced by more than .5% from the rate in effect for the last study.
  - As part of its capital market assumption analysis, the general consultant makes a significant change to its view of the long-term risk, return potential or correlation of one or more asset classes.
4. The Board will conduct a formal asset allocation study at least every five years in order to determine its strategic asset allocation targets and ranges, as well as changes to overall policy.
5. The Board must adopt the asset allocation recommendation by a vote of the majority.
6. The formal asset allocation study shall incorporate both the asset and the liability sides of the equation. The Board shall weigh three competing liability-oriented objectives when making asset allocation determinations. The importance weightings assigned to each of these three objectives by the Board shall determine the risk profile of the System. The liability-oriented objectives are:
  - Achieve and maintain a fully funded pension plan.

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**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION  
MEMORANDUM**

**TO:** Administrative Committee

**FROM:** Andrew Palmer, CIO

**DATE:** August 26, 2020

**RE:** **Fiscal Year 2022 Investment Division Budget**

Staff is presenting both information and a request regarding the Investment Division’s fiscal year 2022 budget. In the fiscal year ended June 30, 2020, the actual expenditures for the division totaled about \$13.1 million, below the appropriated amount of \$13.9 million. The difference was driven largely by the cost of the trade order management system, the implementation of which will begin in fiscal year 2021. The cost of the private equity consultant was also significantly lower than budgeted due to the price uncertainty associated with the procurement process.

For fiscal year 2022, the budget request totals \$17.1 million, which is 1.7% more than the \$16.8 million that was approved for fiscal year 2021. This increase is mostly due to higher costs associated with compensation and benefits as eligible staff progresses toward the salary targets set by the Board. These targets were based on recommendations from the Objective Criteria Committee and the compensation consultant. The salary estimate for fiscal year 2022 assumes maximum salary increases in March 2021 for eligible employees whose current salary is below the midpoint of the appropriate range. It also includes similar increases in March 2022 for a portion of the fiscal year. The 2022 budget also includes an estimate for incentive compensation based on the plan approved by the Board in 2019. The budget request for incentive compensation assumes the 22% target is achieved.

It is important to note that salary adjustments and incentive awards will not take effect automatically. They are subject to Board review and approval prior to implementation. In addition, per Maryland statute, the Board may not grant salary increases or incentives in a fiscal year in which state employees are subject to furloughs.

The table below summarizes the Investment Division’s budgets for fiscal years 2020, 2021 and 2022.

FY 2020 Appropriation	FY 2020 Actual	FY 2021 Appropriation	FY 2022 Request
\$13,933,743	\$13,070,017	\$16,836,029	\$17,120,873



In order to provide a longer-term projection of the Division's resources, we have estimated the impact of the strategic plan on the budget. The Investment Division began managing a small portion of plan assets internally in fiscal year 2020. This effort will continue and grow over the next several years. The long-term strategic plan that was developed in 2018 with the guidance of the Cutter/Funston report included three tenets:

1. Improve staff recruitment and retention through a competitive salary and incentive structure
2. Add staffing to remediate understaffing based on the current plan structure of external management
3. Add staffing to support an internal management initiative

The implementation of these objectives over the next five years will cost roughly \$9.4 million, and result in an estimated 2025 total budget of \$24.6 million.

While the Investment Division budget is expected to increase over the next several years, the management fee savings from internal management will far exceed the additional costs. By 2025, we expect the total amount of public assets managed internally to be roughly \$24.5 billion, while private markets co-investment are expected to reach about \$2.2 billion. This expansion of internal management is projected to result in savings of roughly \$86 million in 2025, exceeding the estimated additional cost by approximately \$76 million. Greater detail associated with the longer-term projections can be found in Exhibit A.

**Recommendation:**

Approve the estimated budget request for the Investment Division for fiscal year 2022.

## Exhibit A

Three Budget Components of Strategic Plan	2018 Actual \$mil	2019 Actual \$mil	2020 Actual \$mil	2021 Proj. \$mil	2023 Proj. \$mil	2024	2025 Proj. \$mil	Total Proj. \$mil
Improve Attraction and Retention of Staffing through Competitive Salary and Incentive rolled out at 10% per Year		-	0.25	0.25	0.25	0.25		1.00
Add 9 staff members to rectify understaffing identified by Cutter/Funston and Staff		1.10	0.21	0.04	0.04	0.04	0.04	1.47
Add Staff Members to Support Internal Management			0.77	0.02	1.30	0.06	4.72	6.88
<b>Total Budget Impact</b>		1.10	1.23	0.31	1.59	0.35	4.76	9.35
<b>Total Budget</b>	11.81	14.64	13.93	16.83	17.12		24.56	
<b>Two Fee Impacts of Strategic Plan</b>								
Lower Management Fees Through Internal Management of Public Assets			-	0.32		17.00		52.00
Lower Management Fees Through Co-investment			7.50	15.00		25.00		34.00
<b>Total Fee Savings</b>			7.50	15.32	-	42.00	-	86.00
<b>Internal Assets</b>								
Internal Assets			540.00	3,500.00	6,700.00	11,700.00		24,500.00
Co-invest			980.00	1,190.00	1,440.00	1,880.00		2,190.00

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STATE RETIREMENT AGENCY						
BUDGET REQUEST						
FISCAL YEAR 2021						
INVESTMENTS						
Sub-Object	Title	FY 2020 Appropriation	FY 2020 Actual	FY 2021 Appropriation	FY 2022 Request	
Object of Expenditure: 01 Salaries, Wages, and Fringe Benefits						
0101	REGULAR EARNINGS	3,910,908	3,696,025	5,044,942	5,455,710	
0102	ADDITIONAL ASSISTANCE (SUMMER INTERNS)					
0104	OVERTIME/INCENTIVE EARNINGS		1,424	494,475	732,620	
0110	MISCELLANEOUS ADJUSTMENTS		38,233			
0111	ACCRUED LEAVE PAYOUT		32,274			
0151	SOCIAL SECURITY CONTRIBUTIONS	257,166	255,959	330,342	381,696	
0152	HEALTH INSURANCE - EMPLOYEES	302,906	353,386	284,895	308,000	
0154	HEALTH INSURANCE RETIREES	175,701	182,771	256,308	277,090	
0167	OTHER POST EMPLOYMENT BENEFITS					
0161	RETIREMENT & PENSION SYSTEM CONTR.	755,196	714,330	1,023,114	1,168,431	
0162	EMPLOYEE'S PENSION SYSTEM					
0172	DEFERRED COMPENSATION					
0174	UNEMPLOYMENT	10,951	10,218	14,126	15,276	
0175	WORKER'S COMPENSATION INSURANCE					
0189	TURNOVER EXPECTANCY	(345,395)		(116,877)	(483,938)	
	<b>TOTAL OBJECT 01</b>	<b>5,067,433</b>	<b>5,284,619</b>	<b>6,999,325</b>	<b>7,826,885</b>	
Object of Expenditure: 04 Travel						
0401	IN-STATE/ROUTINE OPERATIONS	3,180	29	3,180	3,180	
	DBM/LEGISLATIVE C.J.T.	0	0	0	0	
	Total 0401	3,180	29	3,180	3,180	
0402	IN-STATE/CONFERENCES/SEMINARS/TRAINING	3,060	1,733	3,060	3,060	
	DBM/LEGISLATIVE C.J.T.	0	0	0	0	
	Total 0402	3,060	1,733	3,060	3,060	
0403	OUT-OF-STATE/ROUTINE OPERATIONS	74,115	33,117	74,115	74,115	
	DBM/LEGISLATIVE C.J.T.	0	0	0	0	
	Total 0403	74,115	33,117	74,115	74,115	
0404	OUT-OF-STATE/CONFERENCES/CONVENTIONS/SEMINARS	69,645	63,267	69,645	69,645	
	DBM/LEGISLATIVE C.J.T.	0	0	0	0	
	Total 0404	69,645	63,267	69,645	69,645	
	<b>TOTAL OBJECT 04</b>	<b>150,000</b>	<b>98,146</b>	<b>150,000</b>	<b>150,000</b>	
Object of Expenditure: 08 Contractual Services						
0801	ADVERTISING & LEGAL PUBLICATIONS	15,000	645	3,000	3,000	
0804	PRINTING/REPRODUCTION:					
	DUPPLICATING SERVICES	0		0	0	
	BUSINESS CARDS	500	303	500	500	
	MISCELLANEOUS	0		0	0	
	Total 0804	500	303	500	500	
0819	EDUCATION & TRAINING:					
	TRANSIT PLUS PROGRAM	0	0	0	0	
	ADDITIONAL STAFF TRAINING	25,000	10,450	25,000	20,000	
	Total 0819	25,000	10,450	25,000	20,000	
0858	SOFTWARE LICENSES	0		0	0	
0861	APPLICATION SOFTWARE (Code Red)	120,000	117,500	120,000	120,000	
0899	OTHER CONTRACTUAL SERVICES:					
	FACTSET	400,000	312,416	400,000	385,000	
	FINANCIAL NEWS SERVICE (Bloomberg)	265,000	258,241	380,000	420,000	
	CUSTODIAL BANK	2,800,000	2,700,000	2,800,000	2,800,000	
	TRADE ORDER MANAGEMENT SYSTEM	500,000	10,000	500,000	362,810	
	MANAGER BACKGROUND CHECKS	40,000	30,600	40,000	40,000	
	STAFF PERSONAL TRADING SOFTWARE	7,500	0	7,500	11,200	
	PROXY VOTING SERVICE	140,000	125,000	127,500	127,500	
	DIVESTMENT IDENTIFICATION & ENGAGEMENT SERVICE	22,000	10,000	11,000	11,000	
	RUSSELL INDEX	1,000	1,000	1,000	33,030	
	MSCI INDEX	1,000	1,000	1,000	1,000	
	HFRI INDEX				5,460	
	S&P MARKET INDEXES (FACTSET & BARRA)	7,500	7,000	7,500	7,500	
	S&P/LSTA LEVERAGED LOAN DATA	50,000	\$ 16,200	15,500	16,200	
	TAX AGENT	325,000	\$ 280,165	250,000	250,000	
	MANAGER DATABASE PROVIDER	40,000	0	40,000	57,000	
	Total 0899	4,599,000	3,751,622	4,581,000	4,527,700	
	<b>TOTAL OBJECT 08</b>	<b>4,759,500</b>	<b>3,880,520</b>	<b>4,729,500</b>	<b>4,671,200</b>	
Object of Expenditure: 09 Materials & Supplies						
0902	GENERAL SUPPLIES	5,000	381	5,000	5,000	
0915	LIBRARY SUPPLIES	0	0	0	0	
0920	FOOD	4,000	1,266	4,000	4,000	
0921	DATA PROCESSING COMPUTER FORMS:					
	STOCK FORMS, HEAT SEALED, CHECK STOCK, ETC.	0	0	0	0	
	Total 0921	0	0	0	0	
0926	DATA PROCESSING SUPPLIES	0	0	0	0	
0930	APPLICATIONS SOFTWARE	0	0	0	0	
0933	SOFTWARE UPGRADES:					
	WINDOWS	0	0	0	0	
	Total 0933	0	0	0	0	
0999	OTHER MATERIALS & SUPPLIES	0		0	0	
	<b>TOTAL OBJECT 09</b>	<b>9,000</b>	<b>1,648</b>	<b>9,000</b>	<b>9,000</b>	
1304	SUBSCRIPTIONS:					
	ANNOTATED CODE SUPPLEMENTS	0		0	0	
	BARRON'S ONLINE	150	120	0	150	
	CAPITAL ECONOMICS	20,000	20,500	21,000	22,000	

STATE RETIREMENT AGENCY						
BUDGET REQUEST						
FISCAL YEAR 2021						
INVESTMENTS						
Sub-Object	Title	FY 2020 Appropriation	FY 2020 Actual	FY 2021 Appropriation	FY 2022 Request	
	GRANTS INTEREST RATE OBSERVER	1,100		0	0	
	OTHER ECONOMIC AND MARKET RESEARCH	50,000		50,000	50,000	50,000
	ECONOMIST MAGAZINE	250	380	600	600	600
	PRIVATE MARKET DATA PROVIDER	50,000	50,000	60,000	65,000	65,000
	DISMAL SCIENTIST	0		0	0	0
	DOW JONES	0		0	0	0
	FINANCIAL TIMES	775	450	900	900	900
	PENSION FUND DATA EXCHANGE, LTD	7,000	10,000	7,250	7,250	7,250
	PERSONNEL PUBLICATIONS	0		0	0	0
	PORTFOLIO MANAGEMENT	0		0	0	0
	RESEARCH INSTITUTE OF AMERICA	0		0	0	0
	RESEARCH REPORTS/SURVEYS/STUDIES	0		0	0	0
	SESSION LAWS	0		0	0	0
	WALL STREET JOURNAL	6,300	7,918	7,500	9,600	9,600
	SURVEYS	0	434	0	0	0
	<b>Total 1304</b>	<b>135,575</b>	<b>89,802</b>	<b>147,250</b>	<b>155,500</b>	
1305	ASSOCIATION DUES:					
	CFA INSTITUTE	6,000	4,810	6,000	6,700	6,700
	CFA EXAMS	0		0	0	0
	CFA SEMINARS/TRAINING	0		0	0	0
	AMERICAN INSTITUTE OF CPA'S	100	56	100	100	100
	AMERICAN ECONOMIC ASSOCIATION	0		0	0	0
	ASSOC. OF CERTIFIED FRAUD EXAMINERS	150		160	160	160
	CAIA MEMBERSHIP DUES	1,450	1,400	1,450	1,750	1,750
	CAIA Exam		1,435		1,435	1,435
	COUNCIL OF INSTITUTIONAL INVESTORS	30,000	24,800	30,000	24,000	24,000
	GAVEVAL	0		0	0	0
	FIXED INCOME ANALYSTS	0		0	0	0
	FUNDFIRE	2,850	2,820	3,000	3,200	3,200
	GFOA CERTIFICATE OF ACHIEVEMENT PROG	0		0	0	0
	GOVERNMENT FINANCE OFFICERS ASSOC.	300	0	0	0	0
	INSTITUTE OF INTERNAL AUDITORS	140	165	160	165	165
	SUSTAINABILITY ACCOUNTING STANDARDS BOARD	2,500	2,500	2,500	2,500	2,500
	INSTITUTIONAL LIMITED PARTNERS ASSOC.	6,000	4,000	5,000	5,000	5,000
	INVESTORS NETWORK CLIMATE RISK (CERES)	6,000	4,600	5,000	5,000	5,000
	PERSONNEL ASSOCIATIONS	0		0	0	0
	GLOBAL ASSOCIATION OF RISK PROFESSIONALS	180	225	180	225	225
	MACPA	0		0	0	0
	MARYLAND GOVERNMENT FINANCE OFFICERS ASSOC.	0		0	0	0
	MD PUBLIC PURCHASING ASSOCIATION	0		0	0	0
	MD STATE BAR ASSOCIATION	0		0	0	0
	MID ATLANTIC PLAN SPONSORS	0		0	0	0
	NATIONAL CONFERENCE ON PUB EMP RTRMT SYS	0		0	0	0
	NATL ASSOCIATION OF COMPLIANCE PROFESSIONALS	450	475	450	475	475
	NATL ASSOC. OF SECURITIES PROFESSIONALS	0		0	0	0
	NATL ASSOCIATION OF PUB PENSION ATTY	0		0	0	0
	NATL ASSOCIATION OF STATE INVESTMENT PROFESSIONALS	0		0	0	0
	NATL ASSOCIATION OF STATE INVESTMENT OFFICERS	0		0	0	0
	NATL COUNCIL ON TEACHERS RETIREMENT	0		0	0	0
	NATL ASSOCIATION OF BUSINESS ECONOMICS	0		0	0	0
	PENSION REAL ESTATE ASSOCIATION	700	330	400	400	400
	PROGRAM MANAGEMENT INSTITUTE (PMI)	0		0	0	0
	PUBLIC RETIREMENT INFO. SYSTEMS	0		0	0	0
	UNITED NATIONS PRINCIPLE RESPONSIBLE INVESTMENT	12,000	10,830	12,000	12,000	12,000
	LEGAL ENTITY IDENTIFIER	100	84	100	100	100
	<b>Total 1305</b>	<b>68,920</b>	<b>58,530</b>	<b>66,500</b>	<b>63,210</b>	
1307	COMPTROLLER'S FINANCE CHARGES	0		0	0	0
1308	LICENSES:					
	STATE BOARD OF PUBLIC ACCOUNTANCY	0		0	0	0
	<b>Total 1308</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
	<b>TOTAL OBJECT 13</b>	<b>204,495</b>	<b>148,332</b>	<b>213,750</b>	<b>218,710</b>	
	<b>TOTAL OPERATING BUDGET</b>	<b>10,190,428</b>	<b>9,413,265</b>	<b>12,101,575</b>	<b>12,875,795</b>	
	<b>Projected Contractual Expenses</b>					
	Absolute Return Consultant (Aksia)	400,000	\$ 406,015	450,000	450,000	
	General Consultant	675,000	\$ 660,000	675,000	750,000	
	Real Estate Consultant (Townsend)	371,315	\$ 369,503	382,464	393,928	
	Private Equity Consultant	1,000,000	\$ 724,184	2,000,000	1,300,000	
	Risk System (Barra One)	312,500	\$ 300,000	312,500	312,500	
	Index Data License (Bloomberg)	15,500	\$ 12,500	15,500	41,000	
	Private Fund Data Base (Burgiss)	170,000	\$ 165,510	200,000	197,650	
	Legal Fees	800,000	\$ 1,019,040	700,000	800,000	
	Compensation Consultant	0	0	0	0	
		3,744,315	\$ 3,656,752	4,735,464	4,245,078	
	<b>Total:</b>	<b>\$13,934,743</b>	<b>\$13,070,017</b>	<b>\$16,837,029</b>	<b>\$17,120,873</b>	

**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

**TO:** Investment Committee  
**FROM:** Investment Division Staff  
**DATE:** September 14, 2020  
**RE:** Report from CIO

Staff will present an update on Key Performance Objectives, division activities, 2Q20 investment performance and a summary of portfolio characteristics.

The report is attached.

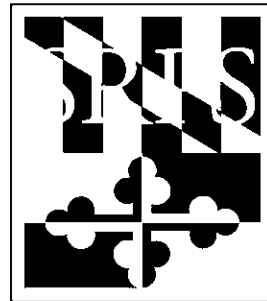
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# Maryland State Retirement and Pension System

## June 30, 2020 Portfolio Review and Update

### September 22, 2020



MARYLAND  
STATE RETIREMENT  
*and* PENSION SYSTEM



# Portfolio Review – March 31, 2020

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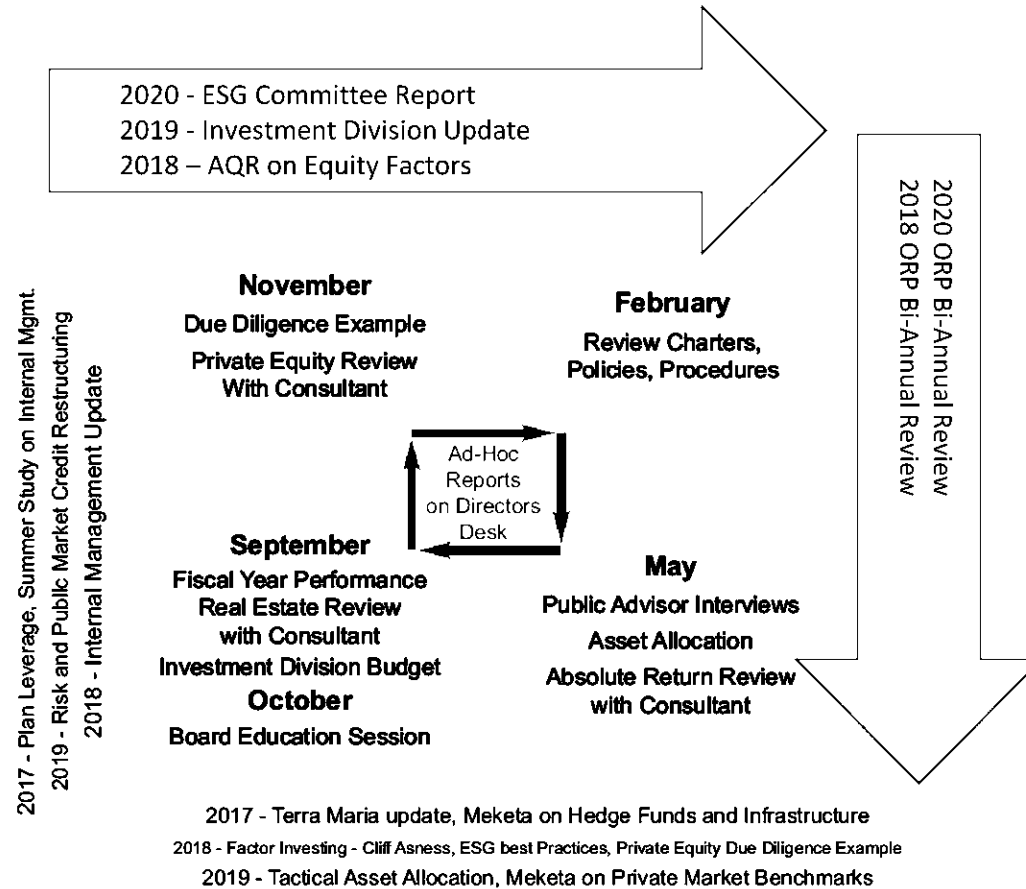
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# Investment Committee Reporting Cycle





# Executive Summary

# Portfolio Review – June 30, 2020

## Executive Summary

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- The System's long-term performance has
  - Fallen below its long- term target despite the 2<sup>nd</sup> quarter recovery;
  - Exceeded the Policy Benchmark for one, three, seven and ten years;
  - Produced strong risk adjusted returns compared to peers as measured by Sharpe Ratio
- For the trailing year, the System saw
  - Strong performance in debt markets;
  - Above benchmark performance at the plan level driven by
    - moderate contribution from asset allocation including overlays
    - continued strong relative performance in the private equity portfolio;
    - strong relative performance in the public equity and rate sensitive portfolios;
    - protection from adverse currency movements
    - negative impacts of the misfit vs policy of individual manager benchmarks and lagged pricing of private assets
- For the quarter, the System
  - Experienced a recovery of 7.4%
  - Outperformed in Private Equity, Public Equity and Rate Sensitive asset classes
  - Met performance, operational, risk and reporting objectives for the internally managed TIPS and Long Government portfolios;
- From December 31, 2019 through April 30, 2020, the System committed \$2.6 billion to new managers or funds.

# Portfolio Review – June 30, 2020

## Executive Summary

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- Focus Items in this presentation
  - Performance –
    - Long-Term relative performance driven positively by private equity, and public equity selection offset by under-allocation to nominal fixed income and the misfit impact in the NR/Infra and Absolute Return portfolios – page 27
    - Public Managers were not positioned for COVID-19 but pivoted and took full advantage of the 2<sup>nd</sup> quarter rebound with issue selection during the quarter – page 24
    - Private equity continues to perform well relative to benchmark and peers - page 38
    - Credit and Real Asset portfolios significantly underperformed their public market benchmarks - pages 40, 42
  - Internal Management project is on plan. \$2.3 billion U.S. TIPS passive portfolio was initially funded for July 1<sup>st</sup>, 2019 and the \$1.3 billion Long Government Bond portfolio was funded for March 1<sup>st</sup>, 2020. The portfolios are meeting performance objectives with the TIPs portfolio outperforming the State Street equivalent by 21 basis points for the year
  - Asset allocation at the end of March remained within policy limits.



# Division Update

# Portfolio Review – June 30, 2020

## Investment Division Initiatives

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- CIO and Tactical Asset Allocation team are responsible for rebalancing exposures for the System using index futures, ETFs or multi asset products. Working to transition the futures trading and management to internal staff from Blackrock.
- Proactively manage cash holdings to limit performance drag by more active use of multi-asset equitization portfolio.
- Real Asset and Public Equity asset class reviews – evaluate each asset class’s role in the strategic benchmark, the mix of assets within the asset class, the implementation strategy and performance
- Diversity, Equity and Inclusion Committee is helping the division to use the recruiting process more effectively to attract a more diverse group of applicants, develop diversity training for, and improve data collection on manager practices.

# Portfolio Review – June 30, 2020

## Investment Division Initiatives

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- Recruiting
  - Recruitment–Accounting, Real Assets, Public Equity, Risk, Associates,
    - Mildred (Mimi) Forbes – Compliance Analyst
    - Minh Nguyen – Associate
    - 2 Rate Sensitive Senior Analysts in process
- Procurement
  - Private Market Data and Analytics
  - Risk Analytics
  - Economic and Credit Research
- Internal Management -
  - Implement Bloomberg AIMS order management system – August rebalancing accomplished via OMS



# Portfolio Review – June 30, 2020

## New Hires



<b>New Hires</b>			
<b>Fund / Manager</b>	<b>Asset Class</b>	<b>Existing</b>	<b>Committed or Funded (Approx. US dollars in millions)</b>
MW TOPS EM Fund	Public Equity	X	\$250
Lizard Investors LLC	Public Equity		\$67
ARGA	Public Equity	X	\$43
Voya TALF Opportunities Fund	Fixed Income		\$200
Hg Genesis 9	Private Equity	X	\$120
CD&R XI	Private Equity	X	\$125
New Mountain VI	Private Equity	X	\$125
Thoma Bravo VI	Private Equity	X	\$125
Silver Lake VI	Private Equity	X	\$150
CVC VIII	Private Equity	X	\$141
IVP XVII	Private Equity	X	\$85
MD Asia IV	Private Equity	X	\$200
Bain Capital XIII	Private Equity	X	\$150
Kirkoswald Global Macro	Absolute Return		\$200
Pharo Gaia	Absolute Return		\$100
Waterton Residential Property Venture XIV	Real Estate	X	\$125
Whitehorse Liquidity Partners IV, LP	Credit/Debt	X	\$200
Shanrock Capital Content Fund II, LP	Credit/Debt		\$50
Castlelake Aviation IV Stable Yield, LP	Credit/Debt	X	\$150
Castlelake Aviation IV Stable Yield Opportunities, LP	Credit/Debt	X	\$50
CVI Credit Value Fund A V, LP	Credit/Debt	X	\$100
Highbridge Convertible Dislocation Fund	Credit/Debt		\$100
<b>Total</b>			<b>\$2.856</b>

Notes:

1.) New hires committed to or funded prior to September 3, 2020.

2.) New hires may have been announced prior to meeting 71 - INVESTMENT COMMITTEE MEETING - CONFERENCE CALL 9/22/2020

# Portfolio Review – June 30, 2020

## Cash Flows



<b>Cash Flows 5/1/2020 thru 8/31/2020</b>				
<b>Rebalance &amp; Raise Cash</b>				
<b>Manager</b>	<b>Asset Class</b>	<b>Date</b>	<b>Increase (in millions)</b>	<b>Decrease (in millions)</b>
MD Long Govt Bonds	Fixed Income	5/4/2020	\$0	\$135
SSgA US Securitized Index	Fixed Income	5/5/2020	\$0	\$65
Graham Tactical Trend	Absolute Return	5/21/2020	\$0	\$226
Fort Global Contrarian	Absolute Return	multiple	\$25	\$50
Bridgewater Pure Alpha	Absolute Return	6/1/2020	\$0	\$125
Kirkoswald Global Macro	Absolute Return	6/1/2020	\$200	\$0
Lizard Investors LLC	Equity - International	6/1/2020	\$67	
ARGA	Equity - International	6/1/2020	\$34	
Global Alpha	Equity - International	6/1/2020		\$100
Metis Global Partners	Equity - International	6/1/2020		\$20
Voya TALF Opportunity Fund	Rate Sensitive	6/18/2020	\$20	\$0
Shoals Finl Opportunity Fund	Absolute Return	6/26/2020	\$0	\$39
Pharo Gaia LTD	Absolute Return	6/30/2020	\$100	\$0
High Bridge Convertible	Absolute Return	multiple	\$50	\$28
Nephila Palmetto	Absolute Return	7/24/2020	\$0	\$25
Aristea Capital	Absolute Return	7/29/2020	\$25	\$0
Maniyar Macro Fund	Absolute Return	7/29/2020	\$25	\$0
Voloridge Fund	Absolute Return	7/30/2020	\$25	\$0
AQR Capital Management - Global	Equity - Global	7/31/2020	\$0	\$400
Artisan Partners	Equity - International	7/31/2020	\$0	\$50

*continued on next page*

# Portfolio Review – June 30, 2020

## Cash Flows (continued)



<b>Cash Flows 5/1/2020 thru 8/31/2020</b>				
<b>Rebalance &amp; Raise Cash</b>				
<b>Manager</b>	<b>Asset Class</b>	<b>Date</b>	<b>Increase (in millions)</b>	<b>Decrease (in millions)</b>
Baillie Gifford	Equity - Global	7/31/2020	\$0	\$50
D E Shaw Global Equity	Equity - Global	7/31/2020	\$0	\$300
Western Asset Management	Fixed Income	7/31/2020	\$300	\$0
Rhumblin DJ Brookfield Global	Equity - International	8/3/2020	\$200	\$0
Aubrey Capital Management	Equity - Emerging	8/27/2020	\$0	\$13
Axiom Emerging	Equity - Emerging	8/27/2020	\$0	\$25
Baillie Gifford Emerging	Equity - Emerging	8/27/2020	\$0	\$25
Bayard Asset Management	Equity - Emerging	8/27/2020	\$0	\$15
Change Global Investment	Equity - Emerging	8/27/2020	\$0	\$13
Channing Capital Management	Equity - Emerging	8/27/2020	\$0	\$9
Rhumblin US Scientific Beta	Equity - Domestic	8/27/2020	\$0	\$100
Credit Suisse Bank Notes	US Credit	8/31/2020	\$0	\$17
MetLife Hard Currency EM	Non-US Credit	8/31/2020	\$30	\$0
SSgA EM Local Currency	Non-US Credit	8/31/2020	\$15	\$0
<i>continued on next page</i>				

# Portfolio Review – June 30, 2020

## Cash Flows (continued)



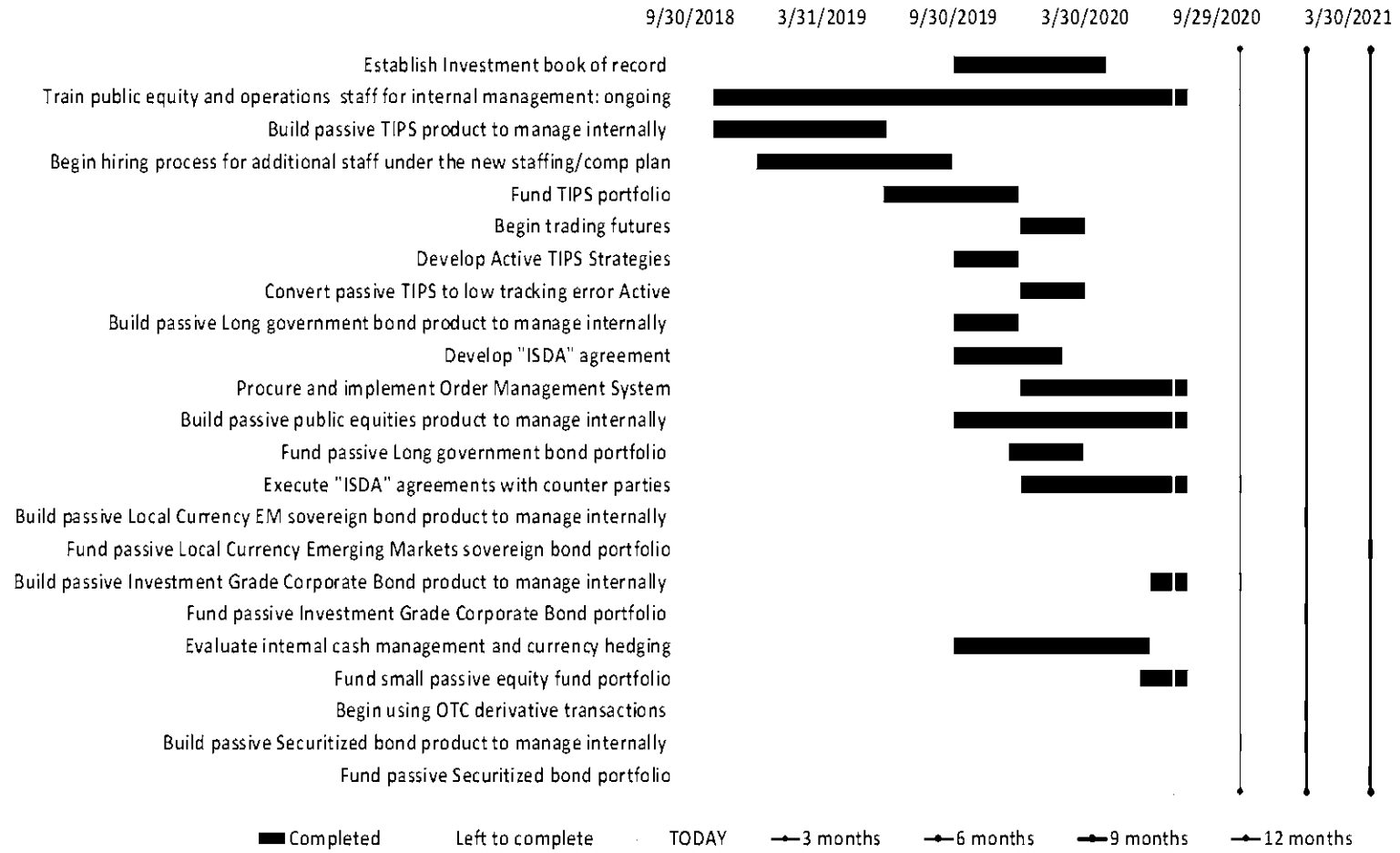
<b>Cash Flows 5/1/2020 thru 8/31/2020</b>				
<b>Rebalance &amp; Raise Cash</b>				
<b>Manager</b>	<b>Asset Class</b>	<b>Date</b>	<b>Increase (in millions)</b>	<b>Decrease (in millions)</b>
BlackRock Cash Equitization	Cash Equitization	multiple	\$70	\$600
Blackrock Emerging Mkts Structural	Equity - Emerging	multiple	\$49	\$23
Blackrock Emerging Mkts Tactical	Equity - Emerging	multiple	\$38	\$97
Blackrock Global Equity Tactical	Equity - International	multiple	\$51	\$73
Blackrock Intl Equity Structural	Equity - International	multiple	\$0	\$41
Blackrock Intl Equity Tactical	Equity - International	multiple	\$0	\$55
Blackrock Nominal FI Structural	Rate Sensitive	multiple	\$69	\$137
Blackrock Nominal FI Tactical	Rate Sensitive	multiple	\$112	\$35
Blackrock US Equity Structural	Equity - Domestic	multiple	\$108	\$27
Blackrock US Equity Tactical	Equity - Domestic	multiple	\$105	\$50
<i>Total</i>			<b>\$1,717</b>	<b>\$2,968</b>

# Portfolio Review – June 30, 2020

## Internal Management Task Force Progression



Internal Management Time Line as of 08/01/2020



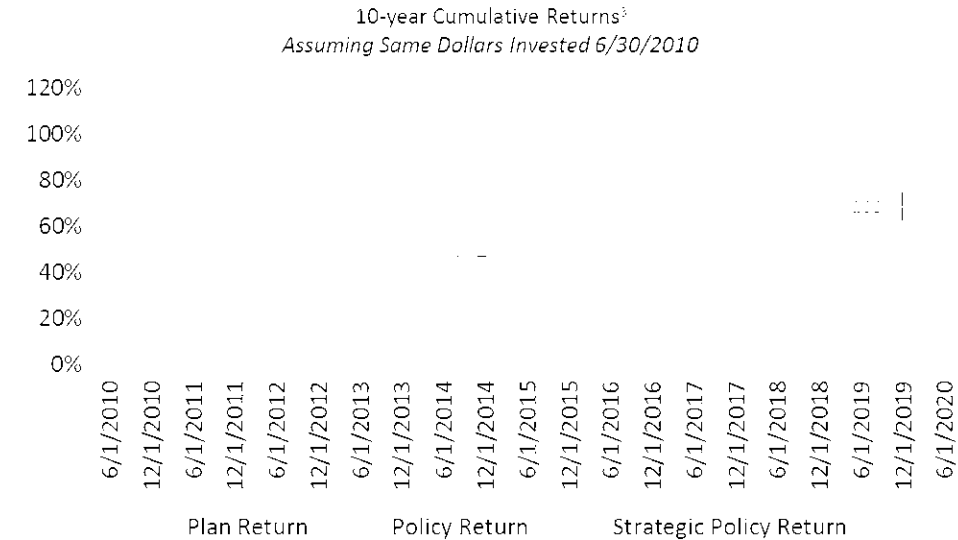
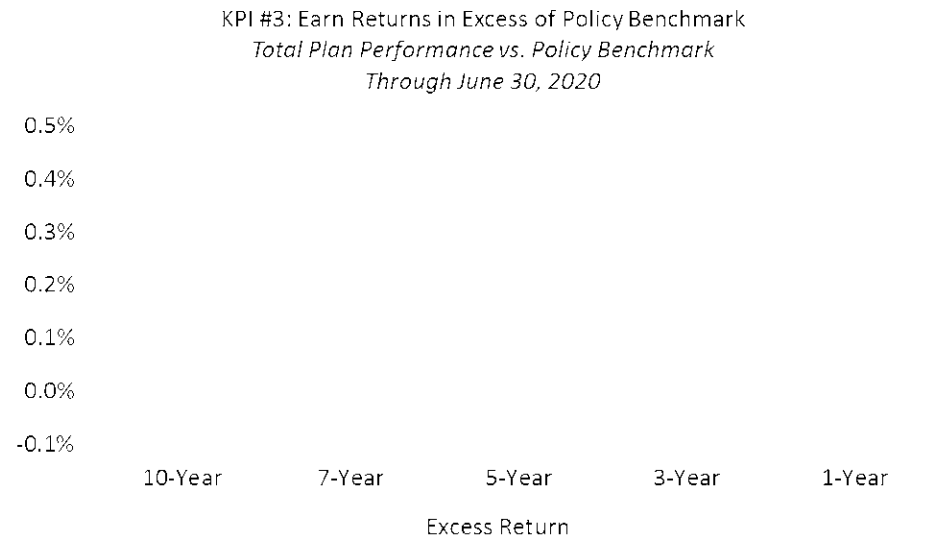
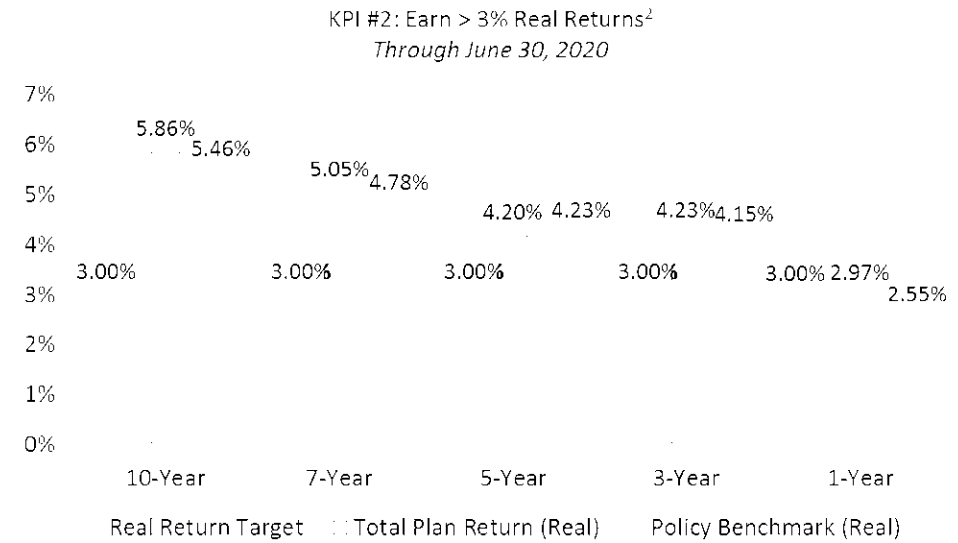
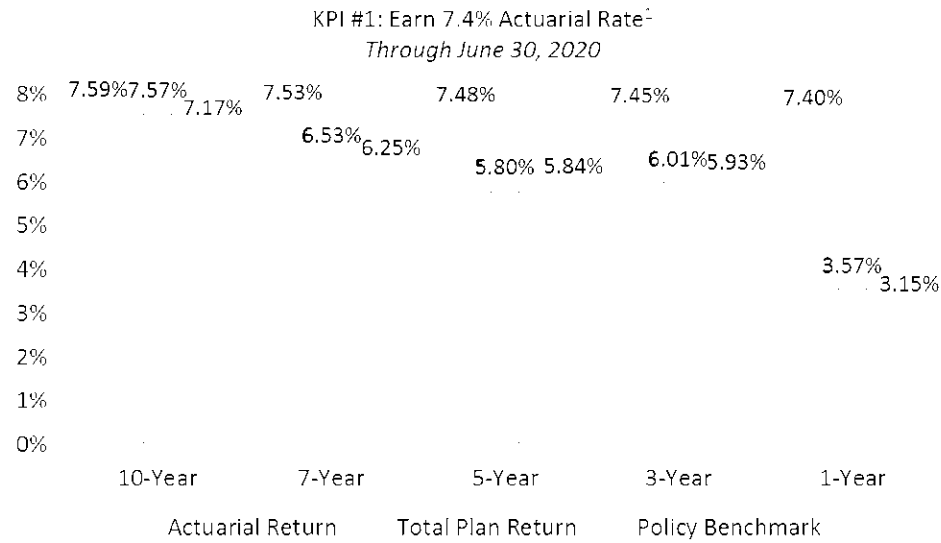


# Key Performance Indicators



# Portfolio Review – June 30, 2020

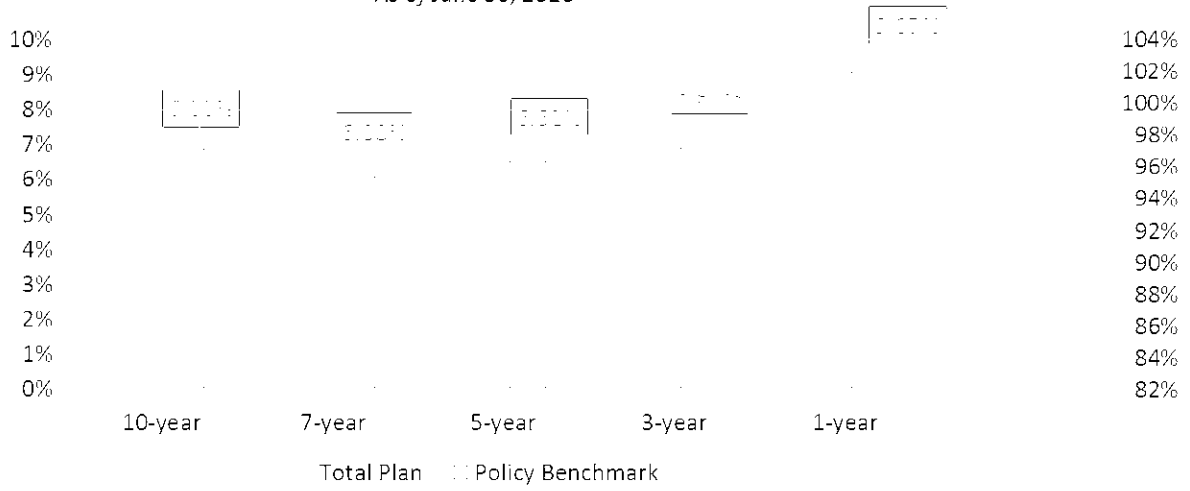
## Key Performance Indicators



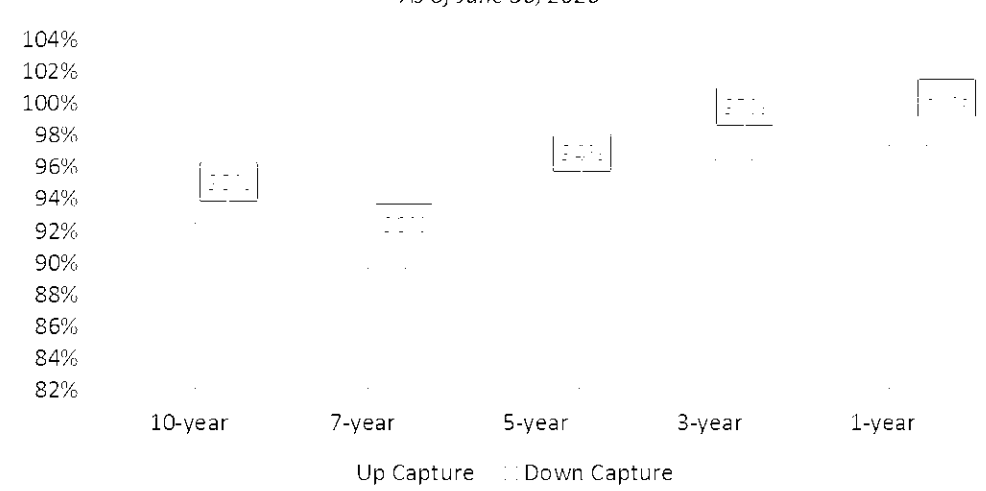
# Portfolio Review – June 30, 2020

## Key Performance Indicators

Portfolio Risk versus Policy Benchmark Risk  
As of June 30, 2020



Total Plan Up/Down Capture versus Policy Benchmark Risk  
As of June 30, 2020



Risk/Return Bubble Chart<sup>1</sup>  
Weighted by 6/30/2020 Market Value

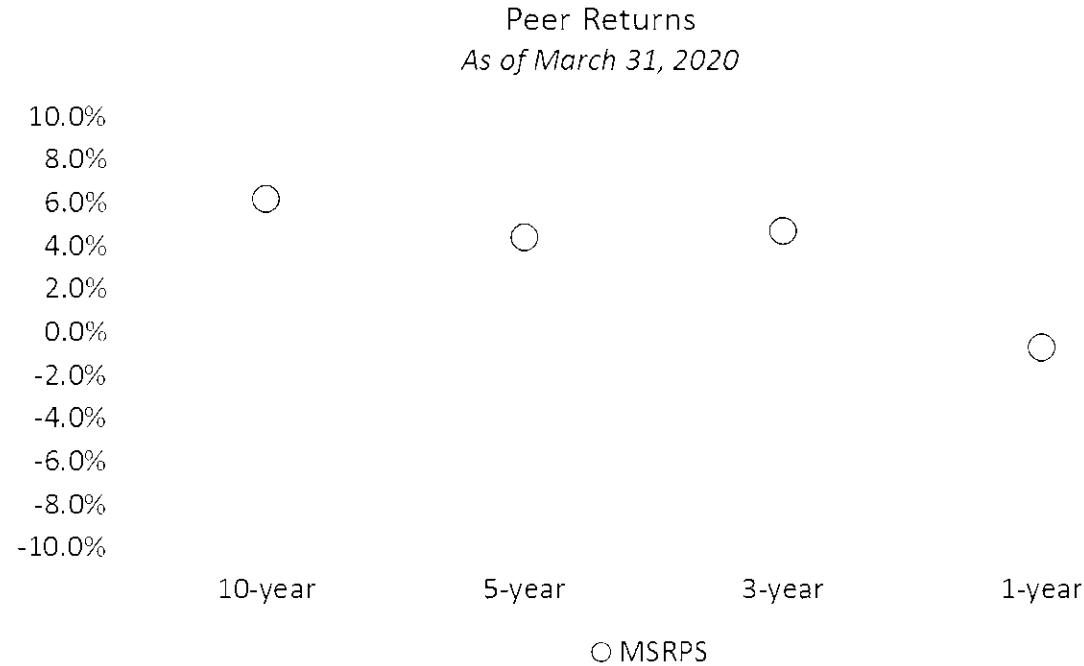


<sup>1</sup> Asset class data is reported ex-Overlay



# Portfolio Review – June 30, 2020

## Key Performance Indicators



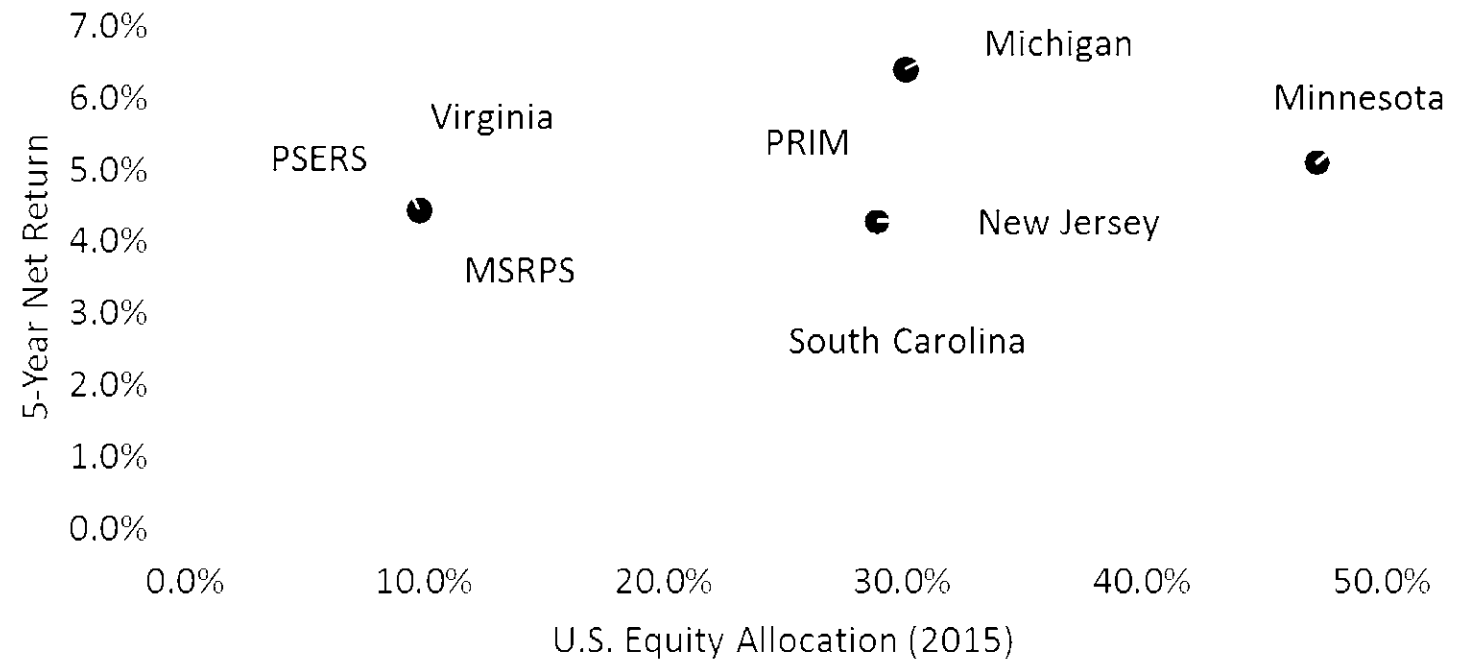
Peer Returns as of March 31, 2020								
Rank	Fund	10-year	Fund	5-year	Fund	3-year	Fund	1-year
1	Michigan	8.6%	Michigan	6.4%	Michigan	6.6%	Michigan	0.2%
2	Minnesota	8.0%	Minnesota	5.1%	PRIM	5.0%	MSRPS	-0.7%
3	PRIM	7.5%	PRIM	4.7%	Minnesota	4.8%	PRIM	-1.2%
4	PSERS	6.9%	Virginia	4.6%	MSRPS	4.7%	PSERS	-1.4%
5	Virginia	6.9%	PSERS	4.4%	PSERS	4.3%	Virginia	-2.2%
6	New Jersey	6.9%	MSRPS	4.4%	Virginia	4.0%	Minnesota	-2.8%
7	MSRPS	6.2%	New Jersey	4.3%	New Jersey	3.8%	New Jersey	-3.4%
8	South Carolina	5.3%	South Carolina	2.6%	South Carolina	1.3%	South Carolina	-8.5%

# Portfolio Review – June 30, 2020

## Key Performance Indicators



5-Year Peer Returns vs U.S. Equity Allocation  
Period ended March 31, 2020  
*U.S Equity-Weight Drives Relative Returns for this Period*



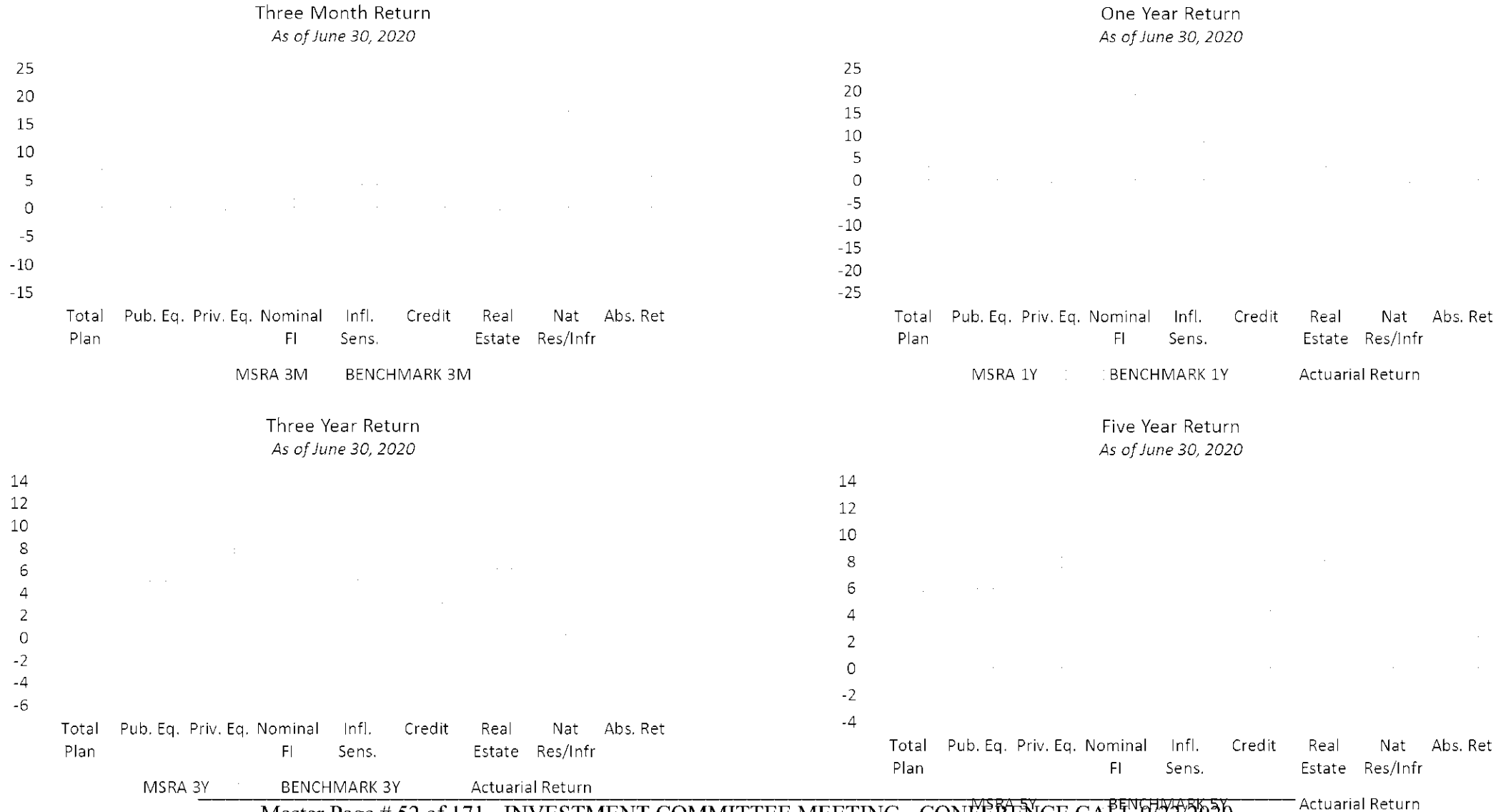


# Performance



# Portfolio Review – June 30, 2020

## Returns by Asset Class – Including Actuarial Target

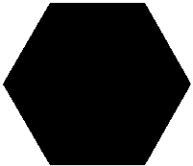


Source: State Street

# Portfolio Review – June 30, 2020

## Performance Attribution – Last Three Months

- Performance attribution provides feedback into the investment process by measuring decision-making efficacy at distinct levels
- Staff utilizes a methodology based on a publication by MSCI/Barra (Miller/Rao, 2014)

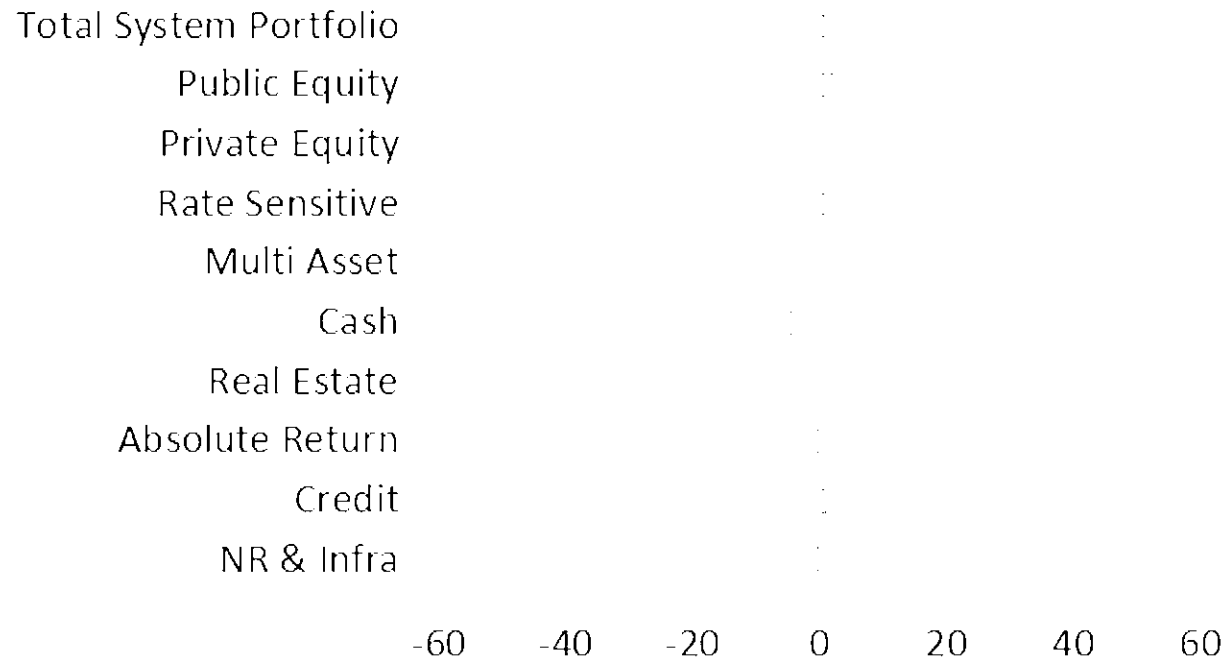
<b>Total outperformance</b>	≈	<b>Allocation effect</b>	+	<b>Selection effect</b>	+	<b>Misfit effect</b>
Total outperformance		Allocation effect		Selection effect		Misfit effect
<ul style="list-style-type: none"> <li>• Did the total plan portfolio beat the policy index?</li> </ul>		<ul style="list-style-type: none"> <li>• Was total plan portfolio overweight (underweight) those asset classes that did better (worse) than the total policy index?</li> </ul>		<ul style="list-style-type: none"> <li>• Did the managers outperform their respective benchmarks?</li> <li>• Were security selection decisions implemented in a cost effective manner?</li> </ul>		<ul style="list-style-type: none"> <li>• Did the manager benchmarks do better than the asset class benchmarks embedded in the policy index?</li> </ul>
<b>+23 bps*</b>	≈	<b>+4 bps</b>	+	<b>+27 bps</b>	+	
		<ul style="list-style-type: none"> <li>• Underweight Rate Sensitive was largest contributor (+9 bps) followed by overweight Public Equity (+2 bps) and overweight Credit (+1 bp)</li> <li>• Cash (-5 bps) and underweight NR &amp; Infra (-3 bps) were detractors</li> </ul>		<ul style="list-style-type: none"> <li>• Public Equity (+48 bps), Private Equity (+36 bps), and Rate Sensitive (+18 bps) added value</li> <li>• NR &amp; Infra (-45 bps) and Credit (-25 bps) suffered mostly from the reporting lag of private investments measured against public benchmarks</li> </ul>		<ul style="list-style-type: none"> <li>• Absolute Return (-11 bps) was main source of negative misfit effect</li> <li>• MLP exposure in NR &amp; Infra added value (+4 bps)</li> </ul>

# Portfolio Review – June 30, 2020

## Performance Attribution – Last Three Months



### Performance Attribution by Asset Class – Last Three Months

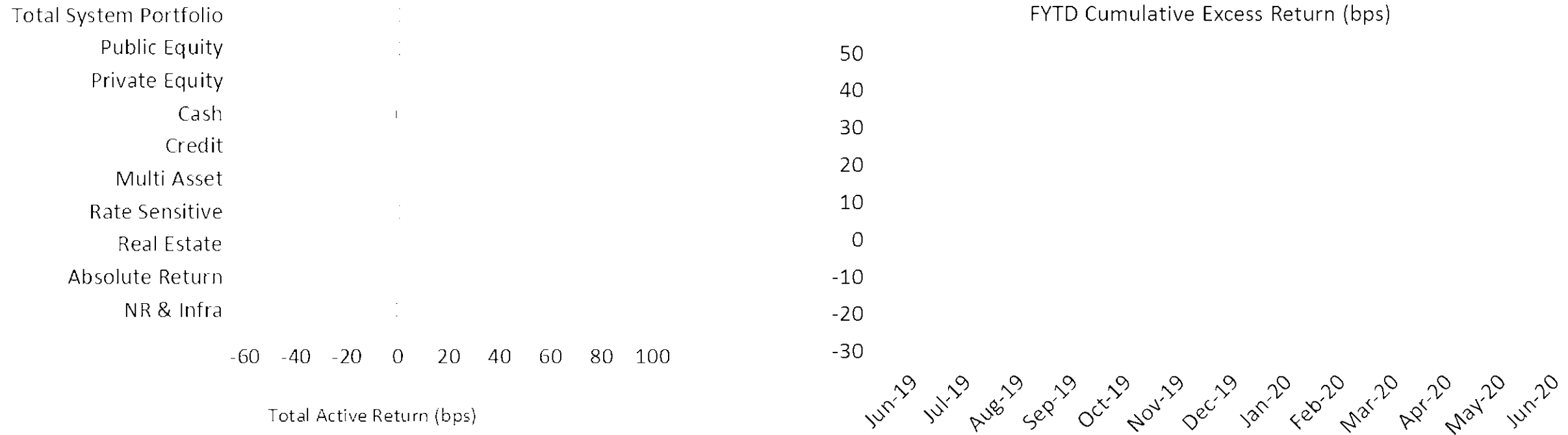


Total Active Return (bps) = Allocation Effect (bps) + Selection Effect (bps) + Misfit Effect (bps)



# Portfolio Review – June 30, 2020

## Performance Attribution – FYTD



<b>Total outperformance</b>	≈	<b>Allocation effect</b>	+	<b>Selection effect</b>	+	<b>Misfit effect</b>
<b>+43 bps*</b>	≈	<b>+19 bps</b>	+	<b>+65 bps</b>	+	

- Total System Portfolio finished the fiscal year on a strong note
- Security selection decisions drove the bulk of outperformance
- Staff implementation during the COVID-19 crisis added value

- Underweight Public Equity coming into March added value
- Underweight Rate Sensitive during market rebound also helped
- Currency hedging resulted in positive attribution as well

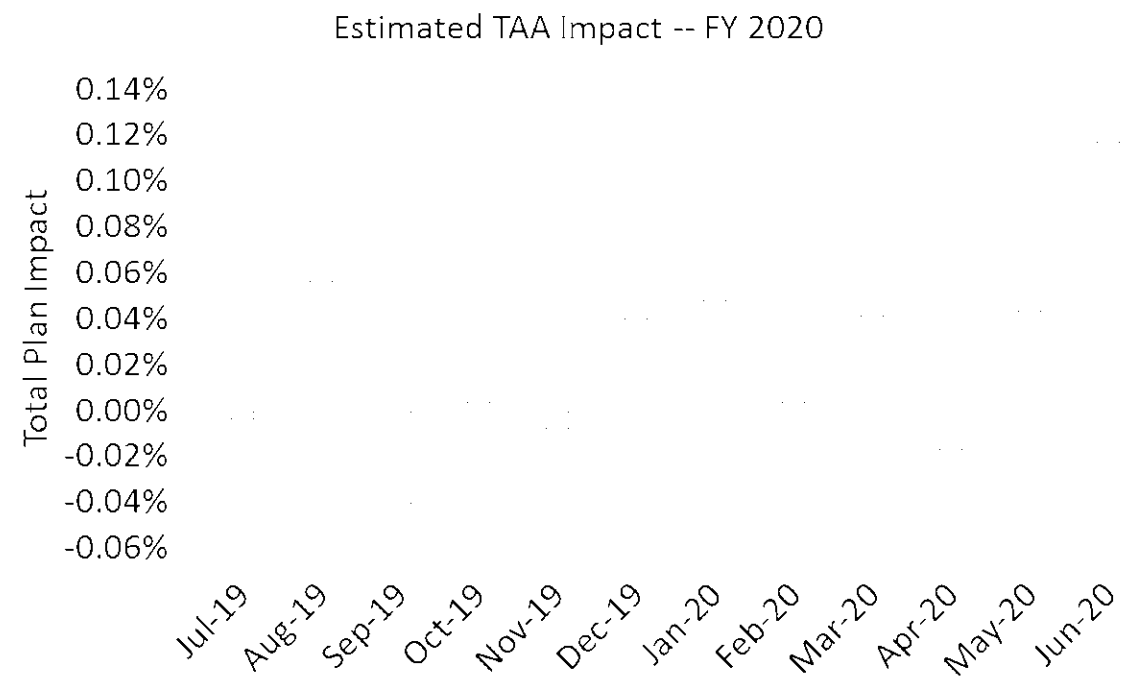
- Private Equity (+49 bps) was the largest contributor
- High conviction managers added value in Public Equity (+47 bps)
- Security selection was also positive within Rate Sensitive (+5 bps)

- NR & Infra (-29 bps) was hurt by benchmarks tied to energy prices
- Shorter duration benchmarks in Rate Sensitive (-15 bps) also detracted

# Portfolio Review – June 30, 2020

## Impact of Tactical Asset Allocation – FYTD

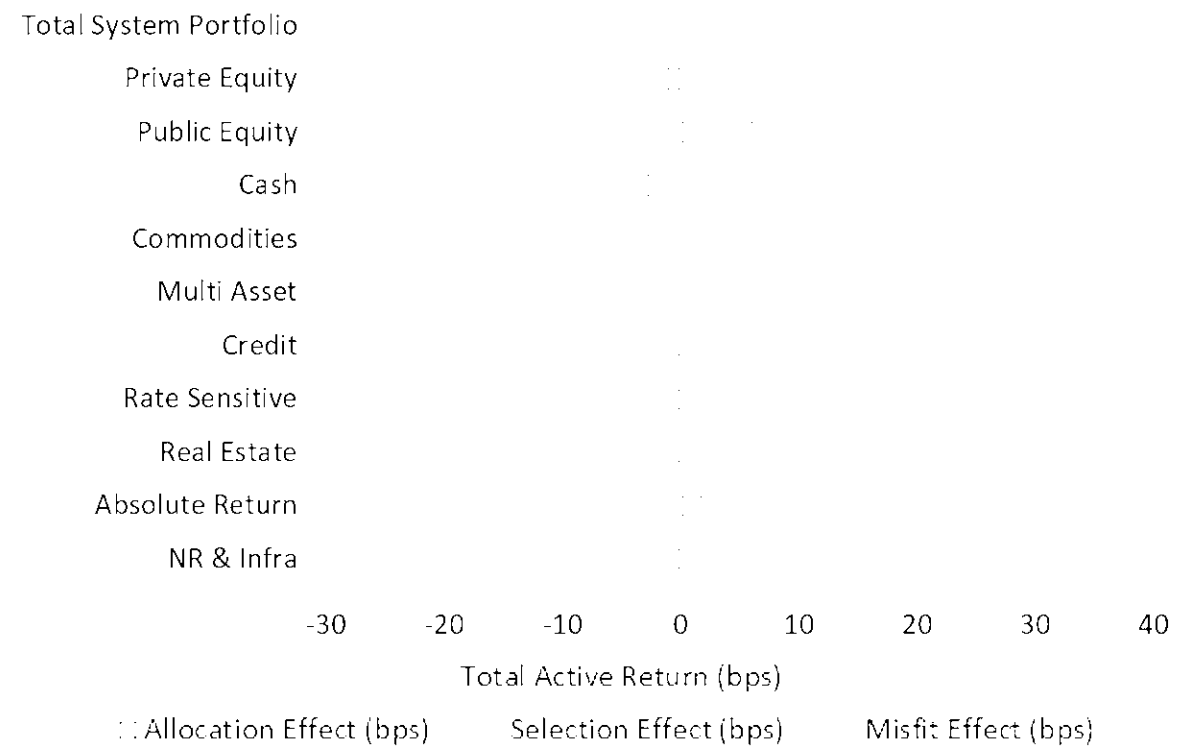
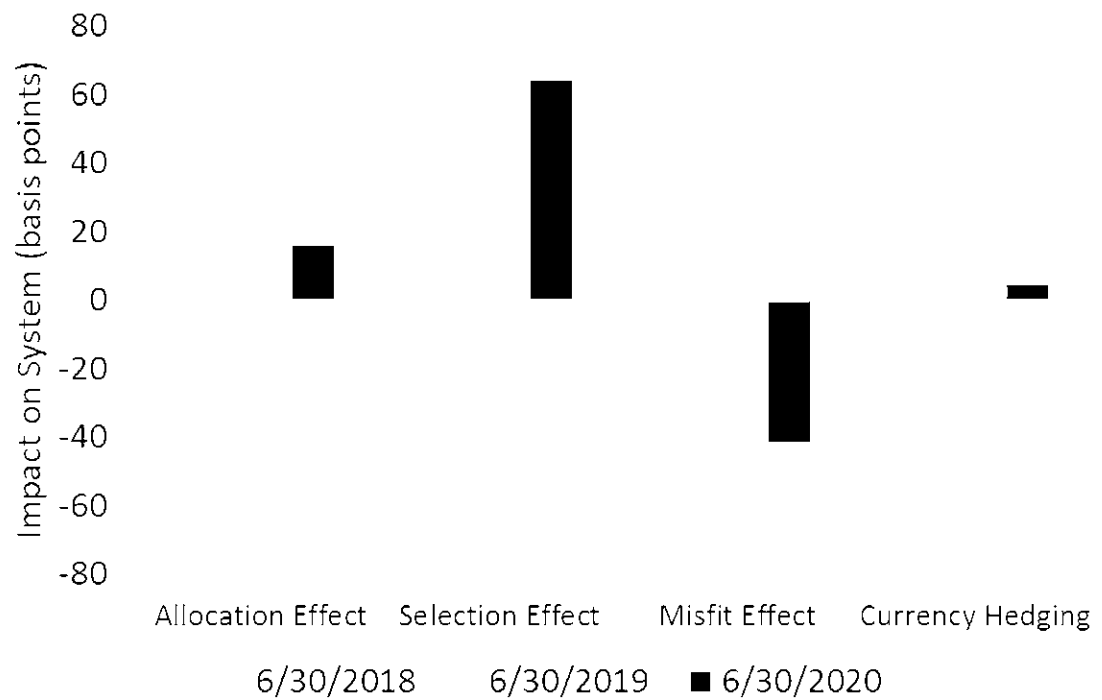
- Staff utilizes an index analytics-based framework to measure the System portfolio’s structural exposures each day
- This approach provides the CIO and Tactical Asset Allocation team with more timely reporting and serves as the basis for estimating the impact of tactical and rebalancing decisions
- During FY 2020, the estimated TAA impact was positive in six of 12 months with greater magnitude on the upside – the portfolio was positioned for a rebound in risk markets towards the end of the fiscal, as reflected in May (+4 bps) and June (+12 bps)





# Portfolio Review – June 30, 2020

## Performance Attribution – Last Three Years



**Total outperformance** ≈ **Allocation effect** + **Selection effect** + **Misfit effect**  
**+9 bps\*** ≈ **0 bps** + **+31 bps** + **-14 bps**

- Total System Portfolio rebounded following a disappointing FY 2019
- Security selection and tighter management of allocation risk were the main sources of outperformance

- Currency hedging (+6 bps) was the leading contributor but was offset by negative allocation effects from cash (-3 bps) and underweight Rate Sensitive (-2 bps)

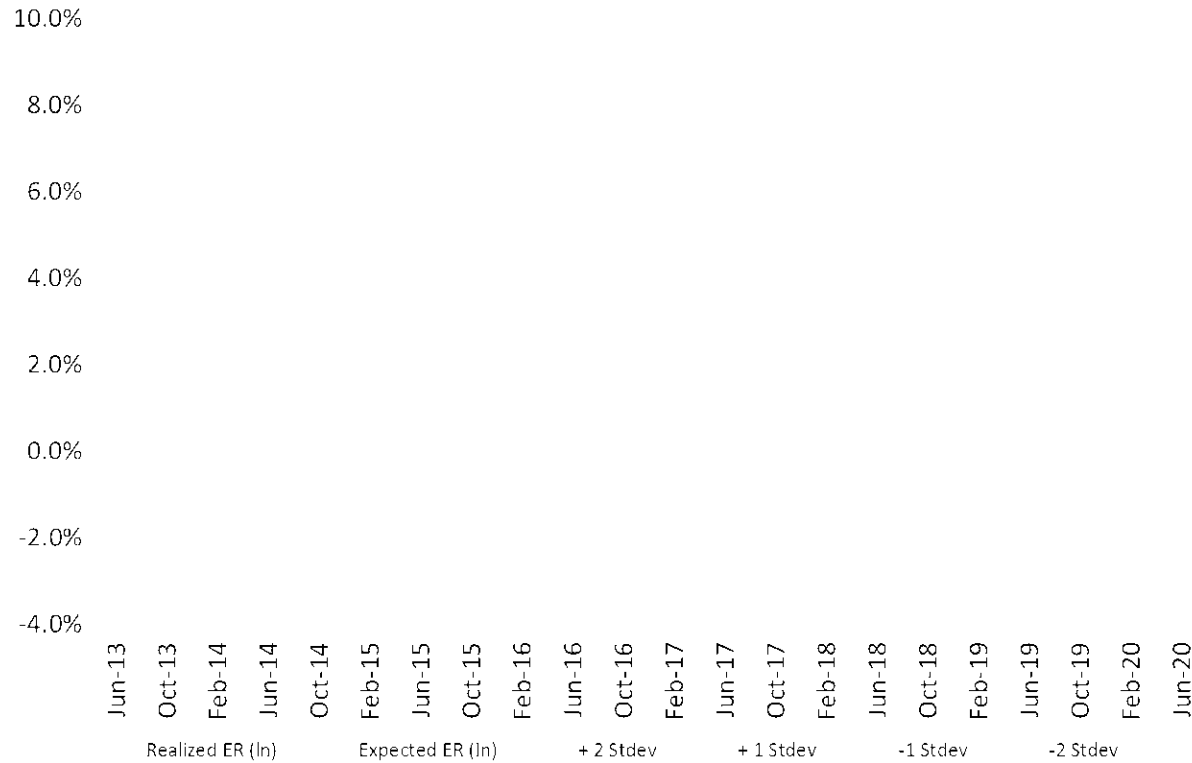
- Private Equity (+29 bps), Public Equity (+7 bps), and Rate Sensitive (+4 bps) were the main sources of positive selection effect

- Negative misfit effects were most pronounced in NR & Infra (-9 bps), Absolute Return (-6 bps), and Rate Sensitive (-5 bps)

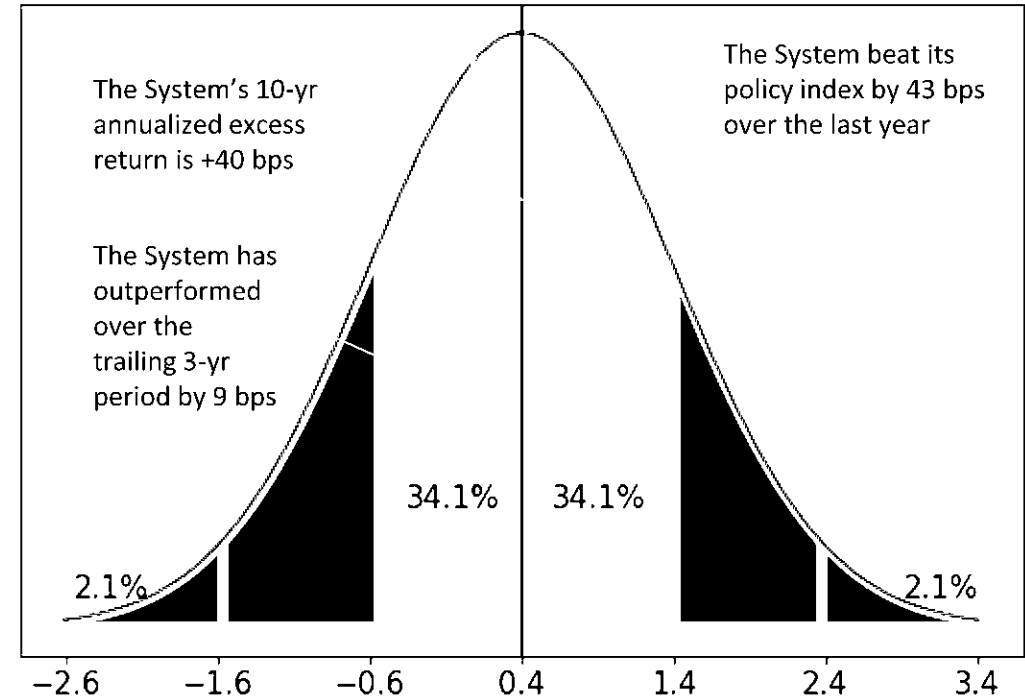
# Portfolio Review – June 30, 2020

## Realized Excess Return

TOTAL PLAN -- Realized vs Expected Cumulative Excess Return (exp ann ER=0.4%,  
exp ann TE=1%)



Total Plan Realized Annualized Excess Return vs. Expectations





# Portfolio Review – June 30, 2020

## Returns by Asset Class

	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
TOTAL PLAN	54,767,091,950	100.0%	7.38	3.57	3.57	6.01	5.80	7.57
TOTAL PLAN POLICY INDEX			7.15	3.14	3.14	5.93	5.84	7.17
Excess			0.23	0.43	0.43	0.08	-0.03	0.40
TOTAL PUBLIC EQUITY	19,787,575,607	36.1%	21.69	2.00	2.00	5.45	5.96	9.23
PUBLIC EQ BM 2			19.10	0.36	0.36	5.13	6.06	9.08
Excess			2.59	1.64	1.64	0.33	-0.10	0.15
TOTAL PRIVATE EQUITY	7,802,532,781	14.2%	-7.04	2.46	2.46	11.69	12.27	13.69
Custom MD/SS PEI Index			-9.99	-1.94	-1.94	8.00	8.41	10.53
Excess			2.95	4.41	4.41	3.69	3.85	3.15
TOTAL RATE SENSITIVE	10,186,335,384	18.6%	4.08	18.10	18.10	9.07	6.80	5.45
CUSTOM RATE SENS BMK			2.33	17.15	17.15	8.89	6.70	4.94
Excess			1.75	0.94	0.94	0.18	0.10	0.51
TOTAL CREDIT/DEBT	5,116,741,387	9.3%	5.59	-0.48	-0.48	2.75	4.05	6.00
CUSTOM CREDIT BMK			9.50	-0.06	-0.06	3.16	4.38	5.14
Excess			-3.91	-0.42	-0.42	-0.41	-0.33	0.86
TOTAL REAL ESTATE	4,607,415,369	8.4%	-2.14	1.31	1.31	5.39	6.88	10.42
REAL ESTATE CUSTOM INDEX			-0.60	3.24	3.24	6.20	7.76	10.68
Excess			-1.54	-1.93	-1.93	-0.81	-0.88	-0.26
NAT RES & INFRA	1,844,017,159	3.4%	1.95	-19.16	-19.16	-4.05	-2.72	5.08
NAT RES & INFRA BMK			17.42	-14.25	-14.25	0.50	4.06	5.41
Excess			-15.47	-4.91	-4.91	-4.55	-6.78	-0.32
TOTAL ABS RET	4,290,308,815	7.8%	3.06	-2.47	-2.47	1.22	0.77	2.74
CUSTOM ABS RET BMK			5.82	0.51	0.51	2.92	2.41	3.12
Excess			-2.76	-2.98	-2.98	-1.70	-1.64	-0.38
TOTAL MULTI ASSET	840,569,622	1.5%	12.84	2.93	2.93			
TOTAL PLAN POLICY INDEX			7.15	3.14	3.14			
Excess			5.69	-0.21	-0.21			
TOTAL CASH AGGREGATE	269,703,473	0.5%	0.38	0.85	0.85	7.22	5.50	4.05
FTSE 3 MONTH T-BILL			0.14	1.56	1.56	1.72	1.15	0.61
Excess			0.24	0.71	0.71	5.50	4.35	3.44

Source: State Street, FactSet

# Portfolio Review – June 30, 2020

## Currency Management Program



	QTD / 3 Month Return	1-year Return	Inception Return	3-Year St. Dev.	5-Year St. Dev.	Inception St. Dev.	Sharpe Inception
<b>Total International Developed Equity ex-Currency Overlay</b>	17.95%	-2.96%	6.67%	16.09%	14.76%	15.84%	0.42
<b>Total International Developed Equity</b>	17.57%	-2.37%	6.99%	15.61%	14.25%	14.90%	0.47
<b>Total Global Equity ex Currency Overlay</b>	21.80%	9.56%	11.01%	15.01%	13.07%	13.89%	0.79
<b>Total Global Equity</b>	21.66%	9.79%	11.15%	14.84%	12.92%	13.42%	0.83

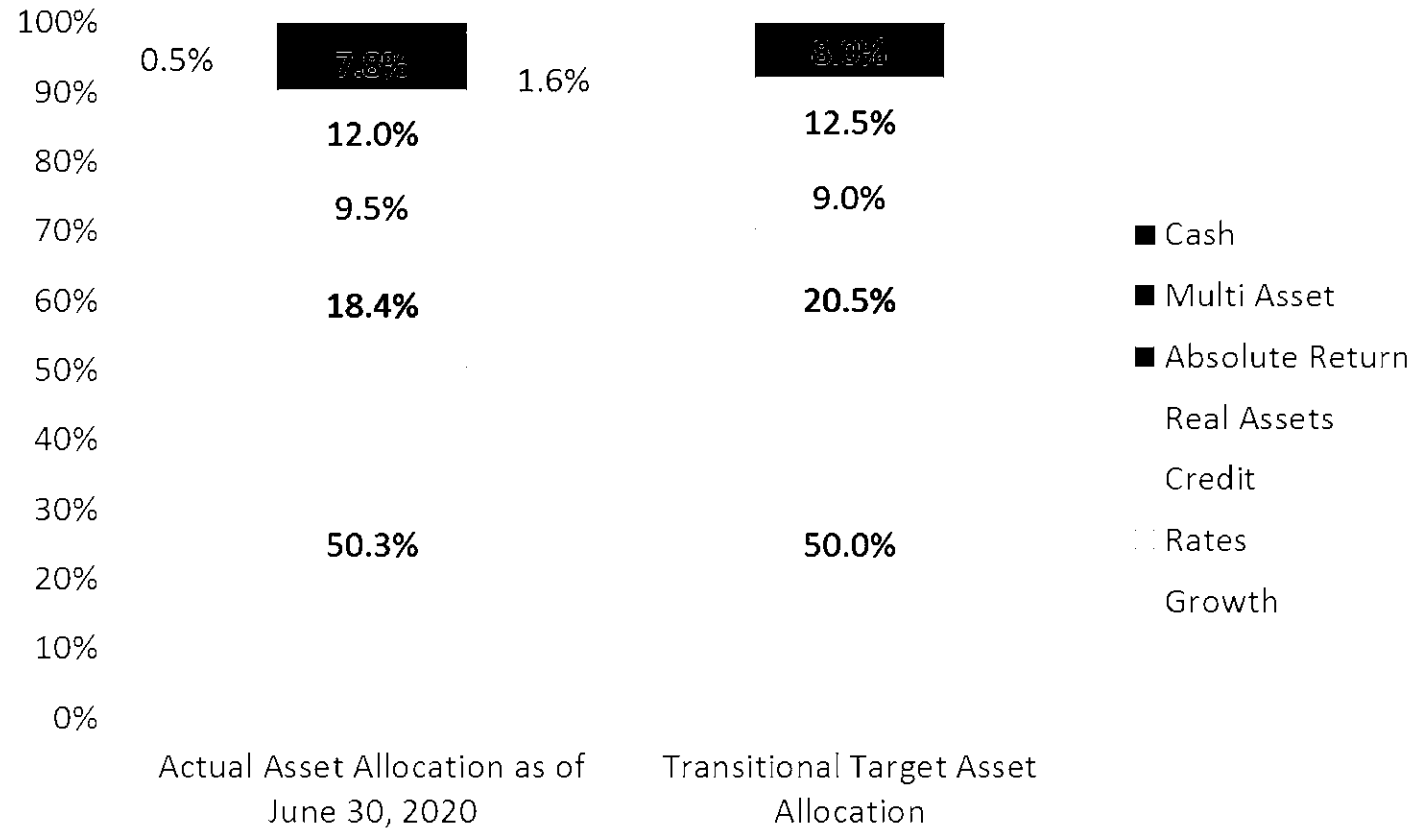
Cum. Cash	Mark to Market	Total Value Since Inception	Open Value at Risk
(4,038,297)	(49,929,966)	(53,968,263)	n/a
213,435,811	101,418,973	314,854,784	30,336,641
322,106,453	(54,988,251)	267,118,202	2,712,972
273,757,530	(48,061,577)	225,695,954	7,594,667
203,360,871	13,674,808	217,035,679	28,718,382
247,795,071	(954,226)	246,840,846	9,181,643
268,436,562	14,747,146	283,183,708	3,598,666



# Risk

# Portfolio Review – June 30, 2020

## Asset Allocation



Notes:

- 1.) The System adopted the target asset allocation in June 2017 which became effective on October 1, 2017.
- 2.) The amounts listed in the bar chart above may not add to 100% because of rounding.
- 3.) Does not include overlay.

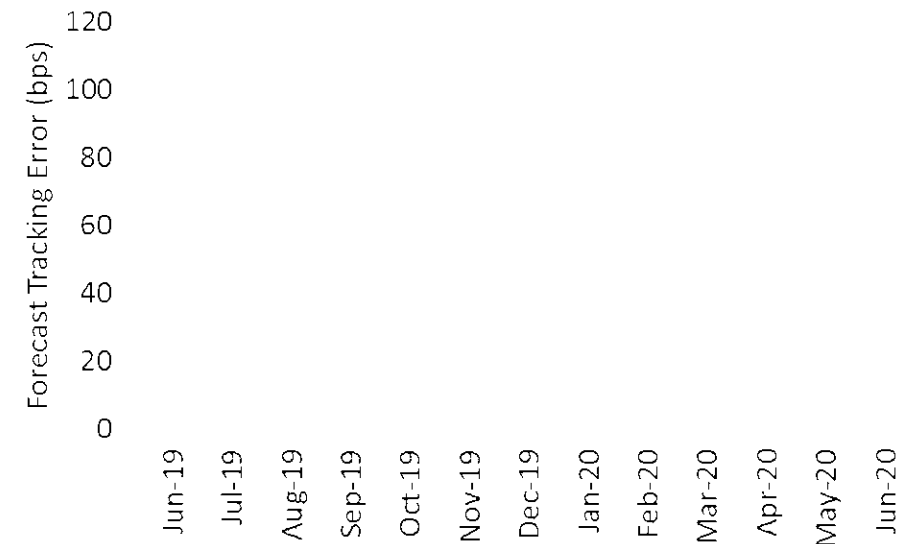
# Investment Risk Management – June 30, 2020

## Tracking Error Decomposition by Manager

- Staff establishes expectations for each manager in the System’s portfolio based on a combination of strategy type, performance history, and qualitative inputs – these expectations are combined to produce a tracking error estimate for the entire portfolio
- The table below shows the System’s forecast tracking error on an ex-overlay basis (i.e., managers only, not considering the impact of currency hedging and tactical overlays)
- Total active risk is 85 bps with the vast majority coming from selection risk
- Overlays, not included in the exhibits below, are primarily used to manage allocation risk
  - ❑ For example, the underweight to Nominal Fixed Income shown in the table below is adjusted using futures contracts in an effort to manage allocation risk (i.e., the System is not underweight Nominal Fixed Income by 2.3% as shown below)
- Forecast tracking error (ex-overlay) was relatively consistent over the last 12 months but has fallen as markets have rebounded from the COVID-19 crisis

Asset class	Portfolio Weight	Policy Weight	Active weight	Allocation Risk (bps)	Selection Risk (bps)	Misfit Risk (bps)	Total Active Risk (bps)
Public Equity	35.8%	35.5%	0.3%	0	24	11	34
Private Equity	14.5%	14.5%	0.0%	0	35	0	35
Nominal Fixed Income	13.9%	16.2%	-2.3%	6	2	4	13
Inflation Fixed Income	4.5%	4.3%	0.2%	0	0	0	0
US Credit	7.5%	7.0%	0.5%	0	2	0	1
Non-US Credit	2.0%	2.0%	0.0%	0	0	0	0
Real Estate	8.5%	8.5%	0.0%	0	-2	0	-2
NR & Infra	3.4%	4.0%	-0.6%	2	3	2	7
Absolute Return	7.8%	8.0%	-0.2%	0	3	-6	-3
Multi Asset	1.6%	0.0%	1.6%	0	0	0	0
Cash	0.5%	0.0%	0.5%	1	0	0	1
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	<b>8</b>	<b>67</b>	<b>11</b>	<b>85</b>

**Forecast Tracking Error (ex-Overlay) – Last 12 months**





# Portfolio Review – June 30, 2020

## Risk Dashboard – Leverage

Allocation	Asset Class	Embedded (Debt/EV)*	Economic			Financial		
			Gross Long	Gross Short	Net	Gross Long	Gross Short	Net
36%	Growth - Public Equities	29%	102%	-4%	98%	4%	-1%	4%
14%	Growth - Private Equity	40%	100%	0%	100%	0%	0%	0%
18%	Rate Sensitive	0%	204%	-109%	96%	15%	0%	15%
9%	Credit	0%	102%	0%	102%	0%	0%	0%
0%	RA - Commodities	0%	0%	0%	0%	0%	0%	0%
9%	RA - Real Estate	27%	100%	0%	100%	0%	0%	0%
3%	RA - Resources & Infra	39%	100%	0%	100%	3%	0%	0%
8%	Absolute Return	0%	420%	-314%	106%	0%	0%	0%
2%	Multi-Asset / Cash Equitization	20%	119%	0%	119%	0%	0%	0%
0%	Cash	0%	100%	0%	100%	0%	0%	0%
<b>100%</b>	<b>TOTAL PLAN</b>	<b>20%</b>	<b>146%</b>	<b>-46%</b>	<b>100%</b>	<b>4%</b>	<b>0%</b>	<b>4%</b>

\*Source data: Factset (Public Equities), Mercer (Private Equity), Power (Real Estate), Bloomberg (Commodities), Fitch (ABS). MEETING - CONFERENCE CALL 9/22/2020



# Portfolio Review – June 30, 2020

## Risk Dashboard – Liquidity



<b>Asset Class</b>	<b>Current Allocation*</b>	<b>5-day Liquid</b>	<b>Liquid</b>	<b>Quasi-Liquid</b>	<b>Illiquid</b>
Growth - Public Equities	36.2%	21.1%	14.1%	0.0%	1.0%
Growth - Private Equity*	14.3%	0.0%	0.0%	0.0%	14.3%
Rate Sensitive	18.7%	18.0%	0.0%	0.7%	0.0%
Credit*	9.4%	1.8%	4.8%	0.7%	2.1%
RA - Real Estate*	8.4%	0.0%	0.0%	0.0%	8.4%
RA - Resources & Infra*	3.4%	1.3%	0.7%	0.0%	1.4%
Absolute Return	7.5%	0.0%	2.3%	1.4%	3.7%
Multi-Asset	1.5%	1.1%	0.4%	0.0%	0.0%
Cash	0.5%	0.5%	0.0%	0.0%	0.0%
<b>Total Plan</b>	<b>100.0%</b>	<b>43.8%</b>	<b>22.4%</b>	<b>2.8%</b>	<b>30.9%</b>

\* Private investment market values are lagged

(1) Liquid: 6 days to 3 months liquidity

(2) Quasi-Liquid: 3 months to 12 months liquidity

(3) Illiquid: > 1 year liquidity



# Asset Class Fact Sheets



# Public Equity – June 30, 2020

## Fact Sheet

### Public Equity 2Q 2020 Asset Class Performance Attribution

Policy allocation 37%

Policy index 43% Russell 3000, 27%MSCI World ex-USA, 30% MSCI Emerging Markets

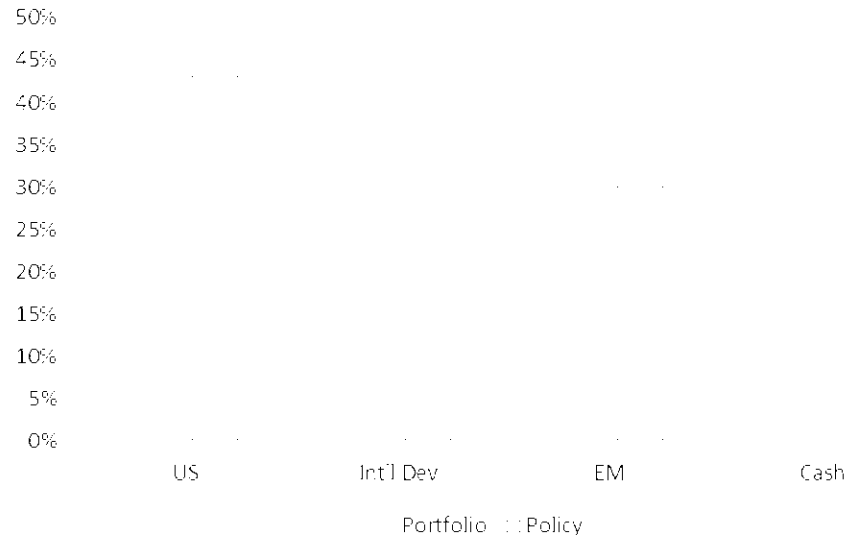
Target excess return 50 bps

Target tracking error 200 bps

Target info ratio 0.25

<b>Total outperformance</b>	≈	<b>Allocation effect</b>	+	<b>Selection effect</b>	+	<b>Misfit effect</b>
<b>+243 bps*</b>	≈	<b>+40 bps</b>	+	<b>+151 bps</b>	+	<b>+51 bps</b>
• Decisions made by managers and staff paid off during the quarter		• Largely the result of futures overlays utilized to manage structural exposures		• A single manager accounted for +78 bps		• Exposure to growth style indices was a tailwind

### Regional Exposures



\* The components may not add up to the total due to cash flow/timing differences at State Street

	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
TOTAL PUBLIC EQUITY	19,787,575,607	36.1%	21.69	2.00	2.00	5.45	5.96	9.23
PUBLIC EQ BM 2			19.10	0.36	0.36	5.13	6.06	9.08
Excess			2.59	1.64	1.64	0.33	-0.10	0.15

	Market Value	% of Plan	3-month	Excess	FYTD	Excess
Public Equity Asset Class	19,714,786,124	36.0%	21.53		1.86	
PUBLIC EQ BM 2			19.10	2.43	0.36	1.50

**Note:** Asset Class performance composites were created at State Street effective 7/1/2019; Asset Class performance includes the results of managers as well as the impact of overlays used to manage intra-asset class exposures but does **not** include the impact of Total Plan overlays such as currency hedging

**Note:** Cash is the embedded exposure within equity long/short



# Private Equity – June 30, 2020

## Fact Sheet

### Performance Metrics as of 3/31/2020 – Since Inception

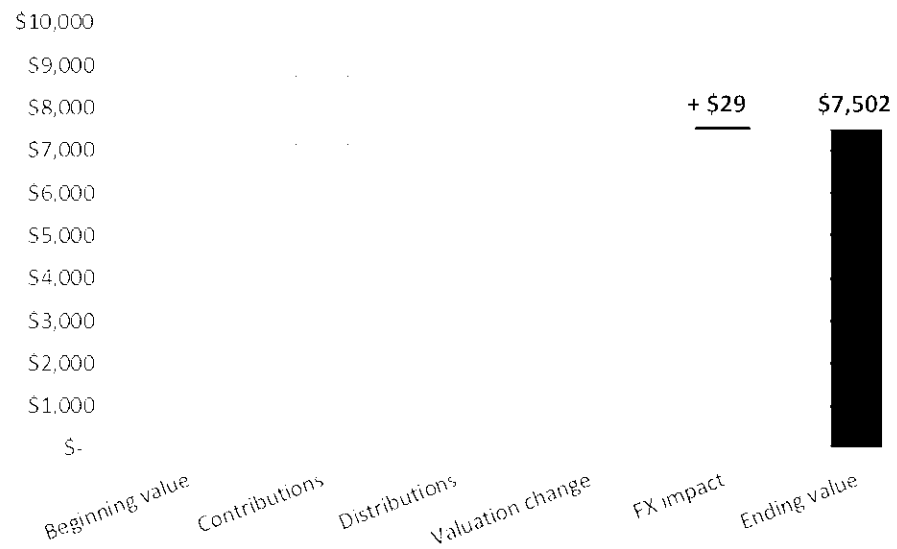
Policy allocation 13%

Policy index State Street Private Equity Index

Target return 200 bps above MSCI ACWI over the long term

Buyout	\$4,956	12.07%	1.39x	0.79x	4.78%	53%	83%
Venture/Growth	\$1,991	12.36%	1.43x	0.64x	4.72%	73%	96%
Other	\$555	9.68%	1.39x	0.98x	2.22%	6%	52%
<b>Total</b>	<b>\$7,502</b>	<b>11.68%</b>	<b>1.40x</b>	<b>0.78x</b>	<b>4.33%</b>	<b>48%</b>	<b>80%</b>

### Portfolio Activity 3/31/2019 to 3/31/2020



	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
TOTAL PRIVATE EQUITY	7,802,532,781	14.2%	-7.04	2.46	2.46	11.69	12.27	13.69
Custom MD/SS PEI Index			-9.99	-1.94	-1.94	8.00	8.41	10.53
Excess			2.95	4.41	4.41	3.69	3.85	3.15

*Note: Total Private Equity 6/30/2020 market value shown above reflects 3/31/2020 valuations adjusted for capital calls and distributions through 6/30/2020*



# Rate Sensitive – June 30, 2020

## Fact Sheet

### Rate Sensitive 2Q 2020 Asset Class Performance Attribution

Policy allocation	19%
Policy index	53% BBG/Barc Long US Gov't, 13% BBG/Barc US Corporate, 13% BBG/Barc US Securitized, 21% BBG/Barc TIPS
Target excess return	30 bps
Target tracking error	100 bps
Target info ratio	0.30

<b>Total outperformance</b>	≈	<b>Allocation effect</b>	+	<b>Selection effect</b>	+	<b>Misfit effect</b>
<b>+164 bps*</b>	≈	<b>+25 bps</b>	+	<b>+127 bps</b>	+	<b>+6 bps</b>
• Managers and staff positioned the portfolio to take advantage of 1Q20 dislocations		• Sector allocation and tactical futures decisions added value		• Managers added to high conviction exposures dislocated in 1Q20		• Shorter duration benchmarks slightly outperformed the policy index as curve steepened

### Portfolio Duration



\* The components may not add up to the total due to cash flow/timing differences at State Street

	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
TOTAL RATE SENSITIVE	10,186,335,384	18.6%	4.08	18.10	18.10	9.07	6.80	5.45
CUSTOM RATE SENS BMK			2.33	17.15	17.15	8.89	6.70	4.94
Excess			1.75	0.94	0.94	0.18	0.10	0.51

	Market Value	% of Plan	3-month	Excess	FYTD	Excess
Rate Sensitive Asset Class	10,162,581,195	18.6%	3.97		17.56	
CUSTOM RATE SENS BMK			2.33	1.64	17.15	0.41

**Note:** Asset Class performance composites were created at State Street effective 7/1/2019; Asset Class performance includes the results of managers as well as the impact of overlays used to manage intra-asset class exposures but does **not** include the impact of Total Plan overlays



# Credit – June 30, 2020

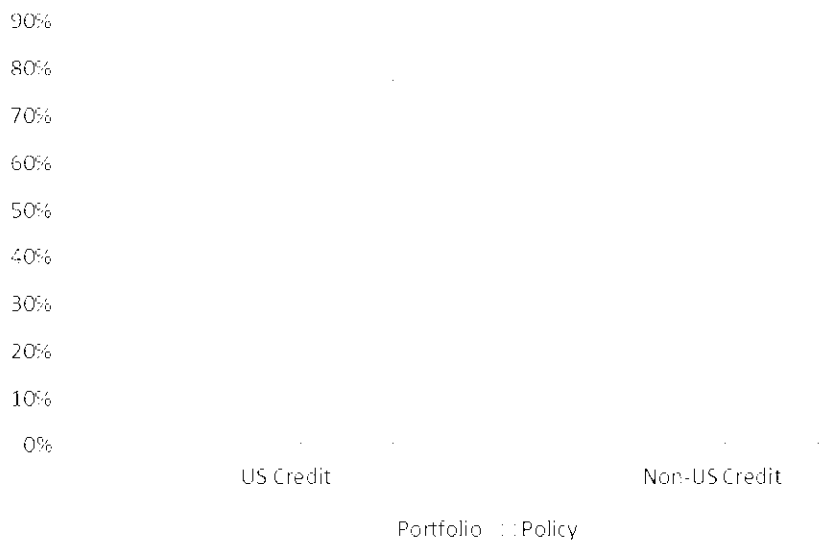
## Fact Sheet

### Credit 2Q 2020 Asset Class Performance Attribution

Policy allocation	9%
Policy index	78% US Credit Custom Benchmark, 22% Non-US Credit Custom Benchmark
Target excess return	65 bps
Target tracking error	195 bps
Target info ratio	0.33

<b>Total outperformance</b>	≈	<b>Allocation effect</b>	+	<b>Selection effect</b>	+	<b>Misfit effect</b>
*	≈	<b>+8 bps</b>	+		+	<b>+5 bps</b>
<ul style="list-style-type: none"> <li>Underperformance stems from reporting lag in private markets and results of liquid markets managers</li> </ul>		<ul style="list-style-type: none"> <li>Underweight bank loans, overweight HY, and tactical allocation to HY CCC added value</li> </ul>		<ul style="list-style-type: none"> <li>Private markets reporting lag</li> <li>Public managers did not fully participate in risk on market</li> </ul>		<ul style="list-style-type: none"> <li>Structural positioning in BB/B relative to full market High Yield added value</li> </ul>

### Regional Exposures



\* The components may not add up to the total due to cash flow/timing differences at State Street

	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
TOTAL CREDIT/DEBT	5,116,741,387	9.3%	5.59	-0.48	-0.48	2.75	4.05	6.00
CUSTOM CREDIT BMK			9.50	-0.06	-0.06	3.16	4.38	5.14
Excess			-3.91	-0.42	-0.42	-0.41	-0.33	0.86

	Market Value	% of Plan	3-month	Excess	FYTD	Excess
Credit/Debt Asset Class	5,116,741,387	9.3%	5.59		-0.43	
CUSTOM CREDIT BMK			9.50	-3.91	-0.06	-0.37

**Note:** Asset Class performance composites were created at State Street effective 7/1/2019; Asset Class performance includes the results of managers as well as the impact of overlays used to manage intra-asset class exposures but does **not** include the impact of Total Plan overlays

# Real Estate – June 30, 2020

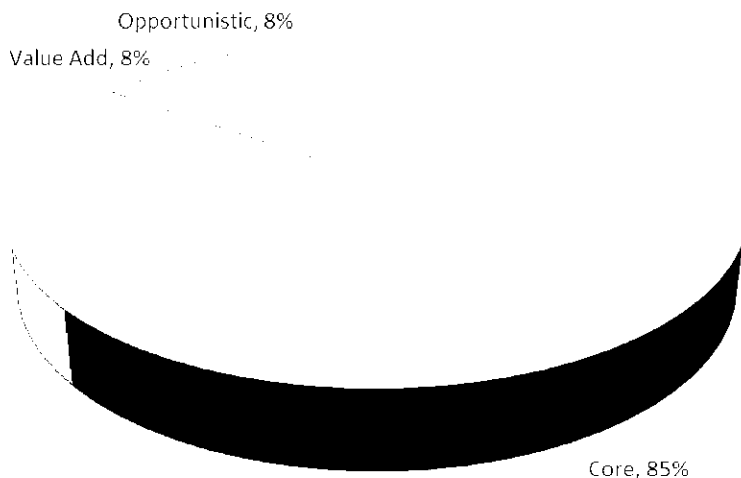
## Fact Sheet

### Real Estate Trailing 1-year Asset Class Performance Attribution

Policy allocation 10%  
 Policy index NCREIF ODCE (gross)  
 Target excess return 25 bps

**Total outperformance** ≈ **Allocation effect** + **Selection effect** + **Misfit effect**  
 \* ≈ **0 bps** + + **+9 bps**

### Strategy Allocation



- Policy benchmark changes creates technical issue for FY2020 comparisons
- Policy benchmark change compares 4 qtrs. of portfolio returns to 5 qtrs. of bmk. returns
- REIT allocation became misfit risk effect 7/1/2019 and had positive impact

\* The components may not add up to the total due to cash flow/timing differences at State Street

	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
TOTAL REAL ESTATE	4,607,415,369	8.4%	-2.14	1.31	1.31	5.39	6.88	10.42
REAL ESTATE CUSTOM INDEX			-0.60	3.24	3.24	6.20	7.76	10.68
Excess			-1.54	-1.93	-1.93	-0.81	-0.88	-0.26

	Market Value	% of Plan	3-month	Excess	FYTD	Excess
Real Estate Asset Class	4,607,415,369	8.4%	-2.14		1.31	
REAL ESTATE CUSTOM INDEX			-0.60	-1.54	3.24	-1.93

**Note:** REITs are an investible asset within the Real Estate allocation despite not being in the Real Estate benchmark

**Note:** Asset Class performance composites were created at State Street effective 7/1/2019; Asset Class performance includes the results of manager as well as the impact of overlays used to manage intra-asset class exposures but does **not** include the impact of Total Plan overlays



# Natural Resources & Infrastructure – June 30, 2020

## Fact Sheet

### NR & Infra 2Q 2020 Asset Class Performance Attribution

Policy allocation 4%

Policy index 60% S&P Global Natural Resources, 40% DJ/Brookfield Global Infrastructure

Target excess return 25 bps

**Total outperformance** ≈ **Allocation effect** + **Selection effect** + **Misfit effect**

\* ≈ + + **+156 bps**

- Benchmarking difficulties are evident amid major rebound in commodity prices
- An overweight to Infrastructure detracted value
- Mostly due to lagged reporting of private markets investments
- MLP managers trailed meaningfully
- MLP index massively outperformed the 60/40 NR/Infra policy benchmark

\* The components may not add up to the total due to cash flow/timing differences at State Street

### Sector Exposures



	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
NAT RES & INFRA	1,844,017,159	3.4%	1.95	-19.16	-19.16	-4.05	-2.72	5.08
NAT RES & INFRA BMK			17.42	-14.25	-14.25	0.50	4.06	5.41
Excess			-15.47	-4.91	-4.91	-4.55	-6.78	-0.32

	Market Value	% of Plan	3-month	Excess	FYTD	Excess
NR & Infra Asset Class	1,844,017,159	3.4%	1.95		-19.16	
NAT RES & INFRA BMK			17.42	-15.47	-14.25	-4.91

**Note:** Asset Class performance composites were created at State Street effective 7/1/2019; Asset Class performance includes the results of managers as well as the impact of overlays used to manage intra-asset class exposures but does **not** include the impact of Total Plan overlays



# Absolute Return – June 30, 2020

## Fact Sheet

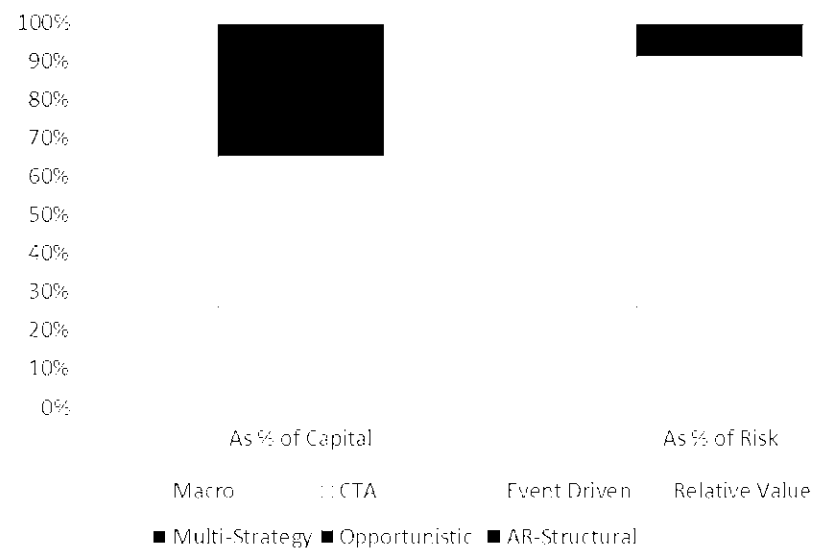
Policy allocation 8%

Policy index HFRI FOF Conservative +100 bps

Target return 400 bps above T-Bills over the long term

Target Beta (ACWI) <0.20

### Strategy Allocation



### Absolute Return 2Q 2020 Asset Class Performance Attribution

**Total outperformance** ≈ **Allocation effect** + **Selection effect** + **Misfit effect**

\* ≈ **0 bps** + +

- ARP trailed HFRI-based benchmark amid market rebound
- A single manager accounted for -144 bps selection effect
- Dragged down by macro systematic and CTA index exposures

\* The components may not add up to the total due to cash flow/timing differences at State Street

	Market Value	% of Plan	3-mo	FYTD	1-year	3-year	5-year	10-year
TOTAL ABS RET	4,290,308,815	7.8%	3.06	-2.47	-2.47	1.22	0.77	2.74
CUSTOM ABS RET BMK			5.92	0.61	0.61	2.95	2.43	3.13
Excess			-2.86	-3.07	-3.07	-1.73	-1.66	-0.39

	Market Value	% of Plan	3-month	Excess	FYTD	Excess
Absolute Return Asset Class	4,290,308,815	7.8%	3.06		-2.47	
CUSTOM ABS RET BMK			5.92	-2.86	0.61	-3.07

**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

**TO:** Investment Committee  
**FROM:** Investment Division Staff  
**DATE:** September 11, 2020  
**RE:** Performance Update as of June 30, 2020

The System's general investment consultant, Meketa Investment Group, Inc., will present the second quarter 2020 performance and market update.

The report is attached in the EXHIBIT BOOK.

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**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

**TO:** Investment Committee  
**FROM:** Investment Division Staff  
**DATE:** September 14, 2020  
**RE:** Update from The Townsend Group

The Committee will receive an update on the Real Estate Program.

The report is attached in the Exhibit Book.

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**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

**TO:** Investment Committee  
**FROM:** Investment Division Staff  
**DATE:** September 14, 2020  
**RE:** Committee Led Discussion

This is some time set aside to solicit comments and discuss new items or other issues of committee members choosing.

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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 PLAN</b>												
TOTAL PLAN	54,767,091,950	100.0	1.88	7.38	-1.53	3.57	3.57	6.01	5.80	7.57	7.89	07/01/86
TOTAL PLAN POLICY INDEX <sup>[1]</sup>			1.37	7.15	-1.93	3.14	3.14	5.93	5.84	7.17		07/01/86
TOTAL PLAN STRATEGIC POLICY INDEX <sup>[2]</sup>			2.39	11.02	-2.10	3.61	3.61	5.70	5.88			07/01/11
TOTAL PLAN EX RECORD CURRENCY	54,199,363,699	99.0	1.80	7.18	-1.94	3.11	3.11	5.79	5.71	7.54	7.85	07/01/86
<b>GROWTH EQUITY</b>												
TOTAL GROWTH EQUITY	27,590,108,388	50.4	3.24	11.97	-5.26	2.09	2.09	6.99	7.34	10.14	5.91	01/01/98
GROWTH EQUITY CUSTOM BENCHMARK <sup>[3]</sup>			1.98	9.63	-7.17	-0.39	-0.39	5.92				01/01/98
TOTAL PUBLIC EQUITY EX OVERLAY	19,471,870,573	35.6	4.45	21.23	-5.91	2.33	2.33	5.41	5.93	9.22		04/01/94
PUBLIC EQ BM 2 <sup>[4]</sup>			4.10	19.10	-7.49	0.36	0.36	5.13	6.06	9.08		04/01/94
PUBLIC EQ BM <sup>[5]</sup>			4.01	18.99	-7.78	-0.05	-0.05	4.60	5.63	8.88		07/01/08
TOTAL PUBLIC EQUITY OVERLAY	315,705,034	0.6										12/01/16
TOTAL PUBLIC EQUITY	19,787,575,607	36.1	4.60	21.69	-6.16	2.00	2.00	5.45	5.96	9.23		04/01/94
TOTAL PUBLIC EQUITY EX RECORD CURRENCY	19,457,005,016	35.5	4.48	21.34	-6.03	2.16	2.16	5.31	5.98	9.27	7.38	01/01/95
<b>U.S. EQUITY EX OVERLAY</b>												
U.S. EQUITY EX OVERLAY	6,287,995,409	11.5	2.68	23.53	-4.30	5.12	5.12	9.16	9.15	12.96	8.82	04/01/94
MSRA CUSTOM US EQUITY INDEX <sup>[6]</sup>			2.29	22.03	-3.48	6.53	6.53	10.04	10.03	13.72		04/01/94
US EQUITY DYNAMIC BENCHMARK <sup>[5]</sup>			2.27	22.09	-5.22	4.19	4.19	8.80	9.31	13.32		07/01/08
S&P 500			1.99	20.54	-3.08	7.51	7.51	10.73	10.73	13.99		02/01/54
Russell 1000			2.21	21.82	-2.81	7.48	7.48	10.64	10.47	13.97		02/01/79
Russell 2000			3.53	25.42	-12.98	-6.63	-6.63	2.01	4.29	10.50		01/01/79
Russell 3000			2.29	22.03	-3.48	6.53	6.53	10.04	10.03	13.72		01/01/79
WILSHIRE 5000			2.34	21.94	-3.30	6.78	6.78	10.13	10.27	13.74		01/01/71
U.S. EQUITY OVERLAY	71,897,757	0.1										02/01/17
U.S. EQUITY	6,359,893,166	11.6	2.73	23.24	-3.86	4.98	4.98	9.34	9.26	13.01	8.84	04/01/94



**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 INTL DEVELOPED EQUITY EX OVERLAY <sup>[7]</sup></b>	<b>3,588,107,092</b>	<b>6.6</b>	<b>3.02</b>	<b>17.57</b>	<b>-9.21</b>	<b>-2.37</b>	<b>-2.37</b>	<b>1.81</b>	<b>2.10</b>	<b>5.15</b>	<b>5.83</b>	<b>01/01/95</b>
MSRA CUSTOM INTERNATIONAL INDEX <sup>[8]</sup>			3.42	15.34	-11.49	-5.42	-5.42	0.84	1.63	4.65	4.81	01/01/95
MSCI WORLD EX US (NET)			3.42	15.34	-11.49	-5.42	-5.42	0.84	2.01	5.43		01/01/70
MSCI WORLD EX US NET HEDGED			2.65	13.12	-9.34	-2.17	-2.17	3.51	4.26	7.49		07/01/90
MSCI EAFE (NET)			3.40	14.88	-11.34	-5.13	-5.13	0.81	2.05	5.73		01/01/70
MSCI AC WORLD ex US (NET)			4.52	16.12	-11.00	-4.80	-4.80	1.13	2.26	4.97		01/01/72
<b>TOTAL INTL DEVELOPED EQUITY OVERLAY</b>	<b>103,683,589</b>	<b>0.2</b>										<b>12/01/16</b>
<b>TOTAL INTL DEVELOPED EQUITY</b>	<b>3,691,790,681</b>	<b>6.7</b>	<b>3.28</b>	<b>18.65</b>	<b>-10.01</b>	<b>-2.82</b>	<b>-2.82</b>	<b>1.68</b>	<b>2.01</b>	<b>5.10</b>	<b>5.82</b>	<b>01/01/95</b>
<b>TOTAL INTL DEV EQUITY EX RECORD CURRENCY <sup>[7]</sup></b>	<b>3,577,036,158</b>	<b>6.5</b>	<b>3.12</b>	<b>17.95</b>	<b>-9.68</b>	<b>-2.96</b>	<b>-2.96</b>	<b>1.49</b>	<b>2.19</b>	<b>5.13</b>		<b>01/01/95</b>
<b>TOTAL EMERGING MARKETS EQUITY EX OVERLAY</b>	<b>5,405,002,231</b>	<b>9.9</b>	<b>7.80</b>	<b>20.25</b>	<b>-10.60</b>	<b>-3.68</b>	<b>-3.68</b>	<b>1.90</b>			<b>6.17</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			5.95	11/01/15
MSCI EMERGING MARKETS IMI INDEX (NET)			7.51	18.93	-10.09	-3.97	-3.97	1.35	2.35	3.11		01/01/70
<b>TOTAL EMERGING MARKETS OVERLAY</b>	<b>61,078,508</b>	<b>0.1</b>										<b>02/01/17</b>
<b>TOTAL EMERGING MARKETS EQUITY</b>	<b>5,466,080,738</b>	<b>10.0</b>	<b>8.01</b>	<b>20.76</b>	<b>-11.79</b>	<b>-4.70</b>	<b>-4.70</b>	<b>1.78</b>			<b>6.08</b>	<b>11/01/15</b>
<b>TOTAL GLOBAL EQUITY EX OVERLAY</b>	<b>4,190,765,842</b>	<b>7.7</b>	<b>4.21</b>	<b>21.66</b>	<b>0.56</b>	<b>9.79</b>	<b>9.79</b>	<b>7.91</b>	<b>7.08</b>	<b>10.10</b>	<b>6.85</b>	<b>10/01/05</b>
MSRA CUSTOM GLOBAL INDEX <sup>[9]</sup>			3.20	19.22	-6.25	2.11	2.11	6.14	6.46	9.16	6.09	10/01/05
MSCI WORLD (NET)			2.65	19.36	-5.77	2.84	2.84	6.70	6.90	9.95		01/01/70
GLOBAL EQUITY DYNAMIC BENCHMARK <sup>[9]</sup>			2.99	18.28	-5.72	1.91	1.91	5.43	5.62	8.62		07/01/08
<b>TOTAL GLOBAL EQUITY OVERLAY</b>	<b>79,045,180</b>	<b>0.1</b>										<b>01/01/20</b>
<b>TOTAL GLOBAL EQUITY</b>	<b>4,269,811,021</b>	<b>7.8</b>	<b>4.39</b>	<b>22.70</b>	<b>1.11</b>	<b>10.38</b>	<b>10.38</b>	<b>8.11</b>	<b>7.20</b>	<b>10.16</b>	<b>6.89</b>	<b>10/01/05</b>
<b>TOTAL GLOBAL EQUITY EX RECORD CURRENCY</b>	<b>4,186,971,218</b>	<b>7.6</b>	<b>4.24</b>	<b>21.80</b>	<b>0.41</b>	<b>9.56</b>	<b>9.56</b>	<b>7.75</b>	<b>7.10</b>	<b>10.18</b>	<b>6.75</b>	<b>10/01/05</b>
<b>TOTAL PRIVATE EQUITY</b>	<b>7,802,532,781</b>	<b>14.2</b>	<b>-0.09</b>	<b>-7.04</b>	<b>-2.87</b>	<b>2.46</b>	<b>2.46</b>	<b>11.69</b>	<b>12.27</b>	<b>13.69</b>	<b>7.98</b>	<b>03/01/94</b>
Custom MD/SS PEI Index <sup>[10]</sup>			-3.26	-9.99	-6.08	-1.94	-1.94	8.00	8.41	10.53		03/01/94
MSCI ACWI + 200 bps			4.68	16.67	-10.09	-2.89	-2.89	3.16	5.09	7.47		07/01/07
STATE STREET PE 1 QTR LAG			-9.99	-9.99	-6.08	-1.94	-1.94	8.00	8.41	10.53		01/01/97
State St. PEI - Buyout qtr lag			-11.57	-11.57	-7.82	-3.81	-3.81	7.42	8.59	10.72		01/01/97
State St. PEI - Domestic qtr lag			-9.99	-9.99	-6.60	-2.41	-2.41	7.56	7.85	10.80		01/01/97

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
State St. PEI - Non U.S. qtr lag			-9.99	-9.99	-4.92	-0.90	-0.90	8.93	9.66	9.76		01/01/97
State St. PEI - Venture Cap qtr lag			-4.23	-4.23	1.21	7.09	7.09	12.55	9.94	12.00		01/01/97
<b>RATE SENSITIVE</b>												
<b>TOTAL RATE SENSITIVE EX OVERLAY</b>	<b>9,971,014,519</b>	<b>18.2</b>	<b>1.10</b>	<b>4.05</b>	<b>12.16</b>	<b>15.65</b>	<b>15.65</b>	<b>8.35</b>	<b>6.36</b>	<b>5.23</b>	<b>7.23</b>	<b>07/01/86</b>
CUSTOM RATE SENSITIVE BENCHMARK <sup>(11)</sup>			0.58	2.33	13.51	17.15	17.15	8.89	6.70	4.94		07/01/86
BBG BARC US Cdt Corp Inv Grd Idx			1.96	8.98	5.02	9.50	9.50	6.34	5.83	5.47		02/01/73
BBG BARC US Gov Lg Idx			0.14	0.28	20.97	25.14	25.14	11.96	9.21	7.71		01/01/73
BBG BARC US TIPS Idx			1.15	4.36	6.37	8.74	8.74	5.26	3.91	3.65		01/01/97
RATE SENSITIVE DYNAMIC BENCHMARK <sup>(12)</sup>			0.74	2.90	11.74	15.09	15.09	7.97	6.05	4.63		07/01/08
<b>TOTAL RATE SENSITIVE OVERLAY</b>	<b>215,320,865</b>	<b>0.4</b>										<b>01/01/17</b>
<b>TOTAL RATE SENSITIVE</b>	<b>10,186,335,384</b>	<b>18.6</b>	<b>1.21</b>	<b>4.08</b>	<b>14.47</b>	<b>18.10</b>	<b>18.10</b>	<b>9.12</b>	<b>6.82</b>	<b>5.46</b>	<b>7.30</b>	<b>07/01/86</b>
<b>NOMINAL FIXED INCOME EX OVERLAY</b>												
<b>NOMINAL FIXED INCOME EX OVERLAY</b>	<b>7,517,386,221</b>	<b>13.7</b>	<b>1.08</b>	<b>3.96</b>	<b>13.71</b>	<b>17.53</b>	<b>17.53</b>	<b>9.22</b>	<b>7.08</b>	<b>5.59</b>	<b>7.33</b>	<b>07/01/86</b>
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>(13)</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.21		07/01/86
<b>NOMINAL FIXED INCOME OVERLAY</b>	<b>215,320,866</b>	<b>0.4</b>										<b>01/01/17</b>
<b>NOMINAL FIXED INCOME</b>	<b>7,732,707,086</b>	<b>14.1</b>	<b>1.23</b>	<b>3.97</b>	<b>16.63</b>	<b>20.64</b>	<b>20.64</b>	<b>10.21</b>	<b>7.67</b>	<b>5.88</b>	<b>7.42</b>	<b>07/01/86</b>
<b>INFLATION SENSITIVE FI EX OVERLAY</b>												
<b>INFLATION SENSITIVE FI EX OVERLAY</b>	<b>2,453,628,299</b>	<b>4.5</b>	<b>1.15</b>	<b>4.34</b>	<b>6.48</b>	<b>8.83</b>	<b>8.83</b>	<b>5.27</b>	<b>4.01</b>	<b>3.88</b>	<b>4.20</b>	<b>07/01/08</b>
CUSTOM INFLATION SENSITIVE BENCHMARK <sup>(14)</sup>			1.15	4.36	6.37	8.74	8.74	5.26	4.04	3.96	4.00	07/01/08
<b>INFLATION SENSITIVE FIXED INCOME OVERLAY</b>	<b>-1</b>	<b>0.0</b>										<b>07/01/17</b>
<b>INFLATION SENSITIVE FIXED INCOME</b>	<b>2,453,628,298</b>	<b>4.5</b>	<b>1.17</b>	<b>4.39</b>	<b>6.57</b>	<b>8.95</b>	<b>8.95</b>	<b>5.26</b>	<b>4.01</b>	<b>3.87</b>	<b>4.20</b>	<b>07/01/08</b>
<b>CREDIT DEBT</b>												
<b>TOTAL CREDIT/DEBT STRATEGIES EX OVERLAY</b>	<b>5,116,741,387</b>	<b>9.3</b>	<b>0.64</b>	<b>5.57</b>	<b>-3.84</b>	<b>-0.48</b>	<b>-0.48</b>	<b>2.74</b>	<b>4.04</b>	<b>5.99</b>	<b>8.10</b>	<b>03/01/09</b>
MSRA CUSTOM CREDIT BENCHMARK <sup>(15)</sup>			1.17	9.50	-3.53	-0.06	-0.06	3.16	4.38	5.14	7.17	03/01/09
<b>TOTAL CREDIT/DEBT STRATEGIES OVERLAY</b>	<b>0</b>	<b>0.0</b>										<b>07/01/19</b>
<b>TOTAL CREDIT/DEBT STRATEGIES</b>	<b>5,116,741,387</b>	<b>9.3</b>	<b>0.65</b>	<b>5.59</b>	<b>-3.81</b>	<b>-0.43</b>	<b>-0.43</b>	<b>2.75</b>	<b>4.05</b>	<b>6.00</b>	<b>8.11</b>	<b>03/01/09</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>US CREDIT EX OVERLAY</b>	<b>4,030,102,006</b>	<b>7.4</b>	<b>0.31</b>	<b>4.64</b>	<b>-3.96</b>	<b>-0.69</b>	<b>-0.69</b>	<b>3.40</b>	<b>4.53</b>	<b>6.82</b>	<b>8.20</b>	<b>03/01/09</b>
U.S. CREDIT CUSTOM BENCHMARK <sup>[16]</sup>			1.01	10.08	-3.96	-0.37	-0.37	3.08	4.58	5.70	7.67	03/01/09
BBG BARC Corp HY			0.98	10.18	-3.80	0.03	0.03	3.33	4.79	6.68		12/01/90
S&P/LSTA Leveraged Loan Index			1.14	9.70	-4.61	-1.99	-1.99	2.07	2.89	4.17		01/01/97
<b>NON US CREDIT EX OVERLAY</b>	<b>1,086,639,381</b>	<b>2.0</b>	<b>1.88</b>	<b>9.19</b>	<b>-3.19</b>	<b>0.47</b>	<b>0.47</b>	<b>2.28</b>	<b>2.68</b>		<b>0.34</b>	<b>10/01/10</b>
NON-U.S. CREDIT CUSTOM BENCHMARK <sup>[17]</sup>			1.75	7.44	-2.07	0.99	0.99	3.11	3.43		1.02	10/01/10
Bloomberg EM Local Govt -30 BPS			0.75	4.46	-3.51	-0.36	-0.36					10/01/17
BBG Barc EM Hard Cur Agg: Sovereign			2.96	10.25	-2.31	-0.53	-0.53	2.79	4.65	5.62		10/01/07
BBG Barc EM USD Aggregate Corporate TR			2.55	10.65	0.84	4.97	4.97	4.90	5.18	5.68		06/01/07
JPMorgan EMBI Global Diversified Index			3.51	12.26	-2.76	0.49	0.49	3.60	5.30	6.03		01/01/70
JPM GBI-EM Global Diversified Index			0.47	9.82	-6.89	-2.82	-2.82	1.14	2.34	1.64		01/01/03
JPM CEMBI BROAD			2.46	9.35	0.57	4.59	4.59	5.04	5.53	5.76		01/01/02
<b>NON US CREDIT OVERLAY</b>	<b>0</b>	<b>0.0</b>										<b>07/01/19</b>
<b>NON US CREDIT</b>	<b>1,086,639,381</b>	<b>2.0</b>	<b>1.88</b>	<b>9.19</b>	<b>-3.17</b>	<b>0.49</b>	<b>0.49</b>	<b>2.28</b>	<b>2.68</b>		<b>0.34</b>	<b>10/01/10</b>
<b>REAL ASSETS</b>												
<b>TOTAL REAL ASSETS EX OVERLAY</b>	<b>6,451,432,528</b>	<b>11.8</b>	<b>-1.42</b>	<b>-1.00</b>	<b>-6.74</b>	<b>-5.41</b>	<b>-5.41</b>	<b>2.49</b>	<b>2.08</b>	<b>2.75</b>	<b>3.58</b>	<b>02/01/06</b>
CUSTOM REAL ASSETS BENCHMARK <sup>[18]</sup>			0.13	4.33	-5.03	-2.30	-2.30	4.26	3.73	2.72	3.17	02/01/06
CUSTOM STATIC REAL ASSETS BENCHMARK <sup>[19]</sup>			0.13	4.49	-4.06	-1.38	-1.38	4.55	5.08			07/01/11
<b>TOTAL REAL ASSETS OVERLAY</b>	<b>21,892,353</b>	<b>0.0</b>										<b>01/01/17</b>
<b>TOTAL REAL ASSETS</b>	<b>6,473,324,881</b>	<b>11.8</b>	<b>-1.40</b>	<b>-0.98</b>	<b>-6.76</b>	<b>-5.42</b>	<b>-5.42</b>	<b>2.50</b>	<b>2.08</b>	<b>2.74</b>	<b>3.58</b>	<b>02/01/06</b>
<b>TOTAL REAL ESTATE</b>	<b>4,607,415,369</b>	<b>8.4</b>	<b>-1.57</b>	<b>-2.14</b>	<b>-0.74</b>	<b>1.31</b>	<b>1.31</b>	<b>5.39</b>	<b>6.88</b>	<b>10.42</b>	<b>6.69</b>	<b>07/01/87</b>
REAL ESTATE CUSTOM INDEX <sup>[20]</sup>			-0.02	-0.60	0.91	3.24	3.24	6.20	7.76	10.68	8.06	07/01/87
CUSTOM MD PRIVATE REAL ESTATE BM <sup>[21]</sup>			-0.02	-0.60	0.91	3.24	3.24	6.25	8.12	10.74		03/01/94
NCREIF ODCE QTR LAG			0.98	0.98	2.50	4.88	4.88	6.81	8.46			01/01/90
FTSE EPRA Nareit Developed Net Index			2.57	10.07	-21.33	-16.25	-16.25	-1.60	1.27	6.30		01/01/05
WILSHIRE RESI			2.28	10.57	-17.89	-12.39	-12.39	0.22	4.20	9.34		01/01/78

**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>NATURAL RESOURCE AND INFRA EX OVERLAY</b>	<b>1,844,017,159</b>	<b>3.4</b>	<b>-1.04</b>	<b>1.95</b>	<b>-19.16</b>	<b>-19.16</b>	<b>-19.16</b>	<b>-4.05</b>	<b>-2.72</b>	<b>5.08</b>	<b>6.47</b>	<b>08/01/09</b>
NATURAL RESOURCE AND INFRASTRUCTURE BM <sup>[22]</sup>			0.50	17.42	-17.36	-14.25	-14.25	0.35	3.88	5.31	5.41	08/01/09
CPI + 5%; 10% Max <sup>[23]</sup>			0.95	1.10	2.80	5.68	5.68	6.80	6.63	6.70		07/01/09
<b>NATURAL RESOURCE AND INFRA OVERLAY</b>	<b>0</b>	<b>0.0</b>										<b>07/01/19</b>
<b>NATURAL RESOURCE AND INFRASTRUCTURE</b>	<b>1,844,017,159</b>	<b>3.4</b>	<b>-1.04</b>	<b>1.95</b>	<b>-19.15</b>	<b>-19.14</b>	<b>-19.14</b>				<b>-19.14</b>	<b>07/01/19</b>
<b>ABSOLUTE RETURN</b>												
<b>TOTAL ABSOLUTE RETURN</b>	<b>4,290,308,815</b>	<b>7.8</b>	<b>1.49</b>	<b>3.06</b>	<b>-3.92</b>	<b>-2.47</b>	<b>-2.47</b>	<b>1.22</b>	<b>0.77</b>	<b>2.74</b>	<b>2.73</b>	<b>04/01/08</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[24]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43	3.14	1.69	04/01/08
3 Month T-Bill + 400 bps			0.34	1.12	2.51	5.61	5.61	6.13	5.80			07/01/11
HFRI FoF CONSERVATIVE + 100 bps			1.75	5.92	-1.44	0.61	0.61	2.95	2.50	3.59		01/01/08
HFRI FOF: Conservative Index			1.66	5.67	-1.94	-0.39	-0.39	1.93	1.49	2.57		01/01/90
HFRI Fund of Funds Composite Index			1.98	7.89	-1.59	0.48	0.48	2.25	1.49	2.79		01/01/90
<b>EVENT DRIVEN STRATEGIES</b>	<b>1,011,753,198</b>	<b>1.8</b>	<b>2.33</b>	<b>1.97</b>	<b>-12.69</b>	<b>-15.03</b>	<b>-15.03</b>					<b>07/01/17</b>
HFRI FoF CONSERVATIVE + 100 bps			1.75	5.92	-1.44	0.61	0.61					07/01/17
<b>GLOBAL MACRO/GTAA STRATEGIES</b>	<b>1,192,864,923</b>	<b>2.2</b>	<b>-0.10</b>	<b>2.27</b>	<b>-8.58</b>	<b>-5.28</b>	<b>-5.28</b>	<b>-0.43</b>	<b>-1.50</b>	<b>0.92</b>	<b>1.47</b>	<b>04/01/08</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[24]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43	3.14	1.69	04/01/08
<b>OPPORTUNISTIC</b>	<b>499,207,382</b>	<b>0.9</b>	<b>-0.68</b>	<b>-4.13</b>	<b>-1.74</b>	<b>-2.54</b>	<b>-2.54</b>	<b>-3.08</b>	<b>-0.28</b>		<b>0.88</b>	<b>01/01/14</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[24]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.62	01/01/14
<b>RELATIVE VALUE STRATEGIES</b>	<b>1,586,068,711</b>	<b>2.9</b>	<b>2.83</b>	<b>6.90</b>	<b>6.59</b>	<b>10.18</b>	<b>10.18</b>	<b>6.74</b>	<b>4.12</b>		<b>4.12</b>	<b>01/01/14</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[24]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.62	01/01/14
<b>MULTI ASSET</b>												
<b>TOTAL MULTI ASSET</b>	<b>840,569,622</b>	<b>1.5</b>	<b>2.34</b>	<b>12.84</b>	<b>-1.71</b>	<b>2.93</b>	<b>2.93</b>				<b>3.66</b>	<b>07/01/18</b>
TOTAL PLAN POLICY INDEX <sup>[1]</sup>			1.37	7.15	-1.93	3.14	3.14				5.10	07/01/18

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
<u>CASH</u>												
TOTAL CASH	269,703,473	0.5	0.01	0.38	-0.97	0.85	0.85	6.51	5.39	3.99	3.82	07/01/08
FTSE 3 MONTH T-BILL			0.01	0.14	0.52	1.56	1.56	1.72	1.15	0.61	0.58	07/01/08

## 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] Since 07/01/2018: Benchmark is 50% Growth Equity Strategic Custom Benchmark, 19% Custom Rate Sensitive Benchmark; 9% MSRA Custom Credit Benchmark; 14% Custom Static Real Assets Benchmark; 8% 3 Month T-Bill + 400 bps.  
From 10/01/2017 to 06/30/2018: Benchmark is 50% Growth Equity Strategic Custom Benchmark, 19% Custom Rate Sensitive Benchmark; 9% MSRA Custom Credit Benchmark; 14% Custom Static Real Assets Benchmark; 8% 3 Month T-Bill + 500 bps.  
From 07/01/2016 to 06/30/2018: Benchmark is 47% Growth Equity Strategic Custom Benchmark, 21% Custom Rate Sensitive Benchmark; 9% MSRA Custom Credit Benchmark; 15% Custom Static Real Assets Benchmark; 8% 3 Month T-Bill + 500 bps.  
From 11/01/2015 to 06/30/2016: Benchmark is 47% Growth Equity Strategic Custom Benchmark, 20% Custom Rate Sensitive Benchmark; 9% MSRA Custom Credit Benchmark; 15% Custom Static Real Assets Benchmark; 9% 3 Month T-Bill + 500 bps.  
From 07/01/2011 to 10/31/2015: Benchmark is 38% Public EQ BM 2; 9% MSCI ACWI + 200 bps; 21% Custom Rate Sensitive Benchmark; 9% MSRA Custom Credit Benchmark; 15% Custom Static Real Assets Benchmark; 8% 3 Month T-Bill + 500 bps.
- [3] 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.
- [4] 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
- [5] Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks
- [6] 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
- [7] Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.
- [8] 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
- [9] 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
- [10] 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

- [11] 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.
- [12] Formerly named "Fixed Income Dynamic Benchmark" prior to 11/01/2015, benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks.
- [13] 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 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
- [14] 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
- [15] 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
- [16] 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.
- [17] 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.
- [18] 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.
- [19] As of 10/01/2017: 71% Real Estate Custom Benchmark, 29% Natural Resource and Infrastructure BM.  
 From 07/01/2016 to 09/30/2017: 67% Real Estate Custom Benchmark, 20% Bloomberg Commodity Index TR, 13% Natural Resource and Infrastructure BM.  
 Prior to 07/01/2016: 67% Real Estate Custom Benchmark, 20% Bloomberg Commodity Index TR, 13% CPI + 5%; 10% Max.

## ENDNOTES

- [20] From 07/01/2020: 100% NCREIF ODCE Net + 40bps.  
For 06/2020: 100% NCREIF ODCE.  
From 07/01/2019 to 05/31/2020: 100% NCREIF ODCE (one qtr lag).  
Prior to 07/01/2016, 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)
- [21] From 07/01/2020: The Private Real Estate benchmark is the NCREIF ODCE Net + 40bps. 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 Net + 40bps.  
For 06/2020: The Private Real Estate benchmark is the NCREIF ODCE.  
From 07/01/2013 to 05/31/2020: 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.
- [22] 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.
- [23] Since 11/01/2015: CPI-U + 500 bp (capped at 10%).  
Prior 11/01/2015: CPI-U + 500 bp (capped at 8%).  
Formerly named "CPI + 5%; 8% Max" prior to 11/01/2015.
- [24] 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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**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	2,476,457,370	4.5	2.21	21.76	-2.79	7.37	7.37	10.61	10.45		13.08	11/01/12
Russell 1000			2.21	21.82	-2.81	7.48	7.48	10.64	10.47		13.10	11/01/12
Excess			-0.00	-0.06	0.02	-0.11	-0.11	-0.03	-0.02		-0.03	
RHUMBLINE S&P 600 INDEX	251,200,701	0.5	3.77	19.93	-19.15	-12.71	-12.71	0.02			0.50	03/01/17
S&P SMALLCAP 600			3.74	21.94	-17.85	-11.29	-11.29	0.56			0.98	03/01/17
Excess			0.04	-2.01	-1.29	-1.43	-1.43	-0.54			-0.48	
<b>TOTAL US EQUITY PASSIVE</b>	<b>2,727,658,074</b>	<b>5.0</b>	<b>2.35</b>	<b>21.34</b>	<b>-5.62</b>	<b>3.93</b>	<b>3.93</b>	<b>8.93</b>			<b>10.00</b>	<b>11/01/15</b>
D.E. SHAW ALL CAP CORE ENHANCED	1,063,947,342	1.9	2.29	22.37	-2.81	7.79	7.79	10.95	10.80		12.29	04/01/13
D.E. Shaw All Cap Custom Benchmark <sup>(1)</sup>			2.21	21.82	-2.81	7.48	7.48	10.64	10.45		11.95	04/01/13
Excess			0.08	0.55	0.00	0.31	0.31	0.31	0.35		0.33	
T. ROWE PRICE ENHANCED	1,166,857,050	2.1	2.17	21.09	-3.35	7.41	7.41	11.22	11.35	14.32	9.13	05/01/06
S&P 500			1.99	20.54	-3.08	7.51	7.51	10.73	10.73	13.99	8.52	05/01/06
Excess			0.18	0.54	-0.27	-0.09	-0.09	0.49	0.62	0.34	0.61	
RHUMBLINE US SCIENTIFIC BETA	441,280,968	0.8	-0.12	19.10	-9.98	-2.49	-2.49	5.69			7.53	01/01/17
SciBeta USA Multi-Beta MStrat 4F-EW TR			-0.11	18.37	-10.01	-2.45	-2.45	5.78			7.64	01/01/17
Excess			-0.01	0.72	0.04	-0.04	-0.04	-0.10			-0.11	
DURABLE CAPITAL PARTNERS	535,573,950	1.0	7.34	42.45	17.95						17.95	01/01/20
Russell 2000 Growth			3.84	30.58	-3.06						-3.06	01/01/20
Excess			3.50	11.86	21.01						21.01	

**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>	<b>3,207,659,310</b>	<b>5.9</b>	<b>2.71</b>	<b>24.68</b>	<b>-1.52</b>	<b>8.44</b>	<b>8.44</b>	<b>10.74</b>	<b>10.55</b>	<b>13.31</b>		<b>06/01/94</b>
ACTIVE US EQ BM <sup>[2]</sup>			2.06	22.02	-3.87	5.77	5.77	9.61	9.93	13.59		06/01/94
<i>Excess</i>			0.65	2.66	2.35	2.68	2.68	1.13	0.62	-0.28		
<b>CAPITAL PROSPECTS US SMALL CAP (TM)</b>	<b>352,677,799</b>	<b>0.6</b>	<b>5.03</b>	<b>28.63</b>	<b>-14.51</b>	<b>-9.01</b>	<b>-9.01</b>	<b>1.55</b>			<b>2.43</b>	<b>04/01/17</b>
S&P 600 Small Cap USD NET			3.69	21.80	-18.06	-11.72	-11.72	0.10			0.59	04/01/17
<i>Excess</i>			1.34	6.83	3.55	2.71	2.71	1.45			1.84	
<b>US EQUITY TERRA MARIA</b>	<b>352,678,025</b>	<b>0.6</b>	<b>5.03</b>	<b>28.61</b>	<b>-15.62</b>	<b>-10.35</b>	<b>-10.35</b>	<b>-0.09</b>	<b>1.97</b>	<b>9.16</b>	<b>6.14</b>	<b>04/01/07</b>
TERRA MARIA US EQUITY BENCHMARK <sup>[3]</sup>			3.51	24.99	-14.09	-7.72	-7.72	1.46	4.53	10.91	6.57	04/01/07
<i>Excess</i>			1.51	3.62	-1.53	-2.64	-2.64	-1.55	-2.56	-1.75	-0.44	
<b>TOTAL US EQUITY TM + U.S. EQUITY ACTIVE</b>	<b>3,560,337,335</b>	<b>6.5</b>	<b>2.94</b>	<b>25.09</b>	<b>-3.31</b>	<b>5.92</b>	<b>5.92</b>	<b>9.20</b>	<b>8.89</b>	<b>12.62</b>	<b>9.18</b>	<b>07/01/08</b>
TM US EQ + ACTIVE US EQ BM <sup>[2]</sup>			2.20	22.31	-5.15	3.99	3.99	8.46	9.12	13.25	9.63	07/01/08
<i>Excess</i>			0.74	2.78	1.84	1.93	1.93	0.75	-0.23	-0.63	-0.45	
<b>U.S. EQUITY EX OVERLAY</b>	<b>6,287,995,409</b>	<b>11.5</b>	<b>2.68</b>	<b>23.53</b>	<b>-4.30</b>	<b>5.12</b>	<b>5.12</b>	<b>9.16</b>	<b>9.15</b>	<b>12.96</b>	<b>8.82</b>	<b>04/01/94</b>
MSRA CUSTOM US EQUITY INDEX <sup>[4]</sup>			2.29	22.03	-3.48	6.53	6.53	10.04	10.03	13.72		04/01/94
<i>Excess</i>			0.40	1.50	-0.83	-1.41	-1.41	-0.89	-0.89	-0.77		
US Equity Tactical	57,443,123	0.1										10/01/18
US Equity Structural	14,454,634	0.0										02/01/17
<b>U.S. EQUITY OVERLAY</b>	<b>71,897,757</b>	<b>0.1</b>										<b>02/01/17</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>U.S. EQUITY</b>	<b>6,359,893,166</b>	<b>11.6</b>	<b>2.73</b>	<b>23.24</b>	<b>-3.86</b>	<b>4.98</b>	<b>4.98</b>	<b>9.34</b>	<b>9.26</b>	<b>13.01</b>	<b>8.84</b>	<b>04/01/94</b>
MSRA CUSTOM US EQUITY INDEX <sup>[4]</sup>			2.29	22.03	-3.48	6.53	6.53	10.04	10.03	13.72		04/01/94
<i>Excess</i>			0.44	1.22	-0.38	-1.55	-1.55	-0.70	-0.77	-0.71		
<b>INTERNATIONAL DEVELOPED MARKETS</b>												
SSGA INTERNATIONAL FUND	1,313,326	0.0										05/01/03
<b>INTERNATIONAL DEVELOPED EQUITY PASSIVE</b>	<b>1,313,326</b>	<b>0.0</b>										<b>11/01/15</b>
ARTISAN PARTNERS, L.P.	613,349,717	1.1	4.76	17.59	-6.77	0.32	0.32	6.59	4.28	8.76	8.19	11/01/03
ARTISAN CUSTOM BENCHMARK <sup>[5]</sup>			3.42	15.34	-11.49	-5.42	-5.42	0.84	2.01	5.52	6.11	11/01/03
<i>Excess</i>			1.34	2.25	4.72	5.74	5.74	5.75	2.27	3.24	2.07	
AQR ENHANCED ACWI EX-US	301,400,880	0.6	3.46	17.16	-12.11	-7.32	-7.32	-1.72	0.42		0.86	12/01/13
AQR Enhanced Custom Benchmark <sup>[6]</sup>			3.42	15.34	-11.49	-5.42	-5.42	0.84	1.84		1.53	12/01/13
<i>Excess</i>			0.04	1.81	-0.63	-1.90	-1.90	-2.56	-1.42		-0.67	
BROWN CAPITAL MANAGEMENT INT'L	614,090,207	1.1	2.21	19.21	2.27	8.06	8.06	6.40	5.78	8.52	11.26	12/01/08
Brown Capital Management International Custom Benchmark <sup>[7]</sup>			3.19	16.21	-11.68	-5.11	-5.11	0.80	1.76	4.83	6.98	12/01/08
<i>Excess</i>			-0.98	3.01	13.95	13.17	13.17	5.60	4.02	3.69	4.28	
DFA INTERNATIONAL CORE EQUITY	377,806,589	0.7	2.83	17.61	-14.20	-7.15	-7.15	-0.76	1.99		3.35	05/01/13
MSCI WORLD EX US (NET)			3.42	15.34	-11.49	-5.42	-5.42	0.84	2.01		2.80	05/01/13
<i>Excess</i>			-0.59	2.27	-2.71	-1.72	-1.72	-1.60	-0.02		0.55	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
RHUMBLINE SCI BETA INTL EX-US	569,645,564	1.0	2.98	14.62	-17.66	-11.65	-11.65	-2.82			0.02	03/01/17
SciBeta Developed ex USA Value Div MS			3.05	14.83	-17.53	-11.43	-11.43	-2.38			0.48	03/01/17
<i>Excess</i>			-0.07	-0.21	-0.13	-0.22	-0.22	-0.43			-0.46	
<b>INTERNATIONAL DEVELOPED EQUITY ACTIVE <sup>[8]</sup></b>	<b>2,476,432,118</b>	<b>4.5</b>	<b>3.26</b>	<b>17.24</b>	<b>-9.40</b>	<b>-3.23</b>	<b>-3.23</b>	<b>1.69</b>	<b>2.24</b>	<b>5.17</b>		<b>01/01/95</b>
CUSTOM INTL DEV EQ ACTIVE BENCHMARK <sup>[9]</sup>			3.28	15.44	-13.02	-6.84	-6.84	0.05	1.50	4.56		01/01/95
<i>Excess</i>			-0.02	1.80	3.61	3.61	3.61	1.64	0.74	0.61		
<b>ATTUCKS INTL DEVELOPED (TM)</b>	<b>413,131,126</b>	<b>0.8</b>	<b>3.29</b>	<b>18.50</b>	<b>-11.17</b>	<b>-3.53</b>	<b>-3.53</b>	<b>1.02</b>	<b>3.76</b>	<b>8.12</b>	<b>10.07</b>	<b>12/01/08</b>
MSCI WORLD EX US NET (DAILY)			3.42	15.34	-11.49	-5.42	-5.42	0.84	2.01	5.43	6.58	12/01/08
<i>Excess</i>			-0.13	3.16	0.32	1.89	1.89	0.17	1.75	2.69	3.49	
<b>XPONANCE INTL SMALL CAP (TM)</b>	<b>259,669,583</b>	<b>0.5</b>	<b>1.55</b>	<b>19.97</b>	<b>-14.27</b>	<b>-5.55</b>	<b>-5.55</b>	<b>-0.75</b>			<b>1.96</b>	<b>04/01/17</b>
MSCI WORLD EX US SMALL CAP (NET)			1.78	21.66	-12.87	-3.20	-3.20	0.53			2.69	04/01/17
<i>Excess</i>			-0.23	-1.70	-1.39	-2.35	-2.35	-1.28			-0.73	
<b>LEADING EDGE INTL DEVELOPED (TM)</b>	<b>426,377,013</b>	<b>0.8</b>	<b>3.09</b>	<b>20.57</b>	<b>-6.69</b>	<b>1.14</b>	<b>1.14</b>	<b>2.79</b>	<b>3.92</b>	<b>7.23</b>	<b>9.66</b>	<b>12/01/08</b>
MSCI WORLD EX US NET (DAILY)			3.42	15.34	-11.49	-5.42	-5.42	0.84	2.01	5.43	6.58	12/01/08
<i>Excess</i>			-0.33	5.23	4.80	6.56	6.56	1.95	1.91	1.80	3.08	
<b>INTL DEVELOPED EQUITY TERRA MARIA <sup>[8]</sup></b>	<b>1,099,290,853</b>	<b>2.0</b>	<b>2.80</b>	<b>19.64</b>	<b>-10.29</b>	<b>-2.28</b>	<b>-2.28</b>	<b>1.24</b>	<b>2.78</b>	<b>5.82</b>	<b>2.36</b>	<b>11/01/07</b>
TERRA MARIA INTL DEVELOPED EQ BM <sup>[10]</sup>			2.97	16.48	-11.89	-4.81	-4.81	0.72	1.96	4.93	0.95	11/01/07
<i>Excess</i>			-0.17	3.16	1.59	2.53	2.53	0.52	0.83	0.89	1.41	
<b>INTL DEVELOPED EQUITY ACTIVE AND TM <sup>[8]</sup></b>	<b>3,575,722,971</b>	<b>6.5</b>	<b>3.12</b>	<b>17.96</b>	<b>-9.68</b>	<b>-2.96</b>	<b>-2.96</b>	<b>1.55</b>	<b>2.39</b>	<b>5.31</b>	<b>2.27</b>	<b>07/01/08</b>
TM INTL DEV EQ + ACTIVE INTL DEV EQ BM <sup>[9]</sup>			3.17	15.74	-12.68	-6.24	-6.24	0.26	1.64	4.67	1.74	07/01/08
<i>Excess</i>			-0.06	2.22	3.00	3.28	3.28	1.29	0.74	0.64	0.53	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
INTL EQUITY TRANSITION ACCOUNT	-138	-0.0										11/01/04
<b>TOTAL INTL DEV EQUITY EX RECORD CURRENCY <sup>[8]</sup></b>	<b>3,577,036,158</b>	<b>6.5</b>	<b>3.12</b>	<b>17.95</b>	<b>-9.68</b>	<b>-2.96</b>	<b>-2.96</b>	<b>1.49</b>	<b>2.19</b>	<b>5.13</b>		<b>01/01/95</b>
MSRA CUSTOM INTERNATIONAL INDEX <sup>[11]</sup>			3.42	15.34	-11.49	-5.42	-5.42	0.84	1.63	4.65		01/01/95
Excess			-0.31	2.61	1.81	2.46	2.46	0.65	0.57	0.48		
RECORD CURRENCY MANAGEMENT	11,070,934	0.0										05/01/09
<b>TOTAL INTL DEVELOPED EQUITY EX OVERLAY <sup>[8]</sup></b>	<b>3,588,107,092</b>	<b>6.6</b>	<b>3.02</b>	<b>17.57</b>	<b>-9.21</b>	<b>-2.37</b>	<b>-2.37</b>	<b>1.81</b>	<b>2.10</b>	<b>5.15</b>	<b>5.83</b>	<b>01/01/95</b>
MSRA CUSTOM INTERNATIONAL INDEX <sup>[11]</sup>			3.42	15.34	-11.49	-5.42	-5.42	0.84	1.63	4.65	4.81	01/01/95
Excess			-0.40	2.23	2.28	3.05	3.05	0.97	0.47	0.50	1.02	
International Equity Tactical	69,892,801	0.1										01/01/17
International Equity Structural	33,790,788	0.1										02/01/17
<b>TOTAL INTL DEVELOPED EQUITY OVERLAY</b>	<b>103,683,589</b>	<b>0.2</b>										<b>12/01/16</b>
<b>TOTAL INTL DEVELOPED EQUITY</b>	<b>3,691,790,681</b>	<b>6.7</b>	<b>3.28</b>	<b>18.65</b>	<b>-10.01</b>	<b>-2.82</b>	<b>-2.82</b>	<b>1.68</b>	<b>2.01</b>	<b>5.10</b>	<b>5.82</b>	<b>01/01/95</b>
MSRA CUSTOM INTERNATIONAL INDEX <sup>[11]</sup>			3.42	15.34	-11.49	-5.42	-5.42	0.84	1.63	4.65	4.81	01/01/95
Excess			-0.15	3.31	1.48	2.60	2.60	0.84	0.38	0.46	1.00	
<b>EMERGING MARKETS</b>												
SSGA EMERGING MARKETS INDEX FUND	29,141,040	0.1	7.31	18.02	-9.01	-2.65	-2.65	1.86	2.65		3.14	06/01/12
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90	2.86		3.63	06/01/12
Excess			-0.04	-0.07	0.78	0.74	0.74	-0.04	-0.21		-0.49	

**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>EMERGING MARKETS EQUITY PASSIVE</b>	<b>29,141,040</b>	<b>0.1</b>	<b>7.31</b>	<b>18.02</b>	<b>-9.01</b>	<b>-2.65</b>	<b>-2.65</b>	<b>2.77</b>			<b>6.39</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			5.95	11/01/15
<i>Excess</i>			-0.04	-0.07	0.78	0.73	0.73	0.87			0.45	
<b>BAILLIE GIFFORD EMERGING MARKETS</b>	<b>923,894,169</b>	<b>1.7</b>	<b>8.15</b>	<b>24.47</b>	<b>-8.49</b>	<b>-0.11</b>	<b>-0.11</b>	<b>6.41</b>			<b>9.65</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			5.95	11/01/15
<i>Excess</i>			0.80	6.39	1.30	3.28	3.28	4.51			3.70	
<b>DFA EMERGING MARKETS</b>	<b>320,984,787</b>	<b>0.6</b>	<b>7.07</b>	<b>20.76</b>	<b>-13.43</b>	<b>-8.29</b>	<b>-8.29</b>	<b>-0.78</b>			<b>7.39</b>	<b>02/01/16</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			9.46	02/01/16
<i>Excess</i>			-0.28	2.67	-3.64	-4.90	-4.90	-2.67			-2.07	
<b>POLUNIN CAPITAL PARTNERS</b>	<b>381,255,619</b>	<b>0.7</b>	<b>6.35</b>	<b>22.94</b>	<b>-13.65</b>	<b>-7.56</b>	<b>-7.56</b>	<b>-1.44</b>			<b>6.02</b>	<b>04/01/16</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			6.71	04/01/16
<i>Excess</i>			-1.00	4.86	-3.86	-4.18	-4.18	-3.33			-0.69	
<b>AXIOM INTERNATIONAL INVESTORS</b>	<b>989,383,246</b>	<b>1.8</b>	<b>8.94</b>	<b>21.40</b>	<b>-4.71</b>	<b>4.85</b>	<b>4.85</b>	<b>5.78</b>			<b>9.72</b>	<b>05/01/16</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			6.71	05/01/16
<i>Excess</i>			1.59	3.32	5.07	8.24	8.24	3.88			3.02	
<b>WESTWOOD GLOBAL INVESTMENTS</b>	<b>593,378,526</b>	<b>1.1</b>	<b>4.70</b>	<b>13.59</b>	<b>-19.17</b>	<b>-11.26</b>	<b>-11.26</b>	<b>-3.05</b>	<b>1.30</b>	<b>3.63</b>	<b>9.32</b>	<b>12/01/08</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90	2.86	3.27	8.20	12/01/08
<i>Excess</i>			-2.65	-4.49	-9.38	-7.88	-7.88	-4.94	-1.56	0.36	1.12	
<b>MARSHALL WACE TOPS CHINA A</b>	<b>313,235,301</b>	<b>0.6</b>	<b>9.97</b>	<b>19.79</b>	<b>10.46</b>	<b>22.60</b>	<b>22.60</b>				<b>31.01</b>	<b>11/01/18</b>
MSCI China A Share Net			9.99	15.96	4.68	12.19	12.19				23.25	11/01/18
<i>Excess</i>			-0.03	3.83	5.78	10.41	10.41				7.76	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TT INTERNATIONAL EMERGING MARKETS	654,669,906	1.2	8.20	19.03	-13.08						-4.92	08/01/19
MSCI Emerging Markets IMI Index (Net)			7.51	18.93	-10.09						-2.75	08/01/19
<i>Excess</i>			0.69	0.10	-2.99						-2.17	
RWC PARTNERS EMERGING MARKETS	290,294,400	0.5	10.38	27.11	-9.09						-3.24	12/01/19
MSCI EMERGING MARKETS			7.35	18.08	-9.78						-3.05	12/01/19
<i>Excess</i>			3.03	9.03	0.69						-0.18	
MARSHALL WACE TOPS EMERGING MARKETS	577,884,469	1.1	7.65	19.88							19.88	04/01/20
MSCI EMERGING MARKETS			7.35	18.08							18.08	04/01/20
<i>Excess</i>			0.30	1.80							1.80	
TRANSITION ACCOUNT EMERGING MARKETS	0	0.0										05/01/16
<b>TOTAL EMERGING MARKET ACTIVE</b>	<b>5,044,977,891</b>	<b>9.2</b>	<b>7.86</b>	<b>20.39</b>	<b>-10.46</b>	<b>-3.28</b>	<b>-3.28</b>	<b>2.03</b>	<b>4.33</b>	<b>3.06</b>	<b>3.06</b>	<b>07/01/10</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90	2.86	3.27	3.27	07/01/10
<i>Excess</i>			0.51	2.31	-0.68	0.11	0.11	0.13	1.47	-0.21	-0.21	
<b>EMERGING MARKETS EQUITY TERRA MARIA</b>	<b>330,883,299</b>	<b>0.6</b>	<b>6.99</b>	<b>18.77</b>	<b>-12.68</b>	<b>-8.72</b>	<b>-8.72</b>					<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39					11/01/15
<i>Excess</i>			-0.36	0.69	-2.90	-5.34	-5.34					
<b>EMERGING MARKETS ACTIVE AND TM</b>	<b>5,375,861,190</b>	<b>9.8</b>	<b>7.81</b>	<b>20.26</b>	<b>-10.62</b>	<b>-3.68</b>	<b>-3.68</b>	<b>1.83</b>			<b>6.50</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			5.95	11/01/15
<i>Excess</i>			0.46	2.18	-0.84	-0.29	-0.29	-0.07			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>TOTAL EMERGING MARKETS EQUITY EX OVERLAY</b>	<b>5,405,002,231</b>	<b>9.9</b>	<b>7.80</b>	<b>20.25</b>	<b>-10.60</b>	<b>-3.68</b>	<b>-3.68</b>	<b>1.90</b>			<b>6.17</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			5.95	11/01/15
<i>Excess</i>			0.45	2.17	-0.82	-0.29	-0.29	-0.00			0.23	
Emrg Mkts Structural Overlay	9,678,503	0.0										02/01/17
Emrg Mkts Tactical Overlay	51,400,005	0.1										10/01/17
<b>TOTAL EMERGING MARKETS OVERLAY</b>	<b>61,078,508</b>	<b>0.1</b>										<b>02/01/17</b>
<b>TOTAL EMERGING MARKETS EQUITY</b>	<b>5,466,080,738</b>	<b>10.0</b>	<b>8.01</b>	<b>20.76</b>	<b>-11.79</b>	<b>-4.70</b>	<b>-4.70</b>	<b>1.78</b>			<b>6.08</b>	<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39	1.90			5.95	11/01/15
<i>Excess</i>			0.66	2.68	-2.00	-1.31	-1.31	-0.11			0.13	
<b>GLOBAL EQUITY</b>												
BAILLIE GIFFORD	1,049,471,574	1.9	12.92	44.78	40.68	58.52	58.52	30.02	23.56	20.44	13.93	02/01/08
MSCI AC WORLD INDEX NET			3.20	19.22	-6.25	2.11	2.11	6.14	6.46	9.16	5.06	02/01/08
<i>Excess</i>			9.72	25.56	46.94	56.41	56.41	23.89	17.11	11.29	8.87	
LONGVIEW PRTNRS GLOBAL EQUITY	653,951,151	1.2	-1.43	13.77	-17.17	-7.24	-7.24	3.35	5.30	11.49	10.54	10/01/09
MSCI AC WORLD INDEX NET			3.20	19.22	-6.25	2.11	2.11	6.14	6.46	9.16	7.96	10/01/09
<i>Excess</i>			-4.63	-5.45	-10.92	-9.35	-9.35	-2.78	-1.16	2.33	2.59	
AQR CAPITAL - GLOBAL EQUITY	953,595,360	1.7	3.21	19.14	-8.36	-1.02	-1.02	2.66	4.15		8.08	08/01/10
MSCI AC WORLD INDEX NET			3.20	19.22	-6.25	2.11	2.11	6.14	6.46		8.38	08/01/10
<i>Excess</i>			0.02	-0.08	-2.11	-3.14	-3.14	-3.48	-2.30		-0.30	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
D.E. SHAW INV - GLOBAL EQUITY	917,631,008	1.7	2.67	20.89	-6.37	1.49	1.49	6.03	6.59		9.71	08/01/10
MSCI WORLD INDEX			2.65	19.36	-5.77	2.84	2.84	6.70	6.90		9.18	08/01/10
<i>Excess</i>			0.03	1.54	-0.60	-1.35	-1.35	-0.67	-0.31		0.53	
<b>TOTAL GLOBAL EQUITY ACTIVE</b>	<b>3,575,125,290</b>	<b>6.5</b>	<b>4.81</b>	<b>25.02</b>	<b>0.52</b>	<b>10.51</b>	<b>10.51</b>	<b>9.46</b>	<b>8.86</b>	<b>11.37</b>	<b>7.53</b>	<b>10/01/05</b>
MSCI AC WORLD INDEX NET			3.20	19.22	-6.25	2.11	2.11	6.14	6.46	9.16	6.01	10/01/05
<i>Excess</i>			1.62	5.80	6.77	8.40	8.40	3.32	2.40	2.22	1.52	
MARSHALL WACE EUREKA FUND	601,082,721	1.1	0.96	5.83	-0.36	4.94	4.94	6.46	6.24		9.61	10/01/12
HFRI Equity Hedge (Total) Index			2.64	13.27	-3.25	0.72	0.72	3.01	3.09		4.75	10/01/12
<i>Excess</i>			-1.68	-7.43	2.89	4.21	4.21	3.46	3.16		4.86	
INDUS PACIFIC OPPORTUNITIES FUND	5,913,129	0.0										06/01/13
<b>TOTAL EQUITY HEDGE FUND</b>	<b>606,995,850</b>	<b>1.1</b>	<b>0.95</b>	<b>5.77</b>	<b>-0.27</b>	<b>3.19</b>	<b>3.19</b>	<b>2.52</b>	<b>1.67</b>		<b>4.10</b>	<b>07/01/12</b>
HFRI Equity Hedge (Total) Index			2.64	13.27	-3.25	0.72	0.72	3.01	3.09		5.04	07/01/12
<i>Excess</i>			-1.69	-7.50	2.98	2.47	2.47	-0.49	-1.42		-0.94	
<b>TOTAL GLB EQ TM + GLB EQ ACTIVE + HF</b>	<b>4,182,121,140</b>	<b>7.6</b>	<b>4.23</b>	<b>21.80</b>	<b>0.41</b>	<b>9.56</b>	<b>9.56</b>	<b>7.75</b>	<b>7.02</b>	<b>10.07</b>	<b>6.16</b>	<b>07/01/08</b>
TM GLOBAL + ACTIVE GLOBAL BM + EQ HF <sup>[2]</sup>			2.99	18.28	-5.72	1.91	1.91	5.43	5.63	8.61	5.04	07/01/08
<i>Excess</i>			1.24	3.52	6.13	7.65	7.65	2.32	1.39	1.46	1.11	
GLOBAL EQUITY TRANSITION ACCOUNT	4,850,078	0.0										06/01/11
<b>TOTAL GLOBAL EQUITY EX RECORD CURRENCY</b>	<b>4,186,971,218</b>	<b>7.6</b>	<b>4.24</b>	<b>21.80</b>	<b>0.41</b>	<b>9.56</b>	<b>9.56</b>	<b>7.75</b>	<b>7.10</b>	<b>10.18</b>	<b>6.75</b>	<b>10/01/05</b>
MSRA CUSTOM GLOBAL INDEX <sup>[12]</sup>			3.20	19.22	-6.25	2.11	2.11	6.14	6.46	9.16	6.09	10/01/05
<i>Excess</i>			1.04	2.59	6.66	7.45	7.45	1.62	0.64	1.02	0.66	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
RECORD CURRENCY - GLOBAL	3,794,624	0.0										05/01/09
<b>TOTAL GLOBAL EQUITY EX OVERLAY</b>	<b>4,190,765,842</b>	<b>7.7</b>	<b>4.21</b>	<b>21.66</b>	<b>0.56</b>	<b>9.79</b>	<b>9.79</b>	<b>7.91</b>	<b>7.08</b>	<b>10.10</b>	<b>6.85</b>	<b>10/01/05</b>
MSRA CUSTOM GLOBAL INDEX <sup>[12]</sup>			3.20	19.22	-6.25	2.11	2.11	6.14	6.46	9.16	6.09	10/01/05
<i>Excess</i>			1.01	2.44	6.81	7.67	7.67	1.78	0.63	0.94	0.76	
Global Equity Tactical	79,045,180	0.1										01/01/20
<b>TOTAL GLOBAL EQUITY OVERLAY</b>	<b>79,045,180</b>	<b>0.1</b>										<b>01/01/20</b>
<b>TOTAL GLOBAL EQUITY</b>	<b>4,269,811,021</b>	<b>7.8</b>	<b>4.39</b>	<b>22.70</b>	<b>1.11</b>	<b>10.38</b>	<b>10.38</b>	<b>8.11</b>	<b>7.20</b>	<b>10.16</b>	<b>6.89</b>	<b>10/01/05</b>
MSRA CUSTOM GLOBAL INDEX <sup>[12]</sup>			3.20	19.22	-6.25	2.11	2.11	6.14	6.46	9.16	6.09	10/01/05
<i>Excess</i>			1.20	3.48	7.36	8.27	8.27	1.97	0.74	1.00	0.80	
<b>PUBLIC EQUITY</b>												
<b>TOTAL PUBLIC EQUITY EX OVERLAY</b>	<b>19,471,870,573</b>	<b>35.6</b>	<b>4.45</b>	<b>21.23</b>	<b>-5.91</b>	<b>2.33</b>	<b>2.33</b>	<b>5.41</b>	<b>5.93</b>	<b>9.22</b>		<b>04/01/94</b>
PUBLIC EQ BM 2 <sup>[13]</sup>			4.10	19.10	-7.49	0.36	0.36	5.13	6.06	9.08		04/01/94
<i>Excess</i>			0.35	2.14	1.58	1.96	1.96	0.28	-0.12	0.14		
<b>TOTAL PUBLIC EQUITY OVERLAY</b>	<b>315,705,034</b>	<b>0.6</b>										<b>12/01/16</b>
<b>TOTAL PUBLIC EQUITY</b>	<b>19,787,575,607</b>	<b>36.1</b>	<b>4.60</b>	<b>21.69</b>	<b>-6.16</b>	<b>2.00</b>	<b>2.00</b>	<b>5.45</b>	<b>5.96</b>	<b>9.23</b>		<b>04/01/94</b>
PUBLIC EQ BM 2 <sup>[13]</sup>			4.10	19.10	-7.49	0.36	0.36	5.13	6.06	9.08		04/01/94
<i>Excess</i>			0.50	2.59	1.33	1.64	1.64	0.33	-0.10	0.15		

**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>PRIVATE EQUITY</b>												
<b>TOTAL PRIVATE EQUITY</b>	<b>7,802,532,781</b>	<b>14.2</b>	<b>-0.09</b>	<b>-7.04</b>	<b>-2.87</b>	<b>2.46</b>	<b>2.46</b>	<b>11.69</b>	<b>12.27</b>	<b>13.69</b>	<b>7.98</b>	<b>03/01/94</b>
Custom MD/SS PEI Index <sup>[14]</sup>			-3.26	-9.99	-6.08	-1.94	-1.94	8.00	8.41	10.53		03/01/94
<i>Excess</i>			3.17	2.95	3.21	4.41	4.41	3.69	3.85	3.15		
<b>TOTAL GROWTH EQUITY</b>	<b>27,590,108,388</b>	<b>50.4</b>	<b>3.24</b>	<b>11.97</b>	<b>-5.26</b>	<b>2.09</b>	<b>2.09</b>	<b>6.99</b>	<b>7.34</b>	<b>10.14</b>	<b>5.91</b>	<b>01/01/98</b>
GROWTH EQUITY CUSTOM BENCHMARK <sup>[15]</sup>			1.98	9.63	-7.17	-0.39	-0.39	5.92				01/01/98
<i>Excess</i>			1.25	2.35	1.91	2.48	2.48	1.07				
<b>RATE SENSITIVE</b>												
<b>NOMINAL FIXED INCOME</b>												
SSGA US GOVT LONG BOND INDEX	98,867,746	0.2	0.14	-0.44	21.54	25.77	25.77	12.09			8.92	11/01/16
BBG BARC US Gov Lg Idx			0.14	0.28	20.97	25.14	25.14	11.96			8.84	11/01/16
<i>Excess</i>			0.00	-0.72	0.57	0.62	0.62	0.13			0.07	
SSGA US SECURITIZED INDEX	139,071,430	0.3	0.01	0.82	3.44	5.41	5.41	3.74			2.94	11/01/16
BBG BARC Sec Idx			0.05	0.94	3.62	5.74	5.74	4.04			3.20	11/01/16
<i>Excess</i>			-0.04	-0.12	-0.18	-0.33	-0.33	-0.30			-0.26	
SSGA US LONG INVEST GRADE CORP INDEX	133,665,073	0.2	2.59	12.22	5.36	12.87	12.87	8.78			7.69	11/01/16
BBG BARC Lg Corp			2.52	11.36	6.34	13.79	13.79	8.80			8.04	11/01/16
<i>Excess</i>			0.07	0.86	-0.98	-0.92	-0.92	-0.01			-0.35	
SSGA US INTERM INVEST GRADE INDEX	450,442,518	0.8	1.57	7.40	2.72	5.73	5.73	4.64			4.07	11/01/16
BBG BARC US Corp Int Inv Grd Idx			1.63	7.63	4.23	7.21	7.21	5.05			4.42	11/01/16
<i>Excess</i>			-0.06	-0.22	-1.51	-1.48	-1.48	-0.41			-0.35	

**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>SSGA PASSIVE FIXED INCOME</b>	<b>822,046,767</b>	<b>1.5</b>	<b>1.29</b>	<b>5.58</b>	<b>12.12</b>	<b>15.83</b>	<b>15.83</b>	<b>8.75</b>	<b>6.53</b>	<b>4.85</b>	<b>4.95</b>	<b>05/01/03</b>
SSgA Aggregate Bond Custom Benchmark <sup>[16]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.20		05/01/03
Excess			0.87	3.77	-3.25	-3.51	-3.51	-1.06	-0.73	-0.35		
<b>MD LONG GOVERNMENT BONDS</b>	<b>1,189,531,857</b>	<b>2.2</b>	<b>0.28</b>	<b>-0.33</b>							<b>6.04</b>	<b>03/01/20</b>
BBG BARC US Gov Lg Idx			0.14	0.28							6.23	03/01/20
Excess			0.14	-0.62							-0.19	
<b>US NOMINAL FIXED INCOME PASSIVE</b>	<b>2,011,578,624</b>	<b>3.7</b>	<b>0.71</b>	<b>2.03</b>	<b>16.66</b>	<b>20.52</b>	<b>20.52</b>	<b>10.20</b>			<b>7.74</b>	<b>11/01/15</b>
US NOMINAL FI PASSIVE BENCHMARK <sup>[17]</sup>			0.43	1.81	15.37	19.34	19.34	9.81			7.57	11/01/15
Excess			0.28	0.22	1.29	1.18	1.18	0.39			0.17	
<b>PIMCO</b>	<b>1,273,886,428</b>	<b>2.3</b>	<b>1.10</b>	<b>3.85</b>	<b>16.28</b>	<b>19.99</b>	<b>19.99</b>	<b>10.34</b>	<b>7.52</b>	<b>5.49</b>		<b>06/01/84</b>
PIMCO Custom Blended Index <sup>[18]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.20		06/01/84
Excess			0.67	2.04	0.91	0.65	0.65	0.53	0.26	0.29		
<b>WESTERN ASSET MANAGEMENT</b>	<b>2,397,483,235</b>	<b>4.4</b>	<b>1.04</b>	<b>4.49</b>	<b>15.06</b>	<b>19.39</b>	<b>19.39</b>	<b>10.21</b>	<b>7.87</b>	<b>6.39</b>	<b>6.78</b>	<b>09/01/03</b>
WESTERN ASSET MANAGEMENT CUSTOM BM <sup>[19]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.22	5.18	5.32	09/01/03
Excess			0.61	2.68	-0.31	0.05	0.05	0.40	0.65	1.21	1.46	
<b>DOUBLELINE US SECURITIZED</b>	<b>447,446,237</b>	<b>0.8</b>	<b>0.57</b>	<b>2.19</b>	<b>3.27</b>	<b>5.04</b>	<b>5.04</b>				<b>4.01</b>	<b>10/01/17</b>
BBG BARC Sec Dly			0.05	0.94	3.62	5.74	5.74				4.06	10/01/17
Excess			0.52	1.24	-0.35	-0.69	-0.69				-0.05	
<b>GARDA FIRVO</b>	<b>375,400,000</b>	<b>0.7</b>	<b>2.40</b>	<b>7.04</b>	<b>13.83</b>	<b>18.72</b>	<b>18.72</b>	<b>9.35</b>			<b>8.70</b>	<b>04/01/16</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95			3.72	04/01/16
Excess			0.65	1.12	15.27	18.12	18.12	6.40			4.98	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
DODGE & COX - FI CORE	367,663,068	0.7	2.19	10.43	5.61	10.45	10.45	6.82	6.31	5.35	6.18	03/01/09
CORE BOND CUSTOM BENCHMARK <sup>[21]</sup>			1.96	8.98	5.02	9.50	9.50	6.15	5.17	4.17	4.79	03/01/09
<i>Excess</i>			0.23	1.44	0.58	0.94	0.94	0.67	1.13	1.18	1.38	
VOYA TALF OPPORTUNITY FUND	20,000,000	0.0										06/01/20
WESTERN ASSET - ISRAEL BD	15	0.0	0.37	2.26	2.82	4.47	4.47	3.29	1.91	2.02	2.79	06/01/05
<b>US NOMINAL FIXED INCOME ACTIVE</b>	<b>4,881,879,109</b>	<b>8.9</b>	<b>1.20</b>	<b>4.71</b>	<b>13.72</b>	<b>17.70</b>	<b>17.70</b>	<b>9.41</b>	<b>7.31</b>	<b>5.67</b>	<b>6.10</b>	<b>07/01/08</b>
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>[22]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.21	5.54	07/01/08
<i>Excess</i>			0.77	2.90	-1.65	-1.64	-1.64	-0.40	0.05	0.46	0.55	
<b>US NOMINAL FIXED INCOME TERRA MARIA</b>	<b>623,928,384</b>	<b>1.1</b>	<b>1.33</b>	<b>4.64</b>	<b>4.59</b>	<b>6.94</b>	<b>6.94</b>	<b>4.59</b>	<b>3.78</b>	<b>3.77</b>	<b>5.47</b>	<b>11/01/08</b>
TERRA MARIA FI BENCHMARK <sup>[23]</sup>			0.55	2.70	5.40	7.72	7.72	4.76	3.72	3.45	6.18	11/01/08
<i>Excess</i>			0.78	1.93	-0.81	-0.78	-0.78	-0.17	0.06	0.32	-0.71	
<b>TOTAL RATE SENSITIVE (CP)</b>	<b>623,928,384</b>	<b>1.1</b>	<b>1.33</b>	<b>4.64</b>	<b>4.59</b>	<b>6.94</b>	<b>6.94</b>	<b>4.61</b>	<b>3.85</b>	<b>4.03</b>	<b>5.35</b>	<b>11/01/08</b>
RATE SENSITIVE (CP) BENCHMARK <sup>[23]</sup>			0.55	2.70	5.40	7.72	7.72	4.79	3.80	3.59	4.71	11/01/08
<i>Excess</i>			0.78	1.93	-0.81	-0.78	-0.78	-0.18	0.05	0.44	0.63	
<b>TOTAL US NOMINAL FI ACTIVE + TM</b>	<b>5,505,807,493</b>	<b>10.1</b>	<b>1.21</b>	<b>4.70</b>	<b>12.76</b>	<b>16.57</b>	<b>16.57</b>	<b>8.91</b>	<b>6.95</b>	<b>5.48</b>	<b>5.93</b>	<b>07/01/08</b>
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>[22]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.21	5.54	07/01/08
<i>Excess</i>			0.79	2.89	-2.61	-2.77	-2.77	-0.90	-0.31	0.27	0.39	
<b>US NOMINAL FIXED INCOME</b>	<b>7,517,386,117</b>	<b>13.7</b>	<b>1.08</b>	<b>3.96</b>	<b>13.71</b>	<b>17.53</b>	<b>17.53</b>	<b>9.22</b>	<b>7.09</b>	<b>5.47</b>	<b>6.08</b>	<b>07/01/08</b>
US NOMINAL FIXED INCOME BENCHMARK <sup>[24]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.20	5.62	07/01/08
<i>Excess</i>			0.65	2.15	-1.66	-1.81	-1.81	-0.58	-0.17	0.28	0.46	

**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>NOMINAL FIXED INCOME EX OVERLAY</b>	<b>7,517,386,221</b>	<b>13.7</b>	<b>1.08</b>	<b>3.96</b>	<b>13.71</b>	<b>17.53</b>	<b>17.53</b>	<b>9.22</b>	<b>7.08</b>	<b>5.59</b>	<b>7.33</b>	<b>07/01/86</b>
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>[22]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.21		07/01/86
<i>Excess</i>			0.65	2.15	-1.66	-1.81	-1.81	-0.58	-0.18	0.37		
Nominal FI Tactical	191,566,677	0.3										01/01/17
Nominal FI Structural	23,754,189	0.0										01/01/17
<b>NOMINAL FIXED INCOME OVERLAY</b>	<b>215,320,866</b>	<b>0.4</b>										<b>01/01/17</b>
<b>NOMINAL FIXED INCOME</b>	<b>7,732,707,086</b>	<b>14.1</b>	<b>1.23</b>	<b>3.97</b>	<b>16.63</b>	<b>20.64</b>	<b>20.64</b>	<b>10.21</b>	<b>7.67</b>	<b>5.88</b>	<b>7.42</b>	<b>07/01/86</b>
CUSTOM NOMINAL FIXED INCOME BENCHMARK <sup>[22]</sup>			0.43	1.81	15.37	19.34	19.34	9.81	7.26	5.21		07/01/86
<i>Excess</i>			0.80	2.16	1.27	1.30	1.30	0.40	0.41	0.66		
<b>INFLATION SENSITIVE</b>												
SSGA PASSIVE US TIPS	106,214,562	0.2	1.14	4.27	6.34	8.63	8.63	5.22	3.88		1.71	12/01/12
BBG BARC US TIPS Idx			1.15	4.36	6.37	8.74	8.74	5.26	3.91		1.76	12/01/12
<i>Excess</i>			-0.01	-0.09	-0.03	-0.11	-0.11	-0.04	-0.03		-0.05	
MD TIPS	2,347,413,736	4.3	1.15	4.34	6.49	8.83	8.83				8.83	07/01/19
BBG Barc US Gov Infi-Lkd All Maturities			1.15	4.36	6.37	8.74	8.74				8.74	07/01/19
<i>Excess</i>			0.01	-0.02	0.12	0.10	0.10				0.10	
<b>TOTAL U.S. TIPS</b>	<b>2,453,628,298</b>	<b>4.5</b>	<b>1.15</b>	<b>4.34</b>	<b>6.48</b>	<b>8.82</b>	<b>8.82</b>	<b>5.28</b>	<b>3.91</b>	<b>3.51</b>	<b>4.39</b>	<b>02/01/06</b>
CUSTOM US TIPS MD BM <sup>[25]</sup>			1.15	4.36	6.37	8.74	8.74	5.26	3.91	3.58	4.20	02/01/06
<i>Excess</i>			0.01	-0.02	0.11	0.09	0.09	0.02	-0.00	-0.06	0.19	

**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>INFLATION SENSITIVE FI EX OVERLAY</b>	<b>2,453,628,299</b>	<b>4.5</b>	<b>1.15</b>	<b>4.34</b>	<b>6.48</b>	<b>8.83</b>	<b>8.83</b>	<b>5.27</b>	<b>4.01</b>	<b>3.88</b>	<b>4.20</b>	<b>07/01/08</b>
CUSTOM INFLATION SENSITIVE BENCHMARK <sup>[26]</sup>			1.15	4.36	6.37	8.74	8.74	5.26	4.04	3.96	4.00	07/01/08
<i>Excess</i>			0.01	-0.02	0.11	0.10	0.10	0.01	-0.03	-0.08	0.20	
Inflation Sensitive FI Tactical	-1	0.0										07/01/17
<b>INFLATION SENSITIVE FIXED INCOME OVERLAY</b>	<b>-1</b>	<b>0.0</b>										<b>07/01/17</b>
<b>INFLATION SENSITIVE FIXED INCOME</b>	<b>2,453,628,298</b>	<b>4.5</b>	<b>1.17</b>	<b>4.39</b>	<b>6.57</b>	<b>8.95</b>	<b>8.95</b>	<b>5.26</b>	<b>4.01</b>	<b>3.87</b>	<b>4.20</b>	<b>07/01/08</b>
CUSTOM INFLATION SENSITIVE BENCHMARK <sup>[26]</sup>			1.15	4.36	6.37	8.74	8.74	5.26	4.04	3.96	4.00	07/01/08
<i>Excess</i>			0.02	0.03	0.20	0.22	0.22	0.00	-0.03	-0.08	0.20	
<b>TOTAL RATE SENSITIVE EX OVERLAY</b>	<b>9,971,014,519</b>	<b>18.2</b>	<b>1.10</b>	<b>4.05</b>	<b>12.16</b>	<b>15.65</b>	<b>15.65</b>	<b>8.35</b>	<b>6.36</b>	<b>5.23</b>	<b>7.23</b>	<b>07/01/86</b>
CUSTOM RATE SENSITIVE BENCHMARK <sup>[27]</sup>			0.58	2.33	13.51	17.15	17.15	8.89	6.70	4.94		07/01/86
<i>Excess</i>			0.52	1.72	-1.35	-1.51	-1.51	-0.54	-0.34	0.29		
<b>TOTAL RATE SENSITIVE OVERLAY</b>	<b>215,320,865</b>	<b>0.4</b>										<b>01/01/17</b>
<b>TOTAL RATE SENSITIVE</b>	<b>10,186,335,384</b>	<b>18.6</b>	<b>1.21</b>	<b>4.08</b>	<b>14.47</b>	<b>18.10</b>	<b>18.10</b>	<b>9.12</b>	<b>6.82</b>	<b>5.46</b>	<b>7.30</b>	<b>07/01/86</b>
CUSTOM RATE SENSITIVE BENCHMARK <sup>[27]</sup>			0.58	2.33	13.51	17.15	17.15	8.89	6.70	4.94		07/01/86
<i>Excess</i>			0.64	1.75	0.95	0.94	0.94	0.23	0.12	0.52		
<b>CREDIT/DEBT</b>												
<b>US CREDIT</b>												
PIMCO HIGH QUALITY HY	1,590,960,741	2.9	0.17	8.39	-2.77	1.65	1.65				5.17	07/01/18
BBG BARC Ba to B US HY Idx			0.74	10.38	-2.19	2.13	2.13				5.41	07/01/18
<i>Excess</i>			-0.57	-1.99	-0.58	-0.49	-0.49				-0.24	



**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
CREDIT SUISSE US BANK LOANS	384,227,143	0.7	1.75	10.66	-4.54	-1.65	-1.65				2.35	07/01/18
S&P/LSTA Leverage Loan Index			1.14	9.70	-4.61	-1.99	-1.99				0.94	07/01/18
<i>Excess</i>			0.61	0.95	0.07	0.34	0.34				1.41	
PINE BRIDGE HIGH QUALITY HY	659,104,889	1.2	0.92	9.29	-2.00	1.70	1.70				4.81	07/01/18
BBG BARC Ba to B US HY Idx			0.74	10.38	-2.19	2.13	2.13				5.41	07/01/18
<i>Excess</i>			0.18	-1.09	0.19	-0.44	-0.44				-0.60	
PIMCO CCC HIGH YIELD	211,670,274	0.4	0.55								5.46	05/01/20
BBG BARC Ba to B US HY Idx			0.74								4.95	05/01/20
<i>Excess</i>			-0.19								0.51	
KKR BANK LOANS	8,355,417	0.0										09/01/10
CREDIT/DEBT TRANSITION ACCOUNT	0	0.0										02/01/09
<b>CREDIT/DEBT TERRA MARIA <sup>[28]</sup></b>	<b>50,976,789</b>	<b>0.1</b>	<b>0.83</b>	<b>6.71</b>	<b>-3.71</b>	<b>-0.80</b>	<b>-0.80</b>					<b>01/01/10</b>
<b>HIGH YIELD/BANK LOAN EX OVERLAY</b>	<b>2,905,681,426</b>	<b>5.3</b>	<b>0.52</b>	<b>8.87</b>	<b>-3.00</b>	<b>0.98</b>	<b>0.98</b>	<b>3.55</b>			<b>4.51</b>	<b>11/01/15</b>
HIGH YIELD CUSTOM BENCHMARK <sup>[29]</sup>			1.01	10.08	-3.96	-0.37	-0.37	3.08			5.22	11/01/15
<i>Excess</i>			-0.49	-1.22	0.96	1.35	1.35	0.46			-0.71	
<b>HIGH YIELD/BANK LOAN OVERLAY</b>	<b>0</b>	<b>0.0</b>										<b>07/01/19</b>
<b>HIGH YIELD/BANK LOAN</b>	<b>2,905,681,426</b>	<b>5.3</b>	<b>0.53</b>	<b>8.89</b>	<b>-2.96</b>	<b>1.07</b>	<b>1.07</b>	<b>3.58</b>			<b>4.53</b>	<b>11/01/15</b>
HIGH YIELD CUSTOM BENCHMARK <sup>[29]</sup>			1.01	10.08	-3.96	-0.37	-0.37	3.08			5.22	11/01/15
<i>Excess</i>			-0.49	-1.19	1.00	1.44	1.44	0.49			-0.69	

**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 PRIVATE CREDIT</b>	<b>1,081,670,608</b>	<b>2.0</b>	<b>0.40</b>	<b>-4.68</b>	<b>-6.10</b>	<b>-4.38</b>	<b>-4.38</b>	<b>2.32</b>	<b>5.49</b>	<b>7.27</b>	<b>6.93</b>	<b>01/01/10</b>
PERELLA WEINBERG	42,749,973	0.1	-14.51	-14.51	-13.71	-14.29	-14.29	-5.90	-6.61	2.23	2.23	07/01/10
HFRI ED: Distressed/Restructuring Index			4.56	10.43	-2.49	-4.23	-4.23	0.56	2.00	3.80	3.80	07/01/10
Excess			-19.07	-24.95	-11.22	-10.05	-10.05	-6.46	-8.61	-1.56	-1.56	
<b>TOTAL CREDIT HEDGE FUND</b>	<b>42,749,973</b>	<b>0.1</b>	<b>-14.51</b>	<b>-14.51</b>	<b>-13.71</b>	<b>-14.29</b>	<b>-14.29</b>	<b>-3.45</b>	<b>-2.30</b>	<b>3.57</b>	<b>3.57</b>	<b>07/01/10</b>
HFRI ED: Distressed/Restructuring Index			4.56	10.43	-2.49	-4.23	-4.23	0.56	2.00	3.80	3.80	07/01/10
Excess			-19.07	-24.95	-11.22	-10.05	-10.05	-4.02	-4.30	-0.23	-0.23	
<b>US CREDIT EX OVERLAY</b>	<b>4,030,102,006</b>	<b>7.4</b>	<b>0.31</b>	<b>4.64</b>	<b>-3.96</b>	<b>-0.69</b>	<b>-0.69</b>	<b>3.40</b>	<b>4.53</b>	<b>6.82</b>	<b>8.20</b>	<b>03/01/09</b>
U.S. CREDIT CUSTOM BENCHMARK <sup>[30]</sup>			1.01	10.08	-3.96	-0.37	-0.37	3.08	4.58	5.70	7.67	03/01/09
Excess			-0.70	-5.45	-0.00	-0.32	-0.32	0.32	-0.05	1.11	0.52	
<b>NON US CREDIT</b>												
LOGAN CIRCLE HARD CURRENCY EM	510,389,984	0.9	3.26	15.23	-2.03	2.28	2.28				7.08	07/01/18
Custom EM HC Benchmark <sup>[31]</sup>			2.76	10.47	-0.72	2.21	2.21				6.25	07/01/18
Excess			0.50	4.76	-1.30	0.07	0.07				0.83	
SSGA LOCAL CURRENCY EM	576,249,396	1.1	0.69	4.34	-3.63	-0.58	-0.58				5.33	11/01/18
Custom EM Debt Benchmark <sup>[32]</sup>			0.75	4.46	-3.51	-0.36	-0.36				5.42	11/01/18
Excess			-0.05	-0.12	-0.12	-0.21	-0.21				-0.09	
<b>NON US CREDIT EX OVERLAY</b>	<b>1,086,639,381</b>	<b>2.0</b>	<b>1.88</b>	<b>9.19</b>	<b>-3.19</b>	<b>0.47</b>	<b>0.47</b>	<b>2.28</b>	<b>2.68</b>		<b>0.34</b>	<b>10/01/10</b>
NON-U.S. CREDIT CUSTOM BENCHMARK <sup>[33]</sup>			1.75	7.44	-2.07	0.99	0.99	3.11	3.43		1.02	10/01/10
Excess			0.13	1.74	-1.12	-0.51	-0.51	-0.84	-0.76		-0.68	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
Non US Credit Tactical	0	0.0										07/01/19
<b>NON US CREDIT OVERLAY</b>	<b>0</b>	<b>0.0</b>										<b>07/01/19</b>
<b>NON US CREDIT</b>	<b>1,086,639,381</b>	<b>2.0</b>	<b>1.88</b>	<b>9.19</b>	<b>-3.17</b>	<b>0.49</b>	<b>0.49</b>	<b>2.28</b>	<b>2.68</b>		<b>0.34</b>	<b>10/01/10</b>
NON-U.S. CREDIT CUSTOM BENCHMARK <sup>[33]</sup>			1.75	7.44	-2.07	0.99	0.99	3.11	3.43		1.02	10/01/10
<i>Excess</i>			0.13	1.75	-1.11	-0.49	-0.49	-0.83	-0.75		-0.68	
<b>TOTAL CREDIT/DEBT STRATEGIES EX OVERLAY</b>	<b>5,116,741,387</b>	<b>9.3</b>	<b>0.64</b>	<b>5.57</b>	<b>-3.84</b>	<b>-0.48</b>	<b>-0.48</b>	<b>2.74</b>	<b>4.04</b>	<b>5.99</b>	<b>8.10</b>	<b>03/01/09</b>
MSRA CUSTOM CREDIT BENCHMARK <sup>[34]</sup>			1.17	9.50	-3.53	-0.06	-0.06	3.16	4.38	5.14	7.17	03/01/09
<i>Excess</i>			-0.53	-3.93	-0.31	-0.42	-0.42	-0.43	-0.34	0.85	0.93	
<b>TOTAL CREDIT/DEBT STRATEGIES OVERLAY</b>	<b>0</b>	<b>0.0</b>										<b>07/01/19</b>
<b>TOTAL CREDIT/DEBT STRATEGIES</b>	<b>5,116,741,387</b>	<b>9.3</b>	<b>0.65</b>	<b>5.59</b>	<b>-3.81</b>	<b>-0.43</b>	<b>-0.43</b>	<b>2.75</b>	<b>4.05</b>	<b>6.00</b>	<b>8.11</b>	<b>03/01/09</b>
MSRA CUSTOM CREDIT BENCHMARK <sup>[34]</sup>			1.17	9.50	-3.53	-0.06	-0.06	3.16	4.38	5.14	7.17	03/01/09
<i>Excess</i>			-0.53	-3.91	-0.28	-0.37	-0.37	-0.41	-0.33	0.85	0.94	
<b>REAL ASSETS</b>												
<b>REAL ESTATE</b>												
<b>TOTAL REITS EX RECORD CURRENCY</b>	<b>300,001</b>	<b>0.0</b>										<b>04/01/94</b>
RECORD CURRENCY MANAGEMENT-REITS	-55,558	-0.0										07/01/11
<b>TOTAL REITS EX OVERLAY</b>	<b>244,443</b>	<b>0.0</b>										<b>04/01/94</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>TOTAL PRIVATE REAL ESTATE</b>	<b>4,607,170,926</b>	<b>8.4</b>	<b>-1.57</b>	<b>-2.14</b>	<b>-0.74</b>	<b>1.28</b>	<b>1.28</b>	<b>5.55</b>	<b>7.31</b>	<b>10.56</b>	<b>8.84</b>	<b>03/01/94</b>
CUSTOM MD PRIVATE REAL ESTATE BM <sup>[35]</sup>			-0.02	-0.60	0.91	3.24	3.24	6.25	8.12	10.74	9.34	03/01/94
<i>Excess</i>			-1.55	-1.54	-1.64	-1.96	-1.96	-0.71	-0.80	-0.17	-0.49	
MSIM Cus FTSE EPRA NAREIT Dev ex US(Net) <sup>[36]</sup>			2.57	10.07	-21.33	-16.25	-16.25	-1.60	1.28	5.92		11/01/06
WILSHIRE RESI			2.28	10.57	-17.89	-12.39	-12.39	0.22	4.20	9.34		01/01/78
<b>TOTAL REAL ESTATE</b>	<b>4,607,415,369</b>	<b>8.4</b>	<b>-1.57</b>	<b>-2.14</b>	<b>-0.74</b>	<b>1.31</b>	<b>1.31</b>	<b>5.39</b>	<b>6.88</b>	<b>10.42</b>	<b>6.69</b>	<b>07/01/87</b>
REAL ESTATE CUSTOM INDEX <sup>[37]</sup>			-0.02	-0.60	0.91	3.24	3.24	6.20	7.76	10.68	8.06	07/01/87
<i>Excess</i>			-1.55	-1.54	-1.64	-1.93	-1.93	-0.81	-0.88	-0.26	-1.37	
<b>NATURAL RESOURCE AND INFRASTRUCTURE</b>												
TORTOISE CAPITAL DOMESTIC EQ	64,125,248	0.1	-8.05	28.01	-33.40	-38.56	-38.56	-15.25	-11.66	1.92	4.42	08/01/09
S&P MLP Total Return Index			-7.11	45.82	-35.66	-40.17	-40.17	-15.34	-12.68	-0.52	2.04	08/01/09
<i>Excess</i>			-0.94	-17.81	2.26	1.61	1.61	0.09	1.02	2.45	2.38	
HARVEST FUND ADVISORS	226,997,027	0.4	-4.38	32.61	-32.15	-36.35	-36.35	-13.57	-11.39	4.07	5.65	11/01/09
S&P MLP Total Return Index			-7.11	45.82	-35.66	-40.17	-40.17	-15.34	-12.68	-0.52	1.72	11/01/09
<i>Excess</i>			2.73	-13.20	3.52	3.82	3.82	1.78	1.29	4.59	3.93	
RHUMBLINE DJ BROOKFIELD GLOBAL INFRA	508,843,235	0.9	-1.65	13.53	-13.94	-9.05	-9.05				1.43	11/01/17
DJ Brookfield Global Infra Comp			-1.74	13.32	-14.39	-9.89	-9.89				0.07	11/01/17
<i>Excess</i>			0.09	0.21	0.45	0.83	0.83				1.35	
RHUMBLINE GLOBAL NATURAL RESOURCES	261,368,943	0.5	2.07	20.34	-19.03	-16.74	-16.74				-4.49	11/01/17
S&P Global Natural Resources (Net)			1.99	20.17	-19.47	-17.36	-17.36				-5.30	11/01/17
<i>Excess</i>			0.08	0.16	0.44	0.62	0.62				0.81	

**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 ENERGY FUNDS	505,130,472	0.9	-0.04	-21.25	-22.66	-25.07	-25.07	-4.78	-3.07	3.70	3.58	01/01/10
TOTAL INFRASTRUCTURE	73,333,324	0.1	0.00	-3.86	-9.89	-10.24	-10.24	-5.86	-2.73	1.86	1.68	10/01/09
TIMBER LP FUNDS	204,218,909	0.4	0.00	-0.18	2.84	4.75	4.75	2.62	2.52	6.15	6.04	05/01/10
<b>NATURAL RESOURCE AND INFRA EX OVERLAY</b>	<b>1,844,017,159</b>	<b>3.4</b>	<b>-1.04</b>	<b>1.95</b>	<b>-19.16</b>	<b>-19.16</b>	<b>-19.16</b>	<b>-4.05</b>	<b>-2.72</b>	<b>5.08</b>	<b>6.47</b>	<b>08/01/09</b>
NATURAL RESOURCE AND INFRASTRUCTURE BM <sup>[38]</sup>			0.50	17.42	-17.36	-14.25	-14.25	0.35	3.88	5.31	5.41	08/01/09
Excess			-1.54	-15.47	-1.79	-4.91	-4.91	-4.40	-6.60	-0.23	1.07	
Real Assets Tactical	0	0.0										07/01/19
<b>NATURAL RESOURCE AND INFRA OVERLAY</b>	<b>0</b>	<b>0.0</b>										<b>07/01/19</b>
<b>NATURAL RESOURCE AND INFRASTRUCTURE</b>	<b>1,844,017,159</b>	<b>3.4</b>	<b>-1.04</b>	<b>1.95</b>	<b>-19.15</b>	<b>-19.14</b>	<b>-19.14</b>				<b>-19.14</b>	<b>07/01/19</b>
NATURAL RESOURCE AND INFRASTRUCTURE BM <sup>[38]</sup>			0.50	17.42	-17.36	-14.25	-14.25				-14.25	07/01/19
Excess			-1.54	-15.46	-1.78	-4.89	-4.89				-4.89	
<b>TOTAL REAL ASSETS EX OVERLAY</b>	<b>6,451,432,528</b>	<b>11.8</b>	<b>-1.42</b>	<b>-1.00</b>	<b>-6.74</b>	<b>-5.41</b>	<b>-5.41</b>	<b>2.49</b>	<b>2.08</b>	<b>2.75</b>	<b>3.58</b>	<b>02/01/06</b>
CUSTOM REAL ASSETS BENCHMARK <sup>[39]</sup>			0.13	4.33	-5.03	-2.30	-2.30	4.26	3.73	2.72	3.17	02/01/06
Excess			-1.55	-5.34	-1.71	-3.10	-3.10	-1.77	-1.65	0.03	0.41	
<b>TOTAL REAL ASSETS OVERLAY</b>	<b>21,892,353</b>	<b>0.0</b>										<b>01/01/17</b>
<b>TOTAL REAL ASSETS</b>	<b>6,473,324,881</b>	<b>11.8</b>	<b>-1.40</b>	<b>-0.98</b>	<b>-6.76</b>	<b>-5.42</b>	<b>-5.42</b>	<b>2.50</b>	<b>2.08</b>	<b>2.74</b>	<b>3.58</b>	<b>02/01/06</b>
CUSTOM REAL ASSETS BENCHMARK <sup>[39]</sup>			0.13	4.33	-5.03	-2.30	-2.30	4.26	3.73	2.72	3.17	02/01/06
Excess			-1.52	-5.31	-1.73	-3.12	-3.12	-1.76	-1.65	0.03	0.41	

**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	189,715,321	0.3	2.06	7.88	2.63	8.29	8.29				9.87	01/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				2.34	01/01/18
<i>Excess</i>			0.31	1.95	4.07	7.68	7.68				7.53	
SHOALS FINANCIALS OPPORTUNITY FUND, LP	20,425,484	0.0	-6.92	-56.98	-57.31	-61.46	-61.46				-31.87	03/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				2.21	03/01/18
<i>Excess</i>			-8.67	-62.90	-55.87	-62.06	-62.06				-34.08	
KING STREET CAPITAL	196,042,421	0.4	3.16	9.07	-2.52	-3.27	-3.27	0.76	1.66		3.98	12/01/11
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		3.50	12/01/11
<i>Excess</i>			1.41	3.14	-1.08	-3.88	-3.88	-2.20	-0.77		0.48	
EMPYREAN CAPITAL FUND	291,675,000	0.5	1.24	3.95	-3.62	-3.88	-3.88				-1.34	06/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				1.83	06/01/18
<i>Excess</i>			-0.50	-1.97	-2.18	-4.49	-4.49				-3.17	
STANDARD GENERAL FUND II	159,096,800	0.3	2.56	7.37	-15.70	-24.88	-24.88				-13.80	02/01/19
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				2.69	02/01/19
<i>Excess</i>			0.82	1.45	-14.25	-25.49	-25.49				-16.49	
SGM CO-INVESTMENT FUND LP	7,309,400	0.0	-4.61	0.93	-25.22						-27.41	10/01/19
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44						0.41	10/01/19
<i>Excess</i>			-6.35	-4.99	-23.78						-27.82	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
CONTRARIAN EMMA 2	147,488,773	0.3	6.47	16.86	-26.26						-26.26	01/01/20
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44						-1.44	01/01/20
<i>Excess</i>			4.73	10.93	-24.81						-24.81	
<b>EVENT DRIVEN STRATEGIES</b>	<b>1,011,753,198</b>	<b>1.8</b>	<b>2.33</b>	<b>1.97</b>	<b>-12.69</b>	<b>-15.03</b>	<b>-15.03</b>					<b>07/01/17</b>
HFRI FoF CONSERVATIVE + 100 bps			1.75	5.92	-1.44	0.61	0.61					07/01/17
<i>Excess</i>			0.58	-3.95	-11.24	-15.64	-15.64					
BRIDGEWATER PURE ALPHA	371,863,817	0.7	0.17	4.68	-16.83	-13.76	-13.76	-2.46	-1.75	2.75	3.15	05/01/08
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43	3.14	1.66	05/01/08
<i>Excess</i>			-1.57	-1.24	-15.39	-14.37	-14.37	-5.41	-4.19	-0.39	1.49	
GRAHAM TACTICAL TREND	123,956,106	0.2	-2.59	-1.98	-10.09	-4.56	-4.56	-0.63	-3.56		-3.56	07/01/15
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.43	07/01/15
<i>Excess</i>			-4.33	-7.90	-8.64	-5.17	-5.17	-3.58	-6.00		-6.00	
FORT GLOBAL CONTRARIAN	177,669,000	0.3	0.96	1.47	-1.81	0.69	0.69				5.29	03/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				2.21	03/01/18
<i>Excess</i>			-0.79	-4.45	-0.36	0.08	0.08				3.08	
MANIYAR MACRO FUND	220,163,000	0.4	1.03	1.98	9.88						10.08	08/01/19
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44						0.28	08/01/19
<i>Excess</i>			-0.72	-3.94	11.32						9.80	
KIRKOSWALD GLOBAL MACRO FUND	199,213,000	0.4	-0.39								-0.39	06/01/20
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75								1.75	06/01/20
<i>Excess</i>			-2.14								-2.14	

**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
PHARO GAIA FUND	100,000,000	0.2										06/01/20
<b>GLOBAL MACRO/GTAA STRATEGIES</b>	<b>1,192,864,923</b>	<b>2.2</b>	<b>-0.10</b>	<b>2.27</b>	<b>-8.58</b>	<b>-5.28</b>	<b>-5.28</b>	<b>-0.43</b>	<b>-1.50</b>	<b>0.92</b>	<b>1.47</b>	<b>04/01/08</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43	3.14	1.69	04/01/08
<i>Excess</i>			-1.85	-3.65	-7.13	-5.89	-5.89	-3.38	-3.93	-2.22	-0.23	
NEPHILA PALMETTO FUND	137,811,030	0.3	0.40	1.84	1.41	0.71	0.71	-2.73	-0.04		1.07	01/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.62	01/01/14
<i>Excess</i>			-1.35	-4.09	2.86	0.10	0.10	-5.68	-2.47		-1.55	
NIMBUS WEATHER FUND LTD	95,682,500	0.2	-0.13	-17.16	-0.95	0.96	0.96	-2.28			-2.33	06/01/17
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95			2.85	06/01/17
<i>Excess</i>			-1.87	-23.09	0.49	0.36	0.36	-5.23			-5.18	
PRIVATE MARKET FUNDS	59,535,410	0.1	-5.77	-7.63	-17.62	-28.88	-28.88				-6.90	06/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				1.83	06/01/18
<i>Excess</i>			-7.51	-13.55	-16.18	-29.49	-29.49				-8.73	
HSCM BERMUDA FUND	206,178,442	0.4	-0.10	0.37	1.20	7.52	7.52				7.52	07/01/19
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				0.61	07/01/19
<i>Excess</i>			-1.84	-5.56	2.64	6.91	6.91				6.91	
<b>OPPORTUNISTIC</b>	<b>499,207,382</b>	<b>0.9</b>	<b>-0.68</b>	<b>-4.13</b>	<b>-1.74</b>	<b>-2.54</b>	<b>-2.54</b>	<b>-3.08</b>	<b>-0.28</b>		<b>0.88</b>	<b>01/01/14</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.62	01/01/14
<i>Excess</i>			-2.42	-10.05	-0.29	-3.15	-3.15	-6.04	-2.72		-1.74	



**SUMMARY OF PERFORMANCE**

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
HUDSON BAY FUND	511,668,375	0.9	2.14	4.85	8.02	12.06	12.06	10.24	7.21		5.70	10/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.55	10/01/14
<i>Excess</i>			0.40	-1.08	9.46	11.45	11.45	7.29	4.78		3.16	
ARISTEIA CAPITAL	393,114,300	0.7	2.86	10.03	6.05	8.82	8.82	7.13	6.27		5.20	12/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.65	12/01/14
<i>Excess</i>			1.12	4.10	7.49	8.21	8.21	4.18	3.83		2.55	
ARISTEIA CO-INVEST	24,836,036	0.0	-1.30	3.74	3.83	16.35	16.35	17.15			9.92	03/01/16
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95			3.70	03/01/16
<i>Excess</i>			-3.05	-2.19	5.27	15.74	15.74	14.19			6.22	
EXODUS POINT	452,231,200	0.8	2.41	7.21	8.14	11.55	11.55				7.71	08/01/18
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61				1.81	08/01/18
<i>Excess</i>			0.67	1.28	9.59	10.95	10.95				5.90	
VOLORIDGE FUND	204,218,800	0.4	6.09	6.04								01/01/20
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92								01/01/20
<i>Excess</i>			4.35	0.12								
<b>RELATIVE VALUE STRATEGIES</b>	<b>1,586,068,711</b>	<b>2.9</b>	<b>2.83</b>	<b>6.90</b>	<b>6.59</b>	<b>10.18</b>	<b>10.18</b>	<b>6.74</b>	<b>4.12</b>		<b>4.12</b>	<b>01/01/14</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43		2.62	01/01/14
<i>Excess</i>			1.09	0.98	8.03	9.57	9.57	3.79	1.69		1.50	
<b>TOTAL ABSOLUTE RETURN</b>	<b>4,290,308,815</b>	<b>7.8</b>	<b>1.49</b>	<b>3.06</b>	<b>-3.92</b>	<b>-2.47</b>	<b>-2.47</b>	<b>1.22</b>	<b>0.77</b>	<b>2.74</b>	<b>2.73</b>	<b>04/01/08</b>
CUSTOM ABSOLUTE RETURN BENCHMARK <sup>[20]</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43	3.14	1.69	04/01/08
<i>Excess</i>			-0.26	-2.86	-2.47	-3.07	-3.07	-1.73	-1.66	-0.40	1.04	

**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>MULTI ASSET</b>												
BRIDGEWATER ALL WEATHER	239,107,781	0.4	1.85	7.91	-2.75	1.39	1.39	5.08	4.22	6.58	7.52	07/01/09
CUSTOM BRIDGEWATER BENCHMARK <sup>(40)</sup>			1.75	5.92	-1.44	0.61	0.61	2.95	2.43	4.69	5.12	07/01/09
<i>Excess</i>			0.10	1.99	-1.30	0.78	0.78	2.13	1.79	1.89	2.41	
BLACKROCK CASH EQUITIZATION	601,461,841	1.1	2.45	14.33	-2.73	3.25	3.25	5.82			8.30	12/01/16
FTSE 3 MONTH T-BILL			0.01	0.14	0.52	1.56	1.56	1.72			1.54	12/01/16
<i>Excess</i>			2.44	14.20	-3.25	1.69	1.69	4.10			6.76	
<b>TOTAL MULTI ASSET</b>	<b>840,569,622</b>	<b>1.5</b>	<b>2.34</b>	<b>12.84</b>	<b>-1.71</b>	<b>2.93</b>	<b>2.93</b>				<b>3.66</b>	<b>07/01/18</b>
TOTAL PLAN POLICY INDEX <sup>(41)</sup>			1.37	7.15	-1.93	3.14	3.14				5.10	07/01/18
<i>Excess</i>			0.98	5.69	0.23	-0.22	-0.22				-1.44	
<b>CASH</b>												
MARYLAND MONEY MARKET ACCOUNT	265,452,145	0.5	0.01	0.02	0.40	1.47	1.47	1.86	1.32		0.72	01/01/11
FTSE 3 MONTH T-BILL			0.01	0.14	0.52	1.56	1.56	1.72	1.15		0.63	01/01/11
<i>Excess</i>			0.00	-0.11	-0.13	-0.09	-0.09	0.14	0.17		0.09	
SELF LIQUIDATING ACCOUNT	5,728	0.0	6.24	0.86	2.36	6.09	6.09					06/01/84
<b>TOTAL CASH</b>	<b>269,703,473</b>	<b>0.5</b>	<b>0.01</b>	<b>0.38</b>	<b>-0.97</b>	<b>0.85</b>	<b>0.85</b>	<b>6.51</b>	<b>5.39</b>	<b>3.99</b>	<b>3.82</b>	<b>07/01/08</b>
FTSE 3 MONTH T-BILL			0.01	0.14	0.52	1.56	1.56	1.72	1.15	0.61	0.58	07/01/08
<i>Excess</i>			0.00	0.24	-1.49	-0.71	-0.71	4.78	4.24	3.39	3.24	
<b>TOTAL PLAN</b>	<b>54,767,091,950</b>	<b>100.0</b>	<b>1.88</b>	<b>7.38</b>	<b>-1.53</b>	<b>3.57</b>	<b>3.57</b>	<b>6.01</b>	<b>5.80</b>	<b>7.57</b>	<b>7.89</b>	<b>07/01/86</b>
TOTAL PLAN POLICY INDEX <sup>(41)</sup>			1.37	7.15	-1.93	3.14	3.14	5.93	5.84	7.17		07/01/86
<i>Excess</i>			0.51	0.23	0.40	0.43	0.43	0.09	-0.03	0.40		

**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 PLAN CUSTOM STATIC INDEX <sup>(42)</sup>			1.36	7.17	-2.23	2.86	2.86	5.91	5.90	7.20		07/01/08

## 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  
From 07/01/2013 to 10/31/2015: 100% Barclays US Intermediate Aggregate 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 BIG
- [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  
07/01/2013 to 09/30/2015: 100% Barclays US Intermediate Aggregate 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 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 EM Local 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] From 07/01/2020: The Private Real Estate benchmark is the NCREIF ODCE Net + 40bps. 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 Net + 40bps.  
For 06/2020: The Private Real Estate benchmark is the NCREIF ODCE.  
From 07/01/2013 to 05/31/2020: 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] From 07/01/2020: 100% NCREIF ODCE Net + 40bps.  
For 06/2020: 100% NCREIF ODCE.  
From 07/01/2019 to 05/31/2020: 100% NCREIF ODCE (one qtr lag).  
Prior to 07/01/2016, 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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# State Retirement Agency of Maryland

Terra Maria Program  
Rates of Return - Net Mgr  
Periods Ending June 30, 2020



## TERRA MARIA SUMMARY OF PROGRAM MANAGER PERFORMANCE

	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inc Date
<b>TOTAL TERRA MARIA PROGRAM <sup>[1]</sup></b>	<b>2,457,757,350</b>	<b>100.0</b>	<b>3.24</b>	<b>16.17</b>	<b>-8.04</b>	<b>-2.32</b>	<b>-2.32</b>	<b>1.30</b>	<b>2.72</b>	<b>7.23</b>	<b>4.68</b>	<b>04/01/07</b>
TOTAL TERRA MARIA INDEX <sup>[2]</sup>			2.95	13.75	-7.95	-2.07	-2.07	1.69	3.59	7.80	4.28	04/01/07
<i>Excess</i>			0.29	2.41	-0.09	-0.25	-0.25	-0.39	-0.87	-0.57	0.40	
<b>ATTUCKS INTL DEVELOPED (TM)</b>	<b>413,131,126</b>	<b>16.8</b>	<b>3.29</b>	<b>18.50</b>	<b>-11.17</b>	<b>-3.53</b>	<b>-3.53</b>	<b>1.02</b>	<b>3.76</b>	<b>8.12</b>	<b>10.07</b>	<b>12/01/08</b>
MSCI WORLD EX US NET (DAILY)			3.42	15.34	-11.49	-5.42	-5.42	0.84	2.01	5.43	6.58	12/01/08
<i>Excess</i>			-0.13	3.16	0.32	1.89	1.89	0.17	1.75	2.69	3.49	
<b>TOTAL CAPITAL PROSPECTS</b>	<b>1,027,582,972</b>	<b>41.8</b>	<b>2.54</b>	<b>11.91</b>	<b>-3.24</b>	<b>0.50</b>	<b>0.50</b>	<b>3.23</b>	<b>4.53</b>	<b>10.29</b>	<b>11.87</b>	<b>12/01/08</b>
CAPITAL PROSPECTS CUSTOM BENCHMARK <sup>[3]</sup>			1.57	9.69	-2.43	1.68	1.68	3.62	5.11	10.58	11.84	12/01/08
<i>Excess</i>			0.98	2.22	-0.81	-1.18	-1.18	-0.39	-0.58	-0.30	0.03	
<b>TOTAL XPONANCE</b>	<b>590,552,825</b>	<b>24.0</b>	<b>4.53</b>	<b>19.30</b>	<b>-13.44</b>	<b>-7.32</b>	<b>-7.32</b>	<b>-1.18</b>	<b>1.88</b>	<b>6.92</b>	<b>8.58</b>	<b>12/01/08</b>
XPONANCE CUSTOM BENCHMARK <sup>[3]</sup>			4.77	19.26	-11.10	-3.21	-3.21	1.07	3.35	7.52	8.79	12/01/08
<i>Excess</i>			-0.24	0.04	-2.35	-4.11	-4.11	-2.25	-1.47	-0.60	-0.21	
<b>LEADING EDGE INTL DEVELOPED (TM)</b>	<b>426,377,013</b>	<b>17.3</b>	<b>3.09</b>	<b>20.57</b>	<b>-6.69</b>	<b>1.14</b>	<b>1.14</b>	<b>2.79</b>	<b>3.92</b>	<b>7.23</b>	<b>9.66</b>	<b>12/01/08</b>
MSCI WORLD EX US NET (DAILY)			3.42	15.34	-11.49	-5.42	-5.42	0.84	2.01	5.43	6.58	12/01/08
<i>Excess</i>			-0.33	5.23	4.80	6.56	6.56	1.95	1.91	1.80	3.08	

# State Retirement Agency of Maryland

Terra Maria Program  
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## SUMMARY OF MONTHLY PERFORMANCE - TERRA MARIA

	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD	Inc Date
<b>US EQUITY</b>											
INVIEW INVESTMENT MGMT (CP)	46,363,164	1.9	3.10	22.67	-29.33	-26.28	-26.28	-7.42		-6.29	04/01/17
Russell 2000 Value			2.90	18.91	-23.50	-17.48	-17.48	-4.35		-3.82	04/01/17
<i>Excess</i>			0.20	3.77	-5.83	-8.80	-8.80	-3.07		-2.46	
LISANTI CAPITAL GROWTH (CP)	88,085,821	3.6	6.98	39.57	7.48	8.93	8.93	15.68		16.81	04/01/17
Russell 2000 Growth			3.84	30.58	-3.06	3.48	3.48	7.86		8.66	04/01/17
<i>Excess</i>			3.14	8.99	10.54	5.45	5.45	7.82		8.14	
MATARIN CAPITAL MGMT (CP)	50,494,216	2.1	3.10	23.01	-20.28	-14.55	-14.55	-3.76		-2.89	04/01/17
S&P SMALLCAP 600			3.74	21.94	-17.85	-11.29	-11.29	0.56		1.04	04/01/17
<i>Excess</i>			-0.63	1.06	-2.42	-3.26	-3.26	-4.32		-3.93	
PACIFIC RIDGE CAPITAL PTNRS (CP)	46,827,599	1.9	3.85	20.70	-29.51	-21.10	-21.10	-7.37		-6.21	04/01/17
Russell 2000 Value			2.90	18.91	-23.50	-17.48	-17.48	-4.35		-3.82	04/01/17
<i>Excess</i>			0.96	1.80	-6.02	-3.62	-3.62	-3.02		-2.39	
PROFIT INVESTMENT MGMT (CP)	71,665,204	2.9	7.38	34.58	-11.74	-0.12	-0.12	10.31		11.06	04/01/17
Russell 2000			3.53	25.42	-12.98	-6.63	-6.63	2.01		2.62	04/01/17
<i>Excess</i>			3.85	9.16	1.24	6.50	6.50	8.30		8.44	
BRIDGE CITY CAPITAL (CP)	49,241,795	2.0	3.26	22.55	-8.79					-2.06	09/01/19
Russell 2000 Growth			3.84	30.58	-3.06					7.10	09/01/19
<i>Excess</i>			-0.59	-8.03	-5.73					-9.16	
TRANSITION ACCOUNT	0	0.0									07/01/83

# State Retirement Agency of Maryland

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## SUMMARY OF MONTHLY PERFORMANCE - TERRA MARIA

	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD	Inc Date
<b>US EQUITY TERRA MARIA</b>	<b>352,678,025</b>	<b>14.3</b>	<b>5.03</b>	<b>28.61</b>	<b>-15.62</b>	<b>-10.35</b>	<b>-10.35</b>	<b>-0.09</b>	<b>1.97</b>	<b>6.14</b>	<b>04/01/07</b>
TERRA MARIA US EQUITY BENCHMARK <sup>[2]</sup>			3.51	24.99	-14.09	-7.72	-7.72	1.46	4.53	6.57	04/01/07
<i>Excess</i>			1.51	3.62	-1.53	-2.64	-2.64	-1.55	-2.56	-0.44	
<b>CAPITAL PROSPECTS US SMALL CAP (TM)</b>	<b>352,677,799</b>	<b>14.3</b>	<b>5.03</b>	<b>28.63</b>	<b>-14.51</b>	<b>-9.01</b>	<b>-9.01</b>	<b>1.55</b>		<b>2.43</b>	<b>04/01/17</b>
S&P 600 Small Cap USD NET			3.69	21.80	-18.06	-11.72	-11.72	0.10		0.59	04/01/17
<i>Excess</i>			1.34	6.83	3.55	2.71	2.71	1.45		1.84	
<b>INTERNATIONAL DEVELOPED EQUITY</b>											
ATIVO CAPITAL MANAGEMENT (LE)	70,906,002	2.9	2.78	15.67	-14.28	-9.03	-9.03	0.72		2.49	04/01/17
MSCI WORLD EX US (NET)			3.42	15.34	-11.49	-5.42	-5.42	0.84		2.49	04/01/17
<i>Excess</i>			-0.64	0.33	-2.79	-3.61	-3.61	-0.12		0.00	
BLACKCRANE CAPITAL LLC (LE)	67,757,690	2.8	4.06	30.46	-3.75	8.92	8.92	1.71		2.93	04/01/17
MSCI WORLD EX US (NET)			3.42	15.34	-11.49	-5.42	-5.42	0.84		2.49	04/01/17
<i>Excess</i>			0.64	15.11	7.74	14.34	14.34	0.87		0.44	
BLACK CREEK INVESTMENT MGMT (LE)	66,362	0.0									04/01/17
REDWOOD INVESTMENTS LLC (LE)	91,222,571	3.7	3.51	22.07	-1.29	5.67	5.67	6.29		8.75	04/01/17
MSCI WORLD EX US (NET)			3.42	15.34	-11.49	-5.42	-5.42	0.84		2.49	04/01/17
<i>Excess</i>			0.08	6.73	10.19	11.09	11.09	5.45		6.26	
STRATEGIC GLOBAL ADVISORS (LE)	98,213,660	4.0	2.67	15.70	-11.45	-5.09	-5.09	0.43		2.36	04/01/17
MSCI EAFE (NET)			3.40	14.88	-11.34	-5.13	-5.13	0.81		2.61	04/01/17
<i>Excess</i>			-0.74	0.82	-0.11	0.05	0.05	-0.38		-0.25	

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## SUMMARY OF MONTHLY PERFORMANCE - TERRA MARIA

	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD	Inc Date
GLOBEFLEX CAPITAL (A)	90,210,642	3.7	3.52	17.99	-13.57	-9.78	-9.78	-2.43		-0.38	04/01/17
MSCI World Ex US IMI Net			3.19	16.21	-11.68	-5.11	-5.11	0.80		2.52	04/01/17
<i>Excess</i>			0.33	1.78	-1.89	-4.68	-4.68	-3.23		-2.90	
ARGA INVESTMENT MANAGEMENT (A)	55,733,445	2.3	3.94	15.92	-21.64	-8.07	-8.07	-1.36		-0.70	04/01/17
MSCI EAFE VALUE NET (DAILY)			3.57	12.43	-19.27	-14.48	-14.48	-4.43		-2.71	04/01/17
<i>Excess</i>			0.38	3.50	-2.37	6.41	6.41	3.07		2.01	
METIS GLOBAL PARTNERS (A)	51,682,109	2.1	2.21	12.47	-20.45	-10.75	-10.75	-5.13		-3.23	04/01/17
MSCI EAFE VALUE NET (DAILY)			3.57	12.43	-19.27	-14.48	-14.48	-4.43		-2.71	04/01/17
<i>Excess</i>			-1.36	0.04	-1.17	3.73	3.73	-0.70		-0.52	
PARADIGM ASSET MANAGEMENT (A)	93,978,671	3.8	2.92	19.57	-7.41	-0.79	-0.79	3.74		5.66	04/01/17
MSCI EAFE (NET)			3.40	14.88	-11.34	-5.13	-5.13	0.81		2.61	04/01/17
<i>Excess</i>			-0.49	4.69	3.93	4.34	4.34	2.93		3.05	
REDWOOD INVESTMENTS LLC (A)	121,512,714	4.9	3.58	22.06	-1.29	5.68	5.68	6.31		8.76	04/01/17
MSCI EAFE GROWTH (NET)			3.24	16.95	-3.53	4.15	4.15	5.91		7.82	04/01/17
<i>Excess</i>			0.34	5.11	2.24	1.52	1.52	0.41		0.94	
ALGERT GLOBAL LLC (X)	52,744,091	2.1	0.96	22.43	-12.52	-4.12	-4.12	-1.68		0.68	04/01/17
MSCI EAFE SMALL CAP NET			1.37	19.88	-13.11	-3.52	-3.52	0.53		2.93	04/01/17
<i>Excess</i>			-0.41	2.55	0.59	-0.59	-0.59	-2.21		-2.25	
GLOBAL ALPHA CAPITAL MGMT (X)	193,029	0.0	1.81	17.73	-15.68	-5.47	-5.47	2.37		5.62	04/01/17
METIS GLOBAL PARTNERS (X)	119,317	0.0									04/01/17

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	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD	Inc Date
EAM INVESTORS (X)	56,840,857	2.3	3.14	27.90	-5.03	2.36	2.36			-4.03	09/01/18
MSCI WORLD EX US SMALL CAP (NET)			1.78	21.66	-12.87	-3.20	-3.20			-5.06	09/01/18
<i>Excess</i>			1.36	6.24	7.84	5.57	5.57			1.03	
DENALI INTERNATIONAL SMALL VALUE (X)	39,195,391	1.6	-0.01	12.54	-20.09	-10.58	-10.58			-10.58	07/01/19
MSCI WORLD EX US SMALL CAP (NET)			1.78	21.66	-12.87	-3.20	-3.20			-3.20	07/01/19
<i>Excess</i>			-1.79	-9.12	-7.22	-7.38	-7.38			-7.38	
ARGA WORLD (X)	42,594,797	1.7									06/01/20
LIZARD WORLD (X)	67,803,659	2.8									06/01/20
HENRY JAMES INTERNATIONAL (LE)	98,173,853	4.0	2.89	21.96	-2.04	7.49	7.49			14.89	02/01/19
MSCI WORLD EX US (NET)			3.42	15.34	-11.49	-5.42	-5.42			0.85	02/01/19
<i>Excess</i>			-0.54	6.61	9.45	12.91	12.91			14.05	
INTL DEVELOPED EQUITY TERRA MARIA <sup>[4]</sup>	1,099,290,853	44.7	2.80	19.64	-10.29	-2.28	-2.28	1.24	2.78	2.36	11/01/07
TERRA MARIA INTL DEVELOPED EQ BM <sup>[5]</sup>			2.97	16.48	-11.89	-4.81	-4.81	0.72	1.96	0.95	11/01/07
<i>Excess</i>			-0.17	3.16	1.59	2.53	2.53	0.52	0.83	1.41	
XPONANCE INTL SMALL CAP (TM)	259,669,583	10.6	1.55	19.97	-14.27	-5.55	-5.55	-0.75		1.96	04/01/17
MSCI WORLD EX US SMALL CAP (NET)			1.78	21.66	-12.87	-3.20	-3.20	0.53		2.69	04/01/17
<i>Excess</i>			-0.23	-1.70	-1.39	-2.35	-2.35	-1.28		-0.73	
<b>EMERGING MARKETS</b>											
FIS EMERGING MARKETS CIT (X)	330,883,241	13.5	6.99	18.77	-12.68	-8.72	-8.72			-8.81	02/01/18
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39			-6.86	02/01/18
<i>Excess</i>			-0.36	0.69	-2.90	-5.33	-5.33			-1.95	

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## SUMMARY OF MONTHLY PERFORMANCE - TERRA MARIA

	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD	Inc Date
<b>EMERGING MARKETS EQUITY TERRA MARIA</b>	<b>330,883,299</b>	<b>13.5</b>	<b>6.99</b>	<b>18.77</b>	<b>-12.68</b>	<b>-8.72</b>	<b>-8.72</b>				<b>11/01/15</b>
MSCI EMERGING MARKETS			7.35	18.08	-9.78	-3.39	-3.39				11/01/15
<i>Excess</i>			-0.36	0.69	-2.90	-5.34	-5.34				
<b>RATE SENSITIVE</b>											
PUGH CAPITAL MGT INC (CP)	140,906,492	5.7	1.07	5.05	6.14	8.97	8.97	5.34	4.19	5.53	11/01/08
Custom BC US Agg / BC Agg Int / BC Agg <sup>[6]</sup>			0.63	2.90	6.14	8.74	8.74	5.21	3.95	4.63	11/01/08
<i>Excess</i>			0.44	2.16	0.01	0.23	0.23	0.13	0.25	0.90	
BBG BARC US Agg			0.63	2.90	6.14	8.74	8.74	5.32	4.30		12/01/75
LM CAPITAL GROUP, LLC (CP)	57,893,462	2.4	1.17	4.89	5.02	8.19	8.19	4.94	3.54	4.72	12/01/08
Custom BC US Agg / BC Agg Int / BC Agg <sup>[6]</sup>			0.63	2.90	6.14	8.74	8.74	5.21	3.95	4.38	12/01/08
<i>Excess</i>			0.54	2.00	-1.12	-0.55	-0.55	-0.28	-0.40	0.34	
BBG BARC US Agg			0.63	2.90	6.14	8.74	8.74	5.32	4.30		12/01/75
NEW CENTURY ADVISORS (CP)	100,194,920	4.1	0.59	2.83	5.00	6.76	6.76	4.51	3.56	4.37	07/01/09
Custom BC US Agg Intermediate <sup>[7]</sup>			0.41	2.13	4.67	6.60	6.60	4.28	3.40	3.84	07/01/09
<i>Excess</i>			0.18	0.70	0.34	0.16	0.16	0.23	0.16	0.53	
BBG BARC US Int Agg Idx			0.41	2.13	4.67	6.60	6.60	4.28	3.40		01/01/76
GARCIA HAMILTON (CP)	70,308,002	2.9	1.05	4.19	6.98	9.41	9.41	5.28	4.26	4.33	07/01/11
Custom BC US Agg / BC Agg Int / BC Agg <sup>[6]</sup>			0.63	2.90	6.14	8.74	8.74	5.21	3.95	3.52	07/01/11
<i>Excess</i>			0.42	1.30	0.84	0.67	0.67	0.07	0.31	0.81	
BBG BARC US Agg			0.63	2.90	6.14	8.74	8.74	5.32	4.30		12/01/75

# State Retirement Agency of Maryland

Terra Maria Program  
Rates of Return - Net Mgr  
Periods Ending June 30, 2020



## SUMMARY OF MONTHLY PERFORMANCE - TERRA MARIA

	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD	Inc Date
LONGFELLOW INVESTMENT MANAGEMENT (CP)	87,640,721	3.6	1.00	3.25	3.95	5.77	5.77	4.24	3.58	3.57	07/01/11
Custom BC US Int Gov/Cdt <sup>[6]</sup>			0.62	2.81	5.28	7.12	7.12	4.49	3.52	3.29	07/01/11
<i>Excess</i>			0.38	0.44	-1.33	-1.35	-1.35	-0.25	0.06	0.29	
BBG BARC US Int Gov/Cdt			0.62	2.81	5.28	7.12	7.12	4.43	3.46		01/01/73
RAMIREZ ASSET MANAGEMENT (CP)	79,945,470	3.3	2.15	5.64	3.36	5.83	5.83			5.14	12/01/17
BBG BARC US Agg			0.63	2.90	6.14	8.74	8.74			5.90	12/01/17
<i>Excess</i>			1.52	2.75	-2.78	-2.90	-2.90			-0.75	
SEMPER CAPITAL MANAGEMENT (CP)	54,690,641	2.2	3.26	6.77	0.81	2.75	2.75			4.76	08/01/18
BBG BARC MBS (Dly)			-0.09	0.67	3.50	5.67	5.67			6.28	08/01/18
<i>Excess</i>			3.35	6.10	-2.69	-2.92	-2.92			-1.52	
BIRCH RUN INVESTMENTS (CP)	32,348,675	1.3	1.37	6.89	2.34	4.72	4.72			5.81	03/01/19
BBG Barclays US Corporate 1-5 years			1.05	5.59	3.28	5.48	5.48			6.55	03/01/19
<i>Excess</i>			0.32	1.30	-0.94	-0.75	-0.75			-0.74	
<b>US NOMINAL FIXED INCOME TERRA MARIA</b>	<b>623,928,384</b>	<b>25.4</b>	<b>1.33</b>	<b>4.64</b>	<b>4.59</b>	<b>6.94</b>	<b>6.94</b>	<b>4.59</b>	<b>3.78</b>	<b>5.47</b>	<b>11/01/08</b>
TERRA MARIA FI BENCHMARK <sup>[3]</sup>			0.55	2.70	5.40	7.72	7.72	4.76	3.72	6.18	11/01/08
<i>Excess</i>			0.78	1.93	-0.81	-0.78	-0.78	-0.17	0.06	-0.71	
<b>RATE SENSITIVE TERRA MARIA</b>	<b>623,928,384</b>	<b>25.4</b>	<b>1.33</b>	<b>4.64</b>	<b>4.59</b>	<b>6.94</b>	<b>6.94</b>	<b>4.61</b>		<b>3.96</b>	<b>11/01/15</b>
TERRA MARIA RATE SENSITIVE BM <sup>[3]</sup>			0.55	2.70	5.40	7.72	7.72	4.79		3.86	11/01/15
<i>Excess</i>			0.78	1.93	-0.81	-0.78	-0.78	-0.18		0.09	
<b>TOTAL RATE SENSITIVE (CP)</b>	<b>623,928,384</b>	<b>25.4</b>	<b>1.33</b>	<b>4.64</b>	<b>4.59</b>	<b>6.94</b>	<b>6.94</b>	<b>4.61</b>	<b>3.85</b>	<b>5.35</b>	<b>11/01/08</b>
RATE SENSITIVE (CP) BENCHMARK <sup>[3]</sup>			0.55	2.70	5.40	7.72	7.72	4.79	3.80	4.71	11/01/08
<i>Excess</i>			0.78	1.93	-0.81	-0.78	-0.78	-0.18	0.05	0.63	



# State Retirement Agency of Maryland

Terra Maria Program  
Rates of Return - Net Mgr  
Periods Ending June 30, 2020



## SUMMARY OF MONTHLY PERFORMANCE - TERRA MARIA

	Market Value	Actual Weight	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD	Inc Date
<b>CREDIT/DEBT</b>											
SKY HARBOR CAPITAL MANAGEMENT (CP)	50,976,789	2.1	0.83	6.71	-3.71	-0.80	-0.80			1.18	03/01/19
BBG BARC US HY Ba/B 1-5Y			1.01	8.90	-3.16	0.00	0.00			1.98	03/01/19
<i>Excess</i>			-0.19	-2.19	-0.55	-0.81	-0.81			-0.80	
<b>TOTAL</b>											
<b>TOTAL TERRA MARIA PROGRAM <sup>(1)</sup></b>	<b>2,457,757,350</b>	<b>100.0</b>	<b>3.24</b>	<b>16.17</b>	<b>-8.04</b>	<b>-2.32</b>	<b>-2.32</b>	<b>1.30</b>	<b>2.72</b>	<b>4.68</b>	<b>04/01/07</b>
TOTAL TERRA MARIA INDEX <sup>(2)</sup>			2.95	13.75	-7.95	-2.07	-2.07	1.69	3.59	4.28	04/01/07
<i>Excess</i>			0.29	2.41	-0.09	-0.25	-0.25	-0.39	-0.87	0.40	

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## ENDNOTES

- [1] Asset totals includes assets of terminated managers not assigned to a program manager.
- [2] 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
- [3] Benchmark is dynamically calculated based on the Average Balance (BMV + Weighted Net Cash Flows) weights of the underlying portfolios and their corresponding indices
- [4] Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.
- [5] 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.
- [6] Since 12/01/2017: 100% Barclays US Agg  
From 07/01/2013 to 11/30/2017: 100% Barclays US Intermediate Aggregate Index  
Prior 07/01/2013: 100% Barclays Aggregate Bond
- [7] Since 07/01/2013: 100% Barclays US Intermediate Aggregate Index  
Prior 07/01/2013: 100% Barclays Aggregate Bond
- [8] Since 12/01/2017: 100% Barclays US Int Govt/Credit  
From 07/01/2013 to 11/30/2017: 100% Barclays US Intermediate Aggregate Index  
Prior 07/01/2013: 100% Barclays Aggregate Bond

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MSRA Schedule of Investments as of 12/31/2019

Active vs. Legacy

Status - Strategy	Client Strategy	Fund Currency	Vintage Year	Commitment	Unfunded	Contributions	Distributions	Market Value	Since Inception IRR	DPI	TVPI
Amounts Shown in USD											
Lion Capital Fund III, L.P.	Buyout - Mid	USD	2011	50,000,000	-	60,284,266	60,311,325	-	0.01%	1.00x	1.00x
Permira IV, L.P.	Buyout - Mega	EUR	2006	16,257,507	-	16,653,772	25,983,066	-	8.27%	1.56x	1.56x
Private Equity Partners IV, L.P.	Buyout - Small	EUR	2007	9,880,785	-	9,880,785	5,861,383	-	(7.47%)	0.59x	0.59x
Riverside Asia II, L.P.	Buyout - Small	USD	2014	50,000,000	-	51,465,775	63,453,311	-	8.32%	1.23x	1.23x
Riverside Capital Appreciation Fund V	Buyout - Mid	USD	2008	75,000,000	-	70,808,548	103,266,007	-	9.48%	1.46x	1.46x
Riverside Capital Appreciation Fund VI, L.P.	Buyout - Mid	USD	2013	100,000,000	-	79,888,999	120,653,178	-	12.26%	1.51x	1.51x
Riverside Europe Fund IV, L.P.	Buyout - Small	EUR	2009	36,203,342	-	39,679,274	59,886,904	-	8.13%	1.51x	1.51x
RLH Investors II, L.P.	Buyout - Small	USD	2006	15,000,000	-	18,410,726	38,565,372	-	18.93%	2.09x	2.09x
RLH Investors III, LP	Buyout - Small	USD	2011	37,892,617	-	44,522,909	64,252,697	-	8.56%	1.44x	1.44x
Siris Partners II, L.P.	Buyout - Mid	USD	2012	20,000,000	-	19,682,739	27,813,519	-	13.71%	1.41x	1.41x
Summer Street Capital II, L.P.	Buyout - Small	USD	2007	25,000,000	-	25,686,872	29,878,429	-	1.86%	1.16x	1.16x
Summer Street Capital III, L.P.	Buyout - Small	USD	2012	50,000,000	-	48,511,698	74,856,789	-	12.22%	1.54x	1.54x
Symmetric Partners, L.P.	Buyout - Mid	USD	2007	11,550,000	-	10,882,223	22,757,593	-	19.95%	2.09x	2.09x
Triton Fund III, L.P.	Buyout - Mid	EUR	2009	33,098,254	-	53,147,802	74,577,418	-	9.65%	1.40x	1.40x
Triton Fund IV, L.P.	Buyout - Mid	EUR	2013	47,056,217	-	47,330,562	62,780,771	-	9.38%	1.33x	1.33x
Vestar Capital Partners V, L.P.	Buyout - Large	USD	2005	20,000,000	-	20,984,460	26,830,407	-	3.63%	1.28x	1.28x
Yucaipa American Alliance Fund II, L.P.	Buyout - Mid	USD	2009	50,000,000	-	69,382,535	101,849,786	-	7.49%	1.47x	1.47x
<b>Legacy - Fund-of-Funds</b>											
Abbott Capital Private Equity Fund III, L.P.	Fund-of-Funds	USD	1999	\$ 50,000,000	-	\$ 48,475,282	\$ 82,917,523	\$ 745,006	11.64%	1.71x	1.73x
<b>Legacy - Special Situations</b>											
SSG Capital Partners III, L.P.	Special Situations	USD	2014	\$ 20,000,000	-	\$ 28,168,267	\$ 31,763,592	-	7.17%	1.13x	1.13x
<b>Legacy - Venture Capital/Growth Equity</b>											
ABS Capital Partners VI, L.P.	Growth Equity	USD	2009	\$ 25,000,000	-	\$ 24,153,345	\$ 20,351,074	-	(3.52%)	0.84x	0.84x
ABS Capital Partners VII, L.P.	Growth Equity	USD	2012	30,000,000	-	25,929,167	32,212,450	-	8.62%	1.24x	1.24x
Azure Capital Partners II, L.P.	Venture Capital	USD	2006	15,000,000	-	15,000,635	11,613,464	-	(3.78%)	0.77x	0.77x
Azure Capital Partners III, L.P.	Venture Capital	USD	2011	19,709,321	-	18,888,190	18,708,775	-	(0.17%)	0.99x	0.99x
Camden Partners Strategic IV, L.P.	Growth Equity	USD	2010	15,000,000	-	15,000,000	18,770,945	-	4.35%	1.25x	1.25x
Commonwealth Capital Ventures IV, L.P.	Venture Capital	USD	2007	20,000,000	-	20,001,184	45,640,024	-	11.23%	2.28x	2.28x
Great Hill Equity Partners III	Growth Equity	USD	2006	20,000,000	-	19,937,000	24,307,377	-	3.40%	1.22x	1.22x
Lombard Asia IV, L.P.	Growth Equity	USD	2012	50,000,000	-	37,136,851	45,395,719	-	6.37%	1.22x	1.22x
Longitude Venture Partners, L.P.	Venture Capital	USD	2008	25,000,000	-	25,809,915	64,297,618	-	25.48%	2.49x	2.49x
Northstar Equity Fund IV Limited	Venture Capital	USD	2014	50,000,000	-	35,090,193	45,482,946	-	9.74%	1.30x	1.30x
Quaker BioVentures II, L.P.	Venture Capital	USD	2009	17,500,000	-	17,150,528	17,939,185	-	1.09%	1.05x	1.05x
Valhalla Partners II, L.P.	Venture Capital	USD	2007	10,625,000	-	10,791,221	11,780,219	-	1.65%	1.09x	1.09x
Vector Capital IV, L.P.	Growth Equity	USD	2007	20,000,000	-	21,032,643	39,376,191	-	13.69%	1.87x	1.87x
Venture Capital Trust	Venture Capital	USD	1999	15,000,000	-	15,000,000	27,074,633	-	9.61%	1.80x	1.80x
<b>Legacy Total</b>				<b>\$ 1,993,167,189</b>	<b>-</b>	<b>\$ 2,057,820,648</b>	<b>\$ 2,882,439,884</b>	<b>\$ 745,006</b>	<b>8.71%</b>	<b>1.40x</b>	<b>1.40x</b>

**MSRA Private Credit - Schedule of Investments as of 12/31/2019**

Fund	Vintage Year	Commitment	Unfunded	Contributions	Distributions	Market Value	Since Inception IRR	TVPI
Amounts Shown in USD								
Alchemy Special Opportunities Fund II, L.P.	2011	\$ 47,246,764	\$ 5,691,770	\$ 44,509,466	\$ 54,769,972	\$ 6,819,574	9.63%	1.38x
Alchemy Special Opportunities Fund III, L.P.	2015	41,249,835	5,137,839	36,111,995	4,286,277	36,480,762	4.32%	1.13x
Apollo Credit Opportunity Fund III, L.P.	2014	100,000,000	20,261,207	159,299,570	134,581,915	23,209,716	(0.53%)	0.99x
Castlelake III, L.P.	2014	50,000,000	3,729,769	46,299,480	28,680,220	35,647,874	7.82%	1.39x
Castlelake IV, L.P.	2015	100,000,000	7,494,189	95,884,628	22,098,213	109,003,968	10.89%	1.37x
Castlelake V, L.P.	2018	150,000,000	58,088,236	91,911,764	-	109,716,382	15.61%	1.19x
Crescent Mezzanine Partners VI, L.P.	2013	100,000,000	7,575,007	107,774,500	99,303,546	36,780,218	8.27%	1.26x
CVI Chesapeake Credit Opportunities Fund, L.P.	2019	150,000,000	142,500,000	7,500,000	-	7,624,394	1.66%	1.02x
CVI Credit Value Fund A, L.P.	2010	100,000,000	5,000,000	95,000,000	208,067,190	6,167,968	18.89%	2.26x
CVI Credit Value Fund II, L.P.	2013	100,000,000	5,000,000	95,075,555	129,452,316	5,209,950	8.26%	1.42x
CVI Credit Value Fund III, L.P.	2015	100,000,000	5,000,000	95,000,000	67,618,667	52,263,926	8.55%	1.26x
CVI Credit Value Fund IV, L.P.	2017	100,000,000	25,000,000	75,000,000	20,489	80,149,138	7.44%	1.07x
EIG Energy Fund XV, L.P.	2011	100,000,000	15,247,548	109,246,587	88,144,828	33,970,412	3.04%	1.12x
EIG Energy Fund XVI, L.P.	2015	100,000,000	28,229,209	91,014,835	39,286,567	70,066,264	6.77%	1.20x
Falcon Strategic Partners III, L.P.	2009	35,000,000	527,099	40,976,306	53,226,701	5,763,093	9.18%	1.44x
Falcon Strategic Partners IV, L.P.	2013	75,000,000	11,599,945	106,308,114	69,831,300	64,329,249	8.07%	1.26x
GSO Credit Alpha Fund II, L.P.	2018	75,000,000	40,042,259	37,809,278	4,585,534	35,438,123	6.33%	1.06x
Healthcare Royalty Partners IV, L.P.	2019	75,000,000	73,544,931	1,542,453	128,561	1,241,523	(12.19%)	0.89x
KKR Mezzanine Partners I, L.P.	2010	100,000,000	9,942,937	138,316,035	144,138,741	23,733,293	8.28%	1.21x
Merit Mezzanine Fund V, L.P.	2010	25,000,000	1,318,367	23,681,633	22,949,953	13,339,007	10.03%	1.53x
Oaktree European Principal Fund III, L.P.	2011	45,653,831	12,109,802	38,769,597	31,574,022	31,256,230	9.85%	1.62x
Oaktree Opportunities Fund VIII, L.P.	2009	67,000,000	-	67,000,000	94,636,666	2,997,867	9.02%	1.46x
Oaktree Opportunities Fund VIII-B, L.P.	2011	33,000,000	-	33,000,000	33,660,337	11,415,864	6.24%	1.37x
Oaktree Principal Fund V, L.P.	2009	100,000,000	11,007,925	93,992,734	97,268,173	4,190,841	1.58%	1.08x
Park Square Capital Partners II, L.P.	2010	61,396,544	21,806,865	90,767,284	104,349,303	4,672,796	7.73%	1.20x
Partners Group European Mezzanine 2008, L.P.	2009	67,177,643	3,421,831	67,385,741	73,670,449	11,250,536	5.30%	1.26x
Peninsula Fund V, L.P.	2010	25,000,000	1,480,961	23,519,039	22,182,283	14,101,245	9.52%	1.54x
Prudential Capital Partners III, L.P.	2009	50,000,000	2,979,471	50,122,218	84,781,278	2,370,756	14.21%	1.74x
Prudential Capital Partners IV, L.P.	2012	100,000,000	3,552,519	105,449,375	81,279,866	56,411,501	9.55%	1.31x
Shoreline China Value III, L.P.	2014	50,000,000	2,265,845	67,597,408	54,435,658	21,914,992	5.57%	1.13x
TA Subordinated Debt Fund III, L.P.	2010	25,000,000	625,000	24,467,188	34,967,058	6,414,432	14.84%	1.69x
The Varde Fund X, L.P.	2010	100,000,000	-	100,000,000	164,262,750	24,745,700	11.38%	1.89x
Wayzata Opportunities Fund III, L.P.	2013	75,000,000	59,526,935	36,795,000	21,390,393	13,119,945	(2.06%)	0.94x
Whitehorse Liquidity Partners III, L.P.	2019	200,000,000	108,108,797	99,642,395	7,861,681	104,685,811	31.35%	1.13x
Advent - Wellington PPIP	2009	\$ 75,000,000	-	\$ 74,968,857	\$ 111,414,019	-	17.79%	1.49x
Angelo Gordon - GE PPIP	2009	50,000,000	-	45,000,000	69,677,356	-	19.38%	1.55x
Blackrock Credit Investors II, L.P.	2009	50,000,000	-	51,750,000	60,741,425	-	16.32%	1.17x
LBC Credit Partners II, LP	2009	25,000,000	-	23,250,000	30,593,366	-	13.95%	1.32x
Marathon PPIP, L.P.	2009	50,000,000	-	50,000,000	81,863,989	-	20.66%	1.64x
PIMCO Distressed Senior Credit Opportunities Fund, L.P.	2008	200,000,000	-	200,000,000	270,321,607	-	10.99%	1.35x
RLJ - Western PPIP	2009	100,000,000	-	112,431,786	167,370,086	-	19.25%	1.49x
TCW Credit Opportunities Fund, L.P.	2009	50,000,000	-	25,000,000	33,293,170	-	25.03%	1.33x



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Private Real Assets

MSRA Schedule of Investments as of 12/31/2019									
Active vs. Legacy									
Fund	Vintage Year	Commitment	Unfunded	Contributions	Distributions	Market Value	Since Inception IRR	TVPI	
Amounts Shown in USD									
Alinda Infrastructure Fund II, L.P.	2009	\$ 50,000,000	\$ 4,452,832	\$ 66,668,219	\$ 60,708,636	\$ 16,065,767	3.25%	1.15x	
Domain Timber Investments III, L.P. (f.k.a. Timbervest Partners III, L.P.)	2011	50,000,000	-	49,597,755	15,440,170	51,676,070	4.54%	1.35x	
EJF United States Power Fund IV, L.P.	2011	75,000,000	-	85,271,751	36,842,259	60,264,726	3.43%	1.14x	
First Reserve Fund XII, L.P.	2008	200,000,000	-	226,070,243	114,947,055	30,138,848	(10.17%)	0.64x	
First Reserve Fund XIII, L.P.	2015	100,000,000	18,706,949	95,158,091	33,863,071	65,191,244	2.60%	1.04x	
Global Timber Investors 9	2010	50,000,000	-	50,000,000	12,280,701	44,505,958	1.90%	1.14x	
Hancock Timberland X, L.P.	2010	50,000,000	-	50,000,000	14,946,206	72,106,123	7.23%	1.74x	
Natural Gas Partners IX, L.P.	2007	49,000,000	197,791	53,803,022	75,682,962	1,030,390	10.89%	1.43x	
NGP Midstream & Resources, L.P.	2007	25,000,000	4,464	28,251,495	46,820,141	2,077,197	13.53%	1.73x	
NGP Natural Resources X, L.P.	2012	100,000,000	3,243,918	101,543,217	81,710,408	22,111,457	0.71%	1.02x	
NGP Natural Resources XI, L.P.	2015	150,000,000	14,678,538	141,891,391	42,820,223	123,556,894	6.96%	1.17x	
NGP Natural Resources XII, L.P.	2017	150,000,000	79,775,492	70,224,508	495,658	68,995,013	(0.93%)	0.99x	
Quantum Energy Partners IV, L.P.	2007	25,000,000	3,654,821	25,216,330	23,704,078	1,988,330	0.59%	1.02x	
Quantum Energy Partners V, L.P.	2008	40,000,000	4,825,738	41,328,809	39,310,383	18,411,249	8.40%	1.40x	
Quantum Energy Partners VI, L.P.	2015	150,000,000	41,023,138	134,005,028	80,315,583	139,180,409	28.90%	1.64x	
Quantum Energy Partners VII, L.P.	2017	100,000,000	51,592,414	53,587,583	5,342,288	47,649,366	(0.84%)	0.99x	
RMS Forest Growth III	2012	50,000,000	414,116	49,585,884	19,074,368	40,984,638	3.30%	1.21x	
The Energy & Minerals Group Fund V Accordion, L.P.	2019	25,000,000	4,963,886	20,036,114	60,938	22,753,676	22.38%	1.14x	
The Energy & Minerals Group Fund V, L.P.	2019	75,000,000	24,013,794	50,986,206	145,769	57,013,601	16.11%	1.12x	
White Deer Energy, L.P.	2010	35,000,000	4,902,659	38,605,416	51,108,243	1,933,893	16.13%	1.37x	
Natural Gas Partners VIII, L.P.	2005	5,000,000	-	5,606,266	8,905,009	-	8.99%	1.59x	

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## Real Estate Report

**Private Market Real Estate Status Commitments and Capital Contributed**  
**Current Investments**  
(as of December 31, 2019)

	Vintage Year	Fair Market Value	Commitment	Contributed Capital <sup>1</sup>	Uncalled Capital	Total Contributions	Capital Distributed	IRR	Investment Multiple
<b>Core</b>		<b>\$3,989,420,157</b>	<b>\$2,821,880,389</b>	<b>\$2,691,343,739</b>	<b>\$130,536,650</b>	<b>\$3,464,505,711</b>	<b>\$1,682,186,127</b>	<b>8.56%</b>	<b>1.60</b>
AEW DPA Copley <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$32,697,333	\$24,623,350	-4.93%	0.75
CBRE US Core Partners	2015	\$553,749,228	\$400,000,000	\$400,000,000	\$0	\$400,000,000	\$0	9.41%	1.38
Cigna <sup>7</sup>	1987	\$0	\$0	\$0	\$0	\$86,799,836	\$205,727,056	5.82%	2.37
Heitman America Real Estate Trust, LP	2017	\$621,532,053	\$600,000,000	\$600,000,000	\$0	\$600,000,000	\$0	2.76%	1.04
JP Morgan Special <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$83,231,714	\$121,881,082	8.89%	1.46
JP Morgan Strategic Property Fund	1998	\$895,900,291	\$221,880,389	\$221,880,389	\$0	\$221,880,389	\$121,945,999	9.08%	3.81
LaSalle Property Fund	2016	\$471,656,189	\$550,000,000	\$419,463,350	\$130,536,650	\$419,463,350	\$0	6.52%	1.12
LaSalle Separate <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$518,826,043	\$1,099,332,242	11.21%	1.98
Prime Property Fund	2013	\$917,421,821	\$650,000,000	\$650,000,000	\$0	\$650,000,000	\$0	9.47%	1.41
Sentinal <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$51,607,046	\$96,829,371	10.17%	1.88
UBS Trumbull Property Fund	2012	\$529,160,575	\$400,000,000	\$400,000,000	\$0	\$400,000,000	\$11,847,027	5.73%	1.35
<b>Value Added</b>		<b>\$367,960,468</b>	<b>\$1,387,010,000</b>	<b>\$1,102,236,247</b>	<b>\$260,368,047</b>	<b>\$1,155,901,272</b>	<b>\$1,394,096,932</b>	<b>10.18%</b>	<b>1.51</b>
AEW Senior Housing Investors II	2013	\$37,102,536	\$50,000,000	\$46,742,617	\$3,257,383	\$64,188,915	\$66,236,413	15.66%	1.61
Black Creek Industrial Fund		\$0	\$200,000,000	\$0	\$200,000,000	\$0	\$0	N/A	N/A
CBRE Strategic Partners US Value 5 <sup>7</sup>	2008	\$0	\$75,000,000	\$71,086,870	\$0	\$82,242,924	\$116,675,715	17.75%	1.42
CBRE Strategic Partners US Value Fund 6 <sup>8</sup>	2012	\$130,290	\$75,000,000	\$75,000,000	\$0	\$86,685,406	\$116,742,391	11.84%	1.33
CBRE Strategic Partners US Value Fund 7	2014	\$8,705,163	\$50,000,000	\$50,000,000	\$0	\$54,305,146	\$64,811,659	11.62%	1.35
Chesapeake Maryland <sup>7</sup>	2002	\$0	\$26,510,000	\$26,510,000	\$0	\$26,510,000	\$32,554,067	3.92%	1.23
Covenant Apartment Fund VII, LP <sup>8</sup>	2012	\$0	\$40,000,000	\$40,000,000	\$0	\$40,000,000	\$62,795,703	17.94%	1.56
FCP Realty Fund II	2012	\$9,477,686	\$40,000,000	\$37,429,962	\$2,570,038	\$38,964,530	\$68,832,217	23.18%	1.69
Federal Capital Partners III	2015	\$61,968,591	\$75,000,000	\$72,521,794	\$2,478,206	\$79,301,077	\$60,612,853	23.99%	1.53
Lion Industrial Trust Fund	2005	\$146,518,807	\$75,000,000	\$75,000,000	\$0	\$75,000,000	\$10,297,142	6.30%	2.02
PRISA II <sup>7</sup>	2007	\$0	\$80,500,000	\$80,500,000	\$0	\$80,500,000	\$122,958,626	5.45%	1.53
Realty Associate Fund IX, L.P. <sup>7</sup>	2008	\$0	\$100,000,000	\$100,000,000	\$0	\$100,000,000	\$160,627,013	10.51%	1.61
Realty Associate Fund X, L.P.	2012	\$17,260,152	\$100,000,000	\$100,000,000	\$0	\$100,000,000	\$144,823,886	13.03%	1.62
Rockwood Capital RE Partners IX	2013	\$26,360,779	\$100,000,000	\$91,409,866	\$8,590,134	\$91,409,866	\$103,658,762	13.35%	1.44
Rockwood Capital RE Partners VIII <sup>7</sup>	2009	\$312,303	\$100,000,000	\$91,508,015	\$0	\$91,508,015	\$150,426,919	19.40%	1.66
Starwood Debt Fund II <sup>7</sup>	2008	\$0	\$100,000,000	\$87,999,409	\$0	\$87,999,409	\$109,560,180	6.23%	1.25
Waterton Residential Pro Venture XIII	2018	\$60,124,160	\$100,000,000	\$56,527,714	\$43,472,286	\$57,285,983	\$2,483,386	7.90%	1.07
<b>Opportunistic</b>		<b>\$405,549,832</b>	<b>\$1,928,364,749</b>	<b>\$1,463,155,554</b>	<b>\$418,967,202</b>	<b>\$1,576,424,851</b>	<b>\$1,529,197,153</b>	<b>5.06%</b>	<b>1.21</b>
AEW Senior Housing Investors IV	2019	\$2,586,573	\$75,000,000	\$3,219,572	\$71,780,428	\$3,219,572	\$0	-20.81%	0.79
BlackRock Asia Fund III <sup>7</sup>	2007	\$0	\$87,146,593	\$66,385,900	\$0	\$75,694,056	\$90,745,681	2.72%	1.17
Carmel Partners Investment Fund VII	2018	\$1,512,543	\$75,000,000	\$2,694,019	\$72,305,981	\$2,694,019	\$0	-59.06%	0.56
CBRE SPUK III <sup>2,7</sup>	2007	\$0	\$93,730,041	\$86,403,102	\$0	\$86,403,102	\$14,782,918	-28.55%	0.17
CBRE Strategic Partners Europe Fund III <sup>2,8</sup>	2007	\$661,202	\$67,088,881	\$67,088,881	\$0	\$67,088,881	\$18,252,513	-16.61%	0.28
Europe Fund III, LP <sup>3</sup>	2007	\$291,014	\$45,000,000	\$33,817,408	\$0	\$37,041,177	\$13,970,702	-14.73%	0.39
Frogmore Real Estate Partners II, L.P. <sup>2</sup>	2009	\$3,419,182	\$72,688,023	\$68,235,505	\$4,452,518	\$83,086,702	\$107,824,207	12.39%	1.34
GI Partners Fund III <sup>8</sup>	2008	\$1,051,623	\$100,000,000	\$98,494,548	\$1,505,452	\$108,893,415	\$172,102,407	13.21%	1.57
GI Partners Fund IV	2014	\$163,612,667	\$100,000,000	\$98,583,978	\$1,416,022	\$104,886,181	\$34,013,537	20.67%	1.88
JER Real Estate Partners - Fund IV <sup>7</sup>	2007	\$0	\$45,000,000	\$38,247,300	\$0	\$49,677,103	\$41,435,243	-11.80%	0.83
Lone Star Real Estate Fund II	2011	\$4,772,577	\$150,000,000	\$132,914,748	\$17,085,252	\$150,216,779	\$218,191,284	25.16%	1.49

## Real Estate Report

**Private Market Real Estate Status Commitments and Capital Contributed**  
**Current Investments**  
(as of December 31, 2019)

	Vintage Year	Fair Market Value	Commitment	Contributed Capital <sup>1</sup>	Uncalled Capital	Total Contributions	Capital Distributed	IRR	Investment Multiple
Lone Star Real Estate Fund III	2014	\$12,451,220	\$100,000,000	\$93,741,548	\$6,258,452	\$103,958,405	\$126,225,123	14.60%	1.32
Lone Star Real Estate Fund IV	2015	\$29,934,553	\$80,869,389	\$63,859,417	\$17,009,972	\$73,843,440	\$73,094,694	16.30%	1.36
Lone Star Real Estate Fund V	2016	\$17,331,060	\$52,815,995	\$24,205,221	\$28,610,774	\$25,134,569	\$6,457,365	-5.10%	0.96
Lone Star Real Estate Fund VI	2019	-\$46,612	\$100,000,000	\$865,675	\$99,134,325	\$865,675	\$0	N/A	-0.05
Lubert Adler III <sup>4</sup>	2001	\$266,790	\$59,667,950	\$58,965,974	\$701,976	\$59,667,950	\$90,381,223	16.71%	1.52
Lubert Adler Fund VI <sup>5</sup>	2008	\$10,909,510	\$75,337,616	\$71,570,736	\$3,766,880	\$71,570,736	\$62,669,255	0.51%	1.03
Lubert Adler Fund VI A <sup>5</sup>	2010	\$3,649,817	\$14,662,384	\$13,929,265	\$733,119	\$13,929,265	\$24,870,853	22.82%	2.05
Scout Fund II-A L.P.	2013	\$53,947,238	\$50,000,000	\$46,050,131	\$3,949,869	\$47,236,368	\$2,112,076	7.29%	1.19
Secured Capital Japan <sup>6,7</sup>	2007	\$0	\$65,000,000	\$67,205,488	\$0	\$71,158,634	\$58,063,153	-3.56%	0.82
Secured Capital Japan IV <sup>7</sup>	2009	\$0	\$125,000,000	\$122,575,464	\$0	\$122,575,464	\$177,066,704	10.25%	1.44
Starwood Cap Hospitality Fd II Global LP	2008	\$19,144,026	\$100,000,000	\$96,340,000	\$3,660,000	\$96,340,000	\$134,620,541	9.87%	1.58
Tristan Capital Partners - European OPPS <sup>3 2</sup>	2013	\$18,766,117	\$59,315,584	\$53,377,095	\$5,938,489	\$63,911,731	\$55,042,396	5.51%	1.15
Tristan Capital Partners - European OPPS <sup>4 2</sup>	2015	\$60,589,979	\$67,712,262	\$52,498,866	\$15,213,396	\$55,445,892	\$7,275,279	10.73%	1.22
Tristan Capital- Euro Special Opps <sup>5 2</sup>	2018	\$698,756	\$67,330,050	\$1,885,734	\$65,444,316	\$1,885,734	\$0	N/M	0.37
<b>Maryland Real Estate</b>		<b>\$4,762,930,457</b>	<b>\$6,137,255,137</b>	<b>\$5,256,735,540</b>	<b>\$809,871,898</b>	<b>\$6,196,831,834</b>	<b>\$4,605,480,212</b>	<b>8.32%</b>	<b>1.49</b>

1 Capital contributed does not include contributions for expenses outside of the commitment amounts.

2 Uncalled Capital amounts are derived by taking the unfunded commitment amounts in local currency divided by the end of period USD exchange rate. The Total Commitment amounts are then the sum of the capital contributed and unfunded in USD.

3 JER has agreed to no longer call capital on this investment. As a result, Maryland's original commitment remains unchanged, while the uncalled capital has been reduced to zero.

4 Lubert Adler III has \$2,527,892 in distributions subject to recall.

5 The reduction of capital commitments to Lubert Adler VI and increase of commitments to Lubert Adler VI A is due to partnership and subscription agreements as of 10/7/2010.

6 Originally reflected as a capital call within The Private Edge Group, Secured Capital Japan actually issued a return of capital recall on 9/16/2010 of \$3,001,319 as well as a previous income distribution recall of \$633,955 on 6/30/2008. These recalls total \$3,635,274 and do not affect the amount funded towards the commitment.

7 This is a sold/exit investment and as such the Commitment and Capital Contributed data for arriving at Uncalled Capital has been excluded from this schedule.

8 This investment is in the process of winding down. As a result, there will be no more capital calls so the uncalled capital has been reduced to zero.

## Real Estate Report

**Private Market Real Estate Status Commitments and Capital Contributed**  
**Current Investments**  
(as of March 31, 2020)

	Vintage Year	Fair Market Value	Commitment	Contributed Capital <sup>1</sup>	Uncalled Capital	Total Contributions	Capital Distributed	IRR	Investment Multiple
<b>Core</b>		<b>\$3,990,635,942</b>	<b>\$2,821,880,389</b>	<b>\$2,691,343,739</b>	<b>\$130,536,650</b>	<b>\$3,464,505,711</b>	<b>\$1,696,889,481</b>	<b>8.45%</b>	<b>1.60</b>
AEW DPA Copley <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$32,697,333	\$24,623,350	-4.93%	0.75
CBRE US Core Partners	2015	\$562,027,623	\$400,000,000	\$400,000,000	\$0	\$400,000,000	\$0	9.20%	1.41
Cigna <sup>7</sup>	1987	\$0	\$0	\$0	\$0	\$86,799,836	\$205,727,056	5.82%	2.37
Heitman America Real Estate Trust, LP	2017	\$609,095,636	\$600,000,000	\$600,000,000	\$0	\$600,000,000	\$0	0.98%	1.02
JP Morgan Special <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$83,231,714	\$121,881,082	8.89%	1.46
JP Morgan Strategic Property Fund	1998	\$901,043,027	\$221,880,389	\$221,880,389	\$0	\$221,880,389	\$130,725,839	9.04%	3.84
LaSalle Property Fund	2016	\$469,919,640	\$550,000,000	\$419,463,350	\$130,536,650	\$419,463,350	\$0	5.54%	1.12
LaSalle Separate <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$518,826,043	\$1,099,332,242	11.21%	1.98
Prime Property Fund	2013	\$922,975,983	\$650,000,000	\$650,000,000	\$0	\$650,000,000	\$0	9.05%	1.42
Sentinal <sup>7</sup>	1993	\$0	\$0	\$0	\$0	\$51,607,046	\$96,829,371	10.17%	1.88
UBS Trumbull Property Fund	2012	\$525,574,032	\$400,000,000	\$400,000,000	\$0	\$400,000,000	\$17,770,540	5.52%	1.35
<b>Value Added</b>		<b>\$329,306,851</b>	<b>\$1,537,010,000</b>	<b>\$1,103,649,935</b>	<b>\$408,954,359</b>	<b>\$1,157,503,195</b>	<b>\$1,419,604,578</b>	<b>9.92%</b>	<b>1.49</b>
Abacus Multi-Family Partners V	2020	\$0	\$50,000,000	\$0	\$50,000,000	\$0	\$0	N/A	N/A
AEW Senior Housing Investors II	2013	\$36,657,541	\$50,000,000	\$46,742,617	\$3,257,383	\$64,188,915	\$66,475,087	15.23%	1.60
Black Creek Industrial Fund	2020	\$0	\$200,000,000	\$0	\$200,000,000	\$0	\$0	N/A	N/A
CBRE Strategic Partners US Value 5 <sup>7</sup>	2008	\$0	\$75,000,000	\$71,086,870	\$0	\$82,242,924	\$116,675,715	17.75%	1.42
CBRE Strategic Partners US Value Fund 6 <sup>8</sup>	2012	\$123,979	\$75,000,000	\$75,000,000	\$0	\$86,685,406	\$116,742,391	11.83%	1.33
CBRE Strategic Partners US Value Fund 7	2014	\$2,631,123	\$50,000,000	\$50,000,000	\$0	\$54,305,146	\$70,806,171	11.27%	1.34
Chesapeake Maryland <sup>7</sup>	2002	\$0	\$26,510,000	\$26,510,000	\$0	\$26,510,000	\$32,554,067	3.92%	1.23
Covenant Apartment Fund VII, LP <sup>8</sup>	2012	\$0	\$40,000,000	\$40,000,000	\$0	\$40,000,000	\$62,795,703	17.94%	1.56
FPA Core Plus Fund V	2020	\$0	\$100,000,000	\$0	\$100,000,000	\$0	\$0	N/A	N/A
FCP Realty Fund II	2012	\$5,123,019	\$40,000,000	\$37,429,962	\$2,570,038	\$38,964,530	\$74,103,287	22.97%	1.67
Federal Capital Partners III	2015	\$53,982,396	\$75,000,000	\$72,521,794	\$2,478,206	\$79,301,077	\$68,730,709	22.72%	1.53
Lion Industrial Trust Fund	2005	\$151,585,824	\$75,000,000	\$75,000,000	\$0	\$75,000,000	\$10,297,142	6.45%	2.09
PRISA II <sup>7</sup>	2007	\$0	\$80,500,000	\$80,500,000	\$0	\$80,500,000	\$122,958,626	5.45%	1.53
Realty Associate Fund IX, L.P. <sup>7</sup>	2008	\$0	\$100,000,000	\$100,000,000	\$0	\$100,000,000	\$160,627,013	10.51%	1.61
Realty Associate Fund X, L.P.	2012	\$11,297,532	\$100,000,000	\$100,000,000	\$0	\$100,000,000	\$150,047,627	12.87%	1.61
Rockwood Capital RE Partners IX	2013	\$17,732,553	\$100,000,000	\$91,409,866	\$8,590,134	\$91,409,866	\$103,658,762	11.07%	1.34
Rockwood Capital RE Partners VIII <sup>7</sup>	2009	\$298,196	\$100,000,000	\$91,508,015	\$0	\$91,508,015	\$150,426,919	19.40%	1.66
Starwood Debt Fund II <sup>7</sup>	2008	\$0	\$100,000,000	\$87,999,409	\$0	\$87,999,409	\$109,560,180	6.23%	1.25
Waterton Residential Pro Venture XIII	2018	\$49,874,689	\$100,000,000	\$57,941,402	\$42,058,598	\$58,887,906	\$3,145,179	-11.12%	0.88
<b>Opportunistic</b>		<b>\$353,231,845</b>	<b>\$1,926,095,949</b>	<b>\$1,483,451,609</b>	<b>\$396,402,346</b>	<b>\$1,596,720,906</b>	<b>\$1,568,041,172</b>	<b>4.89%</b>	<b>1.20</b>
AEW Senior Housing Investors IV	2019	\$12,090,356	\$75,000,000	\$12,942,681	\$62,057,319	\$12,942,681	\$0	-14.92%	0.93
BlackRock Asia Fund III <sup>7</sup>	2007	\$0	\$87,146,593	\$66,385,900	\$0	\$75,694,056	\$90,745,681	2.72%	1.17
Carmel Partners Investment Fund VII	2018	\$3,181,835	\$75,000,000	\$4,696,486	\$70,303,514	\$4,696,486	\$0	-60.81%	0.68
CBRE SPUK III <sup>2,7</sup>	2007	\$0	\$93,730,041	\$86,403,102	\$0	\$86,403,102	\$14,782,918	-28.55%	0.17
CBRE Strategic Partners Europe Fund III <sup>2,8</sup>	2007	\$644,364	\$67,088,881	\$67,088,881	\$0	\$67,088,881	\$18,252,513	-16.59%	0.28
Europe Fund III, LP <sup>3</sup>	2007	\$273,649	\$45,000,000	\$33,817,408	\$0	\$37,041,177	\$13,970,702	-14.74%	0.38
Frogmore Real Estate Partners II, L.P. <sup>2</sup>	2009	\$3,189,896	\$72,403,006	\$68,235,505	\$4,167,502	\$83,086,702	\$107,824,207	12.32%	1.34
GI Partners Fund III <sup>8</sup>	2008	\$1,051,623	\$100,000,000	\$98,494,548	\$1,505,452	\$108,893,415	\$172,102,407	13.21%	1.57
GI Partners Fund IV	2014	\$120,962,089	\$100,000,000	\$98,583,978	\$1,416,022	\$104,886,181	\$68,308,562	18.10%	1.78

## Real Estate Report

**Private Market Real Estate Status Commitments and Capital Contributed**  
**Current Investments**  
(as of March 31, 2020)

	Vintage Year	Fair Market Value	Commitment	Contributed Capital <sup>1</sup>	Uncalled Capital	Total Contributions	Capital Distributed	IRR	Investment Multiple
JER Real Estate Partners - Fund IV <sup>7</sup>	2007	\$0	\$45,000,000	\$38,247,300	\$0	\$49,677,103	\$41,435,243	-11.80%	0.83
Lone Star Real Estate Fund II	2011	\$4,100,665	\$150,000,000	\$132,914,748	\$17,085,252	\$150,216,779	\$218,191,284	25.07%	1.48
Lone Star Real Estate Fund III	2014	\$9,719,143	\$100,000,000	\$93,741,548	\$6,258,452	\$103,958,405	\$126,726,933	13.85%	1.30
Lone Star Real Estate Fund IV	2015	\$22,784,531	\$80,869,389	\$63,859,417	\$17,009,972	\$73,843,440	\$73,584,148	12.65%	1.27
Lone Star Real Estate Fund V	2016	\$11,141,443	\$52,815,995	\$24,205,221	\$28,610,774	\$25,134,569	\$9,501,781	-18.21%	0.83
Lone Star Real Estate Fund VI	2019	\$152,522	\$100,000,000	\$1,363,439	\$98,636,561	\$1,363,439	\$0	-98.98%	0.11
Lubert Adler III <sup>4</sup>	2001	\$86,649	\$59,667,950	\$58,965,974	\$701,976	\$59,667,950	\$90,553,728	16.71%	1.52
Lubert Adler Fund VI <sup>5</sup>	2008	\$10,813,114	\$75,337,616	\$71,570,736	\$3,766,880	\$71,570,736	\$62,669,255	0.48%	1.03
Lubert Adler Fund VI A <sup>5</sup>	2010	\$3,637,023	\$14,662,384	\$13,929,265	\$733,119	\$13,929,265	\$24,870,853	22.72%	2.05
Scout Fund II-A L.P.	2013	\$51,335,796	\$50,000,000	\$50,000,000	\$0	\$51,186,237	\$2,196,012	1.83%	1.05
Secured Capital Japan <sup>6,7</sup>	2007	\$0	\$65,000,000	\$67,205,468	\$0	\$71,158,634	\$58,063,153	-3.56%	0.82
Secured Capital Japan IV <sup>7</sup>	2009	\$0	\$125,000,000	\$122,575,464	\$0	\$122,575,464	\$177,066,704	10.25%	1.44
Starwood Cap Hospitality Fd II Global LP	2008	\$18,408,032	\$100,000,000	\$96,340,000	\$3,660,000	\$96,340,000	\$134,877,414	9.77%	1.57
Tristan Capital Partners - European OPPS <sup>3 2</sup>	2013	\$18,632,108	\$59,181,986	\$53,377,095	\$5,804,891	\$63,911,731	\$55,042,396	5.33%	1.15
Tristan Capital Partners - European OPPS <sup>4 2</sup>	2015	\$57,606,396	\$67,372,914	\$53,621,467	\$13,751,448	\$56,568,493	\$7,275,279	6.62%	1.15
Tristan Capital- Euro Special Opps <sup>5 2</sup>	2018	\$3,420,612	\$65,819,193	\$4,885,981	\$60,933,211	\$4,885,981	\$0	N/M	0.70
<b>Maryland Real Estate</b>		<b>\$4,673,174,638</b>	<b>\$6,284,986,338</b>	<b>\$5,278,445,283</b>	<b>\$935,893,355</b>	<b>\$6,218,729,813</b>	<b>\$4,684,535,230</b>	<b>8.16%</b>	<b>1.48</b>

1 Capital contributed does not include contributions for expenses outside of the commitment amounts.

2 Uncalled Capital amounts are derived by taking the unfunded commitment amounts in local currency divided by the end of period USD exchange rate. The Total Commitment amounts are then the sum of the capital contributed and unfunded in USD.

3 JER has agreed to no longer call capital on this investment. As a result, Maryland's original commitment remains unchanged, while the uncalled capital has been reduced to zero.

4 Lubert Adler III has \$2,527,892 in distributions subject to recall.

5 The reduction of capital commitments to Lubert Adler VI and increase of commitments to Lubert Adler VI A is due to partnership and subscription agreements as of 10/7/2010.

6 Originally reflected as a capital call within The Private Edge Group, Secured Capital Japan actually issued a return of capital recall on 9/16/2010 of \$3,001,319 as well as a previous income distribution recall of \$633,955 on 6/30/2008. These recalls total \$3,635,274 and do not affect the amount funded towards the commitment.

7 This is a sold/exited investment and as such the Commitment and Capital Contributed data for arriving at Uncalled Capital has been excluded from this schedule.

8 This investment is in the process of winding down. As a result, there will be no more capital calls so the uncalled capital has been reduced to zero.

Maryland State Retirement and Pension System  
 Absolute Return - Private Market Funds  
 March 31, 2020

Investment	Vintage	Commitment	Contribution	Distribution	Unfunded	Adjusted NAV	Net IRR	TVPI
Clover Parallel LLC	2018	15,000,000	10,362,963	919,991	5,415,139	10,476,140	10.0%	1.1
Petershill IV LLC	2020	100,000,000	290,000	0	99,710,000	290,000	NA	NA
Petershill Private Equity LP	2018	100,000,000	21,152,538	5,005,100	83,920,032	19,171,332	10.4%	1.1
Credit Suisse ILS Property & Casualty Feeder Fur	2018	150,000,000	57,527,204	8,291,418	9,883,592	23,692,914	-42.1%	0.6
Lone Star Fund XI LP	2019	100,000,000	7,696,386	2,005,000	92,192,216	2,695,305	NA	NA
SGM Co-Investment Fund LP	2019	50,000,000	10,000,000	0	40,000,000	7,241,968	NA	NA
		<b>515,000,000</b>	<b>107,029,091</b>	<b>16,221,509</b>	<b>331,120,979</b>	<b>63,567,659</b>	<b>-21.7%</b>	<b>0.8</b>

Source: Aksia, State Street. Hudson Bay CVF is fully realized and only included in performance.



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**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

TO: The Investment Committee

FROM: Staff

DATE: September 1, 2020

RE: Securities Lending Program –  
Update for Quarter Ending June 30, 2020

The System has a securities lending program managed by Deutsche Bank. As of June 30, 2020 the total market value of securities on loan was **\$6.88 billion**.

For the quarter ending June 30, 2020, the System earned **\$6,065,933**. The income breakdown by asset class was:

Asset Class	Gross Spread	Net Revenue
Treasuries	0.04	\$2,901,986
Domestic Equities	0.44	\$1,829,906
Corporate Bonds	0.54	\$995,364
Intl Equities	0.96	\$319,609
Government Debt	0.75	\$13,461
Agencies	0.55	\$5,606
<b>Totals</b>	<b>0.30</b>	<b>\$6,065,933</b>

Loans of Securities

Securities are loaned to creditworthy brokers and dealers. Loans of securities are over collateralized and marked to market daily. In the unlikely event of insolvency by a counterparty, Deutsche Bank is contractually obligated to provide replacement securities.

### Investment of Cash Collateral

Cash collateral is managed on a separate account basis. As of June 30, 2020, 100% of the cash collateral pool was invested in Overnight and Term Repurchase Agreements. In the unlikely event of insolvency by the counterparty, Deutsche Bank is contractually obligated to restore the amount of cash deposited with the counterparty.

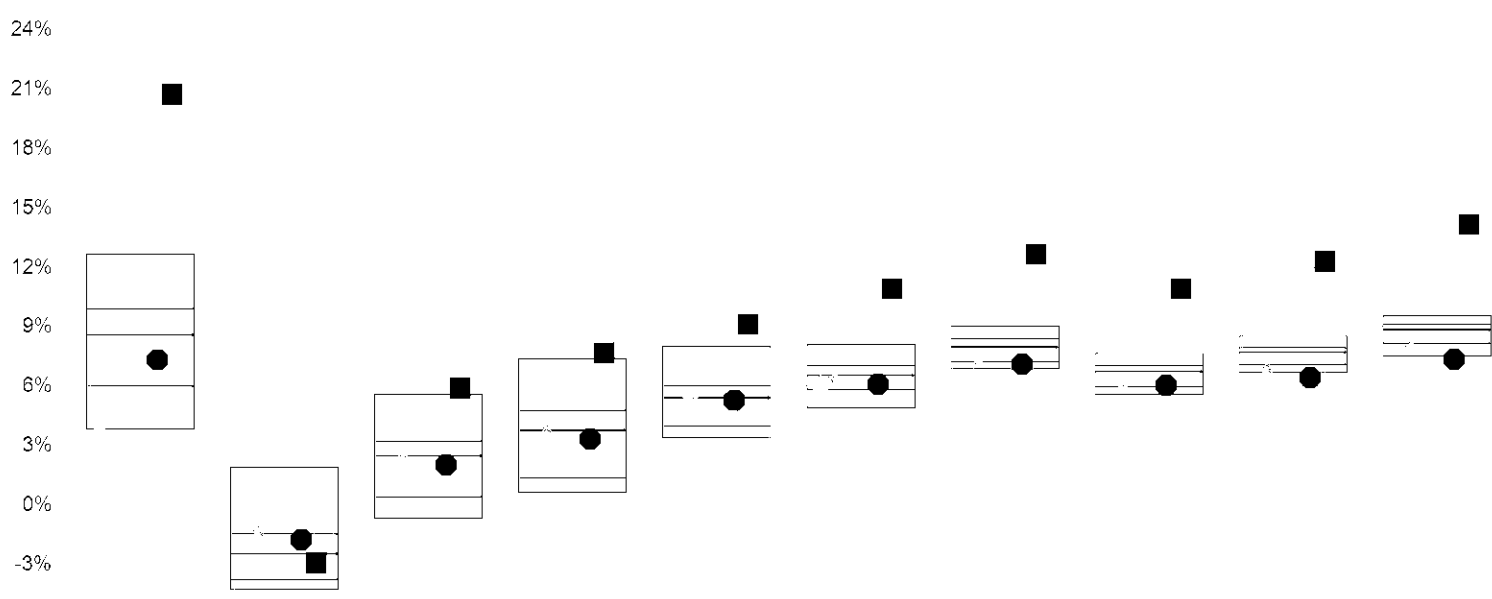
	<b>Amount Invested \$</b>	<b>Avg DTM</b>	<b>%</b>
O/N	3,530,906K	1.00	84.5
2-7 Days	-	-	-
15 -21 Days	30,000K	17.00	>1.
32-61 Days	157,500K	47.69	3.7
62-91 Days	427500K	86.84	10.3
92-181 Days	25,000K	108.00	>1.0
	<b>4,170,906K</b>	<b>12.32</b>	<b>100%</b>

**██████████**  
Wilshire Trust Universe Comparison Service

State Retirement Agency of Maryland  
TUCS Public Funds > \$25 Billion  
June 30, 2020

## State Retirement Agency of Maryland Performance Comparison

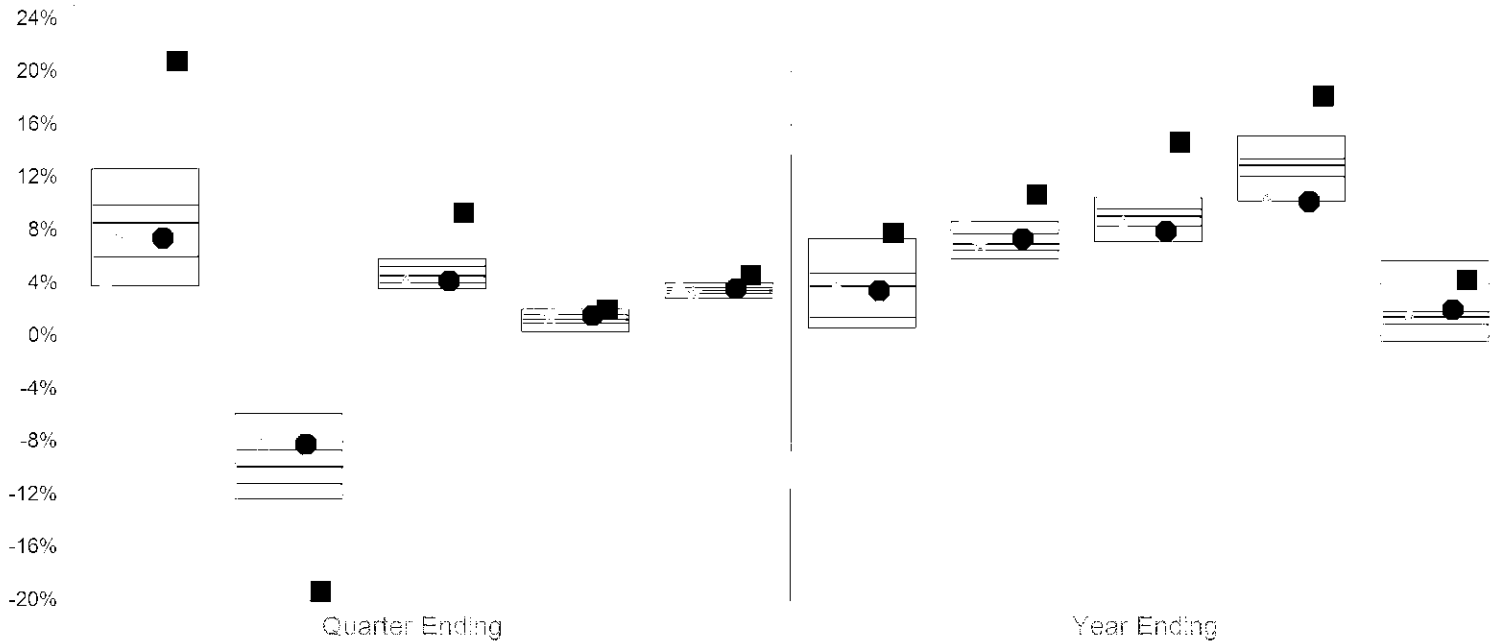
*Total Returns of Public Funds > \$25 Billion  
Cumulative Periods Ending : June 30, 2020*



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	12.66	1.92	5.58	7.39	8.02	8.10	9.04	7.66	8.53	9.57
25th	9.92	-1.44	3.25	4.77	6.03	7.05	8.41	7.06	7.96	9.16
50th	8.58	-2.46	2.48	3.78	5.43	6.57	7.97	6.77	7.73	8.84
75th	6.01	-3.75	0.42	1.41	4.01	5.85	7.24	5.98	7.12	8.16
95th	3.84	-4.27	-0.63	0.64	3.38	4.91	6.89	5.58	6.70	7.52
No. Of Obs	29	29	29	28	28	28	28	28	28	28
Total Fund	7.43 (60)	-1.44 (25)	2.53 (46)	3.76 (53)	5.22 (53)	6.23 (60)	7.22 (79)	6.03 (71)	6.77 (91)	7.83 (87)
● Total Plan Policy Inde	7.15 (64)	-1.93 (28)	1.86 (57)	3.14 (60)	5.10 (53)	5.93 (67)	6.90 (91)	5.84 (87)	6.25 (99)	7.17 (99)
Barclays Govt/Credit	3.71 (95)	7.21 (1)	7.20 (1)	10.02 (1)	9.27 (1)	5.87 (71)	4.26 (100)	4.74 (100)	4.24 (100)	4.13 (100)
■ S&P 500	20.54 (1)	-3.08 (60)	5.71 (1)	7.50 (1)	8.95 (1)	10.73 (1)	12.48 (1)	10.73 (1)	12.13 (1)	13.99 (1)

## State Retirement Agency of Maryland Performance Comparison

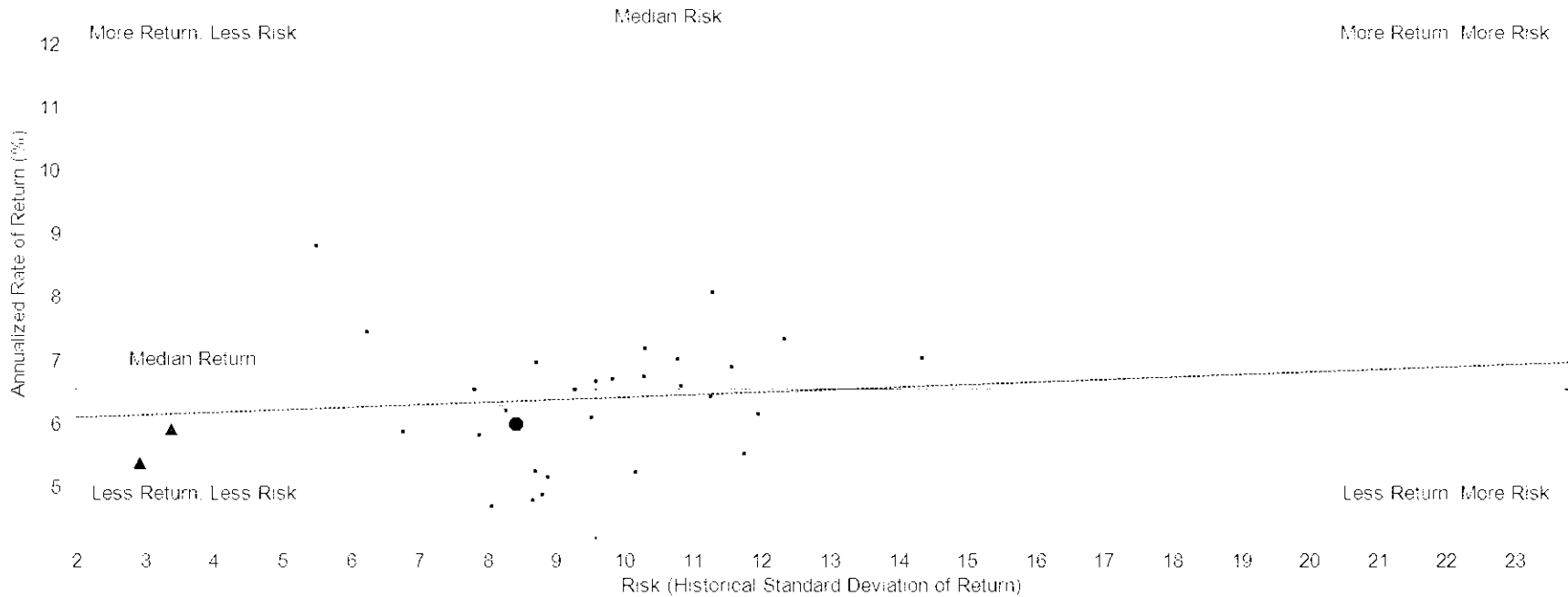
*Total Returns of Public Funds > \$25 Billion  
Consecutive Time Periods: June 30, 2020*



Percentile Rankings	Jun 20	Mar 20	Dec 19	Sep 19	Jun 19	Jun 20	Jun 19	Jun 18	Jun 17	Jun 16
5th	12.66	-5.85	5.86	2.06	4.03	7.39	8.66	10.46	15.16	5.71
25th	9.92	-8.60	5.28	1.61	3.70	4.77	7.75	9.62	13.42	1.86
50th	8.58	-9.89	4.57	1.25	3.45	3.78	7.00	9.05	12.92	1.48
75th	6.01	-11.18	4.03	0.96	3.25	1.41	6.51	8.32	12.06	0.87
95th	3.84	-12.35	3.60	0.36	2.84	0.64	5.82	7.15	10.25	-0.41
No. Of Obs	29	29	29	28	28	28	28	28	28	28
Total Fund	7.43 (60)	-8.25 (15)	4.03 (75)	1.20 (57)	3.01 (91)	3.76 (53)	6.69 (60)	8.29 (79)	10.25 (95)	1.38 (64)
● Total Plan Policy Inde	7.15 (64)	-8.47 (18)	3.86 (83)	1.26 (46)	3.29 (64)	3.14 (60)	7.10 (42)	7.59 (87)	9.88 (95)	1.69 (35)
Barclays Govt/Credit	3.71 (95)	3.37 (1)	-0.01 (100)	2.64 (1)	3.53 (42)	10.02 (1)	8.52 (13)	-0.63 (100)	-0.41 (100)	6.70 (1)
■ S&P 500	20.54 (1)	-19.60 (100)	9.07 (1)	1.70 (17)	4.30 (1)	7.50 (1)	10.42 (1)	14.38 (1)	17.90 (1)	3.99 (5)

## State Retirement Agency of Maryland Risk vs Total Returns of Public Funds > \$25 Billion

3 Years Ending June 30, 2020

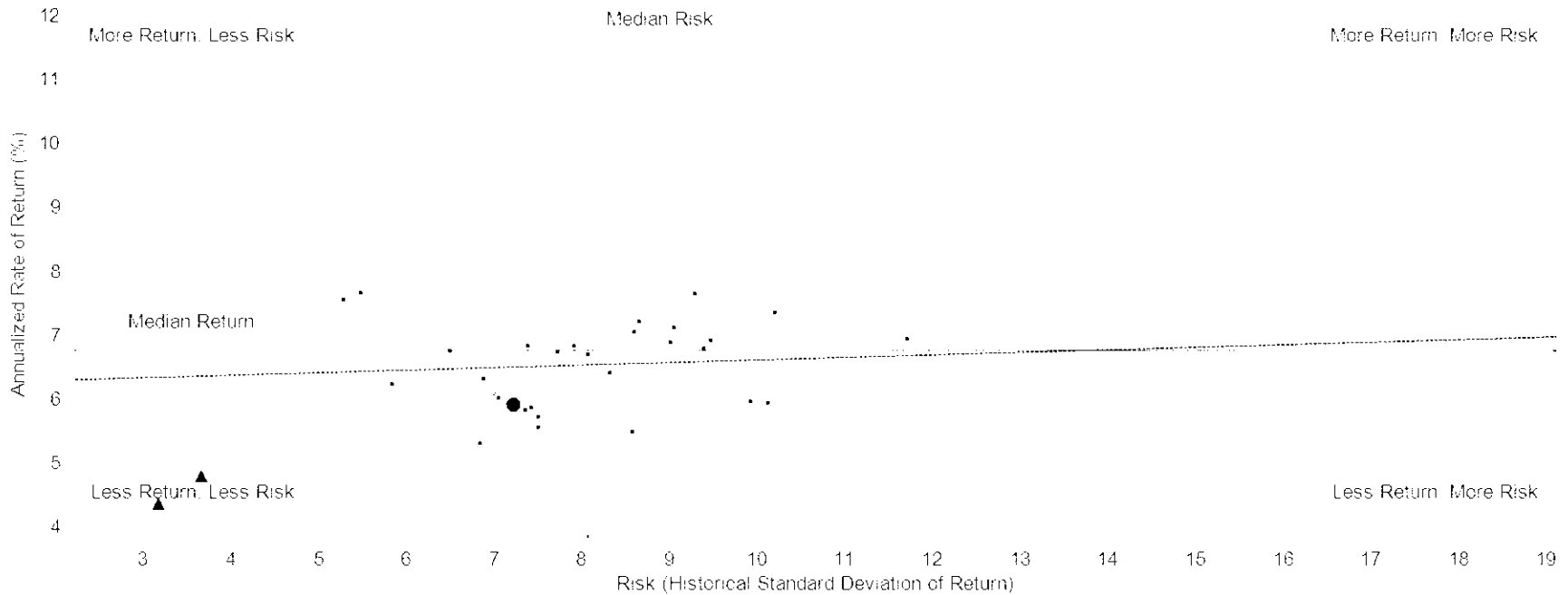


Alpha: 6.04  
Beta: 0.04  
R-Squared: 0.01

	Risk Value	Risk Rank	Return Value	Return Rank
Total Fund	8.26	79	6.23	60
● Total Plan Policy Index	8.48	75	5.93	67
S&P 500	20.79	1	10.73	1
▲ Barclays Aggregate	2.98	100	5.32	79
▲ Barclays Govt/Credit	3.44	100	5.87	71
Wilshire 5000	21.84	1	10.13	1
Median	9.57		6.57	

**State Retirement Agency of Maryland  
Risk vs Total Returns of Public Funds > \$25 Billion**

5 Years Ending June 30, 2020



Alpha: 6.23  
Beta: 0.04  
R-Squared: 0.01

	Risk Value	Risk Rank	Return Value	Return Rank
Total Fund	7.05	79	6.03	71
● Total Plan Policy Index	7.28	75	5.84	87
S&P 500	16.83	1	10.73	1
▲ Barclays Aggregate	3.23	100	4.30	100
▲ Barclays Govt/Credit	3.72	100	4.74	100
Wilshire 5000	17.63	1	10.27	1
Median	8.07		6.77	



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**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION  
MEMORANDUM**

**TO:** Members of the Investment Committee

**FROM:** Investment Division Staff

**DATE:** September 11, 2020

**RE:** Fiscal Year 2021 Travel - Update

Staff has been asked to provide the members of the Committee with a periodic informational update regarding the Investment Division's travel.

**Per Governor Hogan's order, all out-of-state travel involving State employees has been cancelled effective immediately and lasting indefinitely.**

This means:

1. No new out-of-state travel should be scheduled or funded.
2. All previously scheduled out-of-state travel should be evaluated as to the potential for reservation reimbursements for airfare, lodging, rental vehicles, etc...

**\*\*NOTE: NO TRAVEL WAS PERFORMED BY THE INVESTMENT DIVISION AFTER MARCH 12, 2020 PER EXECUTIVE ORDER DUE TO COVID -19 VIRUS.**

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**Optional Retirement Program Performance Report**  
 State Retirement and Pension System of Maryland  
 (As of June 30, 2020)

Investment Options					Average Annual Rates of Return					
Ticker	Money Market	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
VUSXX	TIAA-CREF Vanguard Treasury Money Market Fund		0.09%	0.09%	0.08%	1.40%	1.80%	1.62%	1.32%	1.08%
	<i>Citigroup 3-month Treasury Bill Index</i>				<i>0.14%</i>	<i>1.56%</i>	<i>1.92%</i>	<i>1.72%</i>	<i>1.41%</i>	<i>1.15%</i>
	Stable Value	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
N/A	TIAA-CREF Traditional Retirement Annuity		N/A	N/A	0.93%	3.74%	3.79%	3.79%	3.84%	3.87%
	<i>Citigroup 3-month Treasury Bill Index - 1.25%</i>				<i>0.45%</i>	<i>2.81%</i>	<i>3.17%</i>	<i>2.97%</i>	<i>2.66%</i>	<i>2.40%</i>
	Core Fixed Income/ Intermediate-Term Bond	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
FXNAX	Fidelity U.S Bond Index (I)	Passive	0.03%	0.03%	2.77%	9.03%	8.45%	5.38%	3.86%	4.32%
VBPIX	TIAA-CREF Vanguard Total Bond Market Index Fund	Passive	0.04%	0.04%	2.98%	8.98%	8.42%	5.36%	3.88%	4.33%
WATFX	Western Asset Core Bond Fund (I)	Active	0.45%	0.54%	5.64%	8.53%	8.56%	5.68%	4.59%	5.02%
N/A	TIAA-CREF Bond Market Account	Active	0.26%	0.26%	4.90%	7.71%	7.85%	5.10%	3.96%	4.38%
	<i>Bloomberg Barclays US Aggregate Bond Index</i>				<i>2.90%</i>	<i>8.74%</i>	<i>8.30%</i>	<i>5.32%</i>	<i>3.88%</i>	<i>4.30%</i>
	Inflation-Linked Bond	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
FIPDX	Fidelity Inflation Protected Bond Index	Passive	0.05%	0.05%	4.18%	8.32%	6.52%	5.03%	3.54%	3.75%
VIPIX	Vanguard Inflation-Protected Securities Fund (Instl Shares)	Passive	0.07%	0.07%	4.10%	8.12%	6.40%	4.88%	3.44%	3.70%
	<i>Barclays US TIPS Index</i>				<i>4.24%</i>	<i>8.28%</i>	<i>6.54%</i>	<i>5.05%</i>	<i>3.60%</i>	<i>3.75%</i>

**Optional Retirement Program Performance Report**  
**State Retirement and Pension System of Maryland**  
**(As of June 30, 2020)**

	Balanced	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
FBAKX	Fidelity Balanced Fund (K)	Active	0.45%	0.45%	18.37%	10.65%	8.66%	9.40%	10.44%	8.38%
N/A	TIAA-CREF Social Choice Account (R3)	Active	0.23%	0.23%	14.00%	6.00%	6.90%	6.88%	7.89%	6.68%
	<i>60% Russell 1000/40% BC Aggregate Bond Index</i>				<i>14.25%</i>	<i>9.62%</i>	<i>9.56%</i>	<i>9.22%</i>	<i>9.52%</i>	<i>8.52%</i>
	<i>42% Russell 3000, 18% MSCI EAFE+Canada, 40% Bloomberg Barclays US Aggregate</i>				<i>13.23%</i>	<i>6.69%</i>	<i>7.09%</i>	<i>7.17%</i>	<i>8.10%</i>	<i>6.83%</i>
	U.S Large-Cap Equity	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
FXAIX	Fidelity 500 Index (I)	Passive	0.02%	0.02%	20.53%	7.49%	8.94%	10.71%	12.47%	10.72%
VINIX	TIAA-CREF Vanguard Institutional Index	Passive	0.04%	0.04%	20.55%	7.49%	8.93%	10.70%	12.45%	10.70%
FCNKX	Fidelity Contrafund (K)	Active	0.77%	0.77%	26.91%	18.06%	12.92%	16.54%	17.95%	14.17%
	<i>S&amp;P 500 Index</i>				<i>20.54%</i>	<i>7.51%</i>	<i>8.95%</i>	<i>10.73%</i>	<i>12.48%</i>	<i>10.73%</i>
N/A	TIAA-CREF Stock	Active	0.33%	0.33%	21.33%	2.32%	3.64%	6.46%	9.51%	6.97%
	<i>70% Russell 3000, 30% MSCI ACWI ex-US IMI</i>				<i>20.66%</i>	<i>3.62%</i>	<i>5.05%</i>	<i>7.57%</i>	<i>10.36%</i>	<i>7.93%</i>
FBGKX	Fidelity Blue Chip Growth Fund (K)	Active	0.70%	0.70%	37.85%	32.07%	19.51%	22.38%	23.88%	17.47%
N/A	TIAA-CREF Growth	Active	0.26%	0.26%	29.32%	20.48%	15.11%	18.00%	18.73%	14.47%
	<i>Russell 1000 Growth Index</i>				<i>27.84%</i>	<i>23.28%</i>	<i>17.27%</i>	<i>18.99%</i>	<i>19.35%</i>	<i>15.89%</i>
MADVX	BlackRock Equity Dividend Fund	Active	0.71%	0.71%	14.03%	-4.66%	1.27%	3.88%	7.25%	6.93%
RWMGX	TIAA-CREF American Funds Washington Mutual (R6)	Active	0.27%	0.27%	16.57%	0.24%	5.23%	8.09%	9.89%	9.20%
	<i>Russell 1000 Value Index</i>				<i>14.29%</i>	<i>-8.84%</i>	<i>-0.56%</i>	<i>1.82%</i>	<i>5.09%</i>	<i>4.64%</i>
	U.S. Mid-Cap Equity	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
FKMCX	Fidelity Mid Cap Stock Fund (K)	Active	0.82%	0.82%	21.39%	-7.45%	-0.79%	3.87%	7.21%	5.27%
VMCPX	TIAA-CREF Vanguard Mid-Cap Index Fund (IP)	Passive	0.03%	0.03%	24.96%	-0.18%	3.76%	6.47%	9.07%	7.01%
	<i>S&amp;P Mid Cap 400 Index</i>				<i>24.07%</i>	<i>-6.70%</i>	<i>-2.75%</i>	<i>2.39%</i>	<i>6.22%</i>	<i>5.22%</i>
	<i>CRSP US Mid Cap Index</i>				<i>24.97%</i>	<i>-0.20%</i>	<i>3.75%</i>	<i>6.47%</i>	<i>9.08%</i>	<i>7.01%</i>

## Optional Retirement Program Performance Report

State Retirement and Pension System of Maryland

(As of June 30, 2020)

	U.S. Small-Cap Equity	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
DFSTX	Fidelity DFA U.S. Small Cap Portfolio (I)	Active	0.35%	0.35%	23.54%	-11.71%	-8.67%	-1.29%	3.99%	2.33%
FSSNX	Fidelity Small Cap Index Fund	Passive	0.03%	0.03%	25.49%	-6.46%	-4.85%	2.15%	7.39%	4.47%
TISEX	TIAA-CREF Quant Small Cap Equity (I)	Active	0.42%	0.42%	25.14%	-13.39%	-7.14%	-0.26%	5.94%	3.35%
TISBX	TIAA-CREF Small-Cap Blend Index Fund	Passive	0.06%	0.06%	25.45%	-6.48%	-4.87%	2.14%	7.39%	4.46%
	<i>Russell 2000 Index</i>				25.42%	-6.63%	-4.98%	2.01%	7.24%	4.29%
	International/Global Equity	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
FSGGX	Fidelity Global ex- U.S. Index Fund	Passive	0.06%	0.06%	16.78%	-4.48%	-1.57%	1.20%	5.62%	2.35%
VTSNX	TIAA-CREF Vanguard Total International Stock Index Fund	Passive	0.08%	0.08%	18.12%	-4.07%	-1.75%	1.12%	5.56%	2.45%
	<i>MSCI ACWI ex US (Net)</i>				16.12%	-4.80%	-1.80%	1.13%	5.65%	2.26%
FKIDX	Fidelity Diversified International K6 Fund	Active	0.60%	0.60%	21.32%	8.29%	5.35%	5.72%	8.61%	4.63%
RERGX	TIAA-CREF American Funds EuroPacific Growth R6	Active	0.46%	0.46%	22.77%	3.17%	2.54%	4.76%	8.87%	4.90%
	<i>MSCI EAFE Index (Net)</i>				14.88%	-5.13%	-2.08%	0.81%	5.36%	2.05%
Ticker	International/Global Equity (cont'd)	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
AQGRX	AQR Global Equity Fund	Active	0.71%	0.73%	20.18%	-1.55%	-1.38%	2.64%	6.81%	4.90%
N/A	TIAA-CREF Global Equities	Active	0.27%	0.27%	22.62%	5.18%	4.24%	6.58%	9.51%	6.30%
	<i>Global Equity Custom: Since 5/1/18 – MSCI ACWI; Prior to 5/1/18 – MSCI World Index</i>				19.22%	2.11%	3.91%	5.90%	8.85%	6.42%
	<i>MSCI All-Country World Index Free</i>				19.22%	2.11%	3.91%	6.14%	9.17%	6.46%

**Optional Retirement Program Performance Report**  
**State Retirement and Pension System of Maryland**  
**(As of June 30, 2020)**

	Socially Responsible	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
VFTAX	Vanguard FTSE Social Index Fund	Passive	0.12%	0.12%	23.37%	11.20%	11.25%	12.67%	14.81%	11.64%
	<i>S&amp;P 500 Index</i>				20.54%	7.51%	8.95%	10.73%	12.48%	10.73%
N/A	TIAA-CREF Social Choice Account	Active	0.23%	0.23%	14.00%	6.00%	6.90%	6.88%	7.89%	6.68%
	<i>42% Russell 3000, 18% MSCI EAFE \ Canada, 40% Bloomberg Barclays US Aggregate</i>				13.23%	6.69%	7.09%	7.17%	8.10%	6.83%
Ticker	Lifecycle Funds	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
FNSHX	Fidelity Freedom Income K	Active	0.42%	0.42%	6.41%	4.92%	5.20%	4.53%	4.88%	4.29%
FSNJX	Fidelity Freedom 2005 K	Active	0.42%	0.42%	7.53%	4.94%	5.17%	4.92%	5.70%	4.80%
FSNKX	Fidelity Freedom 2010 K	Active	0.45%	0.45%	9.21%	4.97%	5.15%	5.24%	6.38%	5.21%
FSNLX	Fidelity Freedom 2015 K	Active	0.49%	0.49%	10.83%	4.84%	5.01%	5.49%	6.99%	5.60%
FSNOX	Fidelity Freedom 2020 K	Active	0.52%	0.52%	12.41%	4.74%	4.96%	5.65%	7.39%	5.81%
FSNPX	Fidelity Freedom 2025 K	Active	0.56%	0.56%	13.64%	4.58%	4.83%	5.79%	7.79%	6.00%
FSNQX	Fidelity Freedom 2030 K	Active	0.59%	0.59%	15.41%	4.46%	4.63%	6.12%	8.73%	6.49%
FSNUX	Fidelity Freedom 2035 K	Active	0.63%	0.63%	17.85%	3.67%	3.90%	6.08%	9.17%	6.66%
FSNVX	Fidelity Freedom 2040 K	Active	0.65%	0.65%	19.11%	3.06%	3.53%	5.87%	9.02%	6.56%
FSNZX	Fidelity Freedom 2045 K	Active	0.65%	0.65%	19.15%	3.09%	3.52%	5.85%	9.00%	6.54%
FNSBX	Fidelity Freedom 2050 K	Active	0.65%	0.65%	19.12%	3.10%	3.53%	5.86%	9.03%	6.55%
FNSDX	Fidelity Freedom 2055 K	Active	0.65%	0.65%	19.10%	3.10%	3.53%	5.88%	9.01%	6.55%
FNSFX	Fidelity Freedom 2060 K	Active	0.65%	0.65%	19.10%	3.09%	3.53%	5.85%	9.00%	6.52%

**Optional Retirement Program Performance Report**  
 State Retirement and Pension System of Maryland  
 (As of June 30, 2020)

Ticker	Lifecycle Funds	Active/ Passive	Net Expense Ratio	Gross Expense Ratio	3 Month	1 Year	2 Year	3 Year	4 Year	5 Year
TLRIX	TIAA-CREF Lifecycle Retirement Income (I)	Active	0.37%	0.53%	10.71%	4.70%	5.28%	5.42%	6.24%	5.27%
TCTIX	TIAA-CREF Lifecycle 2010 (I)	Active	0.37%	0.50%	10.71%	4.79%	5.27%	5.54%	6.51%	5.42%
TCNIX	TIAA-CREF Lifecycle 2015 (I)	Active	0.38%	0.50%	11.62%	4.66%	5.21%	5.69%	6.87%	5.62%
TCWIX	TIAA-CREF Lifecycle 2020 (I)	Active	0.39%	0.51%	12.61%	4.61%	5.06%	5.88%	7.35%	5.87%
TCYIX	TIAA-CREF Lifecycle 2025 (I)	Active	0.41%	0.52%	14.14%	4.29%	4.77%	6.07%	7.90%	6.12%
TCRIX	TIAA-CREF Lifecycle 2030 (I)	Active	0.42%	0.53%	15.71%	4.08%	4.49%	6.27%	8.41%	6.36%
TCIIX	TIAA-CREF Lifecycle 2035 (I)	Active	0.43%	0.54%	17.27%	3.80%	4.18%	6.42%	8.88%	6.58%
TCOIX	TIAA-CREF Lifecycle 2040 (I)	Active	0.44%	0.55%	18.77%	3.56%	3.78%	6.53%	9.33%	6.73%
TTFIX	TIAA-CREF Lifecycle 2045 (I)	Active	0.45%	0.56%	20.10%	3.20%	3.39%	6.48%	9.44%	6.80%
TFTIX	TIAA-CREF Lifecycle 2050 (I)	Active	0.45%	0.57%	20.31%	3.14%	3.37%	6.50%	9.50%	6.87%
TTRIX	TIAA-CREF Lifecycle 2055 (I)	Active	0.45%	0.59%	20.51%	3.07%	3.29%	6.50%	9.56%	6.92%
TLXNX	TIAA-CREF Lifecycle 2060 (I)	Active	0.45%	0.71%	20.68%	3.03%	3.24%	6.52%	9.61%	6.97%

Source: FactSet, TIAA-CREF, Fidelity



# Optional Retirement Program Performance Report

## State Retirement and Pension System of Maryland

(As of June 30, 2020)

### Notes:

1. All returns are reported net of all expenses.
2. Returns greater than one year are annualized.
3. Indexes are listed in *red italics*. They are intended to reflect the performance of the overall market in each investment category, and should be used for comparison purposes only.
4. Gross expense ratio is the total annual fund or class operating expenses (before waivers or reimbursements) paid by the fund and stated as a percent of the fund's total net assets. Net expense ratios are calculated after waivers and reimbursements.

### Other Notes:

#### TIAA CREF

1. Variable annuities include a Mortality & Expense in the expense ratios shown above which pays for the guaranteed death benefits and annuity payments upon annuitization of the contract for the life of the annuitant. Please contact a vendor representative for a more complete explanation. R3 Class began operations on April 24, 2015. Performance shown for periods prior to the inception of the R3 Class reflects the performance of R1 Class. Total returns have not been restated to reflect any expense differential between any of the classes. Had the expense differential been reflected, total returns for the R3 Classes would have been higher.
2. For further information on investment options including disclosures please visit the following sites:  
University System of Maryland - [www.tiaa-cref.org/usmd](http://www.tiaa-cref.org/usmd)  
All other colleges and universities - [www.tiaa-cref.org/marylandcc](http://www.tiaa-cref.org/marylandcc)

#### Fidelity

Fund line-up as of 7/10/20

Last categorization update date 6/30/2020

Total returns are historical and include change in share value and reinvestment of dividends and capital gains, if any. Cumulative total returns are reported as of the period indicated. Life of Fund figures are reported as of the inception date to the period indicated. These figures do not include the effect of sales charges, if any, as these charges are waived for contributions made through your company's employee benefit plans. If sales charges were included, returns would have been lower.

The returns shown above for Fidelity Freedom class K funds are for a different class of funds. Returns and expenses prior are those of the Freedom (retail) class. Had K class expenses been reflected in the returns shown, total returns would have been higher.

Indices are unmanaged and you cannot invest directly in an index.

# Optional Retirement Program Performance Report

## State Retirement and Pension System of Maryland

### (As of June 30, 2020)

Morningstar, Inc., provided data on the non-Fidelity mutual funds. Although the data is gathered from reliable sources, accuracy and completeness cannot be guaranteed by Morningstar.

Fidelity® Small Cap Index Fund - Premium Class: As of June 14, 2016, this fund changed its name from Spartan Small Cap Index Fund - Fidelity Advantage Cla

Fidelity® Global ex U.S. Index Fund - Premium Class: As of June 14, 2016, this fund changed its name from Spartan Global ex U.S. Index Fund - Fidelity Advai

Fidelity® 500 Index Fund - Institutional Class: As of June 14, 2016, this fund changed its name from Spartan® 500 Index Fund - Institutional Class.

Fidelity® U.S. Bond Index Fund - Institutional Class: As of June 14, 2016, this fund changed its name from Spartan® U.S. Bond Index Fund - Institutional Class

Fidelity® Inflation-Protected Bond Index Fund - Premium Class: As of June 14, 2016, this fund changed its name from Spartan Inflation-Protected Bond Index F

Franklin Mutual Global Discovery Fund Class R6: The analysis on these pages may be based, in part, on adjusted historical returns for periods prior to the class's actual inception of 05/01/2013. These calculated returns reflect the historical performance of the oldest share class of the fund, with an inception date of 12/31/1992, adjusted to reflect the fees and expenses of this share class (when this share class's fees and expenses are higher.) Please refer to a fund's prospectus for information regarding fees and expenses. These adjusted historical returns are not actual returns. Calculation methodologies utilized by Morningstar may differ from those applied by other entities, including the fund itself.

BlackRock Equity Dividend Fund Institutional Shares: The analysis on these pages may be based, in part, on adjusted historical returns for periods prior to the class's actual inception of 11/29/1988. These calculated returns reflect the historical performance of the oldest share class of the fund, with an inception date of 11/25/1987, adjusted to reflect the fees and expenses of this share class (when this share class's fees and expenses are higher.) Please refer to a fund's prospectus for information regarding fees and expenses. These adjusted historical returns are not actual returns. Calculation methodologies utilized by Morningstar may differ from those applied by other entities, including the fund itself.

Fidelity® 500 Index Fund - Institutional Class: Returns prior to May 4, 2011 are those of the Premium Class and reflect the Premium Class' expense ratio. Had the Institutional Class' expense ratio been reflected, total returns would have been higher.

Fidelity® U.S. Bond Index Fund - Institutional Class: Returns prior to May 4, 2011 are those of the Investor Class and reflect the Investor Class' expense ratio. Had the Institutional Class' expense ratio been reflected, total returns would have been higher.

# Optional Retirement Program Performance Report

## State Retirement and Pension System of Maryland

### (As of June 30, 2020)

Fidelity® Balanced Fund - Class K: On May 9, 2008, an initial offering of the retirement (K) class took place. Returns and expenses prior to that date are those of the non-K, non-advisor class. Had K class expenses been reflected in the returns shown, total returns would have been higher.

Fidelity® Blue Chip Growth Fund - Class K: On May 9, 2008, an initial offering of the retirement (K) class took place. Returns and expenses prior to that date are those of the non-K, non-advisor class. Had K class expenses been reflected in the returns shown, total returns would have been higher.

Fidelity® Contrafund® - Class K: On May 9, 2008, an initial offering of the retirement (K) class took place. Returns and expenses prior to that date are those of the non-K, non-advisor class. Had K class expenses been reflected in the returns shown, total returns would have been higher.

Fidelity® Diversified International Fund - Class K, Fidelity® Mid-Cap Stock Fund - Class K: On May 9, 2008, an initial offering of the retirement (K) class took place. Returns and expenses prior to that date are those of the non-K, non-advisor class. Had K class expenses been reflected in the returns shown, total returns would have been higher.

#### Expense Ratio Footnotes

For a mutual fund, the expense ratio is the total annual fund or class operating expenses (before waivers or reimbursements) paid by the fund and stated as a percent of the fund's total net assets. Where the investment option is not a mutual fund, the figure displayed in the expense ratio field is intended to reflect similar information. However, it may have been calculated using methodologies that differ from those used for mutual funds. Mutual fund data has been drawn from the most recent prospectus. For non-mutual fund investment options, the information has been provided by the trustee or plan sponsor. When no ratio is shown for these options it is due to the fact that none was available. Nevertheless, there may be fees and expenses associated with the investment option.

Expense Ratio after Reduction is the total annual operating expense from the fund's most recent prospectus after any fee waiver and/or expense reimbursements that will reduce any fund operating expenses for no less than one year from the effective date of the fund's registration statement. This number does not include any fee waiver arrangement or expense reimbursement that may be terminated without agreement of the fund's board of trustees during the one-year period.

Morningstar Category Expense Ratio: This figure represents average gross expense ratio paid by the funds in the Morningstar category. The information is based on the gross expense ratio as reported in each fund's most current prospectus and is provided by Morningstar.

Morningstar Category Expense Ratio: This figure represents average net expense ratio paid by the funds in the Morningstar category. The information is based on the net expense ratio as reported in each fund's most current prospectus and is provided by Morningstar.

# Optional Retirement Program Performance Report

## State Retirement and Pension System of Maryland

### (As of June 30, 2020)

Western Asset Core Bond Fund Class I: Contractual Expense Ratio Waiver of 0.09 subject to Expiration Date of 12/31/2018. Expense Waiver is the amount that the fund company waives or assumes of the expenses borne by the fund, until the expiration date, in order to lower the fund's actual expenses. After the expiration date, the expense waiver may be terminated or revised, which may lower the fund's yield and return.

Before investing, consider the funds' investment objectives, risks, charges, and expenses. Contact Fidelity for a prospectus or, if available, a summary prospectus containing this information. Read it carefully.

Fidelity Brokerage Services LLC, Member NYSE, SIPC, 900 Salem Street, Smithfield, RI 02917

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**STATE RETIREMENT AGENCY  
INVESTMENT DIVISION**

**MEMORANDUM**

**TO:** Members of the Investment Committee  
**FROM:** Investment Division Staff  
**DATE:** September 14, 2020  
**RE:** Post-Retirement Health Benefits Trust (PHBT) Update

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The June 30, 2020, quarterly investment report for the Post-Retirement Health Benefits Trust (PHBT) is on the following page. The report is also on the Agency's website.

No funds have been received by the Trust since July 2009.

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**MARYLAND POST RETIREMENT HEALTH BENEFITS TRUST**  
**QUARTERLY INVESTMENT UPDATE BY ASSET CLASS**  
Period Ending June 30, 2020

ASSET CLASS	Market Value	Actual Allocation*	Long-Term Policy Target	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	ITD
<b>TOTAL POSTRETIREMENT HEALTH</b>	355	100.0%	100.0%	2.70	13.54	-5.21	1.32	1.32	5.08	5.45	5.83
POSTRETIREMENT HEALTH POLICY INDEX (1)				2.74	13.44	-5.26	1.37	1.37	4.99	5.46	5.54
<b>TOTAL GROWTH EQUITY</b>	206	58.0%	58.0%	4.00	19.07	-7.52	0.47	0.47	5.18		8.38
GROWTH EQUITY CUSTOM BENCHMARK(2)				3.54	18.89	-7.53	0.37	0.37	5.26		8.44
<b>RATE SENSITIVE</b>	76	21.5%	19.0%	0.53	2.10	13.36	17.10	17.10	8.83		6.35
RATE SENSITIVE CUSTOM BENCHMARK(3)				0.59	2.43	12.57	16.09	16.09	8.45		6.10
<b>CREDIT</b>	31	8.8%	9.0%	0.53	10.90	-4.36	-0.47	-0.47	3.14		5.18
US CREDIT STRATEGIES CUSTOM BENCHMARK(4)				0.81	10.06	-4.28	-0.46	-0.46	3.01		5.75
<b>REAL ASSETS</b>	42	11.7%	14.0%	2.10	12.63	-19.96	-15.29	-15.29	-0.58		1.11
REAL ASSETS CUSTOM BENCHMARK(5)				2.05	12.34	-20.56	-16.05	-16.05	-1.37		0.63

\* May not add due to rounding.

(1) Since 10/2017: Benchmark is dynamically calculated based on the Average Balance weights of PHBT FUND, SSGA BC TIPS, SSGA TUCKERMAN GLOBAL, INTERMEDIATE CREDIT INDEX CTF, LONG US GOVT INDEX CTF, MSCI EMERGING MARKETS FREE CTF, MSCI EAFE NL CTF, SSGA HIGH YIELD BOND INDEX CTF, ASSET BACKED CMB INDEX FUND, MSCI CAD INDEX NL CTF CADCTF, EMERGING MARKETS HARD CURRENCY, DJ UBS COMMON INDX SM NL CMAG, REXITER EMERGING MKT DEBT, RUSSELL 3000 (R) INDX NL CTF, LONG US CREDIT CORP IND, US MORTGAGE BACKED INDEX SL, GLOBAL LARGE MIDCAP.

From 12/2014: Benchmark is dynamically calculated based on the Average Balance weights of SSGA BC TIPS, SSGA PASSIVE BOND, SSGA TUCKERMAN GLOBAL, SSGS GLOBAL INFL LINKED GLOBAL BONDS and TOTAL GLOBAL EQUITY.

From 06/2012: Benchmark is dynamically calculated based on the Average Balance weights of PHBT FUND, SSGA LB TIPS, SSGA PASSIVE BOND, SSGA TUCKERMAN GLOBAL AND TOTAL GLOBAL EQUITY.

(2) Since 04/2016: 45.946% Russell 3000; 37.838% MSCI AC World ex US (Net); 16.216% MSCI Emerging Markets.

(3) Since 04/2016: 9.5% BBG BARC Govt Long, 1.25% BBG BARC +ABS, 47.65% BBG BARC long corp, 13.1% BBG BARC US MBS 23.8% BBG BARC Inf-Lk US TIPS.

(4) Since 04/2016: 66.67% US Credit Strategies Custom Benchmark; 33.33% Non-US Credit Custom Benchmark.

(5) Since 10/2017: Benchmark is dynamically calculated based on the BMV weights of GLOBAL LARGE MIDCAP, SSGA TUCKERMAN, S&P Global Infrastructure

From 2/2017: Dynamically calculated on BMV weights of Global Large MidCap, Bloomberg Commodity Index, SSGA Tuckerman Global, S&P Global Infrastructure

From 4/2016: Dynamically calculated on BMV weights of Global Large MidCap, Bloomberg Commodity Index, SSGA Tuckerman Global

**PLEASE NOTE:**

The Board of Trustees of the Maryland Retirement System is responsible only for investment of those monies deposited by the State of Maryland into the Postemployment Health Benefits Trust Fund (the "Trust"). Under State law:

a) The assets of the Trust are maintained in a tax-exempt trust established in accordance with Section 115 of the Internal Revenue Code. These assets are not commingled with those of the various defined benefit plans administered by the Board of Trustees. b) The State Department of Budget and Management is responsible for the administration of health benefits available to retired State workers. Questions regarding retiree health benefits should be directed to the Department of Budget and Management's Office Personnel Services and Benefits, Employee Benefits Division, 301 West Preston Street, Room 510, Baltimore, MD 21201, telephone: (410) 767-4775; 1-800-30-STATE (Outside Baltimore); (410) 333-7104 Fax.

c) The State of Maryland, through the Office of the State Comptroller, receives investment performance information from the Retirement System regarding the Trust and is responsible for utilizing this information in order to produce financial, accounting and other reports regarding the Trust and is responsible for arranging for audits of the Trust. Questions regarding such matters should be directed to the Comptroller of Maryland, General Accounting Division, Office of the Director, Louis L. Goldstein Treasury Building, 80 Calvert St., Room 200, Annapolis, MD 21404-0746, telephone: (410) 260-7820.



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2020 New Investments Log								
Manager Name	Date of Funding		Strategy	USD	Amount	Did Manager represent that placement agent was used (yes/no)	If yes, name of placement agent as provided by Manager	Has Manager represented that MD's investment was used to pay placement agent
<b>Public Equity</b>								
MW TOPS EM Fund	4/1/2020		Emerging Markets	\$250	\$250 million	No		
Lizard Investors LLC	6/10/2020		International Small Cap Terra Maria	\$64.0	\$64 million	NO		
<b>Fixed Income</b>								
Voya TALF Opportunities Fund	6/7/2020	closing	Securitized Fixed Income	\$200.0	\$200.0	No		
<b>Real Return</b>								
<b>Private Equity</b>								
Clearlake Capital Partners VI	1/23/2020		Lower Mid-Buyout	\$60.0	\$60 Million	No		
Vista Foundation Fund IV	2/21/2020		Lower Mid-Buyout	\$50.0	\$50 Million	No		
Coller VIII	3/18/2020		Secondary	\$100.0	\$100 Million	No		
Lexington Co-Invest II	3/25/2020		Co-invest	\$300.0	\$300 Million	No		
Lexington Co-Invest II - Overage	3/25/2020		Co-invest	\$45.0	\$45 Million	No		
Hg Genesis 9	4/3/2020		Buyout	\$120.0	\$120 million	No		
CD&R XI	4/30/2020		Buyout	\$125.0	125 Million	No		
New Mountain VI	5/22/2020		Buyout	\$125.0	\$125 million	No		
Thoma Bravo IV	5/29/2020		Buyout	\$125.0	\$125 Million	No		
Silver Lake VI	6/4/2020		Buyout	\$150.0	\$150 Million	No		
CVC VIII	6/8/2020		Buyout	\$141.0	€125 Million	No		
IJP XVII	6/18/2020		Venture - Late Stage	\$85.0	\$85 Million	No		
MD Asia IV	7/31/2020		Asian Fund of Funds	\$200.0	\$200 Million	No		
Bain Capital XIII	8/7/2020		Buyout	\$150.0	\$150 Million	No		
<b>Absolute Return</b>								
Contrarian EMMA 2	1/1/2020		Event Driven	\$200	\$200 million	No		
Volordige Fund	2/1/2020		Relative Value	\$200	\$200 million	No		
Kirkoswald Global Macro Fund	6/1/2020		Global Macro	\$200	\$200 million	No		
Pharo Gaia	7/1/2020		Global Macro	\$100	\$100 million	No		
<b>Real Estate</b>								
Abacus Multi-Family Partners V	2/13/2020		Value Add	\$50	\$50 million	No		
FPA Core Plus Fund V	3/31/2020		Value Add / Core Plus	\$100	\$100 million	No		
Waterton Residential Property Venture XIV	5/26/2020		Value Add	\$125	\$125 million	No		
<b>Credit/Debt</b>								
HCR Potomac Fund, LP	1/7/2020	closing	Healthcare Royalties and Credit	\$150.0	\$150 million	No		
Whitehorse Liquidity Partners IV, LP	4/24/2020	closing	Preferred Equity - Private Equity Financing	\$200.0	\$200 million	Yes	Capstone Partners	No; agent not used by MSRA
Shamrock Capital Content Fund II, LP	5/11/2020	closing	Media Royalties	\$50.0	\$50 million	No		

Castlelake Aviation IV Stabel Yield, LP		5/14/2020	closing	Aviation Finance	\$150.0	\$150 million	No		
Castlelake Aviation IV Stabel Yield Opportunities, LP		5/14/2020	closing	Aviation Finance	\$50.0	\$50 million	No		
CVI Credit Value Fund A V, LP		5/29/2020	closing	Global Opportunistic Credit	\$100.0	\$100 million	No		