AGENDA

THURSDAY, September 28, 2017
RSIC Presentation Center
9:00 AM

Commission Meeting

I. Call to Order & Adoption of Proposed Agenda
   A. Adoption of Proposed Agenda
   B. Adoption of June 22, 2017 Minutes

II. Chair's Report

III. Audit and Enterprise Risk Management Committee Report

IV. Human Resources & Compensation Committee Report

V. CEO's Report
   A. Budget Update
   B. Material Interest Form Distribution

VI. CIO's Report
   A. FY 2016-2017 Investment Performance Review
   B. Investment Performance Update July 2017
   C. Albourne Partners (Alternative Investment Consultant)

VII. Investment Recommendations
   A. Global Asset Allocation
      1. PineBridge
      2. Morgan Stanley
      3. Aberdeen Standard Life
   B. Private Equity
      1. Francisco Partners

VIII. Investment Delegation Policy

IX. General Investment Consultant Report

X. Executive Session - To receive advice from legal counsel pursuant to S.C. Code Section 30-4-70(a)(2) related to litigation filed by American Timberlands Fund II, LP.; to discuss investment matters pursuant to S.C. Code Sections 9-16-80 and 9-16-320; and to discuss personnel matters related to CEO performance and compensation pursuant to S.C. Code Section 30-4-70(a)(1).

XI. Potential Action Resulting from Executive Session

XII. Adjournment

South Carolina Retirement System Investment Commission
Meeting Minutes

June 22, 2017 9:30 a.m.
Capitol Center
1201 Main Street, 15th Floor
Columbia, South Carolina 29201
Meeting Location: Presentation Center

Commissioners Present:
Dr. Rebecca Gunnlaugsson, Chair
Dr. Ronald Wilder, Vice Chair
Ms. Peggy Boykin, PEBA Executive Director (Absent)
Mr. Allen Gillespie
Mr. Edward Giobbe
Mr. Curtis Loftis, State Treasurer
Mr. Reynolds Williams (Via Telephone)

Others present for all or a portion of the meeting on June 22, 2017: Christopher Alexander, Geoff Berg, Collin Bernier, Alan Bevard, LaJoia Broughton, Betsy Burn, Alexander Campbell, Andrew Chernick, Kim Cornell, Greg Cowell, Dori Ditty, John Farmer, Robert Feinstein, Scott Forrest, Mitchell Goldsmith, Jonathan Graab, Chandler Hill, Michael Hitchcock, David King, Lynn Lesueur, Steve Marino, Tricia Miller, Bryan Moore, Eric Rovelli, Kathleen Shealy, Brittany Storey, James Wingo and Raven Woods from the South Carolina Retirement System Investment Commission ("RSIC"); Clarissa Adams, State Treasurer's Office; Suzanne Bernard and Tim McEnery from Aon Hewitt Investment Consulting; Wayne Bell, Sam Griswold and Wayne Pruitt from the State Retirees' Association of South Carolina.

I. CALL TO ORDER AND CONSENT AGENDA

Chair Rebecca Gunnlaugsson called the meeting of the South Carolina Retirement System Investment Commission ("Commission") to order at 9:30 a.m. Mr. Allen Gillespie made a motion to approve the proposed agenda as presented. Mr. Edward Giobbe seconded the motion, which was approved unanimously.

The Chair referred to the draft minutes from the April 27, 2017 Commission Meeting as presented and asked whether there was a motion to approve the minutes. Dr. Ronald Wilder made a motion to approve the minutes as presented. Mr. Edward Giobbe seconded the motion, which passed unanimously.

II. CHAIR'S REPORT

The Chair began her report by recognizing that due to some changes to the Commission's structure required by the Pension Reform Act (the "Act") which will go into effect on July 1, 2017, this would be Mr. Curtis Loftis' last meeting as a member of the Commission. She thanked him for his work with the Commission and his service to state government. Mr.

Michael Hitchcock, CEO, also recognized Mr. Loftis and thanked him for his service to the Commission. The Chair then turned to a discussion of certain provisions of the Act, including a provision in the Act providing the Commission with the ability to delegate to the CEO the authority to execute contracts relating to the closing of investment matters. Dr. Wilder moved that the Commission, in accordance with 2017 S.C. Acts 13, Pt. III, §10, delegates to the Chief Executive Officer the full authority to act on behalf of the Commission to execute any documents necessary to implement a duly authorized final decision to invest upon documented approval for legal sufficiency by RSIC Legal and upon expiration of the three business day review period as approved by the Commission on May 1, 2014 (or as the review period may be amended or otherwise superseded or rescinded by the Commission). This delegation shall take effect on July 1, 2017. Mr. Gillespie seconded the motion, the motion passed, with Mr. Loftis abstaining.

Next, the Chair and CEO noted that certain edits were needed to the Governance Policies and the Placement Agent Policy to reflect changes required by the Act. Staff had posted drafts of the proposed changes to the Governance Policies and the Placement Agent Policy in advance of the meeting for the Commissioners to review. Mr. Giobbe moved that the Commission amends, effective July 1, 2017, Governance Policies I through VIII as presented, and as amended by the proposed revisions dated June 15, 2017 from the Chair and Vice Chair, to bring the Governance Policies into conformity with 2017 S.C. Acts 13, and directs Staff to make any technical revisions or formatting edits to the Governance Policies and other RSIC policy documents consistent with the foregoing amendments. Mr. Reynolds Williams seconded the motion, with Mr. Loftis opposing, and the motion passed.

Dr. Wilder then moved that the Commission adopts, effective July 1, 2017, the proposed revisions to the Placement Agent Policy as presented; directs Staff to incorporate the revised Placement Agent Policy into the Statement of Investment Objectives and Policies ("SIOP"); reaffirms the SIOP, as amended; and directs Staff to make any technical revisions or formatting edits to the Placement Agent Policy and other RSIC policy documents consistent with the action taken by the Commission. Mr. Giobbe seconded the motion. Mr. Loftis opposed the motion, which passed. The Commissioners discussed the new statutory provision regarding placement agents and implementation issues related to the Policy.

III. INVESTMENT RECOMMENDATION

Mr. Berg began by noting that the RSIC needed to consider real estate strategies that are more defensive in nature and not as dependent on continued growth in property values because the commercial real estate market is in the latter stages of the market cycle. He then introduced Mr. Alexander Campbell, Investment Officer, who gave a presentation on a proposal to invest $100 million in Brookfield Real Estate Finance Fund V ("BREF V"), a $3 billion commingled real estate debt fund. Mr. Campbell reminded the Commission that the RSIC has several other investments with Brookfield, including two of their prior real estate debt funds, Brookfield manages approximately $225 billion in assets globally, and is the second largest property manager in the world. He stated that BREF V will employ a value-add strategy, with Brookfield originating whole loans and then syndicating the senior piece of the loan to a third party, while retaining the mezzanine-level loan. Mr. Campbell noted that BREF V will focus on primary markets within the U.S., but will retain the option to invest up to 20% of assets in select markets outside the U.S. In response to a question regarding the size of the trust funds' total relationship with Brookfield, Mr. Berg indicated that RSIC currently has approximately $300 - $400 million invested in a total of four Brookfield real estate and private equity funds.

After further discussion, Dr. Wilder moved for a motion (a) to adopt the recommendation of the CIO and the Internal Investment Committee as set forth in the Summary Terms Chart on Page 1 of the Due Diligence Report dated May 25, 2017; (b). authorize an investment of $100 million to Brookfield Real Estate Finance Fund V; (c) authorize the Chair or her designee to negotiate and execute any necessary documents to implement the Investment as approve by the Commission (1) upon documented approval for legal sufficiency by RSIC Legal, and (2) upon expiration of the three business day review period as approved by the Commission on May 1, 2014 (or as the review period may be amended or superseded by the Commission; and (d) authorize the Chair and/or the CIO or their designee(s) to thereafter authorize the custodian of funds to transfer such funds as necessary to meet the Retirement System trust funds' obligations with respect to the Investment. Mr. Williams seconded the motion, which passed, with Mr. Loftis opposed.

IV. AUDIT AND ENTERPRISE RISK MANAGEMENT COMMITTEE REPORT

Mr. Allen Gillespie stated that the Audit and Enterprise Risk Management Committee was still engaged in the search for the ERM/Compliance position. Mr. Andrew Chernick, Managing Director of Operations and Operational Due Diligence, is still serving in that role until the position is filled. Mr. Gillespie went on to discuss that the Audit Committee will begin to develop the Audit Plan in conjunction with John Page from PEBA, and the plan should be presented in the beginning of August. Mr. Hitchcock reported that Mr. Chernick was doing an excellent job and the interview process is ongoing. Mr. Gillespie stated that the next meeting is scheduled for August. This concluded Mr. Gillespie's report.

V. HUMAN RESOURCES & COMPENSATION COMMITTEE REPORT

Dr. Ronald Wilder then presented his report for the Human Resources and Compensation Committee. He gave an overview of the Performance Pro software that the Staff has implemented for employee reviews and performance planning. He noted that the CEO/CIO evaluation timeline had been changed to occur on a fiscal year basis, rather than a calendar year basis. He also noted that in the future the CEO will conduct the evaluation of the CIO, as a result of the Act, but with input and oversight by the Commission.

VI. CEO REPORT

Mr. Hitchcock updated the Commission on the progress of the implementation of the Act and stated that things were moving forward smoothly. He expressed appreciation to the Treasurer and his office for their cooperation in the transition process.

VII. CIO's REPORT

Mr. Berg began his report by reminding the Commissioners of an issue he had previously communicated regarding a compliance matter related to the planned reduction in hedge fund exposure. He explained that as Staff had redeemed out of hedge fund portfolios, they replaced that exposure by adding to the Plan's GAA allocation, in the form of low cost passive equity and fixed income exposure. Mr. Berg explained that because RSIC had been redeeming from the hedge funds at a faster pace than originally anticipated, RSIC inadvertently exceeded the upper end of the range for GAA. Mr. Berg further explained that, in hindsight, the replacement exposures should have been categorized as equity and fixed income, rather than as GAA. Mr. Berg reported that the issue has been fixed by breaking the exposure into its component parts and reclassifying the exposure to equity and core fixed income. Mr. Berg pointed out that this was done without any trading costs, solved by simply making an accounting adjustment.

Next, Mr. Berg introduced Mr. David King, Reporting Officer, who presented an update regarding the Plan's fiscal year-to-date performance as of April 30, 2017. Mr. King confirmed that, with the exception of the compliance issue addressed by Mr. Berg, every other asset class was within the approved asset allocation ranges. Mr. King reported that fiscal year-to-date, the Plan had a return of 10.47 percent versus a policy benchmark of 9.66 percent, paid out $940 million in net benefit payments, and had earned $2.8 billion of investment gains, which equated to approximately $1.9 billion of asset growth in the Plan for fiscal year-to-date. Moving on to asset class performance, Mr. King detailed the individual asset class returns, reporting that public equity had a 16 percent return, private equity had a 14.2 percent return, and private debt had a 10.67 percent return fiscal year-to-date. Mr. King noted that portable alpha hedge funds had performed very strongly (accounting for 73 of the 81 basis points of the Plan's fiscal year to date excess return), as well as non-portable alpha hedge funds and emerging market debt. Mr. King said that commodities, infrastructure and public real estate exposures were struggling relative to their benchmarks for the fiscal year-to-date period.

After discussion with the Commissioners, Mr. King finished his performance summary presentation and Mr. Berg introduced Ms. Suzanne Bernard from Aon Hewitt Consulting. Ms. Bernard began her report by noting the performance of various equity markets worldwide, and noted the turnaround in emerging markets over the last few months. Ms. Bernard remarked on the incredibly low volatility in many markets, which she noted is usually not favorable for hedge funds, but noted that hedge funds had navigated these challenging conditions quite well.

Ms. Bernard then shifted to the real estate market. Ms. Bernard agreed with Staff's position that the Plan should be more defensive at this time in real estate due to the late stage of the real estate market cycle. Ms. Bernard then discussed other U.S. and worldwide market trends and some general economic indicators.

After Mr. Tim McEnery of Aon Hewitt Consulting offered additional comments regarding Plan performance, Ms. Bernard thanked the Commission for the opportunity to serve the Plan and its participants over the past five years. Ms. Bernard commended the Commission for the steps that it had taken to improve governance, and wished the Commission well.

The Chair then thanked Ms. Bernard and Mr. McEnery for their support and guidance over the past five years. Mr. Berg added his appreciation for the support that Ms. Bernard and Mr. McEnery had provided to the Commission and staff.

Mr. Berg then provided an update regarding current projects. Mr. Berg summarized the results of two of the investment team's most recent "Challenging Beliefs" exercises, relating to equity options and mixed credit. He noted that he had asked the investment team to research and compare the utility of high yield credit and equity options. Mr. Berg noted that the results of the research were extremely helpful, and indicated that he may come back to the Commission with a recommendation to reduce the amount of credit in the Plan's portfolio and increase the amount of equity options after more work is done in this area. A discussion with the Commissioners ensued relating to equity options and related risk issues.

Mr. Berg then went on to highlight upcoming Challenging Beliefs topics, including portable alpha and the case for investing with smaller and emerging private fund managers (focusing on private equity and private debt), as well as implementation options.

Mr. Berg then made some brief comments on the topic of risk and reporting. Mr. Berg reminded the Commission of their discussion at the April meeting regarding the Plan's evolving liquidity needs, and reiterated that the Plan has a seven to eight-month period of time of substantially elevated liquidity need during the concluding months of the TERI program. He noted that members of the investment team and other members of RSIC staff will be exploring ways to quantify and report on the Plan's liquidity risk.

VIII. EXECUTIVE SESSION

Mr. Gillespie made a motion that the Commission recede into Executive Session to discuss investment matters pursuant to S.C. Code Sections 9-16-80 and 9-16-320 and discuss personnel matters pursuant to S.C. Code Section 30-40-70(a)(1) and to receive advice from legal counsel pursuant to S.C. Code Section 30-4-70(a)(2), Mr. Giobbe seconded the motion, which passed unanimously.

IX. POTENTIAL ACTION RESULTING FROM EXECUTIVE SESSION

Upon a return to open session, Mr. Hitchcock noted that no action was taken by the Commission in Executive Session.

X. ADJOURNMENT

There being no further business, upon a motion made by Mr. Gillespie and seconded by Mr. Williams, the Commission voted unanimously to adjourn. The meeting adjourned at 12:12 p.m.

[Staff Note: In compliance with S.C. Code Ann. Section 30-4-80, public notice of and the agenda for this meeting were delivered to the press and to parties who requested notice and were posted at the entrance, in the lobbies, and near the 15th Floor Presentation Center at 1201 Main Street, Columbia, S.C., at 5:02 p.m. on June 19, 2017.]

To: Commission Members

From: Michael Hitchcock, Chief Executive Officer

Date: September 28, 2017

Re: Meeting Schedule for 2018

2018 Proposed Commission Meeting Schedule

Thursday, February 8, 2018

Thursday, April 12, 2018

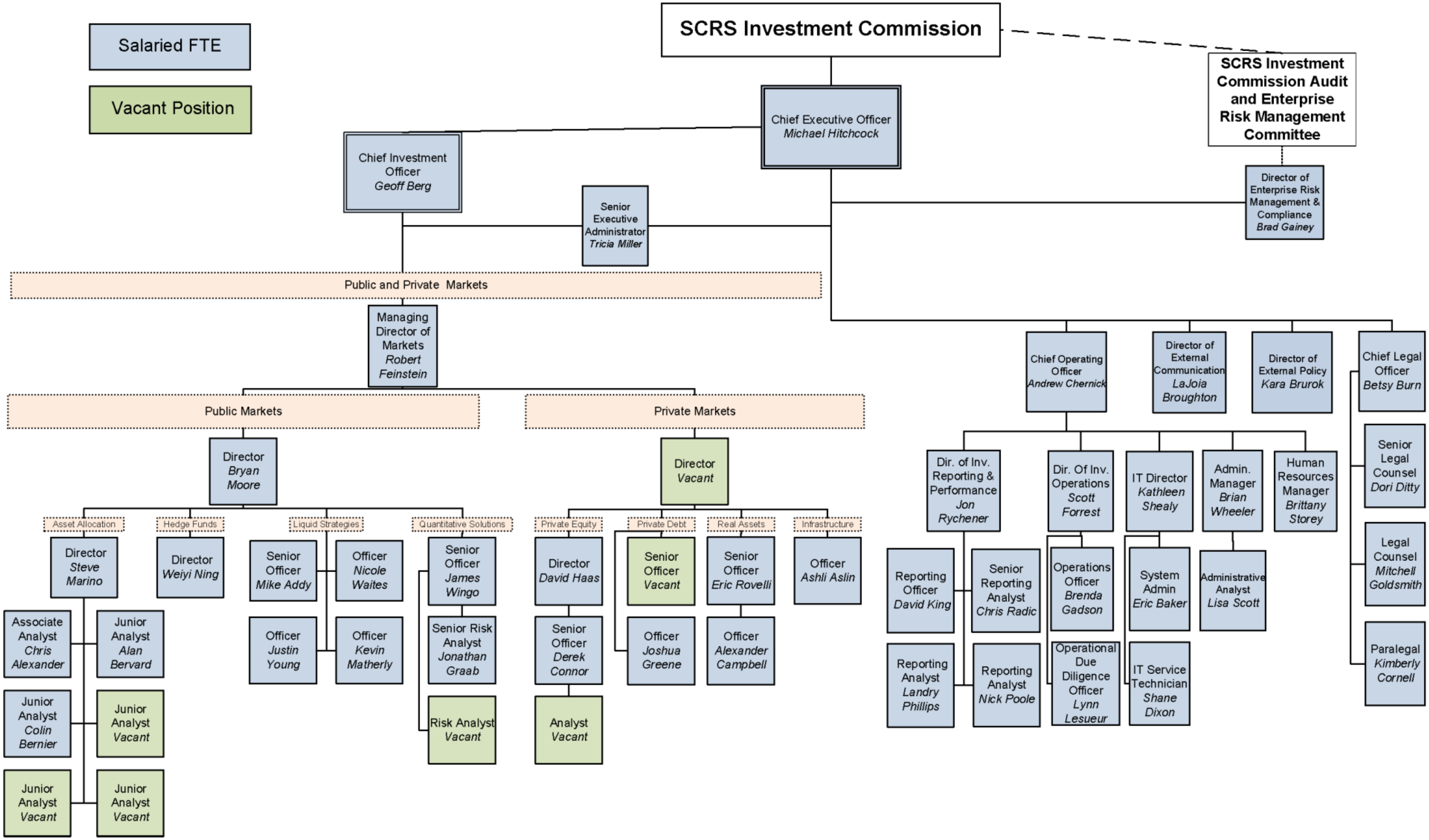
Thursday, June 14, 2018

Thursday, September 13, 2018

Thursday, November 8, 2018

Retirement System Investment Commission

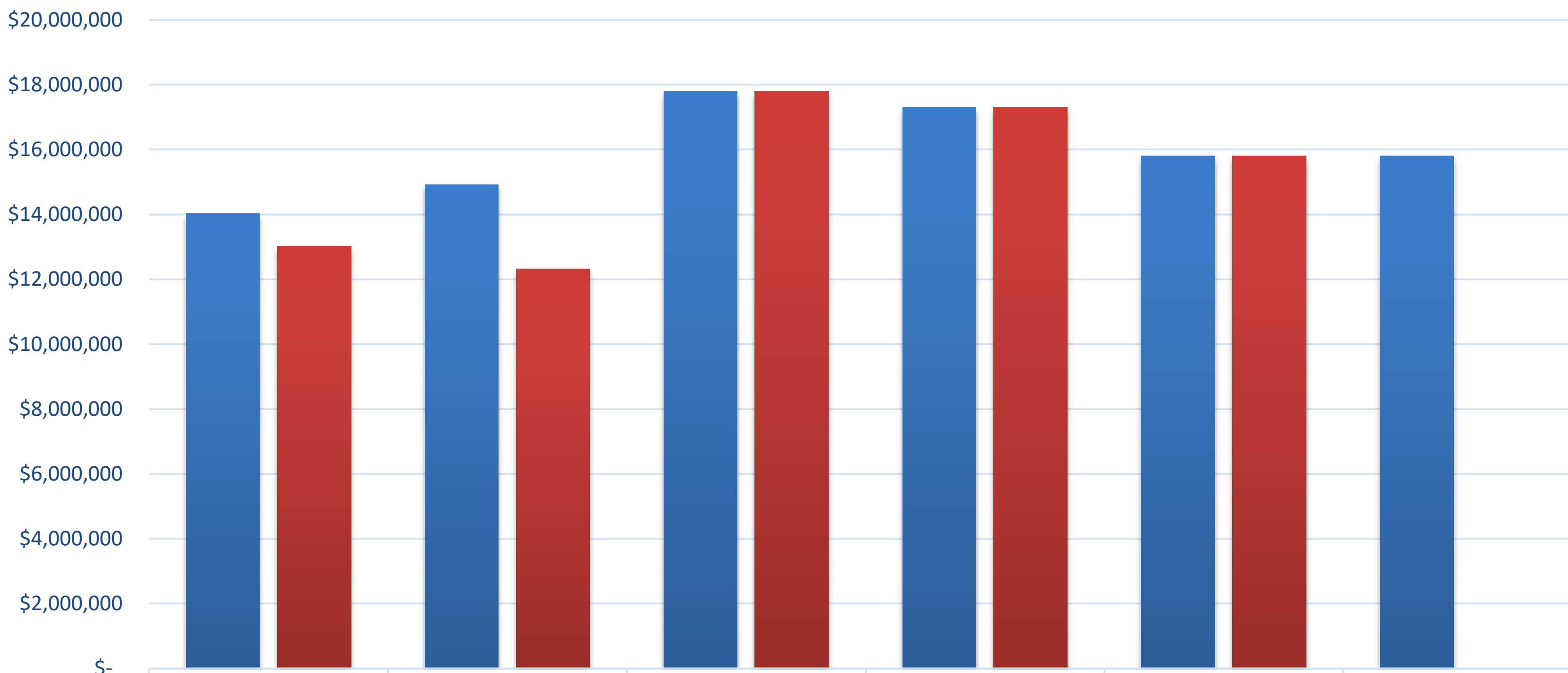
Budget Request 2018-2019



SC Retirement System Investment Commission

Appropriations History (since FY14)

RSIC is solely Other Funds



	FY14	FY15	FY16	FY17	FY18	FY19
Requested	$14,027,847	$14,920,000	$17,809,123	$17,308,138	$15,803,000	$15,803,000
Approved	$13,021,374	$12,321,374	$17,809,132	$17,308,138	$15,803,000	

RSIC
SC Retirement System Investment Commission

RSIC FY 17-18 Current Funding

Total Budget
(Other Funds)
$15,803,000

Personal Services:
$7,200,000

Employer Contributions:
$1,800,000

Other Operating Expenses: $6,803,000

RSIC FY 18-19 Budget Request

Total Budget
(Other Funds)
$15,803,000

Personal Services:
$7,200,000

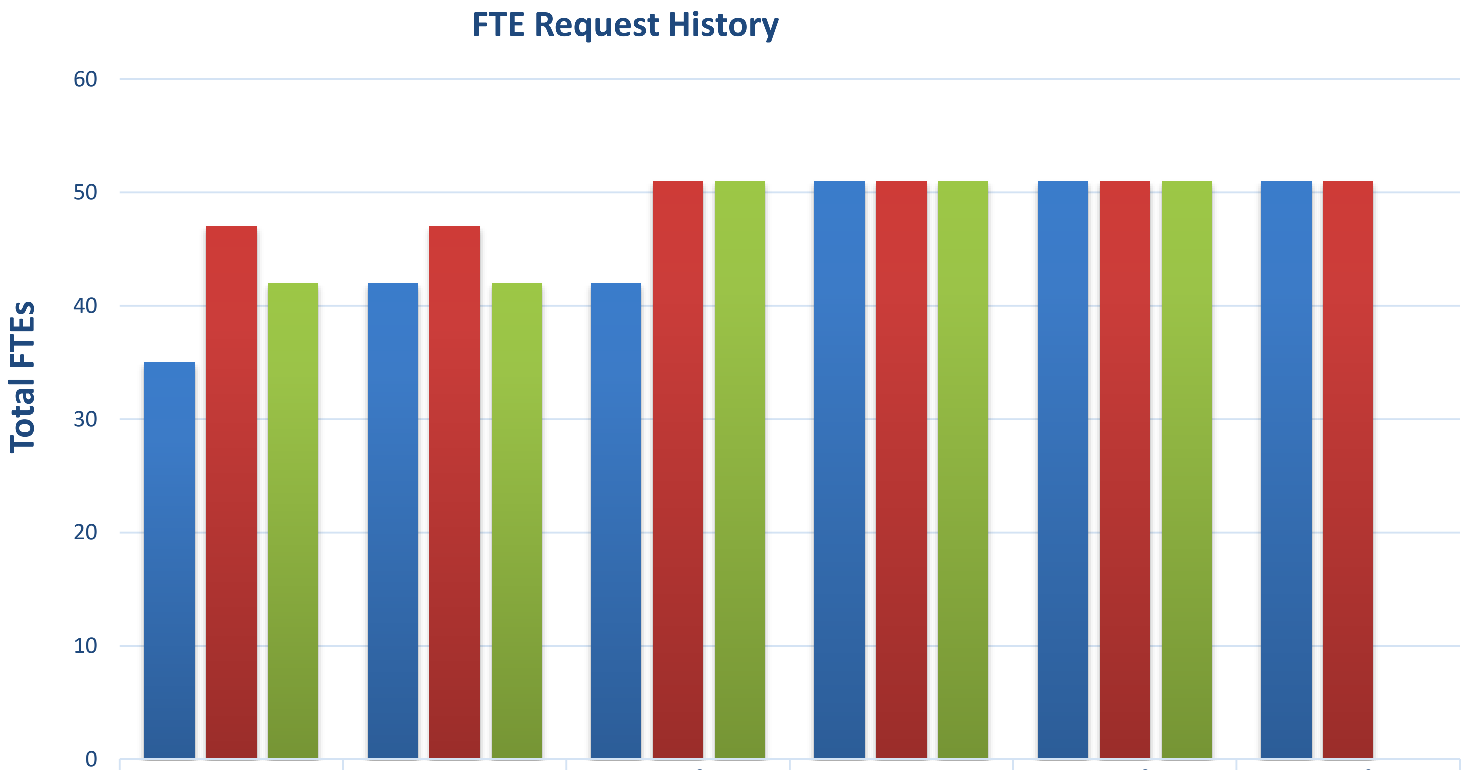
Employer Contributions:
$1,800,000

Other Operating Expenses: $6,803,000

Budget Request Summary for FY 18-19

- The Commission is not requesting any additional authorization.
- The Commission is not requesting any additional FTEs for FY19 and has plans in place to continue to fill open FTEs to best meet the needs of the agency.

5 Year FTE Request vs. Approved



	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Approved FTEs Prior Year	35	42	42	51	51	51
Prior FY Approved + Request	47	47	51	51	51	51
FY Approved FTEs	42	42	51	51	51	

SC Retirement System Investment Commission

Full Time Employee (FTE) Status Update – *currently 7 vacancies - FTEs*

- 7 Open FTEs Currently
  - 1 FTE will be utilized by hiring a Director, Private Markets
  - 1 FTE will be utilized by hiring a Senior Officer, Private Debt
  - 1 FTE will be utilized by hiring an Analyst, Private Equity
  - 1 FTE will be utilized by hiring a Risk Analyst
  - 3 FTEs will be utilized by hiring Junior Analysts

SC Retirement System Investment Commission
1201 Main Street, Suite 1510
Columbia, SC 29201-3261

Attn: Chief Operating Officer

RE: Statement of Material Interest Certification – Fiscal Year 2016-17

I write this letter for compliance with S.C. Code Ann. §9-16-90(B)(1), which states that the Commission shall provide an annual report which must contain:

> "… a description of a material interest held by a trustee, fiduciary, or an employee who is a fiduciary with respect to the investment and management of assets of the system, or by a related person, in a material transaction with the system within the last three years or proposed to be effected".

Please be advised that I hold no material interest in a material transaction with the South Carolina Retirement System, nor have I within the last three years. There is no such material interest proposed to be effected by the System, and to the best of my knowledge and belief, I am related to no person who holds such an interest in any such transaction.

Sincerely,

____

Signature

____

Date

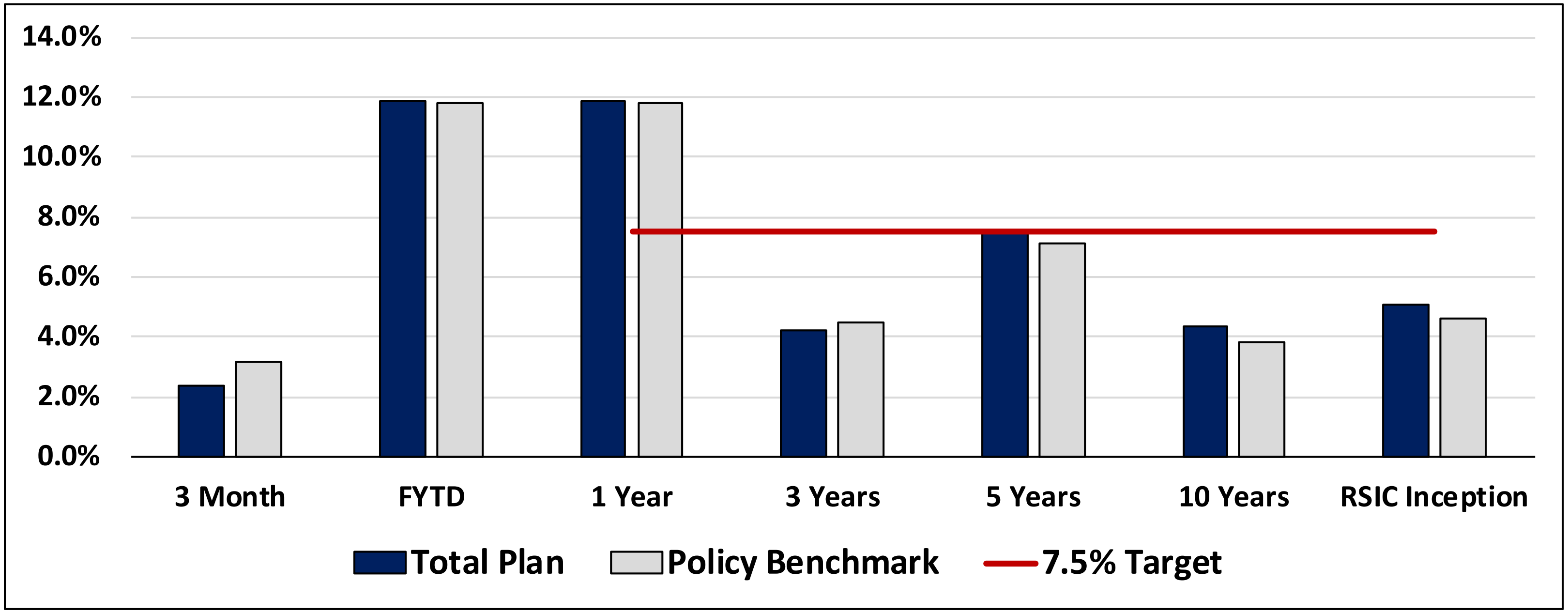
____

Commissioner Name

SC Retirement System Investment Commission

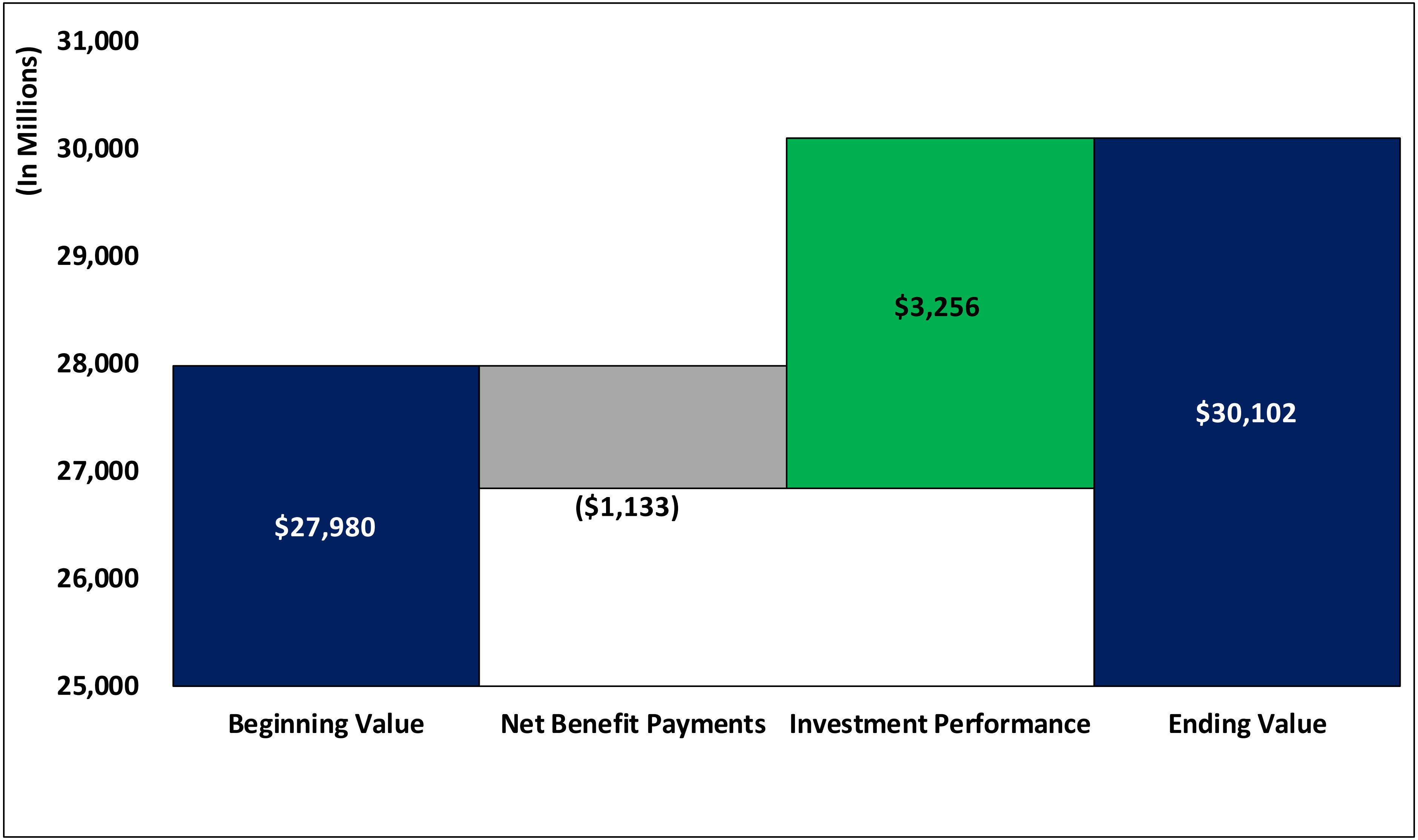
Performance Update

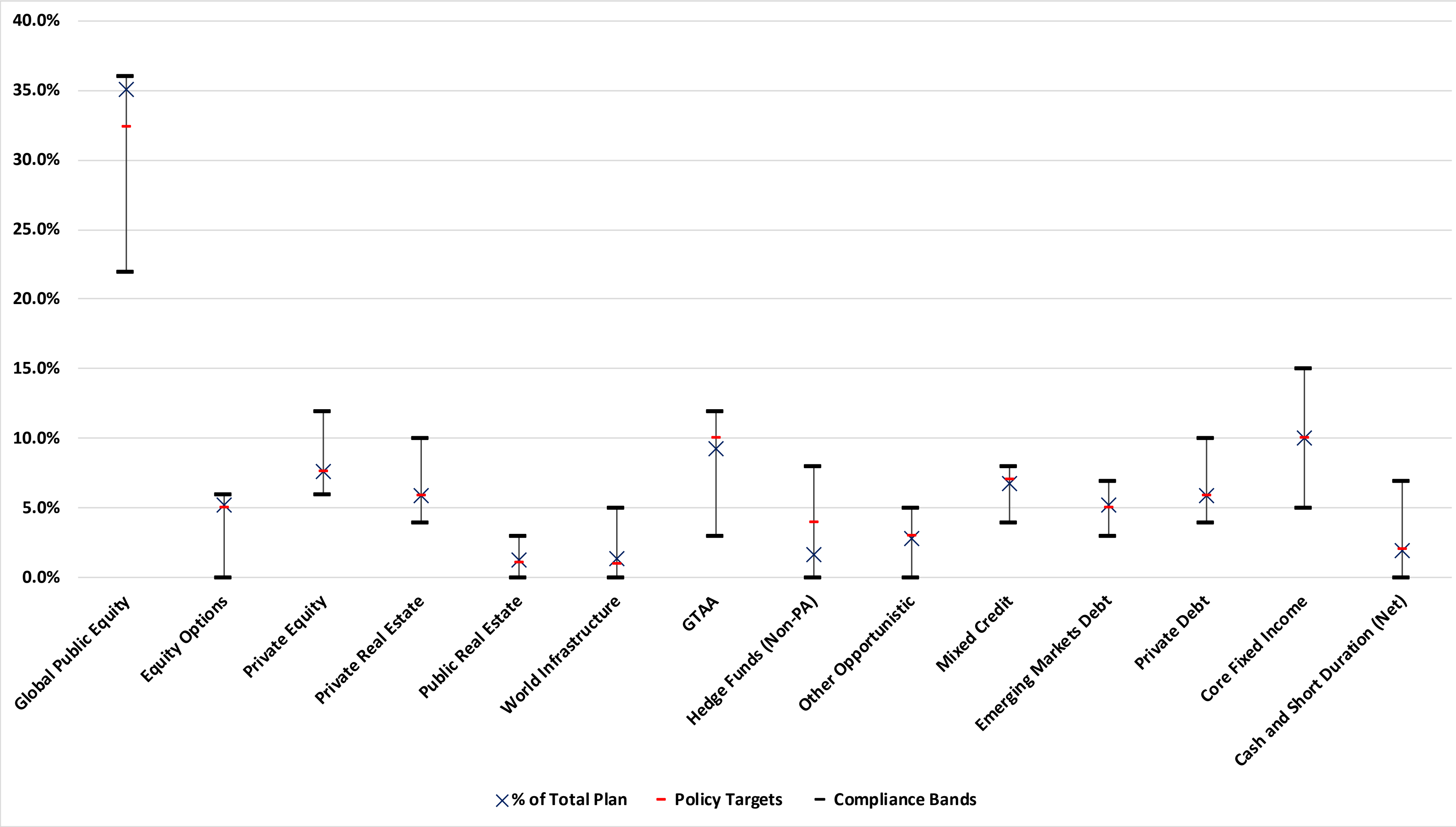
RSIC Commission Meeting
September 28, 2017
Data as of June 30, 2017

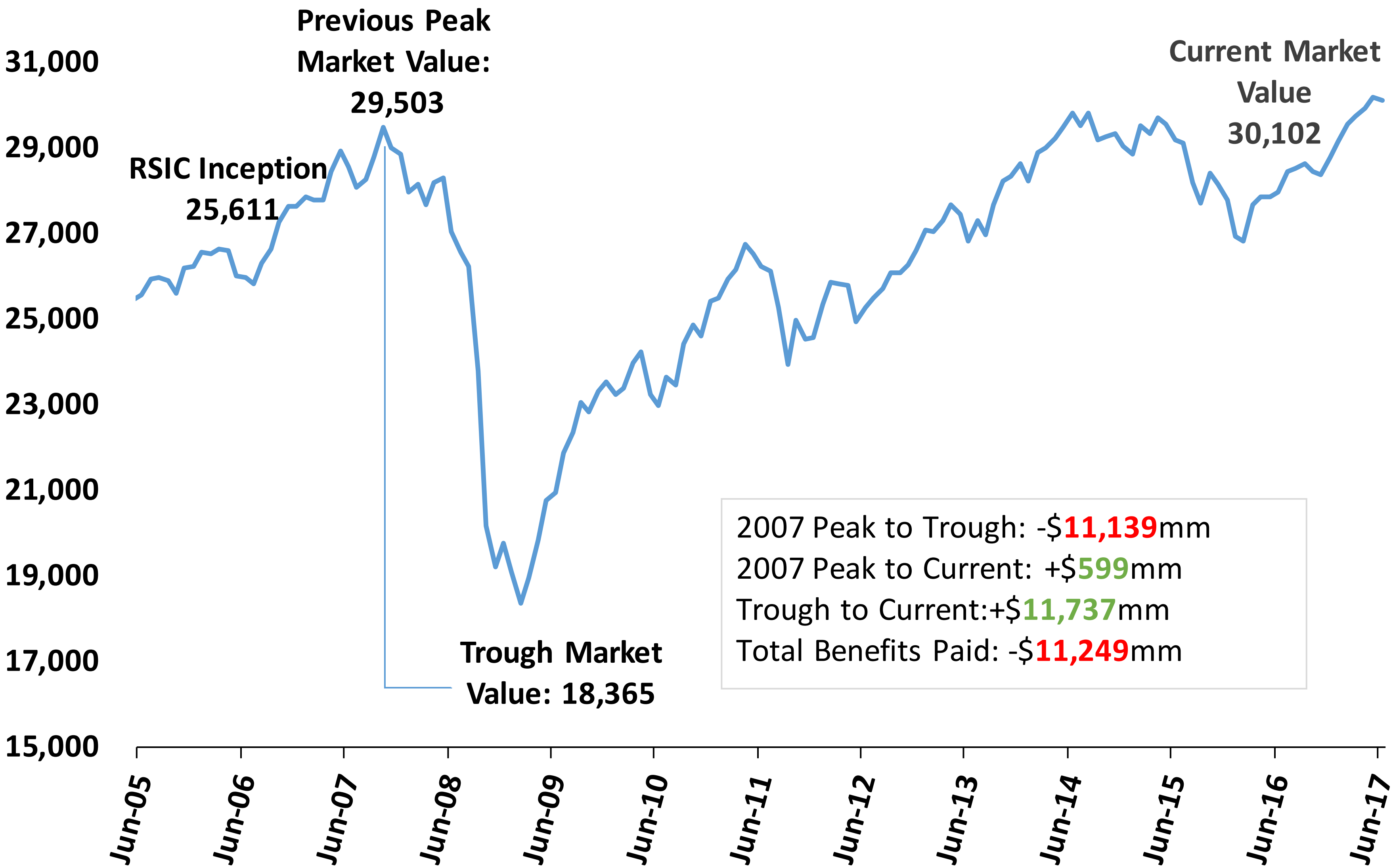


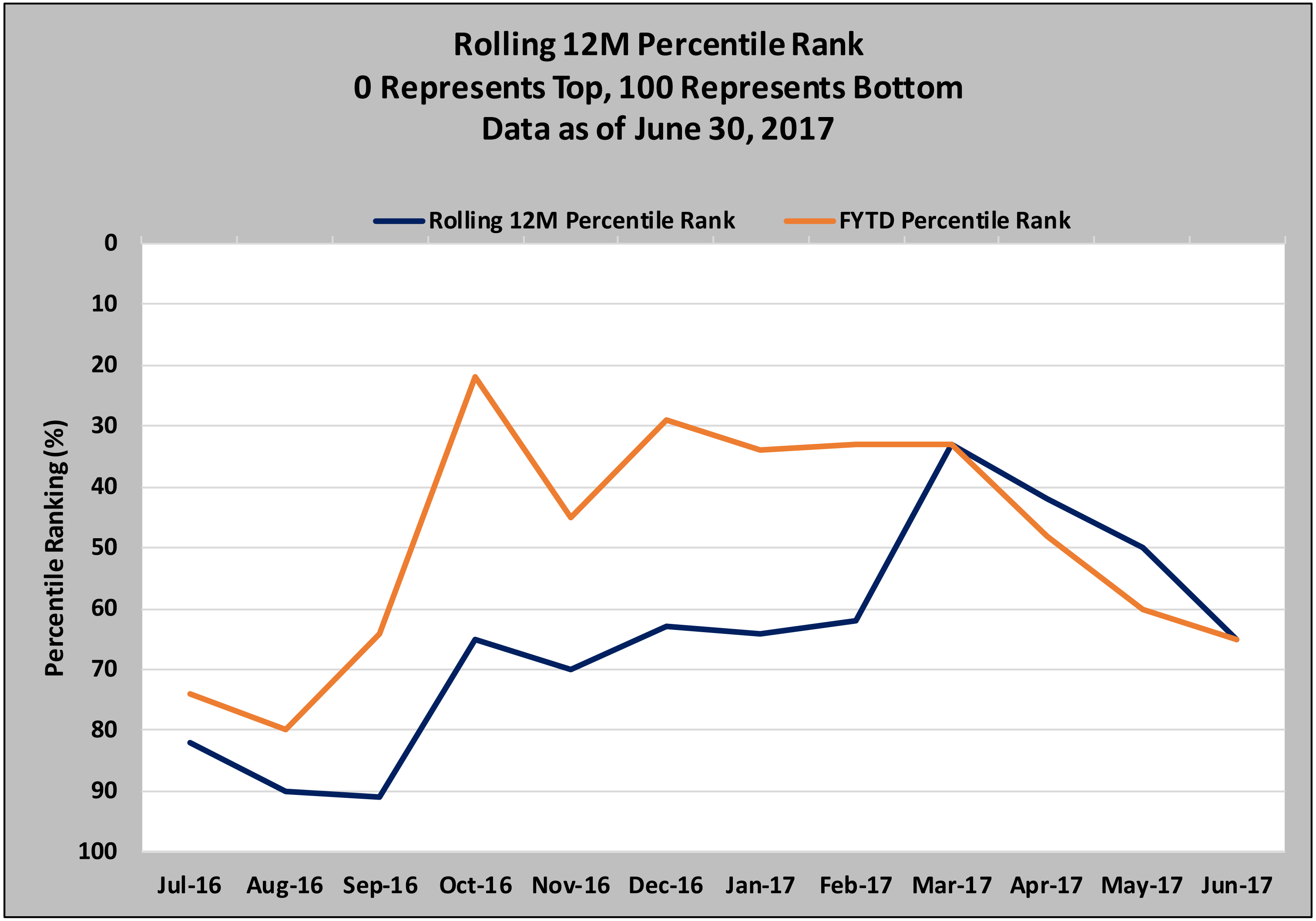
Historic Plan Performance As of 06/30/17	Market Value (In Millions)	3 Month	FYTD	1 Year	Annualized 3 Years	5 Years	10 Years	RSIC Inception
Total Plan	**$30,102**	**2.34%**	**11.88%**	**11.88%**	**4.23%**	**7.50%**	**4.34%**	**5.09%**
Policy Benchmark		3.19%	11.82%	11.82%	4.49%	7.11%	3.83%	4.59%
Excess Return		-0.85%	0.06%	0.06%	-0.26%	0.39%	0.50%	0.49%
Net Benefit Payments (In Millions)		($337)	($1,133)	($1,133)	($3,258)	($5,269)	($9,723)	($11,249)

The Footnotes and Disclosures page is an integral part of this report.

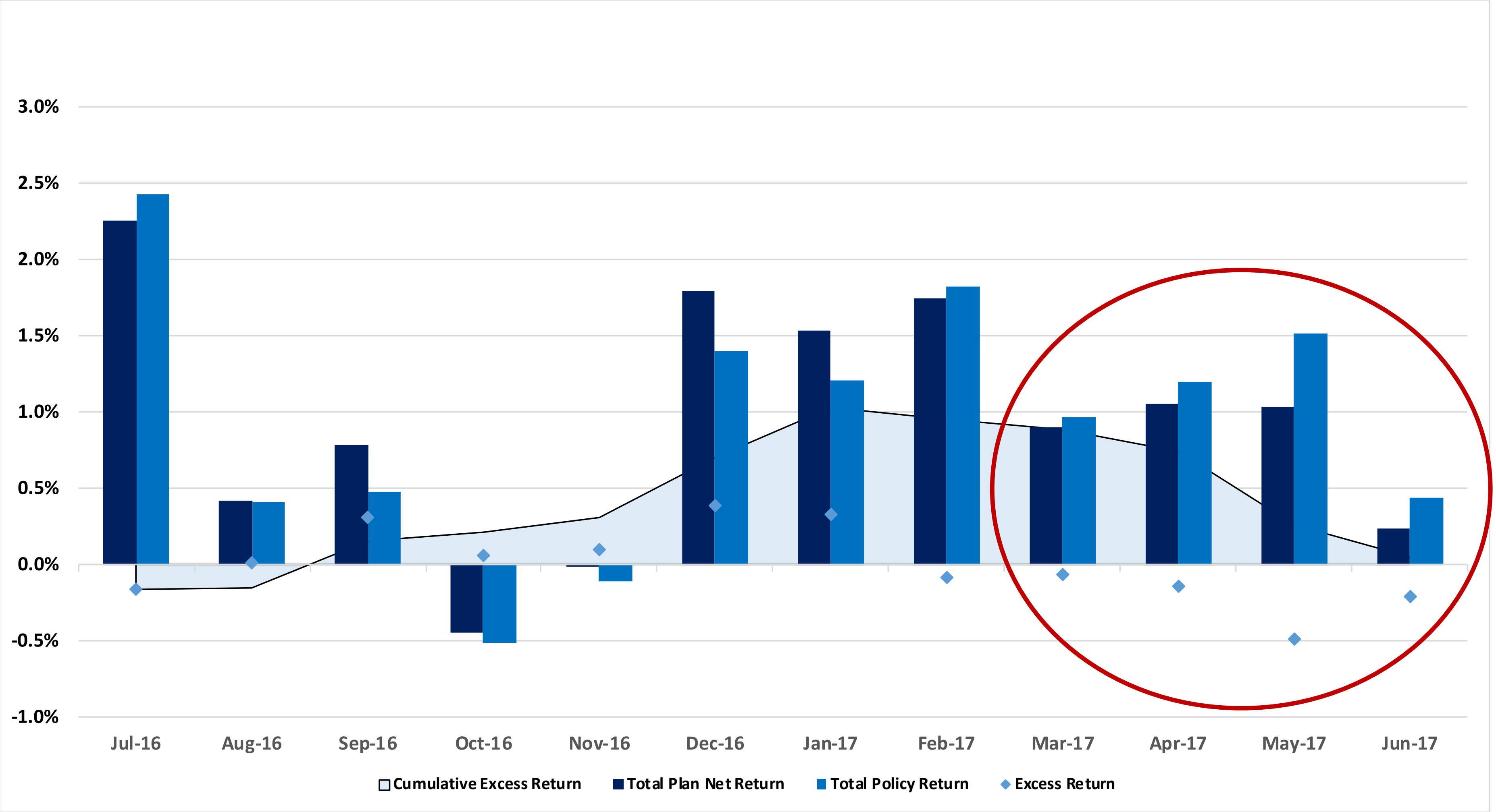

(In Millions)
31,000
30,000
29,000
28,000
27,000
26,000
25,000
$27,980
($1,133)
$3,256
$30,102
Beginning Value
Net Benefit Payments
Investment Performance
Ending Value


40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Global Public Equity
Equity Options
Private Equity
Private Real Estate
Public Real Estate
World Infrastructure
GTAA
Hedge Funds (Non-PA)
Other Opportunistic
Mixed Credit
Emerging Markets Debt
Private Debt
Core Fixed Income
Cash and Short Duration (Net)
% of Total Plan
Policy Targets
Compliance Bands


Previous Peak
Market Value:
29,503
Current Market
Value
30,102
RSIC Inception
25,611
Trough Market
Value: 18,365
31,000
29,000
27,000
25,000
23,000
21,000
19,000
17,000
15,000
Jun-05
Jun-06
Jun-07
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
Jun-15
Jun-16
Jun-17
2007 Peak to Trough: -$11,139mm
2007 Peak to Current: +$599mm
Trough to Current:+$11,737mm
Total Benefits Paid: -$11,249mm



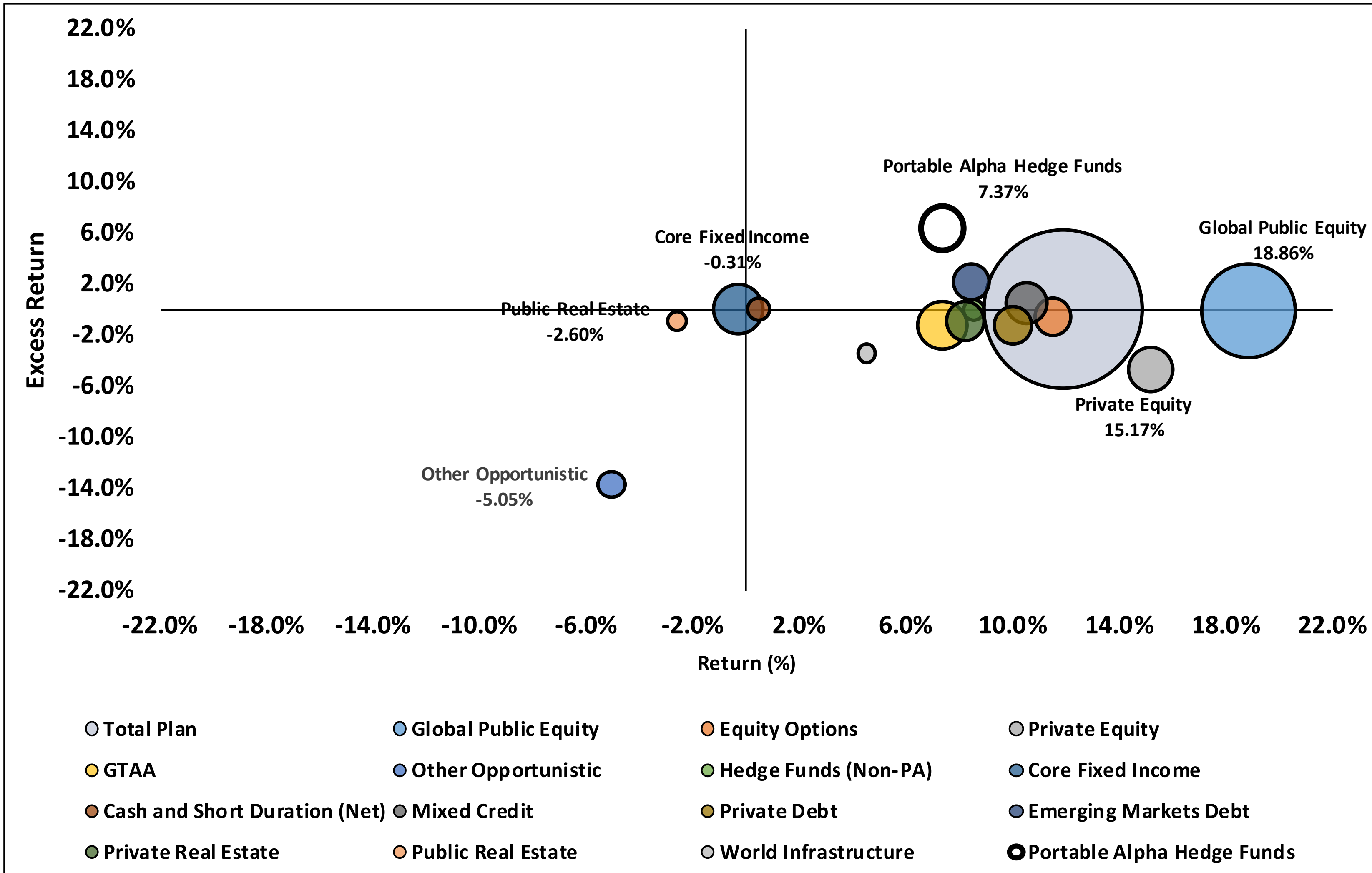
Universe: BNYM Public Funds >$5 Billion



The Footnotes and Disclosures page is an integral part of this report.

Asset Class / Benchmark returns as of June 30,2017	Plan Weight	3 Month	YTD	FYTD	1 Year	Annualized 3 Years	Annualized 5 Years
Total Plan	100.0%	2.34%	6.69%	11.88%	11.88%	4.23%	7.50%
Policy Benchmark		3.19%	7.38%	11.82%	11.82%	4.49%	7.11%
Global Public Equity	35.1%	4.15%	11.16%	18.86%	18.86%	4.79%	10.76%
Global Public Equity Blend		4.25%	11.32%	19.01%	19.01%	4.89%	10.58%
Equity Options	5.2%	2.60%	6.69%	11.49%	11.49%	n/a	n/a
CBOE S&P 500 BuyWrite Index (BXM)		3.07%	7.21%	12.06%	12.06%	n/a	n/a
Private Equity	7.6%	1.94%	7.22%	15.17%	15.17%	9.41%	13.15%
Private Equity Blend		6.88%	10.56%	19.84%	19.84%	10.90%	14.74%
GTAA	9.3%	1.94%	5.29%	7.36%	7.36%	1.78%	4.92%
GTAA Blend		2.73%	6.40%	8.61%	8.61%	2.90%	5.99%
Other Opportunistic	2.8%	-2.15%	-3.20%	-5.05%	-5.05%	n/a	n/a
50% MSCI World / 50% Barclays Aggregate		2.73%	6.40%	8.61%	8.61%	n/a	n/a
Hedge Funds (Non-PA)	1.6%	-0.06%	2.11%	8.54%	8.54%	n/a	n/a
50% MSCI World / 50% Barclays Aggregate		2.73%	6.40%	8.61%	8.61%	n/a	n/a
Core Fixed Income	10.0%	1.31%	2.31%	-0.31%	-0.31%	2.23%	2.25%
Barclays US Aggregate Bond Index		1.45%	2.27%	-0.31%	-0.31%	2.48%	2.21%
Cash and Short Duration (Net)	2.0%	0.20%	0.31%	0.49%	0.49%	0.23%	0.17%
Merrill Lynch 3-Month T-Bill		0.20%	0.31%	0.49%	0.49%	0.23%	0.17%
Mixed Credit	6.7%	0.84%	3.54%	10.50%	10.50%	1.81%	4.87%
Mixed Credit Blend		1.46%	3.41%	10.04%	10.04%	4.48%	5.17%
Private Debt	5.9%	-0.21%	0.87%	10.01%	10.01%	4.45%	8.74%
S&P/LSTA Leveraged Loan + 150 Bps on a 3-month lag		1.64%	4.11%	11.22%	11.22%	5.07%	6.08%
Emerging Markets Debt	5.2%	3.22%	9.26%	8.45%	8.45%	2.48%	3.14%
Emerging Markets Debt Blend		2.93%	8.26%	6.26%	6.26%	1.28%	2.54%
Private Real Estate	5.9%	2.48%	4.07%	8.22%	8.22%	13.48%	15.57%
NCREIF ODCE + 75 Bps		1.89%	4.14%	9.09%	9.09%	12.54%	12.73%
Public Real Estate	1.3%	1.16%	2.11%	-2.60%	-2.60%	n/a	n/a
FTSE NAREIT Equity REITs Index		1.52%	2.70%	-1.70%	-1.70%	n/a	n/a
World Infrastructure	1.4%	3.28%	10.30%	4.52%	4.52%	n/a	n/a
Dow Jones Brookfield Global Infrastructure Net Index		3.72%	11.53%	8.00%	8.00%	n/a	n/a
Ported Cash	5.3%	0.20%	0.31%	0.49%	0.49%	n/a	n/a
3 Month LIBOR		0.29%	0.55%	0.97%	0.97%	n/a	n/a
Ported Short Duration	4.3%	0.65%	1.06%	1.59%	1.59%	n/a	n/a
3 Month LIBOR		0.29%	0.55%	0.97%	0.97%	n/a	n/a
Portable Alpha Hedge Funds	7.7%	-1.34%	0.45%	7.37%	7.37%	n/a	n/a
3 Month LIBOR		0.29%	0.55%	0.97%	0.97%	n/a	n/a

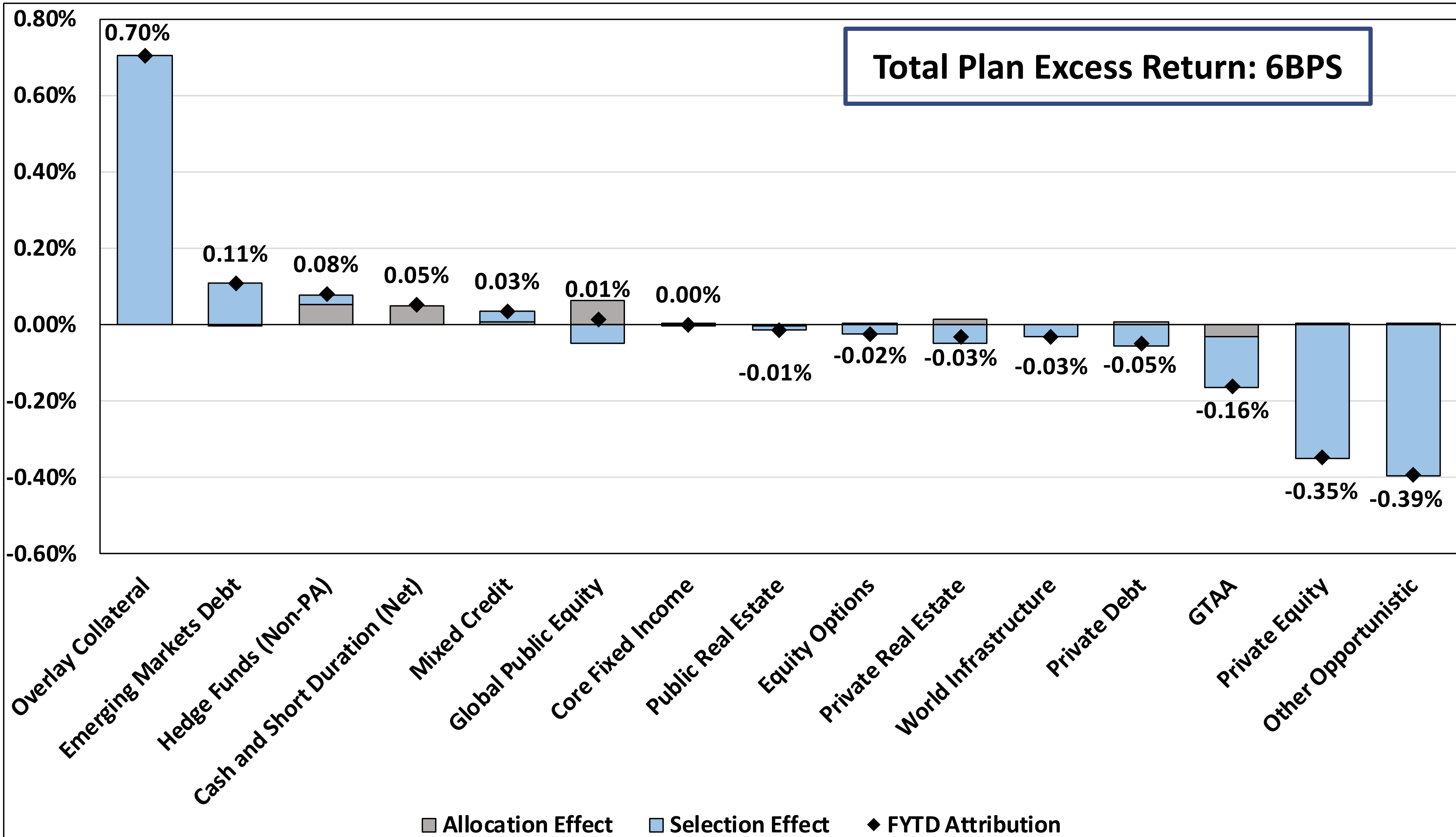

Excess Return
10.0%
5.0%
0.0%
-5.0%
-10.0%
-15.0%
6.40%
2.19%
0.06%
0.46%
0.00%
0.00%
-0.07%
-0.15%
-0.57%
-0.87%
-0.90%
-1.21%
-1.25%
-3.48%
-4.67%
-13.66%
Total Plan
Portable Alpha Hedge Funds
Emerging Markets Debt
Mixed Credit
Core Fixed Income
Cash and Short Duration (Net)
Hedge Funds (Non-PA)
Global Public Equity
Equity Options
Private Real Estate
Public Real Estate
Private Debt
GTAA
World Infrastructure
Private Equity
Other Opportunistic


Excess Return
22.0%
18.0%
14.0%
10.0%
6.0%
2.0%
-2.0%
-6.0%
-10.0%
-14.0%
-18.0%
-22.0%
-22.0%
-18.0%
-14.0%
-10.0%
-6.0%
-2.0%
2.0%
6.0%
10.0%
14.0%
18.0%
22.0%
Return (%)
Portable Alpha Hedge Funds
7.37%
Core Fixed Income
-0.31%
Global Public Equity
18.86%
Public Real Estate
-2.60%
Private Equity
15.17%
Other Opportunistic
-5.05%
Total Plan
Global Public Equity
Equity Options
Private Equity
GTAA
Other Opportunistic
Hedge Funds (Non-PA)
Core Fixed Income
Cash and Short Duration (Net)
Mixed Credit
Private Debt
Emerging Markets Debt
Private Real Estate
Public Real Estate
World Infrastructure
Portable Alpha Hedge Funds

Fiscal Year Attribution	Total Attribution	Allocation Effect	Selection Effect	Average O/U Weight	Asset Class FY Return	Asset Class BM Return
Emerging Markets Debt	0.11%	0.00%	0.11%	0.34%	8.45%	6.26%
Hedge Funds (Non-PA)	0.08%	0.05%	0.03%	-1.86%	8.54%	8.61%
Cash and Short Duration (Net)	0.05%	0.05%	0.00%	-0.29%	0.49%	0.49%
Mixed Credit	0.03%	0.01%	0.03%	-0.31%	10.50%	10.04%
Global Public Equity	0.01%	0.06%	-0.05%	0.61%	18.86%	19.01%
Core Fixed Income	0.00%	0.00%	0.00%	0.05%	-0.31%	-0.31%
Public Real Estate	-0.01%	0.00%	-0.01%	0.21%	-2.60%	-1.70%
Equity Options	-0.02%	0.00%	-0.03%	0.13%	11.49%	12.06%
Private Real Estate	-0.03%	0.02%	-0.05%	0.04%	8.22%	9.09%
World Infrastructure	-0.03%	0.00%	-0.03%	0.00%	4.52%	8.00%
Private Debt	-0.05%	0.01%	-0.06%	0.02%	10.00%	11.22%
GTAA	-0.16%	-0.03%	-0.13%	1.12%	7.36%	8.61%
Private Equity	-0.35%	0.00%	-0.35%	0.00%	15.17%	19.84%
Other Opportunistic	-0.39%	0.00%	-0.39%	-0.05%	-5.05%	8.61%
Overlay Collateral	0.70%	0.00%	0.70%	n/a	3.59%	0.97%
Portable Alpha Hedge Funds	0.56%	0.00%	0.56%	n/a	7.37%	0.97%
Ported Short Duration	0.09%	0.00%	0.09%	n/a	1.59%	0.97%
Ported Cash	0.05%	0.00%	0.05%	n/a	0.49%	0.97%

	Total Plan Excess Return	Allocation Effect	Selection Effect	Interaction / Other	RSIC Return	RSIC Policy Benchmark Return
FYTD Total	0.06%	0.16%	-0.23%	0.13%	11.88%	11.82%

The Footnotes and Disclosures page is an integral part of this report.

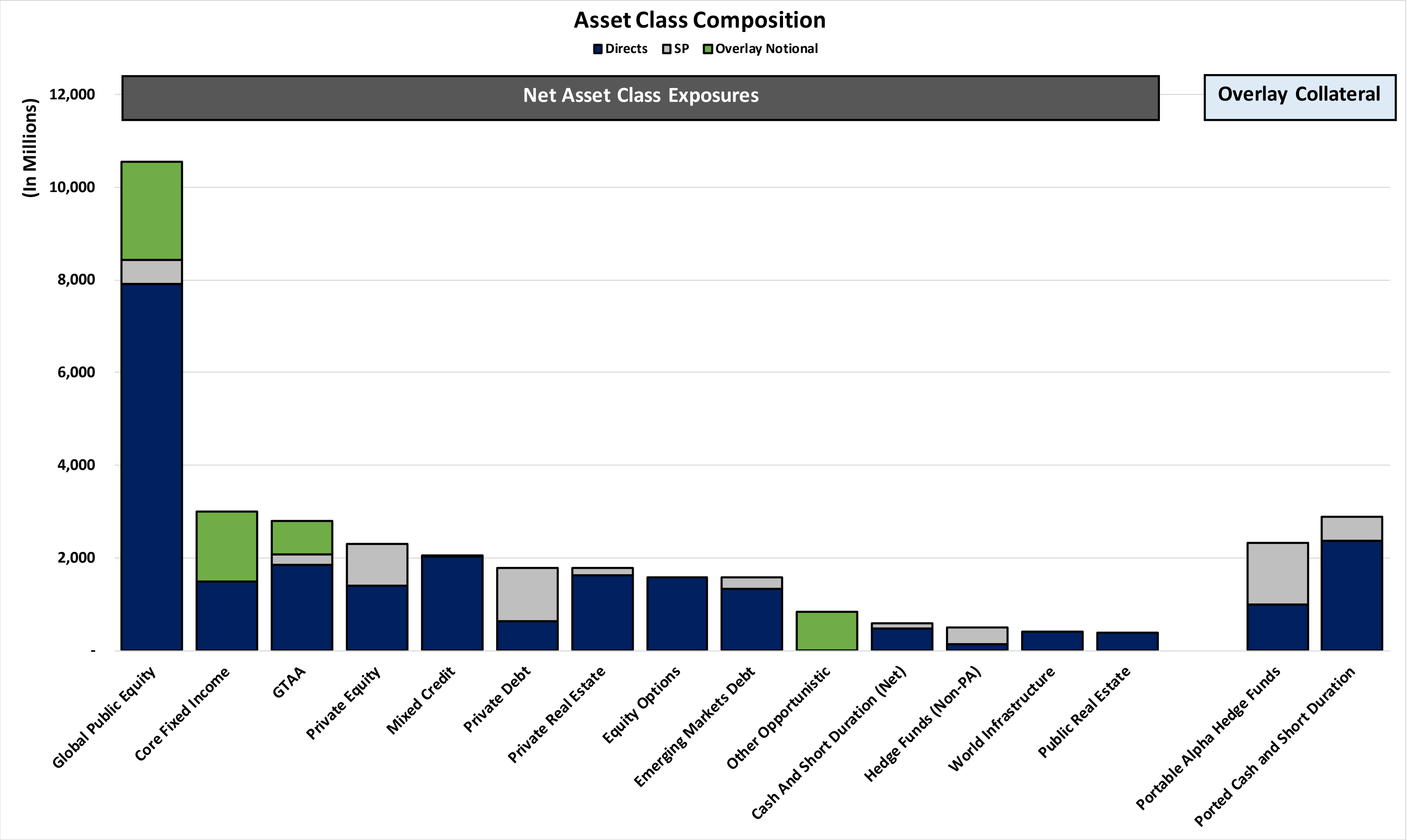

Total Plan Excess Return: 6BPS
0.80%
0.60%
0.40%
0.20%
0.00%
-0.20%
-0.40%
-0.60%
0.70%
0.11%
0.08%
0.05%
0.03%
0.01%
0.00%
-0.01%
-0.02%
-0.03%
-0.03%
-0.05%
-0.16%
-0.35%
-0.39%
Overlay Collateral
Emerging Markets Debt
Hedge Funds (Non-PA)
Cash and Short Duration (Net)
Mixed Credit
Global Public Equity
Core Fixed Income
Public Real Estate
Equity Options
Private Real Estate
World Infrastructure
Private Debt
GTAA
Private Equity
Other Opportunistic
Allocation Effect
Selection Effect
FYTD Attribution

APPENDIX

Asset Class Composition by Implementation[4]

SC Retirement System Investment Commission

As of June 30, 2017



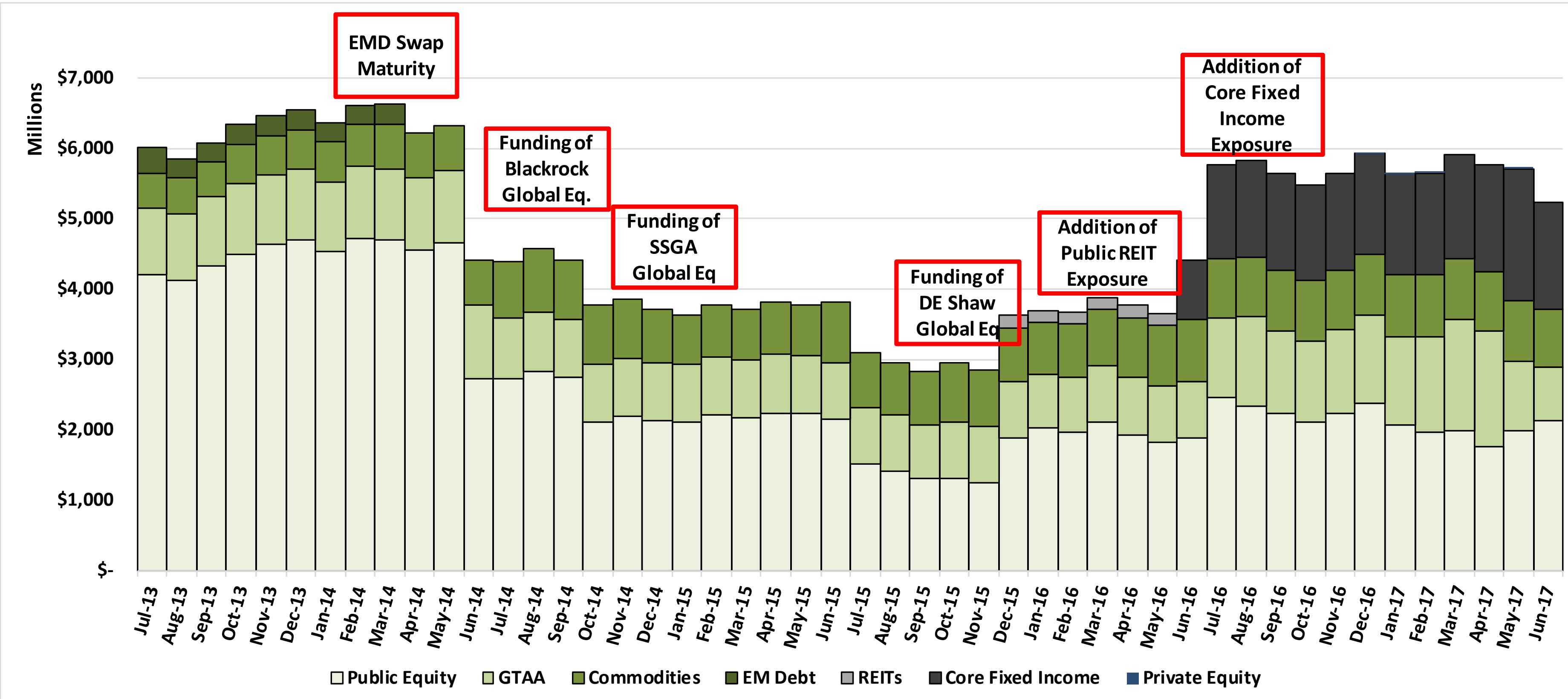
Asset Allocation	Market Value as of 06/30/17	Overlay Exposures	Net Position	% of Total Plan	Policy Targets	Difference	Allowable Ranges	SIOP Compliance
Global Equity	**12,312**		**14,429**	**47.9%**	**45.0%**	**2.9%**	**42% - 52%**	YES
Global Public Equity	8,442	2,118	10,559	35.1%	32.4%	2.7%	22% - 36%	YES
Equity Options	1,576		1,576	5.2%	5.0%	0.2%	0% - 6%	YES
Private Equity	2,294	0	2,294	7.6%	7.6%	0.0%	6% - 12%	YES
Real Assets	**2,576**		**2,576**	**8.6%**	**8.0%**	**0.6%**	**8% - 14%**	YES
Private Real Estate	1,778		1,778	5.9%	5.9%	0.0%	4% - 10%	YES
Public Real Estate	380		380	1.3%	1.1%	0.2%	0% - 3%	YES
World Infrastructure	418		418	1.4%	1.0%	0.4%	0% - 5%	YES
Opportunistic	**2,553**		**4,126**	**13.7%**	**17.0%**	**-3.3%**	**9% - 19%**	YES
GTAA	2,066	731	2,797	9.3%	10.0%	-0.7%	3% - 12%	YES
Hedge Funds (Non-PA)	487		487	1.6%	4.0%	-2.4%	0% - 8%	YES
Other Opportunistic		842	842	2.8%	3.0%	-0.2%	0% - 5%	YES
Diversified Credit	**5,376**		**5,376**	**17.9%**	**18.0%**	**-0.1%**	**15% - 21%**	YES
Mixed Credit	2,028		2,028	6.7%	7.1%	-0.4%	4% - 8%	YES
Emerging Markets Debt	1,570		1,570	5.2%	5.0%	0.2%	3% - 7%	YES
Private Debt	1,778		1,778	5.9%	5.9%	0.0%	4% - 10%	YES
Conservative Fixed Income	**4,963**		**3,594**	**11.9%**	**12.0%**	**-0.1%**	**10% - 16%**	YES
Core Fixed Income	1,485	1,522	3,007	10.0%	10.0%	0.0%	5% - 15%	YES
Cash and Short Duration (Net)	3,477	-2,890	587	2.0%	2.0%	0.0%	0% - 7%	YES
Portable Alpha Hedge Funds	2,323	-2,323	0	7.7%*	n/a	n/a	0% - 12%	YES
Total Plan	**$30,102**	-	**$30,102**	**100.0%**				
Total Hedge Funds	3,046		**$3,046**	**10.1%**	n/a	n/a	0% - 20%	YES
Total Private Markets	5,850	-	**$5,850**	**19.4%**	n/a	n/a	14% - 25%	YES

Total Hedge Fund exposure: 10.1% and consisted of: 7.7% Portable Alpha Hedge Funds, 0.8% to a hedge fund in Mixed Credit, and 1.6% Hedge Funds (Non-PA). *Portable Alpha Hedge Funds are expressed as gross exposure but employed in conjunction with the Overlay Program and are offset when looking at total plan market value.

RSIC
SC Retirement System Investment Commission

Monthly Change in Overlay Exposure[4]

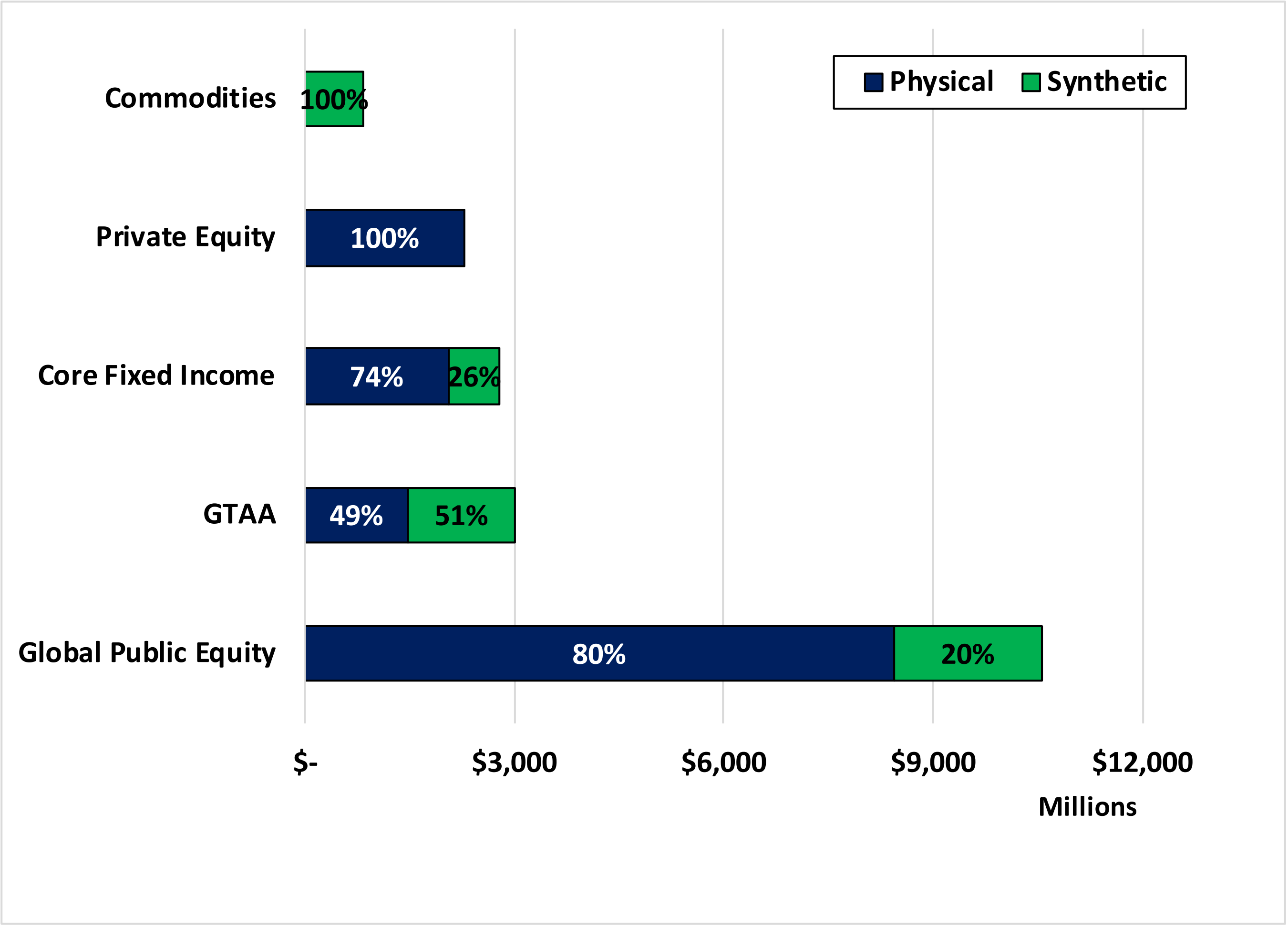
As of June 30, 2017

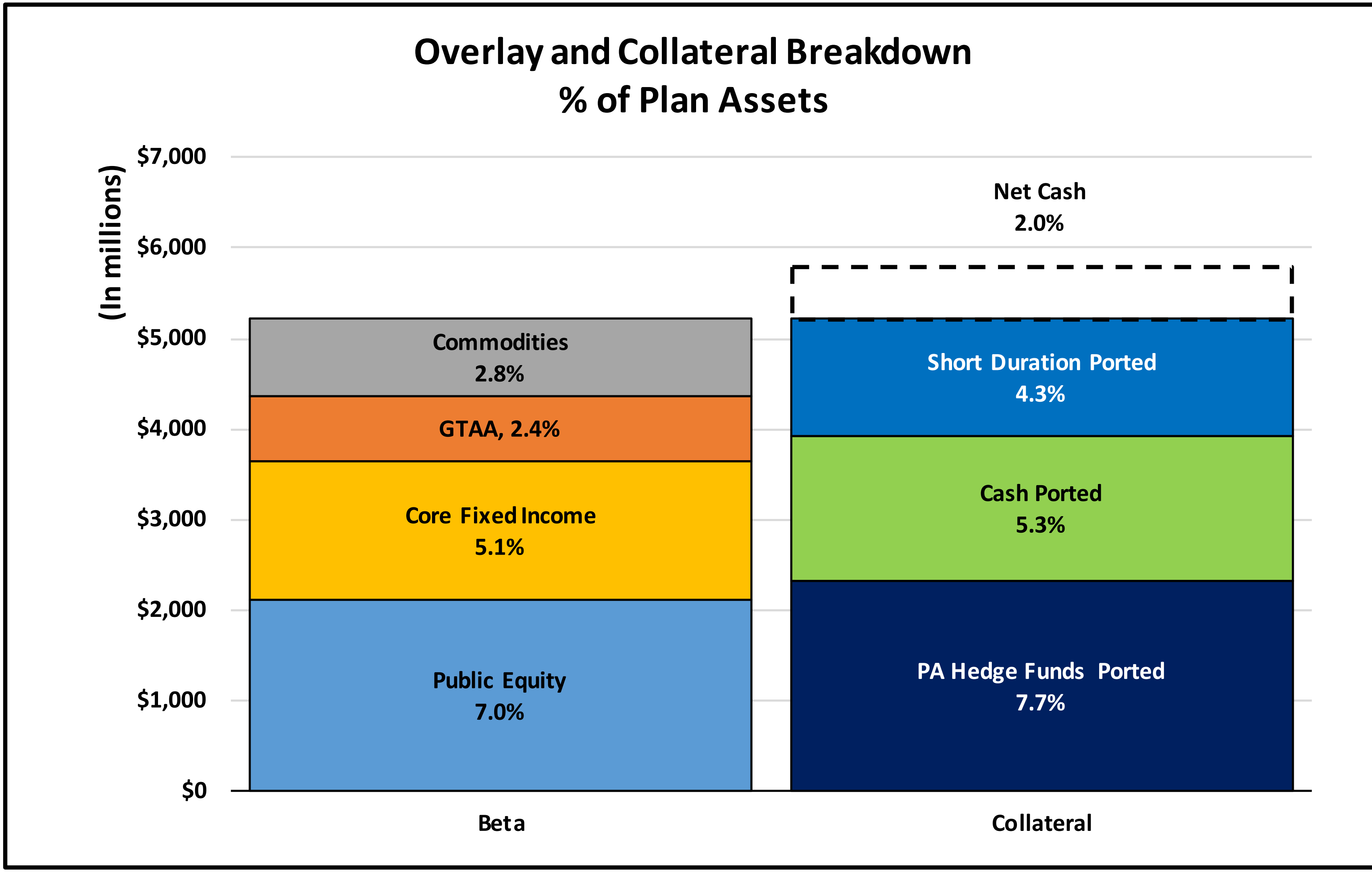


Overlay Percentage by Asset Class[4]

SC Retirement System Investment Commission

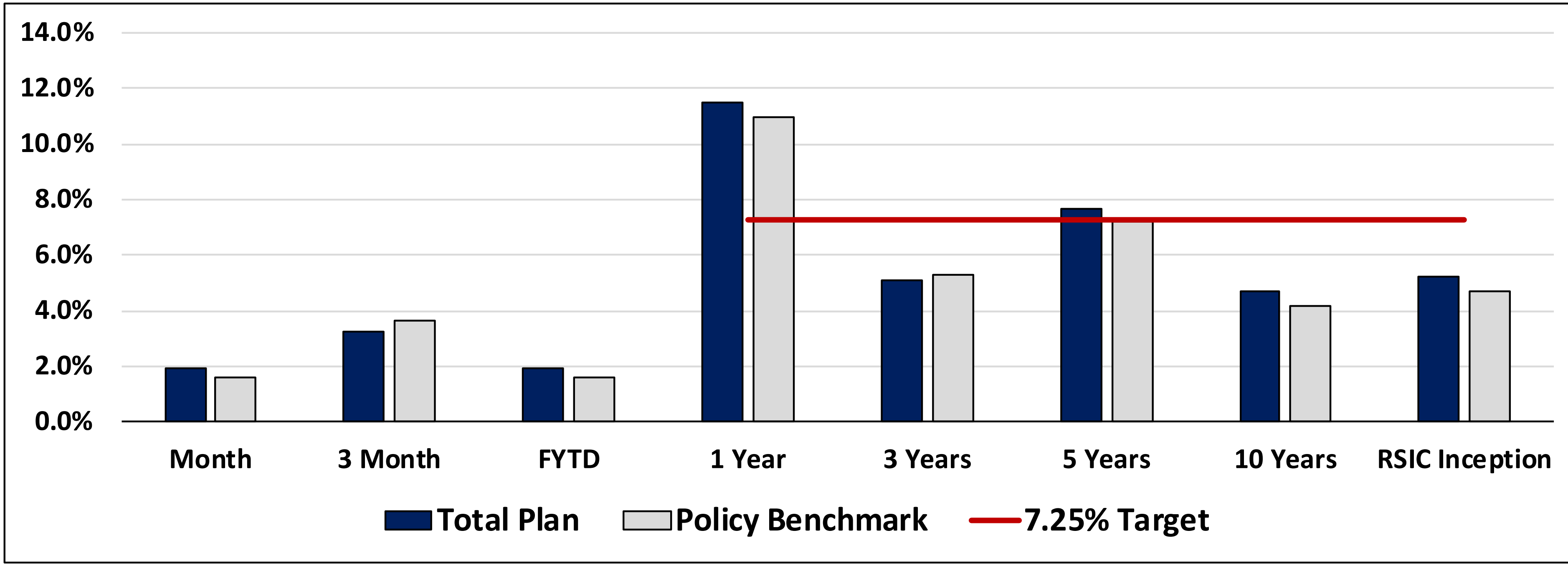
FYTD as of June 30, 2017




Overlay and Collateral Breakdown
% of Plan Assets
(In millions)
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
Commodities
2.8%
GTAA, 2.4%
Core Fixed Income
5.1%
Public Equity
7.0%
Net Cash
2.0%
Short Duration Ported
4.3%
Cash Ported
5.3%
PA Hedge Funds Ported
7.7%
Beta
Collateral

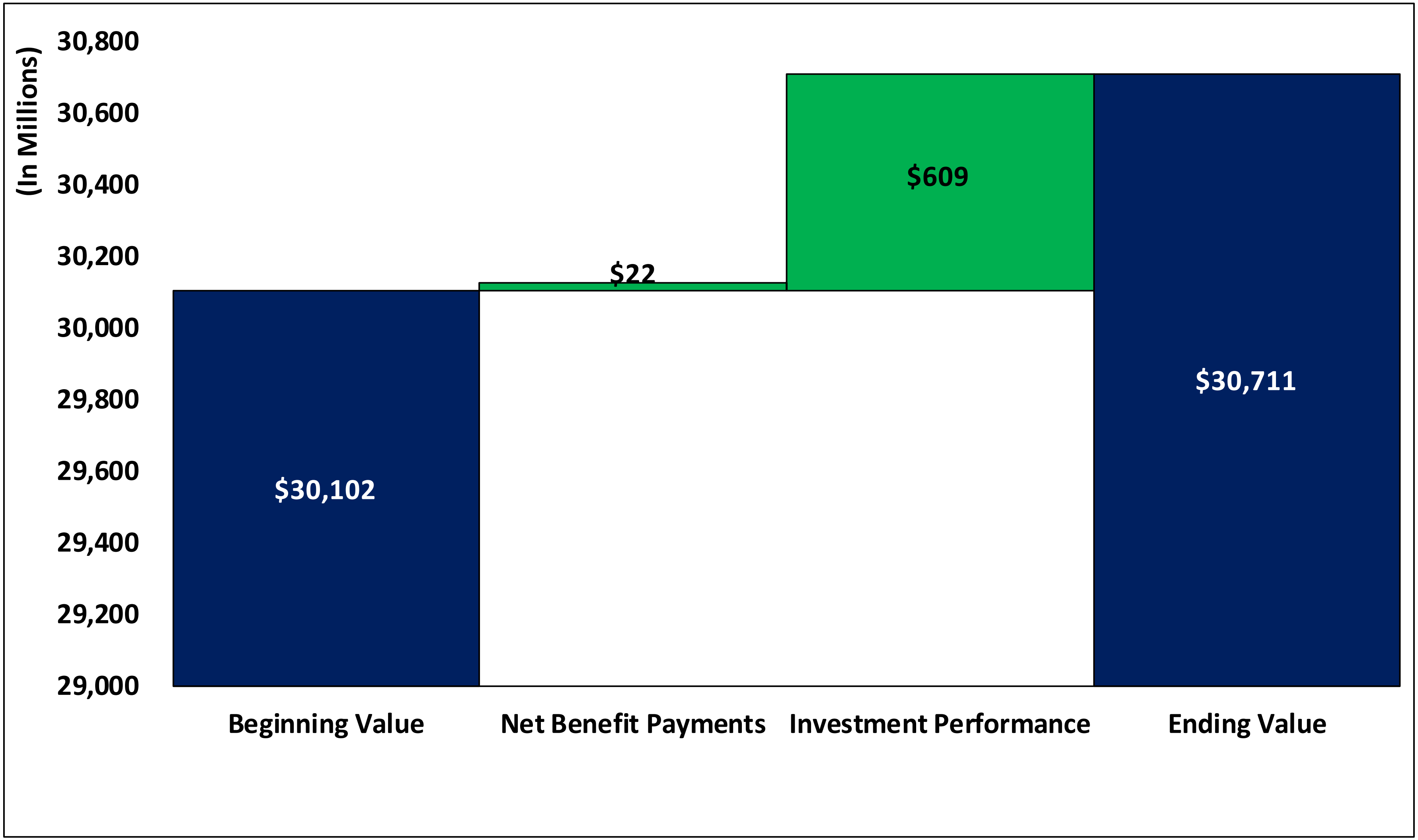
Performance Update

RSIC Commission Meeting
September 28, 2017
Data as of July 31, 2017

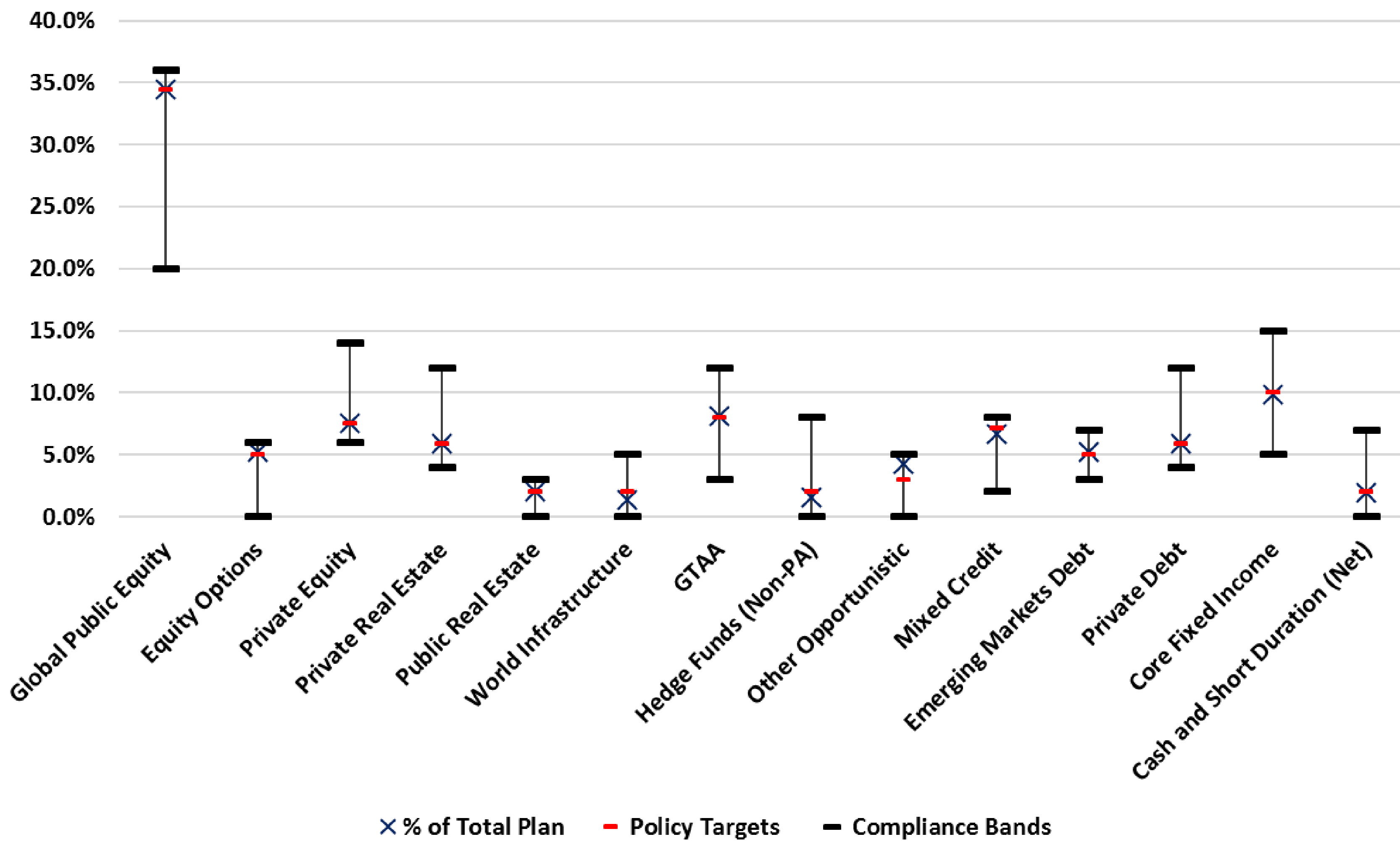


Historic Plan Performance As of 07/31/17	Market Value (In Millions)	Month	3 Month	FYTD	1 Year	Annualized 3 Years	5 Years	10 Years	RSIC Inception
Total Plan	**$30,711**	**1.93%**	**3.23%**	**1.93%**	**11.52%**	**5.09%**	**7.65%**	**4.68%**	**5.22%**
Policy Benchmark		1.63%	3.63%	1.63%	10.95%	5.30%	7.20%	4.15%	4.70%
Excess Return		0.30%	-0.40%	0.30%	0.57%	-0.21%	0.45%	0.54%	0.52%
Net Benefit Payments (In Millions)		$22	($172)	$22	($933)	($3,124)	($5,176)	($9,608)	($11,227)

The Footnotes and Disclosures page is an integral part of this report.


(In Millions)
30,800
30,600
30,400
30,200
30,000
29,800
29,600
29,400
29,200
29,000
$30,102
$22
$609
$30,711
Beginning Value
Net Benefit Payments
Investment Performance
Ending Value

APPENDIX


40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Global Public Equity
Equity Options
Private Equity
Private Real Estate
Public Real Estate
World Infrastructure
GTAA
Hedge Funds (Non-PA)
Other Opportunistic
Mixed Credit
Emerging Markets Debt
Private Debt
Core Fixed Income
Cash and Short Duration (Net)
% of Total Plan
Policy Targets
Compliance Bands

Asset Allocation	Market Value as of 07/31/17	Overlay Exposures	Net Position	% of Total Plan	Policy Targets	Difference	Allowable Ranges	SIOP Compliance
Global Equity	**12,416**		**14,505**	**47.2%**	**47.0%**	**0.2%**	**42% - 52%**	YES
Global Public Equity	8,503	2,089	10,592	34.5%	34.5%	0.0%	20% - 36%	YES
Equity Options	1,599		1,599	5.2%	5.0%	0.2%	0% - 6%	YES
Private Equity	2,315	0	2,315	7.5%	7.5%	0.0%	6% - 14%	YES
Real Assets	**2,894**		**2,894**	**9.4%**	**10.0%**	**-0.6%**	**8% - 14%**	YES
Private Real Estate	1,825		1,825	5.9%	5.9%	0.0%	4% - 12%	YES
Public Real Estate	640		640	2.1%	2.1%	0.0%	0% - 3%	YES
World Infrastructure	429		429	1.4%	2.0%	-0.6%	0% - 5%	YES
Opportunistic	**2,565**		**4,272**	**13.9%**	**13.0%**	**0.9%**	**9% - 19%**	YES
GTAA	796	1,696	2,493	8.1%	8.0%	0.1%	3% - 12%	YES
Hedge Funds (Non-PA)	466		466	1.5%	2.0%	-0.5%	0% - 8%	YES
Other Opportunistic	1,302	11	1,313	4.3%	3.0%	1.3%	0% - 5%	YES
Diversified Credit	**5,427**		**5,427**	**17.7%**	**18.0%**	**-0.3%**	**15% - 21%**	YES
Mixed Credit	2,038		2,038	6.6%	7.1%	-0.5%	2% - 8%	YES
Emerging Markets Debt	1,591		1,591	5.2%	5.0%	0.2%	3% - 7%	YES
Private Debt	1,798		1,798	5.9%	5.9%	0.0%	4% - 12%	YES
Conservative Fixed Income	**4,774**		**3,613**	**11.8%**	**12.0%**	**-0.2%**	**10% - 16%**	YES
Core Fixed Income	1,495	1,527	3,022	9.8%	10.0%	-0.2%	5% - 15%	YES
Cash and Short Duration (Net)	3,279	-2,688	591	1.9%	2.0%	-0.1%	0% - 7%	YES
Portable Alpha Hedge Funds	2,635	-2,635	0	8.6%*	n/a	n/a	0% - 12%	YES
Total Plan	**$30,711**	-	**$30,711**	**100.0%**				
Total Hedge Funds	3,340		**$3,340**	**10.9%**	n/a	n/a	0% - 20%	YES
Total Private Markets	5,938	-	**$5,938**	**19.3%**	n/a	n/a	14% - 25%	YES

Total Hedge Fund exposure: 10.9% and consisted of: 8.6% Portable Alpha Hedge Funds, 0.8% to a hedge fund in Mixed Credit, and 1.5% Hedge Funds (Non-PA). *Portable Alpha Hedge Funds are expressed as gross exposure but employed in conjunction with the Overlay Program and are offset when looking at total plan market value.

Footnotes and Disclosures

Footnotes

1. Represents asset class benchmarks as of reporting date. Benchmarks for asset classes may have changed over time.

2. Benefit payments are net of Plan contributions and disbursements.

3. "Cash" market value is the aggregate cash held at the custodian, Russell Investments, and strategic partnerships. Cash performance is estimated using the BofA Merrill Lynch 3-Month T-Bill rate.

4. Asset class exposures and returns include blended physical and synthetic returns and notional values (EM Debt, GTAA, Global Public Equity, Real Estate, Core Fixed Income, Private Equity, and Commodities).

5. Performance contribution methodology: Contribution is calculated by taking the sum of the [beginning weight] X [monthly return].

6. Source: Russell Investments; Net notional exposure.

7. Allocation Effect: [Asset Class Weight – Policy Weight] * [Benchmark Return – Plan Policy Benchmark]
   Selection Effect: [Asset Class Return – Policy Benchmark Return] * Asset Class Weight in Plan

8. The target weights to Private Equity, Private Debt, and Private Real Estate will be equal to their actual weights, reported by the custodial bank, as of the prior month end. When flows have occurred in the asset classes, flow adjusted weights are used to more accurately reflect the impact of the asset class weights. In the case of Private Equity, the use of the flow adjusted weight will affect the target allocation to Public Equity, such that the combined target weight of both asset classes shall equal 42% of the Plan. For Private Debt, the use of the flow adjusted weight will affect the target allocation to Mixed Credit, such that the combined target weight of both asset classes shall equal 13% of the Plan. For Private Real Estate, the use of the flow adjusted weight will affect the target allocation to Public Real Estate, such that the combined target weight of both asset classes shall equal 8% of the Plan.

9. Policy Ending Value is an estimate of the Plan NAV had it earned the Policy Benchmark return.

10. Collateral held to support the overlay program represents opportunity cost associated with financing the overlay program. The Overlay collateral consists of Ported Cash, Ported Short Duration, and Portable Alpha Hedge Funds. The cost of holding these assets is proxied using 3 Month LIBOR. This benchmark is not a component of the Policy benchmark.

11. RSIC Peer Universe is Bank of New York Public Plans Greater than 5 Billion dollars. The universe includes fund returns that are gross of invoiced fees. The RSIC percentile rank represents the RSIC return gross of invoiced fees.

Disclosures

- Returns are provided by BNY Mellon and are time-weighted, total return calculations. Net of fee performance is calculated and presented after the deduction of fees and expenses. Periods greater than one year are annualized. Past performance is no guarantee of future results. Policy benchmark is the blend of asset class policy benchmarks using policy weights. Asset class benchmarks and policy weights are reviewed annually by the Commission's consultant and adopted by the Commission and have changed over time. The policy benchmark return history represents a blend of these past policies.

- Overlay allocation detail is provided by Russell Investments.

- This report was compiled by the staff of the South Carolina Retirement System Investment Commission and has not been reviewed, approved or verified by the external investment managers. No information contained herein should be used to calculate returns or compare multiple funds, including private equity funds.

- Effective October 1, 2005, the State Retirement System Preservation and Investment Reform Act ("Act 153") established the Commission and devolved fiduciary responsibility for investment and management of the assets of the South Carolina Retirement Systems upon RSIC.

- Allocation / exposure percentages might not add up to totals due to rounding.

Footnotes and Disclosures

Benchmarks

- **Global Public Equity Blend**:
  7/2016 – Present: MSCI All-Country World Investable Markets Index (net of dividends)
  Prior to 7/2016: MSCI All-Country World Index (net of dividends)

- **Equity Options Strategies:** CBOE S&P Buy Write Index (BXM)

- **Private Equity Blend**: 80% Russell 3000 Index on a 3-month lag / 20% MSCI EAFE (net of dividends) on a 3-month lag Plus 300 basis points

- **Core Fixed Income**: Bloomberg Barclays US Aggregate Bond Index

- **Emerging Market Debt**: 50% JP Morgan EMBI Global Diversified (US Dollar) / 50% JP Morgan GBIEM Global Diversified (Local)

- **Private Debt** : S&P/LSTA Leveraged Loan Index + 150 basis points on a 3-month lag

- **Mixed Credit Blend**:
  7/2016 – Present: 1/2 Bloomberg Barclays US Corporate High Yield 2% Issuer Capped Bond Index
  1/2 S&P/LSTA Leveraged Loan Index
  Prior to 7/2016: 1/3 Bloomberg Barclays US Corporate High Yield 2% Issuer Capped Bond Index
  1/3 S&P/LSTA Leveraged Loan Index
  1/3 Bloomberg Barclays US Mortgage Backed Securities (MBS) Index

- **GTAA Blend**:
  7/2016 – Present: 50% MSCI World Index (net of dividends)
  50% Bloomberg Barclays US Aggregate Bond Index
  Prior to 7/2016: 50% MSCI World Index (net of dividends)
  50% Citi World Government Bond Index (WGBI)

- **Other Opportunistic**:
  7/2016 – Present: 50% MSCI World Index (net of dividends)
  50% Bloomberg Barclays US Aggregate Bond Index

- **Non PA Hedge Funds**
  7/2016 – Present: 50% MSCI World Index (net of dividends)
  50% Bloomberg Barclays US Aggregate Bond Index

- **Real Estate**: NCREIF Open-end Diversified Core (ODCE) Index + 75 basis points

- **Cash & Short Duration**: BofA Merrill Lynch 3-Month US Treasury Bill Index

Global Tactical Asset Allocation Network

Steve Marino, CFA
Justin Young, CAIA
Chris Alexander
Colin Bernier

Investment Recommendation

- **Allocation:** Up to 4% allocation to each, Morgan Stanley Investment Management, PineBridge Investments, and Standard Life Investments
- **Structure:** Fund of One
- **Operating Expenses:** 10bps expense cap
- **RSIC ODD:** Pass
- **Fee Structure:**
  - Low management fee
  - Performance fee with hurdle rate above market based benchmark
  - Performance fee calculated on a rolling 3-year period
  - All-in fee cap to control for excessive risk taking

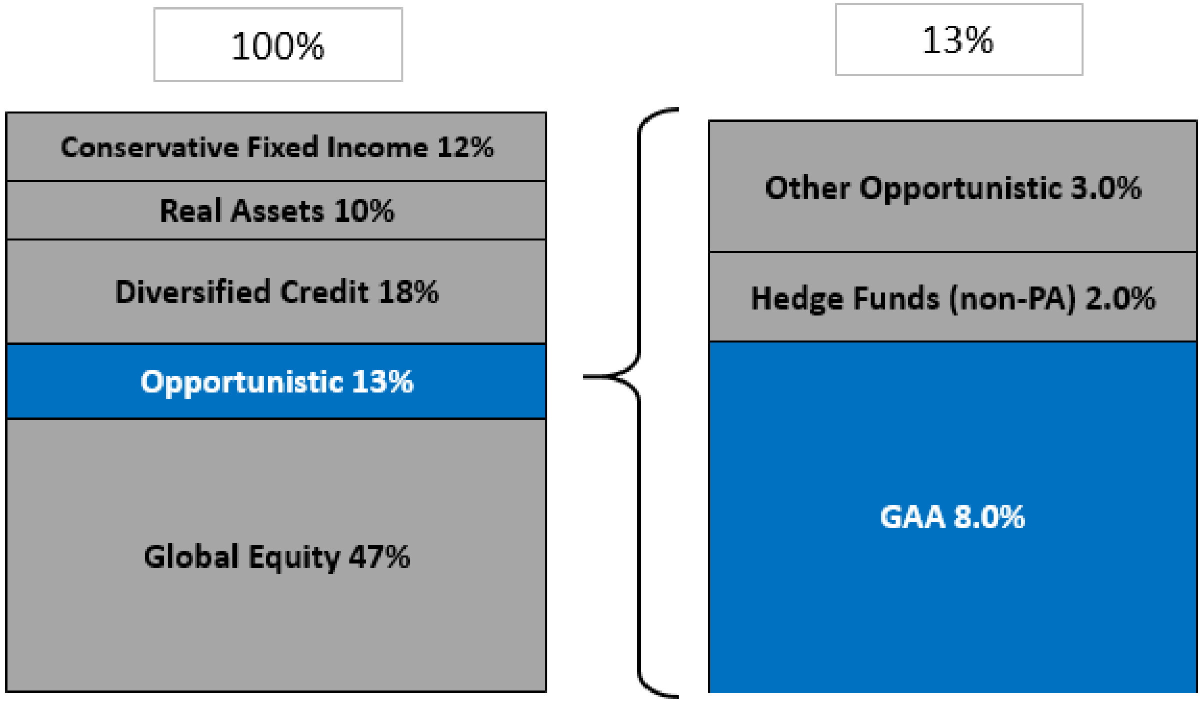
	Blended Portfolio Fees
Management Fee	29bps
Hurdle Rate	88bps (over benchmark)
Performance Fee	11.25%
All in Fee-Cap	87bps

Strategic Anchors

- **Enhance Value**
  - Knowledge transfer from partnership structure
- **Improve Plan Performance**
  - Expected 300bps excess return net of fees
  - Diversifying excess return to RSIC Plan
- **Promote Confidence**
  - Created economic alignment through low management fee, performance fee over a hurdle, and performance fee calculation over a 3-year rolling period

GAA Asset Class Overview

GAA Asset Class Place in Plan Allocation



Plan Asset Allocation

Opportunistic

Current Benchmark

- **50%: MSCI World Total Return Index**
- **50%: Bloomberg Barclays US Aggregate Total Return Index**

Investment Objectives

GAA Portfolio:

1. Add 25bps excess return to the Total Plan, annually from GTAA managers
2. Add 300bps of excess return annually over the GTAA custom benchmark with 400-500bps of tracking error
3. Measure and judge the success of the portfolio over 3-year rolling periods

Individual Manager Portfolios:

1. Add 400bps of excess return annually over the GTAA custom benchmark with 500-600bps of tracking error
2. Measure and judge the success of each manager portfolio over 3- and 5-year rolling periods
3. Evaluate "non-financial" manager value-add

Investment Rationale

Included 10 managers in the initial RFI, evaluated on the following criteria

Criteria	Morgan Stanley	PineBridge	Standard Life
Consistent alpha generation from TAA	✓	✓	✓
Diversifying excess returns not dependent on overweight to risk	✓	✓	✓
Full range of products and services	✓	✓	✓
Customized research	✓	✓	✓
Ability to share meaningful resources with RSIC	✓	✓	✓
Senior team commitment	✓	✓	✓
Economic alignment	✓	✓	✓

Investment Considerations

- **Active drawdown risk:** 500-600bps of tracking error can result in material underperformance relative to the benchmark in a 2 standard deviation negative performance year

- **Paying performance fees in negative return environments:** The performance fee is calculated as the portfolio vs. the benchmark + hurdle rate

- **Key Person risk:** There are no reasons to believe any of the Key Portfolio Managers would leave, however if they do, we will reevaluate the allocation

- **Aberdeen Standard Life – Merger:** As with any merger, disruptions from business integration may impact the services provided to clients

Model Portfolio Construction Overview

Built a portfolio with diversity of time horizon and tactical asset allocation skill set

Characteristic	Morgan Stanley	PineBridge	Standard Life
Time Horizon *(average TAA idea)*	1-6 months 1-5 years	9-18 months	6-12 months Up to 3 years
Implementation	Level **II, III**	Level **I, II,** III	Level I, **II, III**
Excess return correlation to RSIC excess returns	Low	Low	Low

Portfolio Diversification / Construction

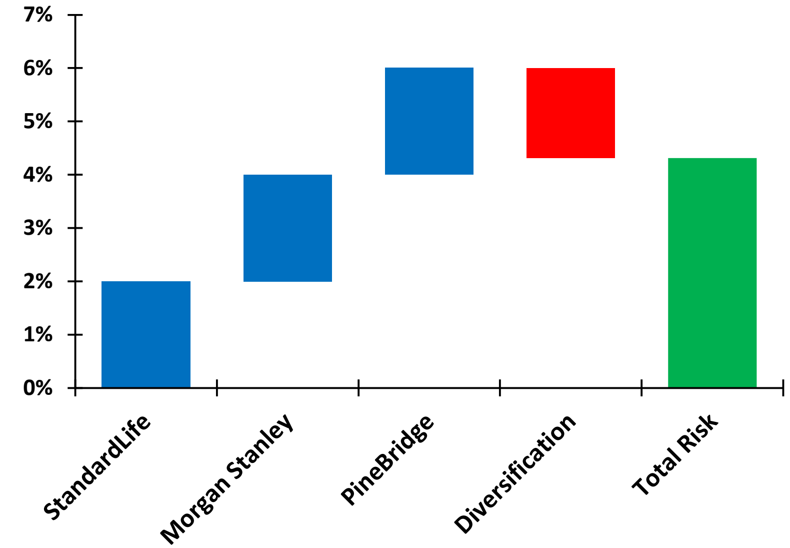
Portfolio Construction

- Lowly correlated excess returns
- Capital allocation is roughly equal to active risk allocation

	StandardLife	Morgan Stanley	PineBridge
StandardLife	1.00		
Morgan Stanley	0.16	1.00	
PineBridge	0.21	0.45	1.00

10/2008 – 6/2017

Approx. 30% T.E Reduction through Combination

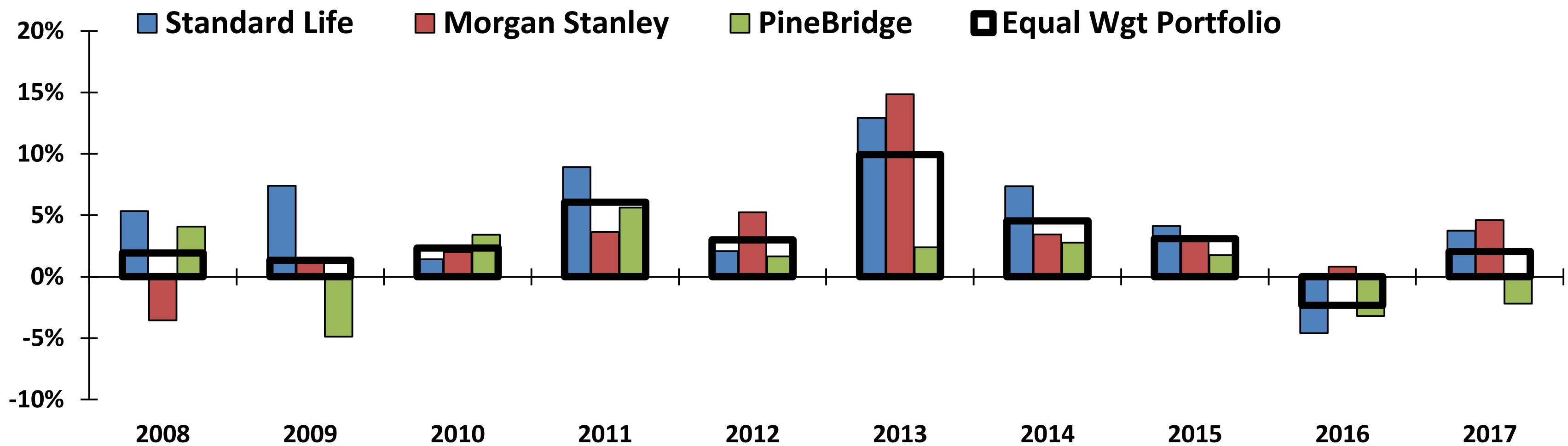


Diversification through Portfolio Construction

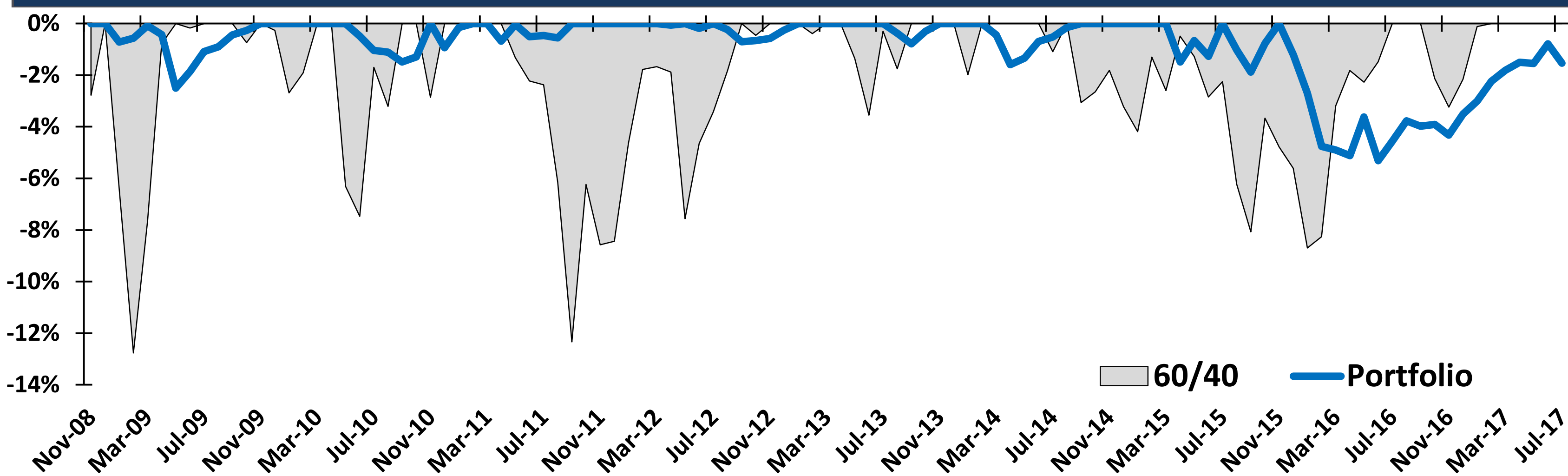
	Tracking Error	Weight	Standalone Risk	Contribution to Risk
Standard Life	6.0%	33%	2.0%	1.3%
Morgan Stanley	6.0%	33%	2.0%	1.5%
PineBridge	6.0%	33%	2.0%	1.5%
Tracking Error before Diversification			6.0%	4.3%
Diversification			**-1.7%**	
Total Tracking Error			4.3%	

Model Portfolio Construction Analysis

Calendar Year EXCESS Returns – Scaled to Equivalent Tracking Error Level



Active Drawdown Analysis vs. Global 60/40 Portfolio



MSIM Tear Sheet

Philosophy

- **Global Macro and Thematic investors**
- **Major macro shifts (1-6 months)**
- **Structural transformations (1-5 year time horizon)**
- **Believe fundamentals converge to long-term mean**

Process

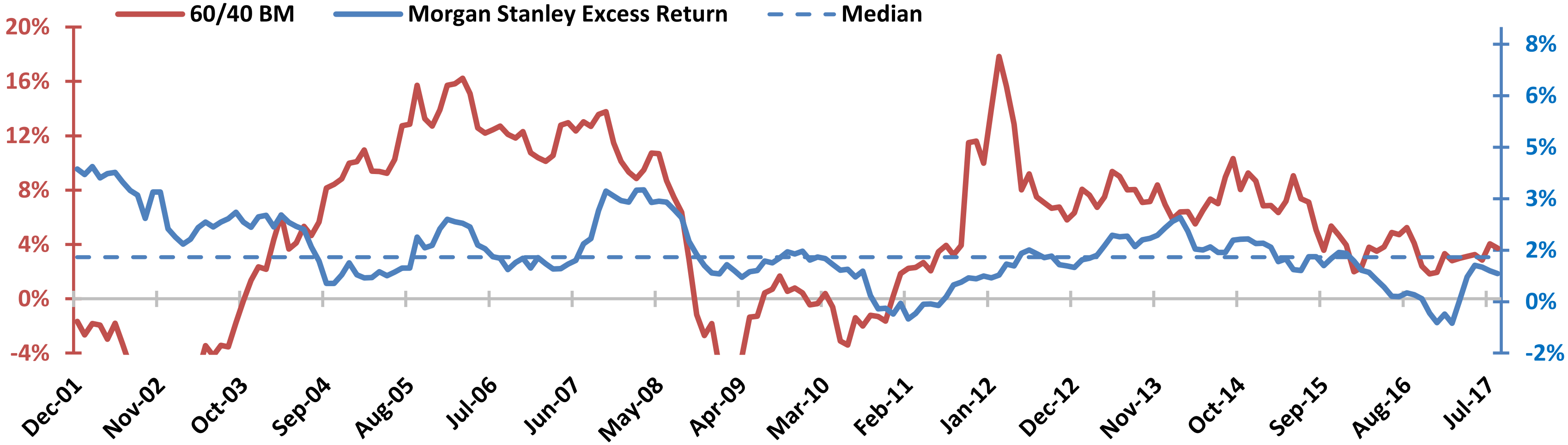
- **Develop medium-term 5-year return expectations**
- **Develop tactical, thematic investment ideas**
  - 5-6 themes on at any time, 3-5 trades per theme
- **Look for valuation and sentiment extremes with attractive or improving fundamentals**

People

- **Senior Team: Cyril Moulle-Berteaux (ultimate risk owner) 26 years of industry experience**
  - Mark Bavoso – 31 years of industry experience
  - Sergei Parmenov – 21 years of industry experience
- **16 Dedicated Investment Professionals**

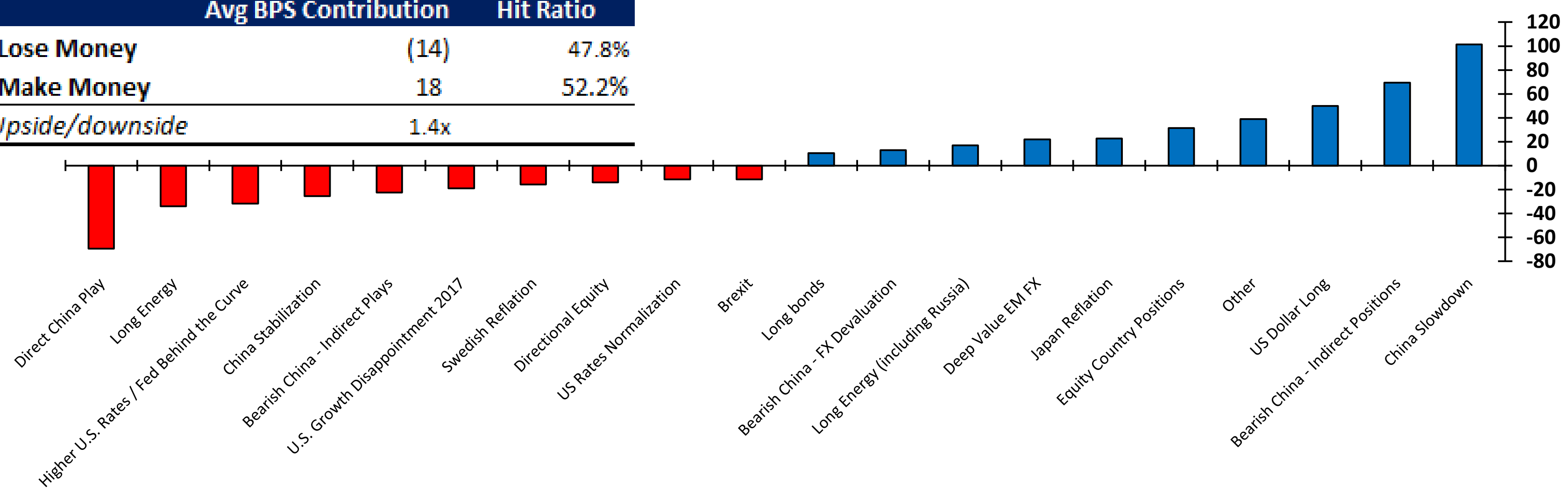
MSIM – Investment Analysis

MSIM Rolling 36mo Excess Return vs. Global 60/40



Attribution by Themes*

	Avg BPS Contribution	Hit Ratio
Lose Money	(14)	47.8%
Make Money	18	52.2%
Upside/downside	1.4x	



* Captures themes from 12/31/2012 – 6/30/2017

PineBridge GDAA Tear sheet

Philosophy

- Fundamentals drive markets and over intermediate time horizons, 9-18 months, inefficiencies exist. Prices will ultimately converge towards fundamentals.

Process

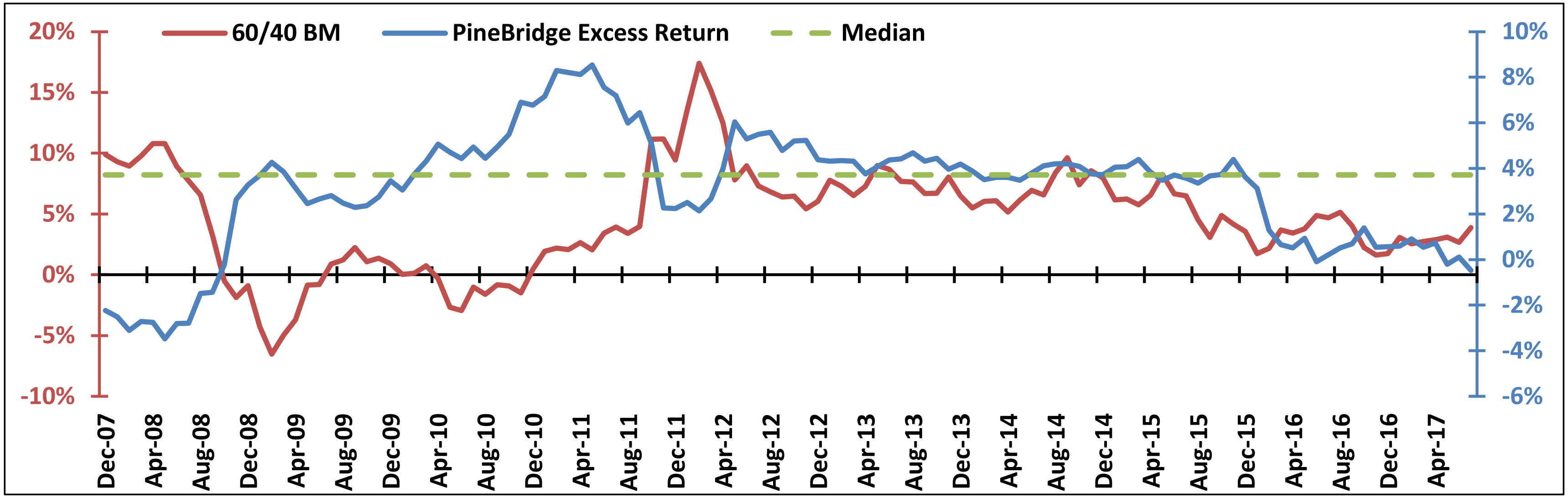
- Build forward-looking return and risk curve for all asset classes
- Construct the optimal portfolio (move to the efficient frontier)
- Apply risk dial score – Internal assessment of Level I decision
- Identify catalysts within asset class
- Implement with active or passive

People

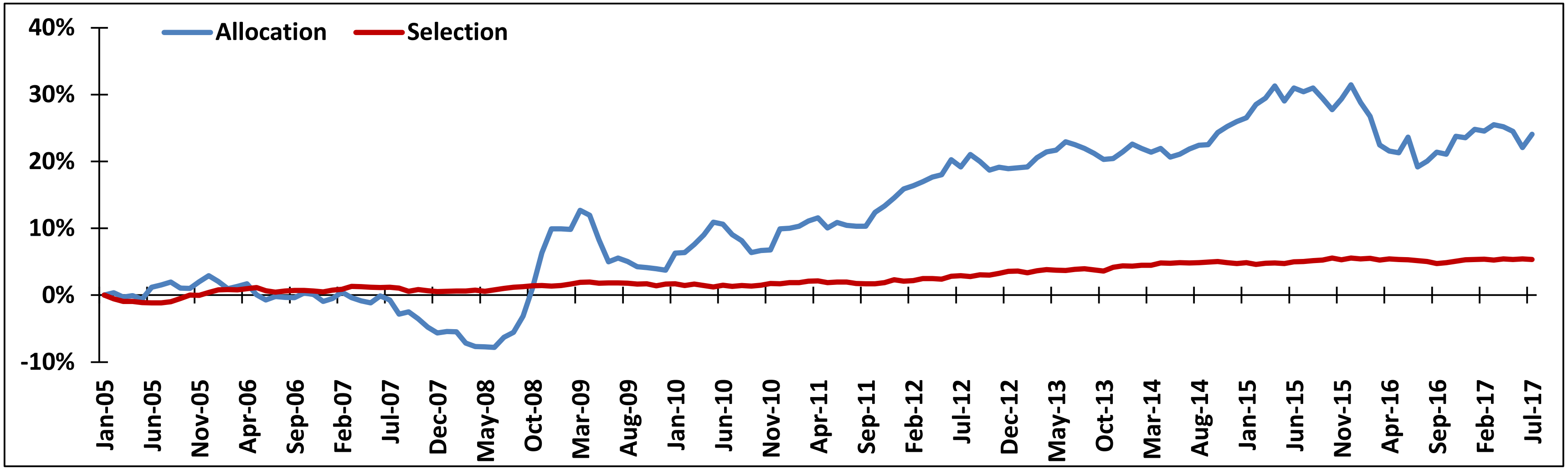
- Led by Mike Kelly, Joined in 1999
- 20 dedicated investment professionals
- 5 senior team members with an average of 19 years of industry experience

PineBridge GDAA – Investment Analysis

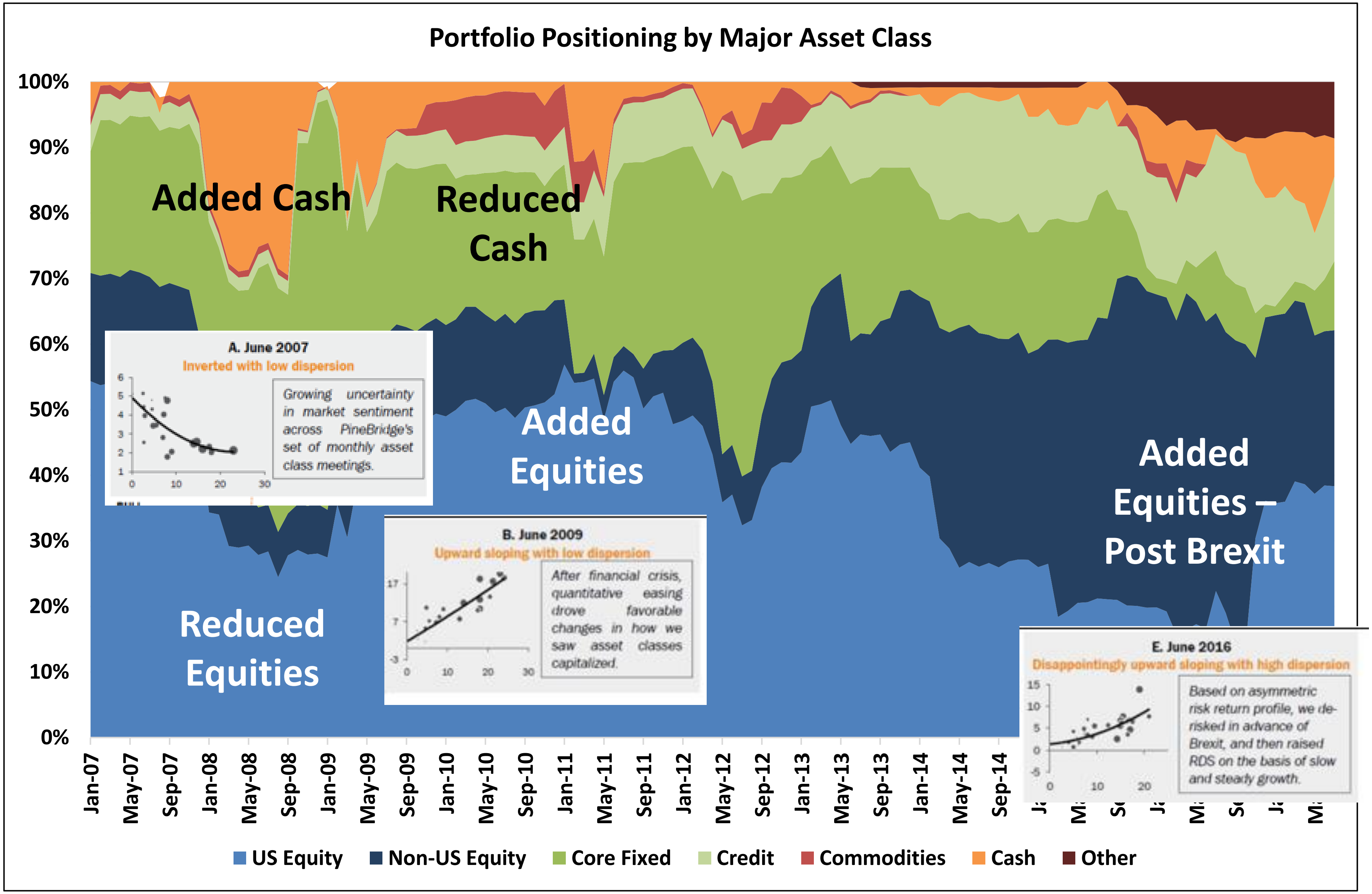
Rolling 36-month Excess Returns vs. Global 60/40



Attribution From Allocation vs. Selection



PineBridge GDAA – Investment Analysis



Standard Life Tear sheet

Philosophy

- **Focus on Change:** Idea that fundamentals ultimately drive markets, but when fundamentals change, there are opportunities
- **Focus on four key factors:** macro profits, monetary policy, valuation and market behavior

Process

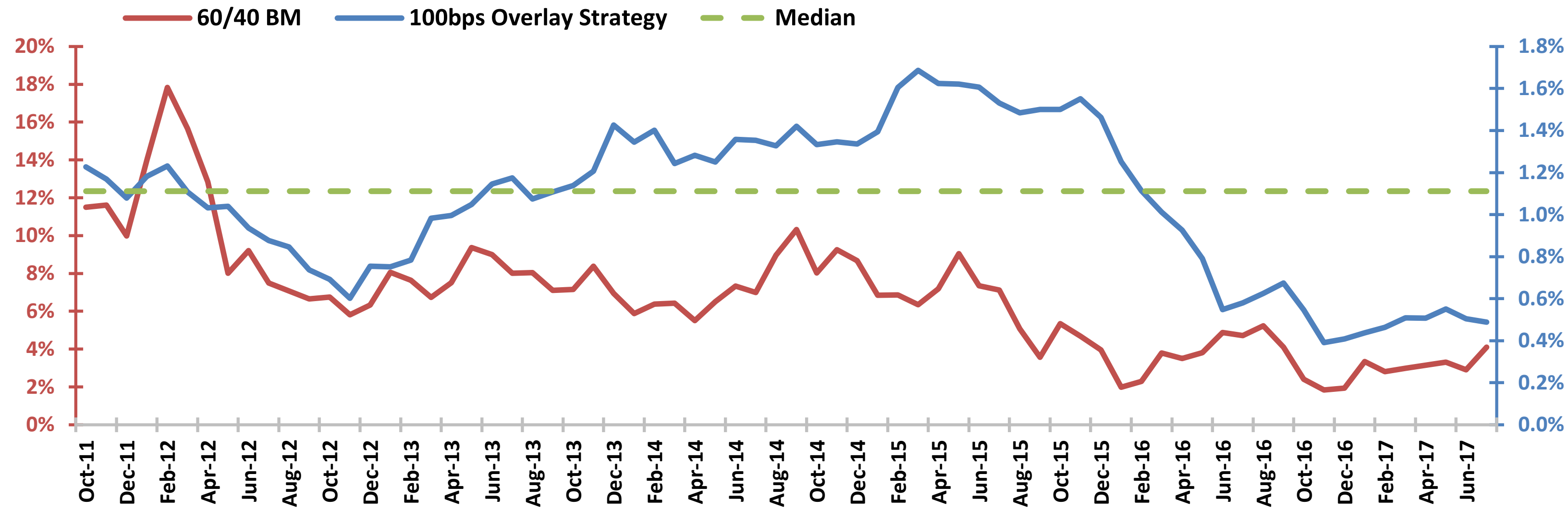
- **Develop SL House View:** Senior team averaging 30 years of experience
- **Strategic Investment Group:** research and vet investment ideas across GTAA and GARS (flagship) portfolios
- **GTAA Team:** Asset Allocation Practitioners/Strategists
  - Form views on 28 liquid global markets
  - Portfolio views are translated into a portfolio by Adam Rudd (PM) and the implementation and investment risk team

People

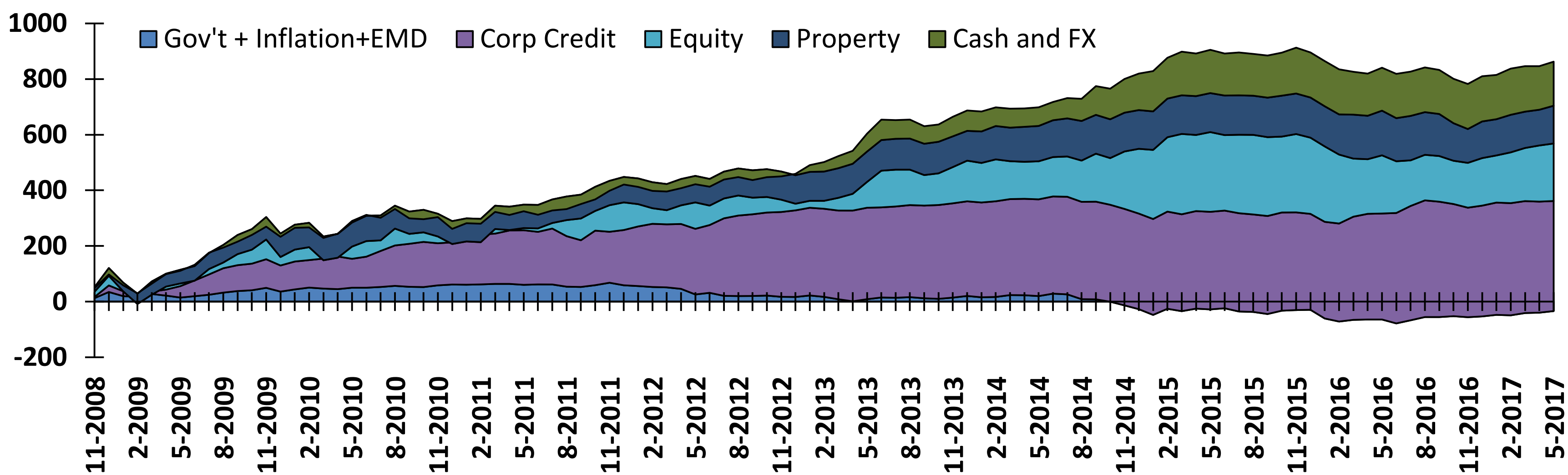
- Guy Stern heads the group, joined in 2008
- **Adam Rudd –** Named portfolio manager – 12 years of industry experience
- 8 person GTAA team, 11 Investment Strategists, 8 person implementation team

Standard Life GTAA – Investment Analysis

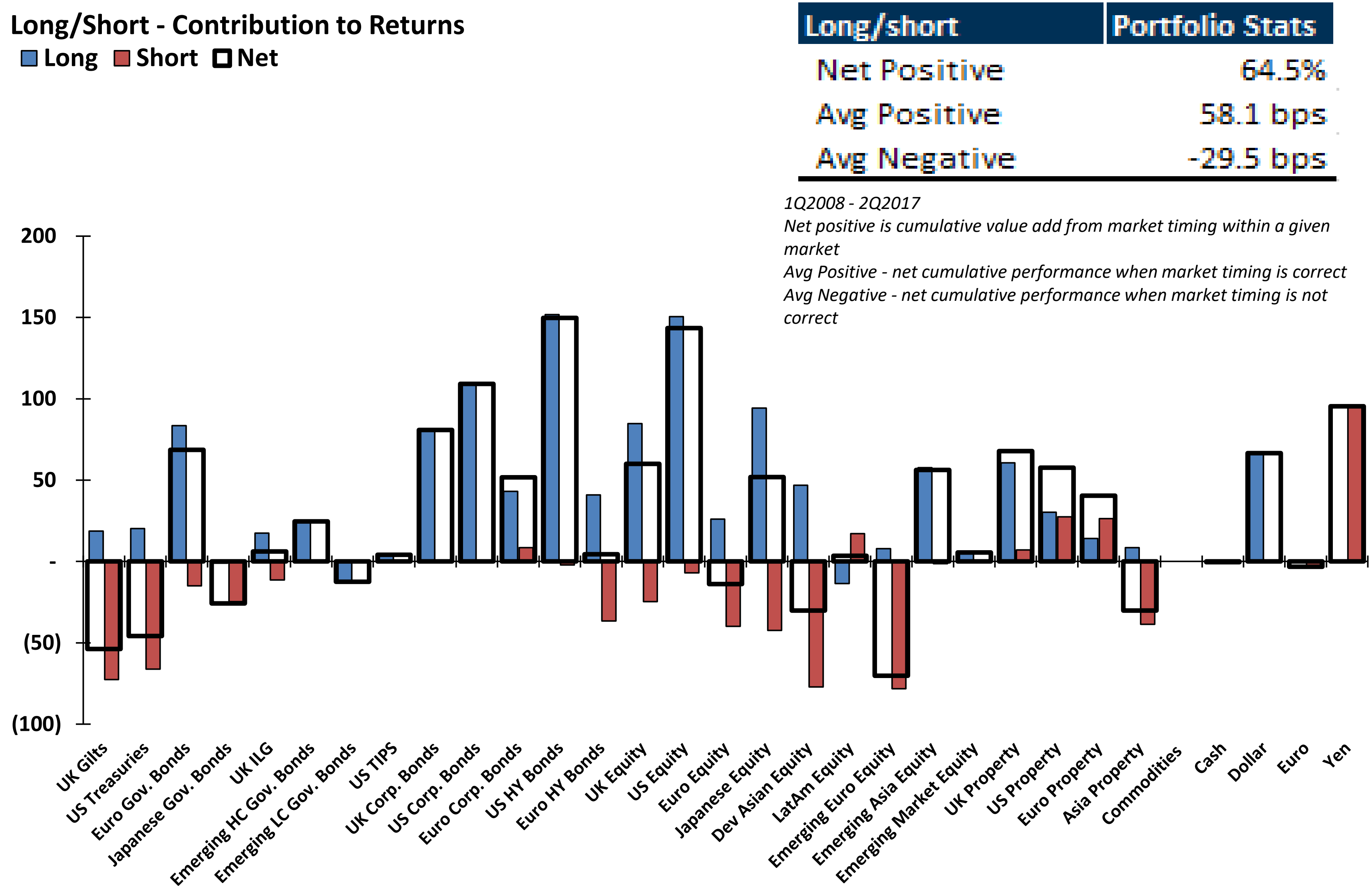
Rolling 36-month Excess Returns vs. Global 60/40



Asset Class Cumulative Contribution to Return from GTAA



Standard Life GTAA – Investment Analysis



Long/short	Portfolio Stats
Net Positive	64.5%
Avg Positive	58.1 bps
Avg Negative	-29.5 bps

1Q2008 - 2Q2017
Net positive is cumulative value add from market timing within a given market
Avg Positive - net cumulative performance when market timing is correct
Avg Negative - net cumulative performance when market timing is not correct

Thoughts on the Network

Tactical asset allocation insights

- Look through the portfolio
- Extension of RSIC staff to evaluate allocation trades

Contracted research support

- 2-3 Challenging Beliefs-like research projects per year as third-party view to work collaboratively with or in opposition to RSIC staff

Contracted training hours for staff

- Access to firm training resources, on-site training, RSIC teach-ins

Higher frequency of communication

- Weekly – positioning reports
- Monthly – portfolio and positioning reviews
- Quarterly –in person review, research pipeline, macro update
- Annual – Network panel discussion
- Ad hoc – senior team and PMs will be available for one off requests

Investment Recommendation

- **Allocation:** Up to 4% allocation to each, Morgan Stanley Investment Management, PineBridge Investments, and Standard Life Investments
- **Structure:** Fund of One
- **Operating Expenses:** 10bps expense cap
- **RSIC ODD:** Pass
- **Fee Structure:**
  - Low management fee
  - Performance fee with hurdle rate above market based benchmark
  - Performance fee calculated on a rolling 3-year period
  - All-in fee cap to control for excessive risk taking

	Blended Portfolio Fees
Management Fee	29bps
Hurdle Rate	88bps (over benchmark)
Performance Fee	11.25%
All in Fee-Cap	87bps

Global Tactical Asset Allocation Network

RSIC Investment Team:	Staff recommends allocations up to 4% of Plan assets to each of three managers: Morgan Stanley, PineBridge, and Standard Life Investments

Summary:

The GTAA portfolio's objective is to add 25bps of excess return to RSIC Plan returns annually, measured over a 3-year period. The portfolio will seek to do this through the use of three external managers (above). At the 8% GTAA Policy Target, the expectation is that the combined GTAA portfolio will generate 300bps of excess return with 400-500bps of tracking error. The request for 4% of Plan Assets to each manager provides us with flexibility should the Investment Team need to reallocate away from one of the managers. The three managers were selected based on their ability to meet the goals of the GTAA search and the differentiation of approaches and investment horizons. This unique construction can provide the Investment Team with valuable information regarding markets.

Portfolio Construction and Risk Budget (Green >33%, Yellow > 25%, White <25%)

Manager	Level I Risk off / Risk on	Level II Regions, Country, Capital Structure	Level III Sector, Market Cap, Duration, Currency
Morgan Stanley	Does not make large directional cross asset class allocations.	Relative value positions across equity, credit, and fixed income across regions and countries	Relative value positions intra-market, including equity sectors, market cap, curve positioning and currency
PineBridge	Process explicitly involves dialing up and down risk via the asset allocation.	Will take large regional, country and capital structure trades across equity, credit and fixed income markets	Will take active positions in market cap, selectively in sectors, and currency via active hedged vs. unhedged positons
Standard Life	Will make take directional views based on assessment of business cycle and financial conditions	Will use the majority of the risk budget from regions, country, and capital structure trades	Country fixed income and yield curve/duration management in addition to active and hedging positions in currency

Risk Budget and Investment Analysis

The varying approaches to tactical asset allocation creates a portfolio that results in a ~30% reduction in tracking error at the portfolio level (Figure 1). Given that each mandate has a similar tracking error and return target, Figure 2 highlights that an equal capital-weighted approach is appropriate to balance the active risk and prevent any one manager's decision from having a disproportionate impact on the portfolio (Figure 2).

Figure 1.

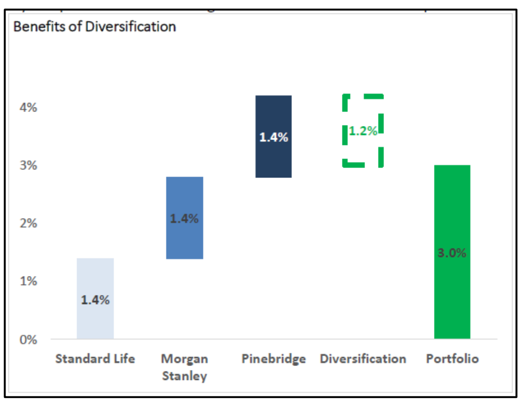
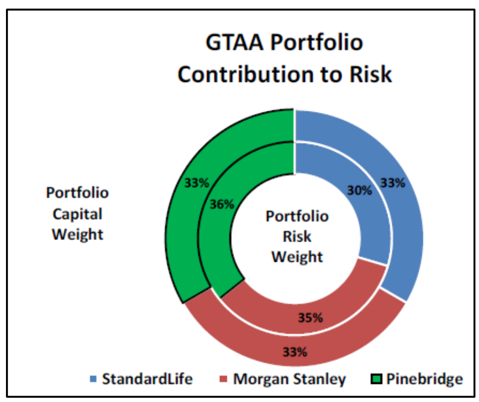


Figure 2.



Investment Rationale:

Differentiated Excess Returns: RSIC's active risk is predominantly comprised of security selection within traditional long-only managers and through hedge fund managers within the portable alpha program. The GTAA portfolio will aim to diversify the sources of RSIC's excess returns through the addition of alpha from tactical asset allocation.

Investment Considerations

Active drawdown: The portfolio will target 400-500bps of annualized tracking error. In a two standard deviation year, it would not be uncommon for the GTAA portfolio to be down 500-700bps below the benchmark (40-60bps at the Plan level). While the managers' strategies are different and are uncorrelated historically, if correlations increase, risk in the portfolio could increase.

Paying performance fees in a negative absolute return year: While performance fees can create better alignment, a drawback is the potential to pay performance fees when the portfolio returns a negative absolute return. The Investment Team feels that this structure results in a better outcome over the long-term for RSIC as we would be better off for investing with the manager than a passive benchmark.

PineBridge Investments, LLC – Global Dynamic Asset Allocation – GTAAN-PB ("the Strategy")
INVESTMENT SUMMARY

RSIC Investment Team:	Staff recommends an allocation up to 4% of Plan assets to GTAAN - PB. Staff and PineBridge will create a Fund of One vehicle.
RSIC ODD Rating:	Pass Rating

Summary:

The Strategy's objective is outperform the RSIC Public Markets Composite benchmark portfolio by 400bps annually, measured over 3- and 5-year time horizons, within a targeted 500-600bps annual tracking error risk budget through tactical asset allocation. While providing for a diversified return stream that is lowly correlated with other risk assets and RSIC Plan returns (Figures 5 & 6)

PineBridge's investment approach focuses around the belief that, over the intermediate time horizon, market prices can converge toward fundamentals. The team applies a forward looking perspective to asset allocation that sits between a pure tactical and strategic approach. With a focus on four key distinct sources of excess returns: 1) constructing the risk efficient neutral portfolio, 2) determining the level of risk to take along the efficient frontier, 3) identifying asset classes with a catalyst to pull-forward future returns in the next 6-18 months, and 4) employing actively managed strategies where and when active management is rewarded.

The Global Multi-Asset Strategies team manages $12 billion to a composite that is similar to the Strategy. The team is comprised of 20 investment professionals led by Michael Kelly, the Global Head, and original architect of the Strategy.

Investment Expectations:

Excess Return: 3-4% net of fees vs. benchmark over a 3- and 5- year period.

Likely to underperform towards the end of a cycle: Given valuation is a key component to bottom-up forecasting, when assets appear expensive, the forward looking returns will be lower and likely cause the portfolio to be more defensively positioned. (Figure 4)

Excess returns predominately from Level I and Level II tactical asset allocation: Excess returns will primarily be derived from Level I (i.e Stock vs. Bond, Stock vs. Credit) and Level II (i.e US Equity vs. EM Equity) as defined in the DDR, with additional value add coming from implementation with active management. (Figure 3)

Investment Rationale:

Excess returns from tactical asset allocation: PineBridge has demonstrated a track record of adding excess returns through tactical asset allocation and manager selection. A component of the excess returns is driven by the ability to position the portfolio dynamically into and out of major inflection points. (Figures 1, 2, 3, 4)

Portfolio alignment with RSIC outcomes: The portfolio will be structured to put PineBridge in RSIC's shoes through the selection of the RSIC Public Markets Composite benchmark. Additionally, a hurdle rate (of the management fee + the benchmark returns) and performance fee is included to align further align incentives. Performance fees will be paid over a rolling 3-year measurement period.

Knowledge sharing and transmission of market data through their investment activity: Given the challenge of outperforming the RSIC Public Markets Composite benchmark, similar asset classes, and constraints, PineBridge's positioning will provide valuable real-time input into RSIC's tactical positioning across and within asset classes.

Investment Considerations:

Dependent on inflection periods: The process is suited to take advantage of large inflection points and as a result may underperform the benchmark for a sustained period prior to a major market correction or recovery. This willingness to be a contrarian will provide meaningful differentiation of opinion at key inflection points and over the long-term will lead to positive outcomes.

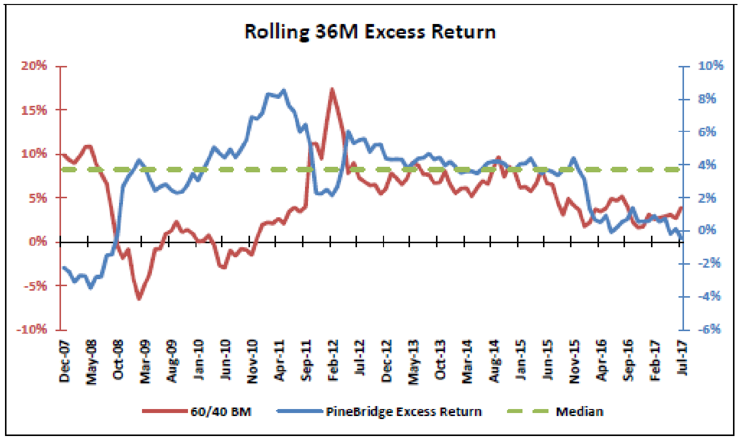
Key man risk: Michael Kelly is the lead portfolio manager on the strategy and his departure may create future uncertainty given he is the architect of the strategy. Conversations with Mr. Kelly, we believe he is adequately incentivized to continue to lead the Strategy.

Active drawdown: The Strategy will target 500-600bps of annualized tracking error. In a two standard deviation year, it would not be uncommon for the Strategy to be down 600-800bps below the benchmark. The diversification of strategies across the three managers will mitigate the impact of a large drawdown in any one manager.

Paying performance fees in a negative absolute return year: While performance fees can create better alignment, a drawback is the potential to pay performance fees when the portfolio returns a negative absolute return. This is ultimately a positive outcome for RSIC as we would be better off for investing with the manager than a passive benchmark.

PineBridge Investments, LLC – Global Dynamic Asset Allocation – GTAAN-PB ("the Strategy")
INVESTMENT SUMMARY

Figure 1: Rolling 36-month Excess Return



Source: RSIC Staff via PineBridge provided data

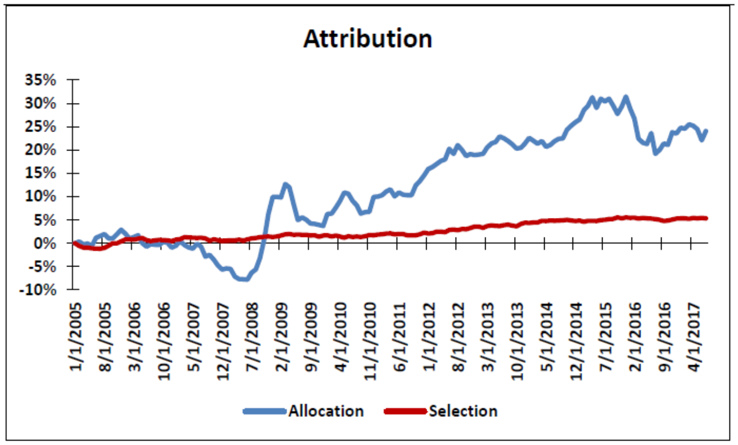
Figure 2: Persistency of Excess Returns (500bps T.E Portfolio)

	Rolling 12 Months Excess Return	Rolling 36 Months Excess Return
>0	67.1%	87.9%
>3.5%	40.0%	56.9%
>5.0%	28.6%	17.2%

Statistic	Rolling 12 Months Excess Return	Rolling 36 Months Excess Return
min	-8.80%	-3.48%
25th %tile	-2.24%	1.95%
median	1.98%	3.71%
75th %tile	5.42%	4.40%
max	26.13%	8.54%

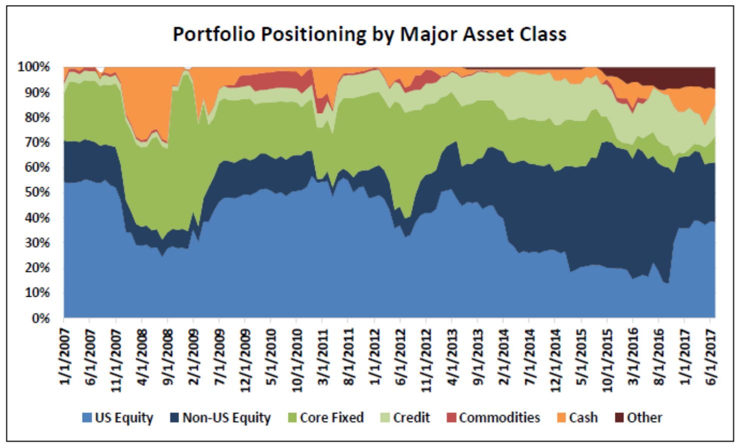
Source: RSIC Staff via PineBridge provided data

Figure 3: Attribution - Allocation and Manager Selection



Source: RSIC Staff via PineBridge provided data

Figure 4: Dynamic Asset Allocation



Source: RSIC Staff via PineBridge provided data

Figure 5: Low correlation of excess returns to major risk assets

8/31/2007-4/28/2017

Correlation	ACWI	US Agg	Commodities	HY 2 % Cap	Plan
PineBridge	-0.31	-0.04	-0.40	-0.41	-0.36

Source: RSIC Staff via Bloomberg and PineBridge provided data

Figure 6: Alpha is significant against major risk assets

	Coefficients	*t Stat*	*Significance*
Alpha	3.4%	2.47	YES
ACWI	0.058	1.53	NO
Global Rates	(0.236)	(3.27)	YES
US HY Credit	(0.131)	(2.33)	YES
Commodities	(0.054)	(1.78)	NO

Source: RSIC Staff via Bloomberg and PineBridge provided data, Oct 2008 to July 2017

SC Due Diligence Team:
Steve Marino, Director, CFA Justin Young, Investment Officer, CAIA Chris Alexander, Associate Analyst Colin Bernier, Junior Analyst

Summary Terms Chart		
	Investment Officer Summary:	**Source Location:**
Manager Name:	PineBridge Investments, LLC	Term Sheet
Fund/Investment Name:	GTAAN – PB	Term Sheet
Primary Custodian(s) or Safekeeping Agent(s) (together with point of contact information if other than BONY Mellon):	State Street Global Custodial Services Brandon Ford Brandon.Ford@statestreet.com 816-871-3087	Term Sheet
RSIC Investment Size & Limitations (Commitment):	Up to 4% of Plan Assets	Term Sheet
All-in Investment Management Fee:	Management Fee and Performance Fee (rolling 3-year) not to exceed 100bps	Term Sheet
Organizational Expenses:	Prior to the execution of the LPA and IMA, the Parties shall be responsible for their own costs (“Organizational Expenses”) associated with the drafting and negotiation of the LPA, IMA and the term sheet as well as the formation of the Limited Partnership. Subsequent to the execution of the LPA and IMA, Organizational Expenses will be paid by the Limited Partnership. For the avoidance of doubt, the Fund shall not bear more than $40k of Organizational Expenses related to the Fund set up costs.	Term Sheet
Professional Fees:	The Fund will bear audit, tax, annual legal expenses, 3rd party admin, custody and director fees subject to a cap of 10bps per year. Professional fees in excess of 10bps will be offset through a management fee waiver.	Term Sheet
Other Expenses/Fees:	The Fund will not be subject to any other expenses outside of those specifically detailed above as Professional Fees.	Term Sheet
Soft Dollar/Commission Sharing Arrangements:	The Fund prohibits the usage of soft dollars/commission sharing arrangements.	Term Sheet
Manager Commitment:	A minimum of 25bps GP commitment of the total Fund NAV	Term Sheet
Anticipated Investment Period:	N/A	Term Sheet
Anticipated Investment/Fund Term:	1 year, with four automatic 1-year extensions	Term Sheet
Withdrawal Rights:	RSIC directed with 5 business days’ notice	Term Sheet
Placement Agent Used in Obtaining Investment by RSIC:	None	Placement Agent Disclosure Letter

Morgan Stanley Investment Management – Global Tactical Asset Allocation – GTAAN-MS ("the Strategy")
INVESTMENT SUMMARY

RSIC Investment Team:	Staff recommends an allocation up to 4% of Plan assets to GTAAN - MS. Staff and Morgan Stanley will create a Fund of One vehicle.
RSIC ODD Rating:	Pass Rating

Summary:

The Strategy's objective is outperform the RSIC Public Markets Composite benchmark portfolio by 400bps annually, measured over 3- and 5-year time horizons, within a targeted 500-600bps annual tracking error risk budget through tactical asset allocation. While providing for a diversified return stream that is lowly correlated with other risk assets and RSIC Plan returns (Figures 4 & 5)

Morgan Stanley's (MSIM) investment approach targets Macroeconomic Shifts (6-12 months; rates, inflation, growth, etc.) and Structural Transformations (1-5 years; big sector, country or technological changes warranting a re-rating). These themes are identified through valuation and sentiment anomalies and are then constructed into contrarian, mean-reverting positions. At any one time, 4-5 different themes may be implemented across the portfolio either as directional and relative value positions (with approximately 4-5 trades per theme). The risk with a mean-reverting strategy is the continuation of the trend against a contrarian position, to combat this risk the portfolio managers employ stop-loss mechanisms that force the team to close a position at various levels of underperformance and reevaluate the investment thesis to invest additional money. With each theme, they target a greater than 50% hit ratio, but seek to structure asymmetric upside/downside payoffs.

The Solutions and Multi-Asset team (GMA) manages $58 billion, of which $19 billion is managed to a composite that is similar to the Strategy. The team is comprised of 16 investment professionals led by Cyril Moulle-Berteaux and Mark Bavoso.

Investment Expectations:

Excess Return: 3-4% net of fees vs. benchmark over a 3- and 5- year period.

Uncorrelated Excess Returns to Market Cycle: Given the structure of the Strategy which invests around thematic ideas and does not take large directional risk on/ risk off bets, the Strategy will generate excess returns that will not have a meaningful beta component to them.

Excess returns from Level II and Level III tactical asset allocation: Excess returns will primarily be derived from Level II (i.e US Equity vs. EM Equity, Capital Structure positioning – IG vs. HY) and Level III (i.e Sector, Market Cap, Currency, Duration) as defined in the DDR.

Investment Rationale:

Excess returns from tactical asset allocation: MSIM and GMA team have a demonstrated track record of adding value through tactical asset allocation (Figures 1 & 2). The process is unique through the identification of themes, which is measurable to the idea, and has demonstrated a 50%+ hit rate with an upside/downside capture ratio of ~1.36x over the period analyzed. (Figure 3)

Portfolio alignment with RSIC outcomes: The portfolio will be structured to put MSIM in RSIC's shoes through the selection of the RSIC Public Markets Composite benchmark. Additionally, a hurdle rate (of the management fee + the benchmark returns) and performance fee is included to further align incentives. Performance fees will be paid over a rolling 3-year measurement period.

Knowledge sharing and transmission of market data through MSIM's investment activity: Given the challenge of outperforming the RSIC Public Markets Composite benchmark, similar asset classes, and constraints, MSIM's positioning will provide valuable real-time input into RSIC's tactical positioning across and within asset classes.

Investment Considerations:

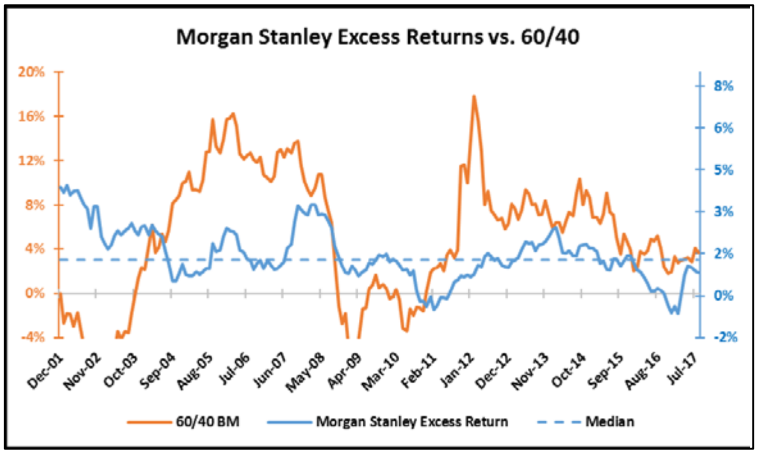
Key man risk: Cyril Moulle-Berteaux, named Portfolio Manager, departed MSIM to launch a hedge fund, Traxis Partners with Barton Biggs in 2003. He rejoined the team in 2011. The 20+ year track record has had multiple Portfolio Managers. This demonstrates the quality and strength of the process and is viewed as a positive that Mr. Moulle-Berteaux returned.

Active drawdown: The Strategy will target 500-600bps of annualized tracking error. In a two standard deviation year, it would not be uncommon for the Strategy to be down 600-800bps below the benchmark. The stop-loss mechanism noted above, and the diversification among the GTAA managers should help to mitigate this risk.

Paying performance fees in a negative absolute return year: While performance fees can create better alignment, a drawback is the potential to pay performance fees when the portfolio returns a negative absolute return. This is ultimately a positive outcome for RSIC as we would be better off for investing with the manager than a passive benchmark.

Morgan Stanley Investment Management – Global Tactical Asset Allocation – GTAAN-MS ("the Strategy") INVESTMENT SUMMARY

Figure 1: Rolling 36-month Excess Return



Source: RSIC Staff via MSIM provided data

Figure 2: Persistency of Excess Returns (200bps T.E Portfolio)

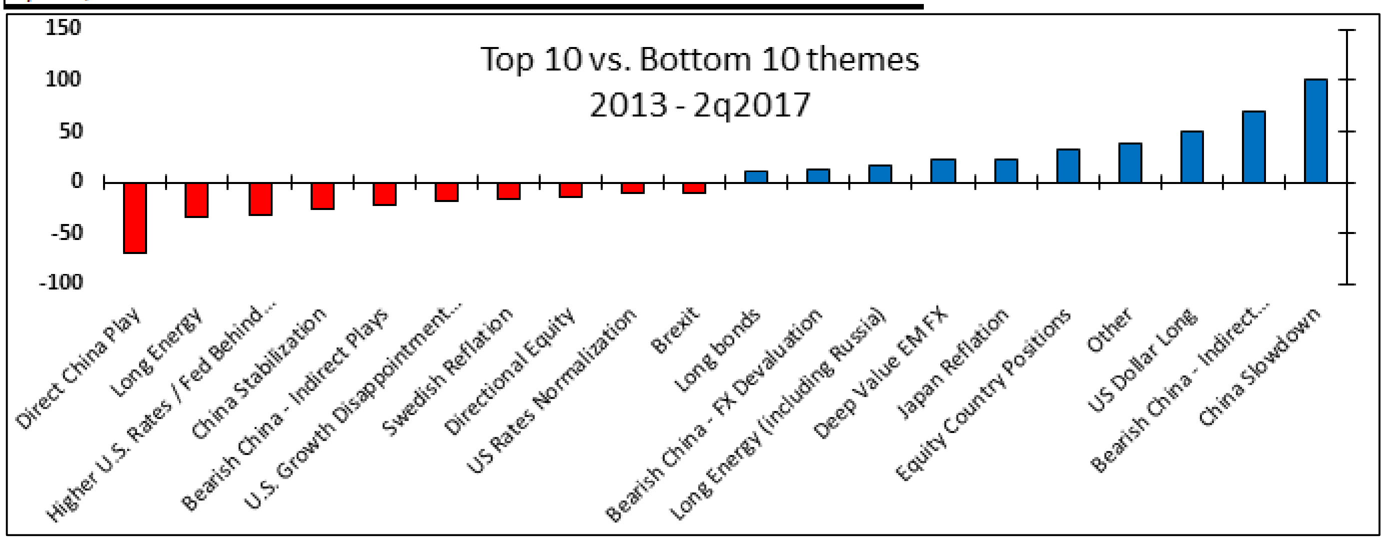
	Rolling 12 Months	Rolling 36 Months
>0	79.3%	93.1%
>1.4%	46.5%	46.0%
>2.0%	38.5%	25.9%

Statistic	Rolling 12 Months	Rolling 36 Months
min	-2.62%	-0.63%
25th %tile	0.17%	0.89%
median	1.24%	1.30%
75th %tile	2.88%	2.10%
max	6.34%	3.94%

Source: RSIC Staff via MSIM provided data

Figure 3: Thematic Analysis – Top 10 vs. Bottom 10 Portfolio Themes
(Illustrating positive hit ratio and asymmetry of position outcomes)

	Avg BPS Contribution	Hit Ratio
Lose Money	(14)	47.8%
Make Money	18	52.2%
Upside/downside	1.36	



Source: RSIC Staff via MSIM provided data from Jan 2013 – June 2017

Figure 4: Low correlation of excess returns to other risk assets

11/28/2008 - 12/31/2016

Correlation	60/40	ACWI	US Agg	Commodities	HY 2% Cap	Plan Return
Morgan Stanley	-0.01	0.01	-0.03	-0.15	-0.02	-0.01

Source: RSIC Staff via Bloomberg and MSIM provided data

Figure 5: Alpha is significant against other risk assets

	Coefficients	*t Stat*	*Significance*
Alpha	2.4%	3.29	YES
ACWI	0.124	6.09	YES
Global Rates	(0.154)	(3.94)	YES
US HY Credit	(0.016)	(0.52)	NO
Commodities	(0.079)	(4.86)	YES

Source: RSIC Staff via Bloomberg and MSIM provided data, Oct 2008 to July 2017

SC Due Diligence Team:
Steve Marino, Director, CFA Justin Young, Investment Officer, CAIA Chris Alexander, Associate Analyst Colin Bernier, Junior Analyst

Summary Terms Chart

	Investment Officer Summary:	Source Location:
Manager Name:	Morgan Stanley Investment Management	Term Sheet
Fund/Investment Name:	GTAAN – MS	Term Sheet
Primary Custodian(s) or Safekeeping Agent(s) (together with point of contact information if other than BONY Mellon):	State Street Global Custodial Services Sean Conroy spconroy@statestreet.com 617-786-3000	Term Sheet
RSIC Investment Size & Limitations (Commitment):	Up to 4% of Plan Assets	Term Sheet
All-in Investment Management Fee:	Management Fee and Performance Fee (rolling 3-year) not to exceed 100bps	Term Sheet
Organizational Expenses:	Prior to the execution of the LPA and IMA, the Parties shall be responsible for their own costs associated with the drafting and negotiation of the LPA, IMA and the term sheet, and the formation of the Limited Partnership ("the Fund"). Subsequent to the execution of the LPA and IMA, costs will be paid by the Limited Partnership.	Term Sheet
Professional Fees:	The Fund will bear audit, tax, annual legal expenses, 3rd party admin, custody and director fees subject to a cap of 10bps per year. Professional fees in excess of 10bps will be offset through a management fee waiver.	Term Sheet
Other Expenses/Fees:	The Fund will not be subject to any other expenses outside of those specifically detailed above as Professional Fees.	Term Sheet
Soft Dollar/Commission Sharing Arrangements:	The Fund prohibits the usage of soft dollars/commission sharing arrangements.	Term Sheet
Manager Commitment:	A minimum of 1% GP commitment of the total Fund NAV	Term Sheet
Anticipated Investment Period:	N/A	Term Sheet
Anticipated Investment/Fund Term:	1 year, with four automatic 1-year extensions	Term Sheet
Withdrawal Rights:	RSIC directed with 5 business days' notice	Term Sheet
Placement Agent Used in Obtaining Investment by RSIC:	None	Placement Agent Disclosure Letter

Standard Life Investments, Inc. – Global Tactical Asset Allocation – GTAAN-SL ("the Strategy")
INVESTMENT SUMMARY

RSIC Investment Team:	Staff recommends an allocation up to 4% of Plan assets to GTAAN - SL. Staff and Standard Life will create a Fund of One vehicle.
RSIC ODD Rating:	Pass Rating

Summary:

The Strategy's objective is outperform the RSIC Public Markets Composite benchmark portfolio by 400bps annually, measured over 3- and 5-year time horizons, within a targeted 500-600bps annual tracking error risk budget through tactical asset allocation. While providing for a diversified return stream that is lowly correlated with other risk assets and RSIC Plan returns (Figures 5 & 6)

Standard Life's investment approach is centered on the idea that fundamentals ultimately drive markets, but where fundamentals face the prospect of material change, there is inefficiency. By identifying these drivers and combining them with valuation, the team can seek to profit from these changes. The team generates 12-month views on 28 major markets that span equities, fixed income, credit, commodities, foreign exchange, and public real estate, where they belief market prices can converge to fundamentals.

The Global Multi-Asset Strategies team manages $195 billion in Multi-Asset strategies, of which $70 billion is managed to a composite that is similar to the Strategy. The team is comprised of eight investment professionals, 11 strategists and eight implementation specialists, led by Guy Stern and Adam Rudd as the named Portfolio Managers for the Strategy.

Investment Expectations:

Excess Return: 3-4% net of fees vs. benchmark over a 3- and 5- year period.

Will run with a high gross notional exposure: Given greater activity in relative value yield curve, duration adjustments, and FX exposure, the Strategy will run higher than other managers. The level of gross notional exposure will be set at a prudent level to meet the objective.

Excess returns predominately from Level II and Level III tactical asset allocation: Excess returns will primarily be derived from Level II (i.e US Equity vs. EM Equity) and Level III (i.e Yield Curve, Duration, FX, Country Rates and Equity), with additional value add coming from Level I directional views on risk assets and the broader business cycle.

Investment Rationale:

Excess returns from tactical asset allocation: The Strategy has demonstrated a track record of adding value through tactical asset allocation, through long/short relative value and market directional exposure. (Figures 1, 2, 3, 4)

Portfolio alignment with RSIC outcomes: The portfolio will be structured to put Standard Life in RSIC's shoes through the selection of the RSIC Public Markets Composite benchmark. Additionally, a hurdle rate (of 200bps above the benchmark returns) and performance fee is included to further align incentives. Performance fees will be paid over a rolling 3-year measurement period.

Knowledge sharing and transmission of market data through their investment activity: Given the challenge of outperforming the RSIC Public Markets Composite benchmark, similar asset classes, and constraints, Standard Life's positioning will provide valuable real-time input into RSIC's tactical positioning across and within asset classes.

Investment Considerations:

Merger Disruptions: On August 14, 2017, the merger between Standard Life and Aberdeen was completed. In the near-term there may be some disruption of the firm and the potential for reduction of redundant business units and strategies. Given numerous conversations with the manager, there appears to be minimal Multi-Asset product overlap, but we will continue to monitor the progress of the merger.

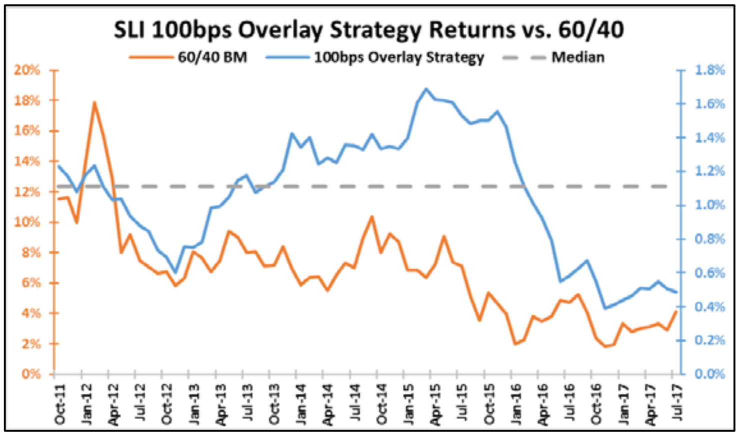
Active drawdown: The Strategy will target 500-600bps of annualized tracking error. In a two standard deviation year, it would not be uncommon for the Strategy to be down 600-800bps below the benchmark. The diversification of strategies across the three managers will mitigate the impact of a large drawdown in any one manager.

Paying performance fees in a negative absolute return year: While performance fees can create better alignment, a drawback is the potential to pay performance fees when the portfolio returns a negative absolute return. This is ultimately a positive outcome for RSIC as we would be better off for investing with the manager than a passive benchmark.

The return stream analyzed is a paper portfolio of the team's views: The long-term underwritten track record is based on a paper portfolio constructed by the team, which does not take into account transactions costs or management fees. However, the firm has managed the Strategy live for over 2 years and tracking within expectations of the model portfolio.

Standard Life Investments, Inc. – Global Tactical Asset Allocation – GTAAN-SL ("the Strategy") INVESTMENT SUMMARY

Figure 1: Rolling 36-month Excess Return



Source: RSIC Staff via Standard Life provided data

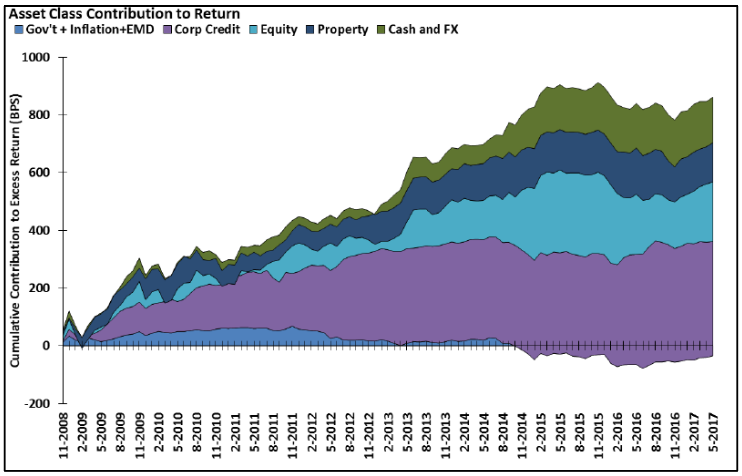
Figure 2: Persistency of Excess Returns (100bps T.E Portfolio)

	Rolling 12 Months	Rolling 36 Months
>0bps	86.2%	100.0%
>70bps	64.9%	77.1%
>100bps	50.0%	61.4%

Statistic	Rolling 12 Months	Rolling 36 Months
min	-1.30%	0.39%
25th %tile	0.35%	0.75%
median	0.99%	1.11%
75th %tile	1.64%	1.35%
max	2.44%	1.69%

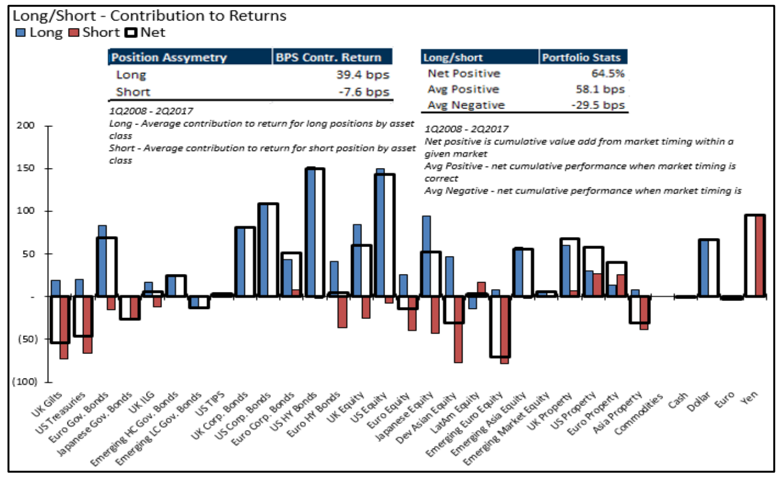
Source: RSIC Staff via Standard Life provided data

Figure 3: Asset class contribution to return



Source: RSIC Staff via Standard Life provided data

Figure 4: Long/Short portfolio contribution to return



Source: RSIC Staff via Standard Life provided data

Figure 5: Low correlation of excess returns to major risk assets and RSIC Plan returns

11/28/2008 - 7/31/2017

Correlation	60/40	ACWI	US Agg	Commodities	HY 2% Cap	Plan Excess Return
Standard Life	-0.03	-0.04	0.22	-0.23	-0.06	-0.12

Source: RSIC Staff via Bloomberg and Standard Life provided data

Figure 6: Alpha is significant against major risk assets

	Coefficients	t Stat	Significance
Alpha	0.9%	3.00	YES
ACWI	0.008	1.06	NO
Global Rates	0.023	1.56	NO
US HY Credit	(0.004)	(0.35)	NO
Commodities	(0.018)	(2.87)	YES

Source: RSIC Staff via Bloomberg and Standard Life provided data, Oct 2008 to July 2017

SC Due Diligence Team:
Steve Marino, Director, CFA Justin Young, Investment Officer, CAIA Chris Alexander, Associate Analyst Colin Bernier, Junior Analyst

Summary Terms Chart

	Investment Officer Summary:	Source Location:
Manager Name:	Standard Life Investments	Term Sheet
Fund/Investment Name:	GTAAN – SL	Term Sheet
Primary Custodian(s) or Safekeeping Agent(s) (together with point of contact information if other than BONY Mellon):	State Street Bank & Trust Company Rocco Logozzo Rocco.logozzo@ifs.statestreet.com 647-775-5317	Term Sheet
RSIC Investment Size & Limitations (Commitment):	Up to 4% of Plan Assets	Term Sheet
All-in Investment Management Fee:	Management Fee and Performance Fee (rolling 3-year) not to exceed 100bps	Term Sheet
Organizational Expenses:	Prior to the execution of the LPA and IMA, the Parties shall be responsible for their own costs associated with the drafting and negotiation of the LPA, IMA and the term sheet, and the formation of the Limited Partnership ("the Fund"). Subsequent to the execution of the LPA and IMA, costs will be paid by the Limited Partnership.	Term Sheet
Professional Fees:	The Fund will bear audit, tax, annual legal expenses, 3rd party admin, custody and director fees subject to a cap of 10bps per year. Professional fees in excess of 10bps will be offset through a management fee waiver.	Term Sheet
Other Expenses/Fees:	The Fund will not be subject to any other expenses outside of those specifically detailed above as Professional Fees.	Term Sheet
Soft Dollar/Commission Sharing Arrangements:	The Fund prohibits the usage of soft dollars/commission sharing arrangements.	Term Sheet
Manager Commitment:	A minimum of 1% GP commitment of the total Fund NAV	Term Sheet
Anticipated Investment Period:	N/A	Term Sheet
Anticipated Investment/Fund Term:	1 year, with four automatic 1-year extensions	Term Sheet
Withdrawal Rights:	RSIC directed with 5 business days' notice	Term Sheet
Placement Agent Used in Obtaining Investment by RSIC:	None	Placement Agent Disclosure Letter

RSIC Beneficiaries First: Their Future, Our Mission.

Francisco Partners V

Derek Connor, CFA, CAIA

David Haas

Josh Greene, CFA

Colin Bernier

Alan Bevard

Investment Recommendation

- Up to $125 million commitment
- Received IDD and ODD reports from Albourne
- Pass rating from RSIC ODD
- Legal negotiations underway
  - September 29 close

Manager Background

- San Francisco-based buyout and growth equity firm focused on technology investments
  - Team of 45 experienced investments professionals
  - Organized along the following technology verticals: Communications & Security, Financial Technology, Healthcare Technology, Other Services, Software, and Hardware

- Strong leadership team
  - Dipanjan "DJ" Deb promoted to CEO and lead Partner in 2005

- Operating resources resulting from dedicated relationship with Francisco Partners Consulting, LLC ("FPC")

Investment Rationale

- Attractive long-term performance
- Access to the middle market technology sector
- Deep and experienced team with significant technology domain expertise
- Conservative deal structures with disciplined use of leverage
- Flexible investment strategy

Investment Strategy

- Middle market technology investments ranging in size from $50 million to $250 million
  - Enterprise values between $100 million to $1 billion
- Preference for control transactions
  - ~80% of historical transactions providing a controlling position
- Pursues a "barbell" approach by investing in both value and growth companies
- Deep domain expertise across a variety of technology sub-sectors

Performance Summary

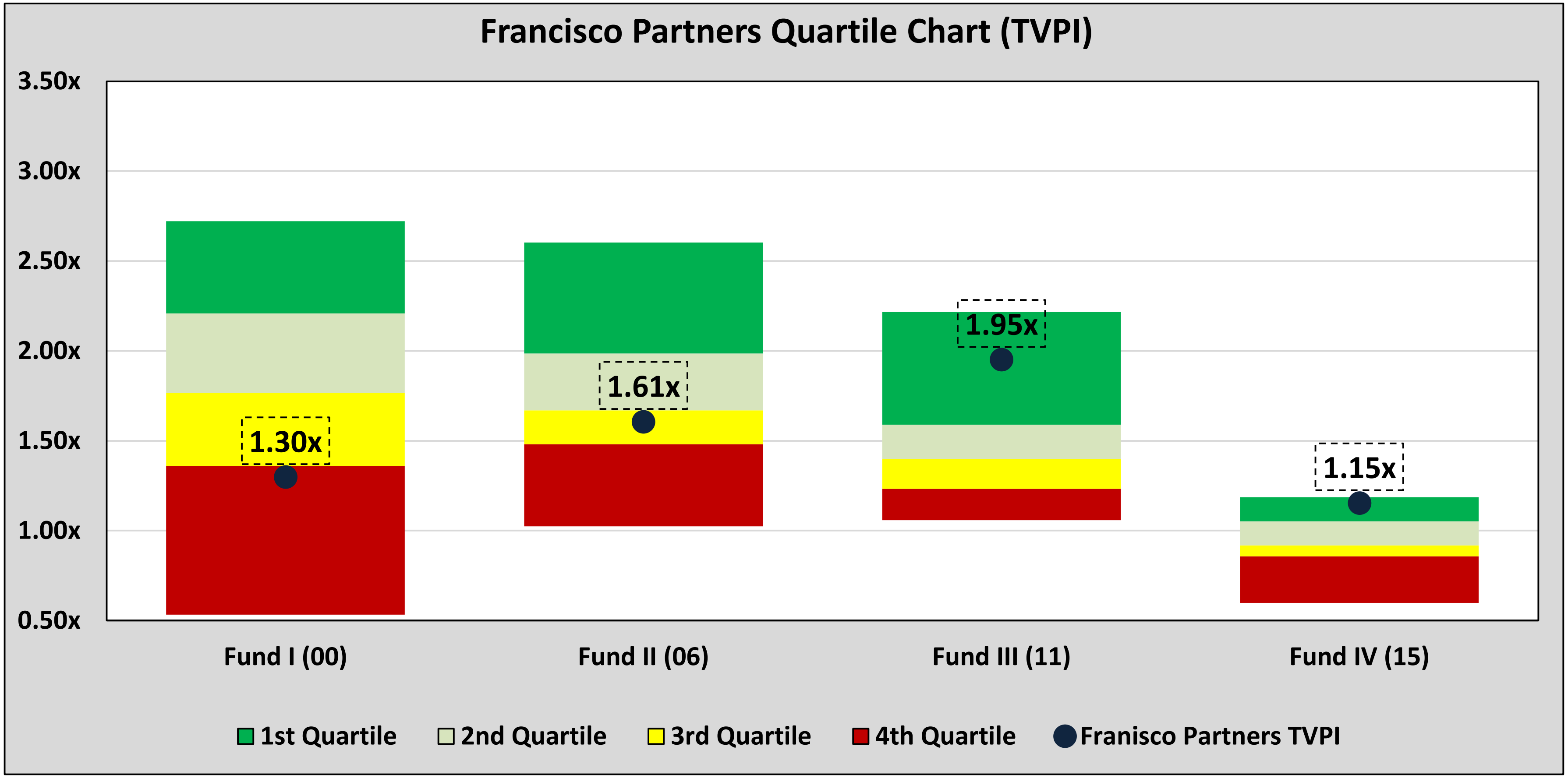
($'s in millions)

Investment	Vintage Year	Fund Size	Number of Investments	Invested Capital	Unrealized Value	Net IRR	Net MOIC	Net IRR Quartile Ranking	TVPI Quartile Ranking
Francisco Partners I	2000	$2,400	22	$2,381	$31	4.4%	1.3x	4th Quartile	4th Quartile
Francisco Partners II	2006	$2,400	30	$2,362	$502	10.5%	1.6x	3rd Quartile	3rd Quartile
Francisco Partners III	2011	$2,000	22	$1,962	$2,998	19.5%	2.0x	1st Quartile	1st Quartile
Francisco Partners IV	2015	$2,875	14	$1,700	$1,591	11.7%	1.2x	1st Quartile	1st Quartile
TOTAL		**$9,675**	**88**	**$8,405**	**$5,122**				

Francisco has had relatively modest growth in AUM

Data Source: Francisco Partners and Cambridge Associates U.S. Growth Equity and Buyout universe, as of 3/31/17

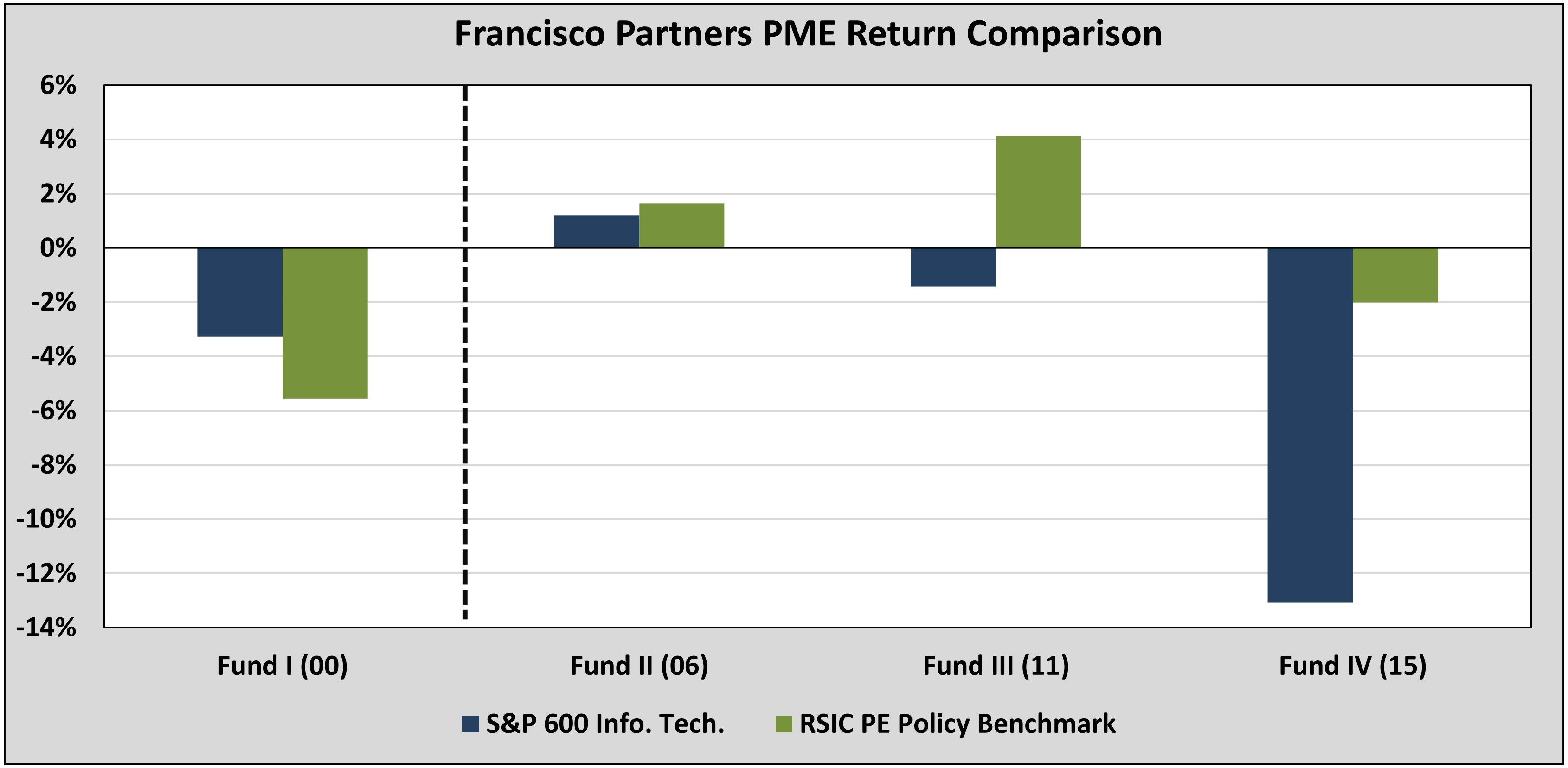
Performance Quartile Ranking (TVPI)



FP III and FP IV are top quartile compared to the Cambridge universe

Data Source: Francisco Partners and Cambridge Associates U.S. Growth Equity and Buyout universe, as of 3/31/17

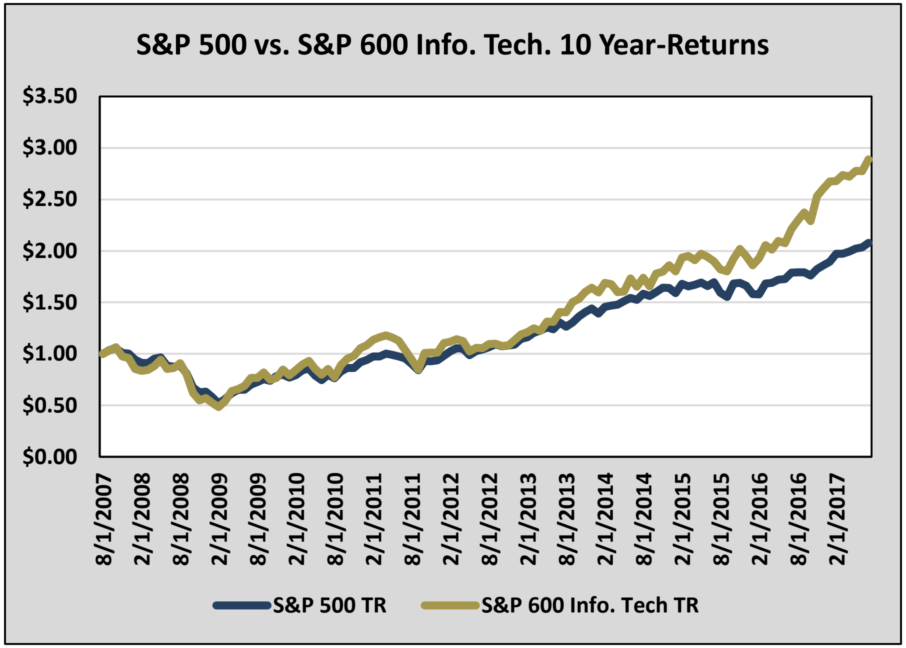
Fund-Level PME Analysis

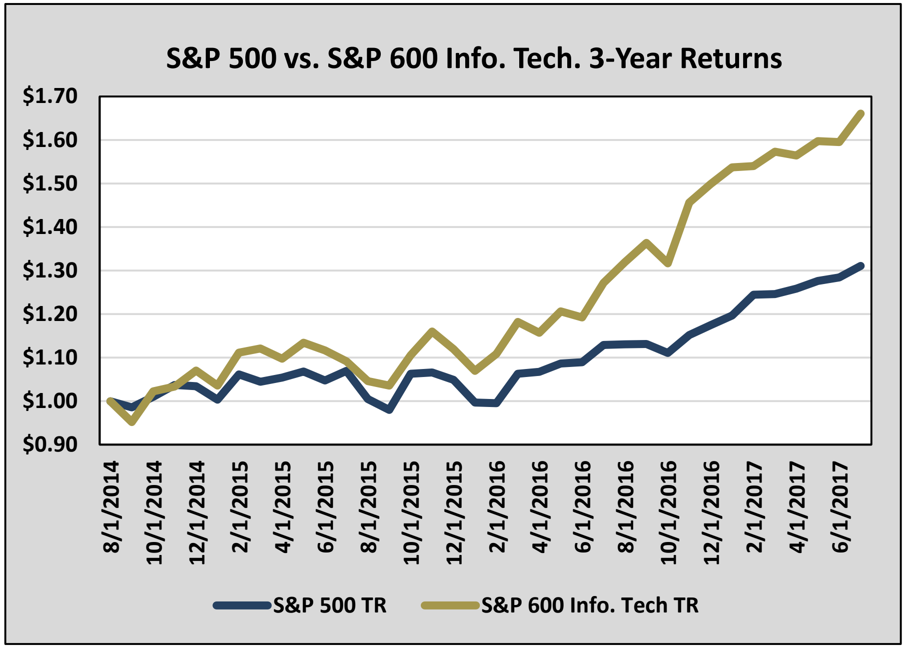


FP III and FP IV have outperformed the RSIC policy benchmark by an average of 288 bps

Note:
* Policy benchmark is 80% Russell 3000 + 20% MSCI EAFE + 300 basis points, lagged 3 months

Public Equity Technology Returns

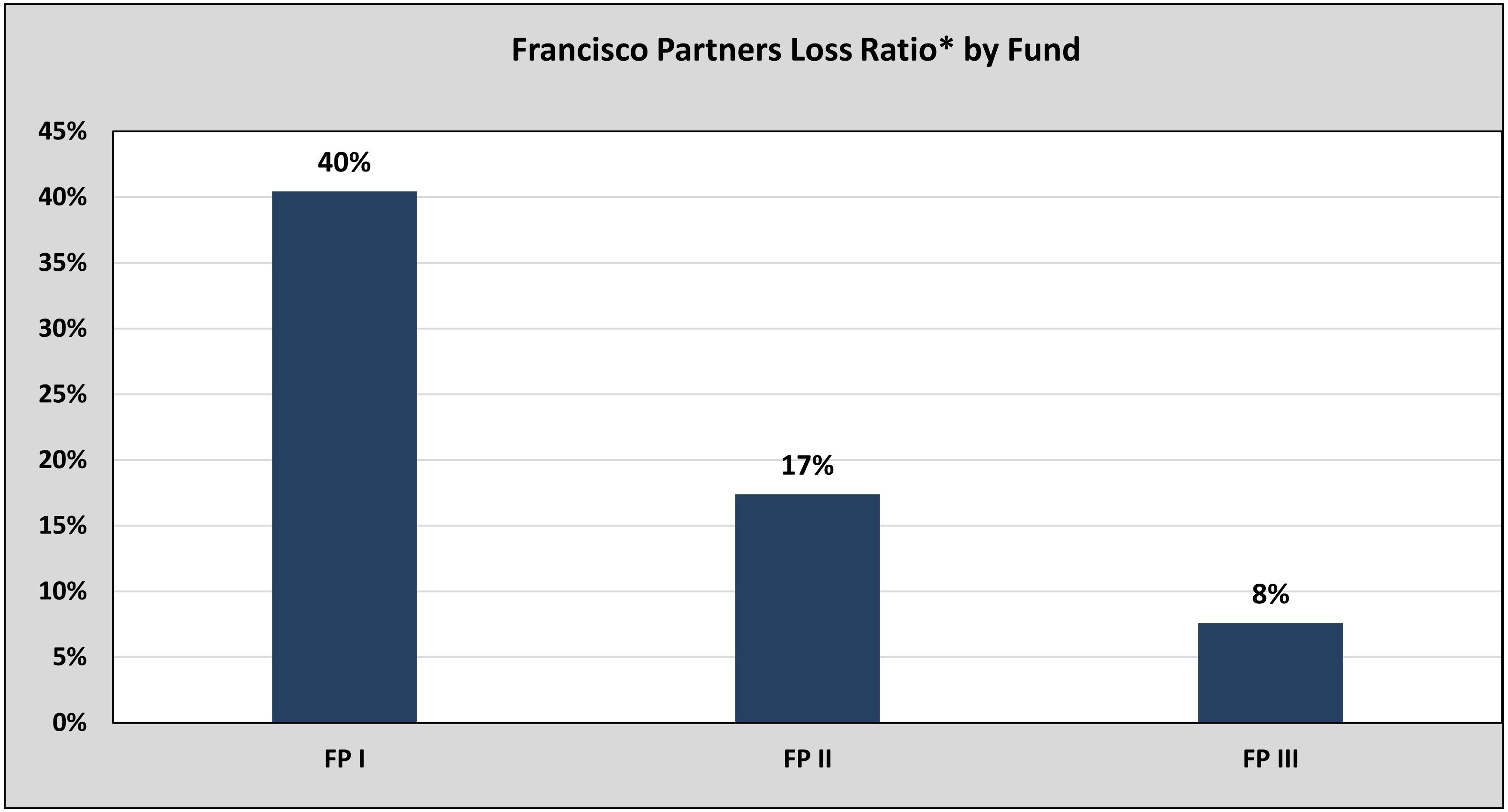




Public technology companies have experienced strong returns in recent years, leading to an unfavorable PME

Data Source: Bloomberg
- As of 7/31/17

Loss Ratio by Fund



Francisco's value orientation and conservatism is demonstrated through the steady decline of its loss ratio by fund

Note:
* Loss ratio calculation based on invested capital

Investment Considerations

- Expected increase in fund size
  - Mitigant: Majority of deals expected to average approximately $125 million with few outliers

- Relatively large unrealized portfolio
  - Mitigant: Francisco deal professional per investment has remained steady over the last few years and FPC team has grown

Francisco V Terms

- Fund Size: $3.25 billion target (hard cap of $3.875 billion)
  - GP will commit minimum of $100 million
- Management Fee:
  - 1.5% on committed capital during IP (6 years)
  - 1.25% of invested capital thereafter
  - 100% of fees offset against management fee
- Preferred Return: 8%
  - 20% carry
  - 80% GP catch-up then 80/20 split
- Fund Term:
  - 10 years with two 1-year extensions (GP discretion)
  - Additional years with consent of Advisory Board or majority of LPs

Investment Recommendation

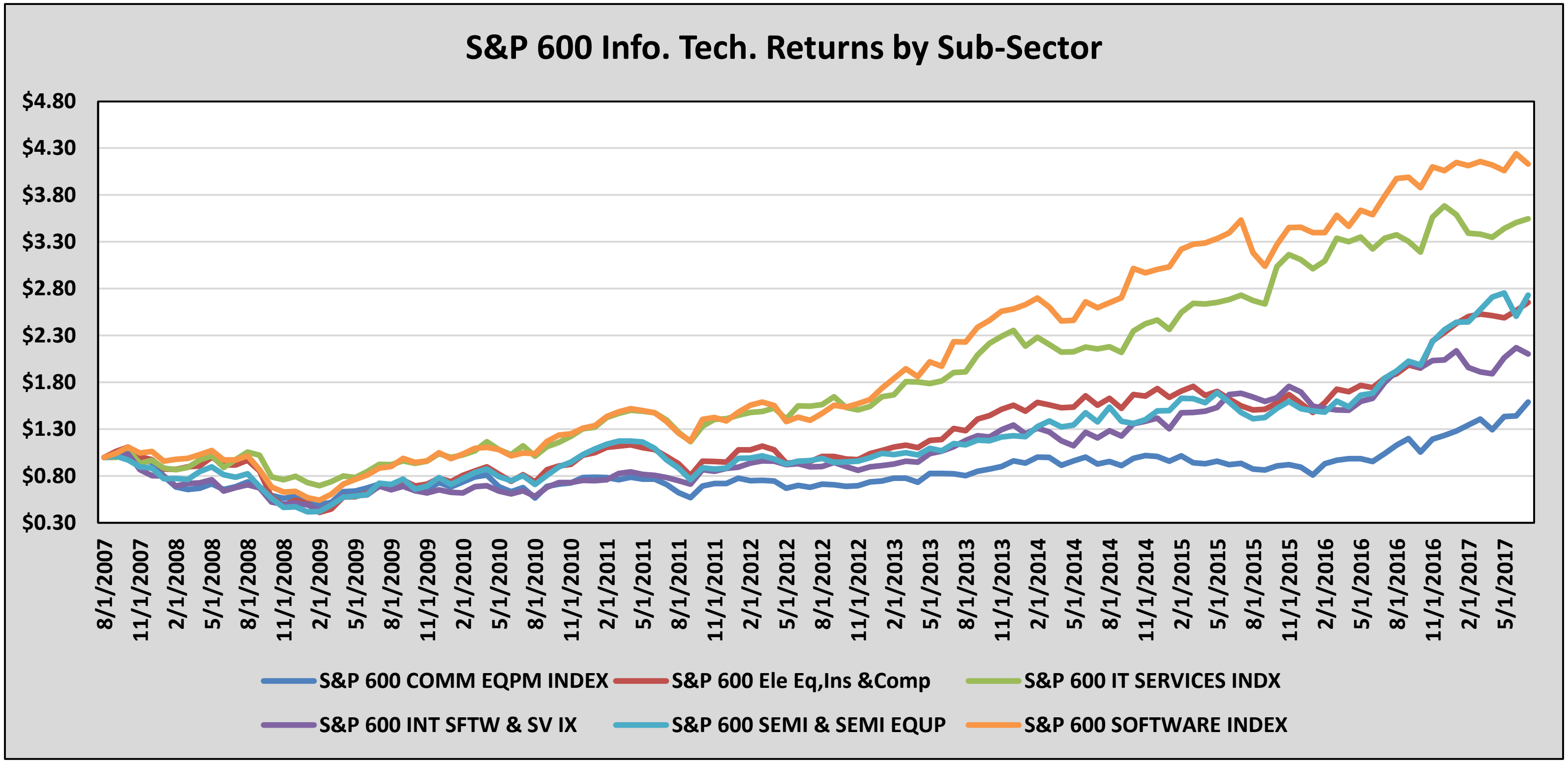
- Up to $125 million commitment
- Received IDD and ODD reports from Albourne
- Pass rating from RSIC ODD
- Legal negotiations underway
  - September 29 close

APPENDIX

Investment Process

- Each sector team identifies most attractive themes and maps out universe of target companies
- Utilizes relationships with corporates to source deals
- Proactively contacts founders and CEOs of target companies
- Prospective company CEOs required to present to Investment Committee before each investment is made

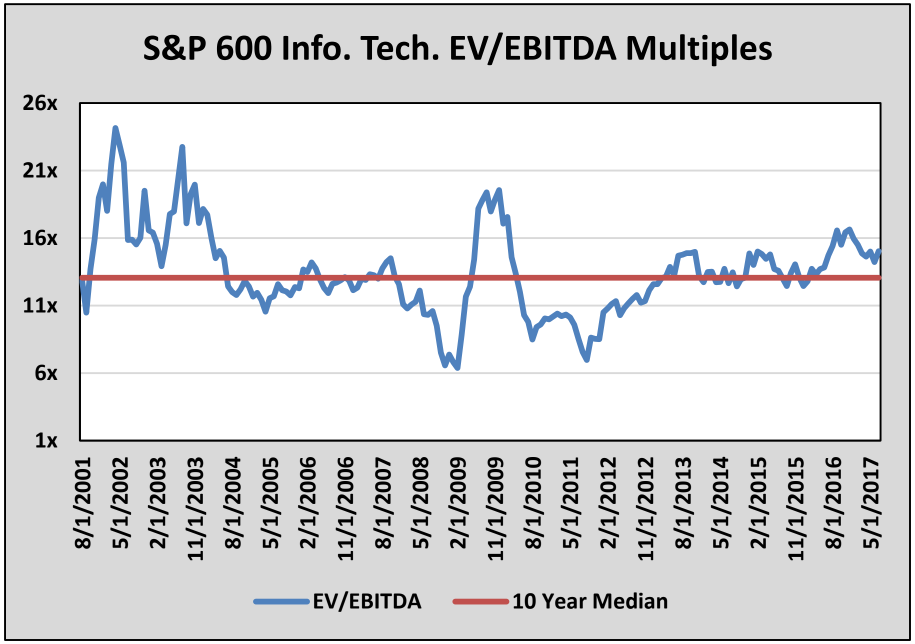
Public Equity Technology Sub-Sector Returns

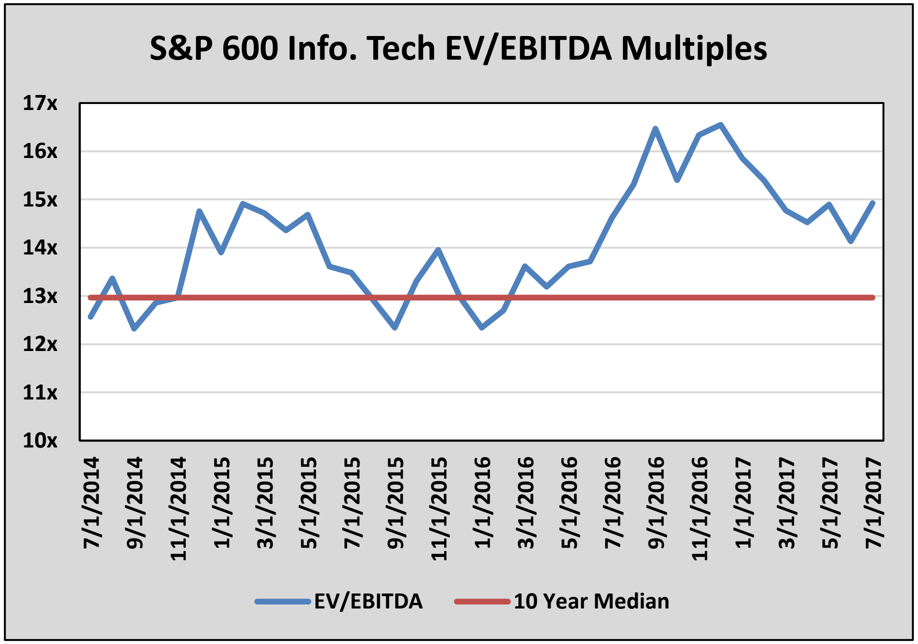


The software sub-sector has generated the strongest long term performance

Data Source: Bloomberg
- As of 7/31/17

Public Equity Technology Valuations





- S&P 600 Info. Tech. index EV/EBITDA valuation multiples are above historical averages

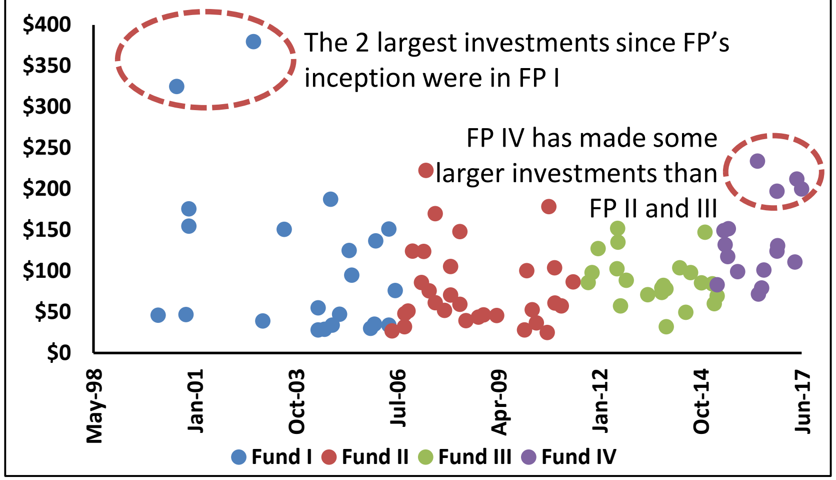
Data Source: Bloomberg
- As of 7/31/17

Invested Capital Per Investment

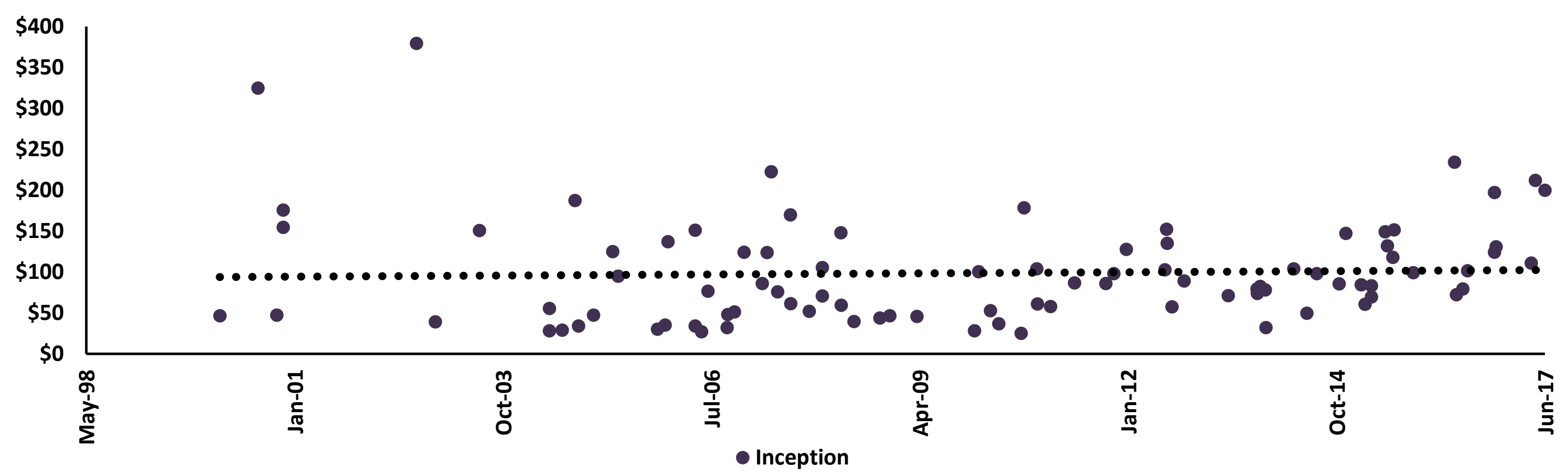
FP Investment Sizes Have Increased Modestly

- **Invested capital per deal has increased marginally with FP funds containing a few larger outlier deals**

Invested Capital Per Deal Since Inception



Invested Capital Trend



Francisco Partners V, L.P. (THE "FUND" or "FP V")
INVESTMENT SUMMARY

RSIC Investment Team:	Staff recommends a commitment up to $125 million as outlined in the *Summary Terms Chart*.
RSIC ODD Rating:	Pass Rating

Summary:

FP V is targeting a close of $3.25 billion, with an expected close at $4 billion of capital. The Fund will target between 15-25 investments in middle market technology companies (Enterprise values between $100 million and $1 billion) located in North America (expected to be 60-80%), Europe (expected to be 15-25%) and other geographies (expected to be 5-10%).

Francisco has one of the deepest teams of any technology-focused private equity manager, with 45 investment professionals based in San Francisco and London. In addition to the investment team, Francisco has an independent consulting arm, Francisco Partners Consulting ("FPC"), bring operational expertise to its engagements with its portfolio companies. FPC is owned by the management team of FPC and consists of 11 experienced technology Operating Partners (CEO level resources) and Operating Advisors.

Each sector team at Francisco is responsible for identifying the most attractive themes in their respective verticals (Figure 1) and mapping out the universe of companies deemed to fit the criteria of the deal teams. Historically, certain verticals will receive more capital in a particular fund vintage year, but over multiple funds the invested capital has been rather balanced across verticals.

Investment Expectations:

The expectation is that FP V will generated net IRRs in the range of 15-20% with a target multiple of 2.0x with many transactions structured with downside protection through preferred and convertible stock. This defensive profile is particularly attractive given the current high valuation environment for technology companies, but at the expense of upside participation in a continued rising valuation market.

Francisco tends to be more defensively position across the technology spectrum and will likely lag, on a public market equivalent basis, publicly traded technology companies when those stocks have better than the broader market performance, which was the case for Fund IV (Figure 5). However, in a stress environment, FP V should create meaningful excess PME performance.

Investment Rationale:

Attractive long-term performance: Francisco has demonstrated strong performance after undergoing a leadership transition in 2005 (Figure 4). Upon assuming leadership of the Firm, DJ Deb implemented a number of positive changes, which included professionalizing the firm, formalizing the investment process, creating a culture based on merit (as opposed to tenure) and reducing the risk of loss by structuring downside protection and limiting the use of leverage. These leadership and organizational changes have resulted in solid absolute performance of FP II and top quartile performance of FP III and FP IV (Figures 2 and 3).

Deep and experienced team: Francisco has experience investing during two significant recessions: the technology collapse of 2001 and the financial crisis of 2008-2009. The Firm's deep sector domain expertise, and middle market technology specialization, allows the team to develop insights and relationships that can lead to a greater proportion of proprietary deal flow.

Access to the middle market technology market: The technology industry has been one of the most dynamic and fastest growing industries in the global economy, with technology disrupting almost every industry. The middle market technology ecosystem is vast with a large number of potential acquisition opportunities. Francisco's expertise in middle market technology investing is expected to give investors attractive exposure to a growing sector of the global economy.

Flexible investment strategy: Francisco pursues a wide range of transaction types and invests in multiple geographies. The Firm will pursue divisional carve-outs, public-to privates, private buyouts and growth equity investments. Francisco's "barbell" approach to investing in growth and value companies has proven to be successful and helps create a more diversified portfolio of companies.

Investment Considerations:

Increase in fund size and deal size: FP V will likely be significantly larger than FP IV, which was approximately $2.9 billion. Based on discussions with Francisco, it is expected that FP V will close on around $3.9 billion of capital. This would be an increase of approximately 35% compared to FP IV. With the larger fund size there is the risk that FP V will stray from its middle market roots and go up market. While staff would prefer that Francisco raise less capital for FP V, it has exhibited a fairly measured increase in fund size compared to some of its competitors and has indicated the vast majority of its deals will be under $250 million, with a few outlier deals above $250 million.

Relatively large unrealized portfolio: Francisco currently has 45 unrealized portfolio companies and over $5 billion of unrealized value across its funds. The majority of the unrealized companies are held in FP III (2011 vintage) and FP IV (2015 vintage). With a large unrealized portfolio, there is a risk that Francisco investment professionals may become distracted when deployed FP V. However, despite the increase in unrealized portfolio companies, the ratio of FP investment professionals to current company has remained steady over the last few years.

Francisco Partners V, L.P. (THE "FUND" or "FP V")
INVESTMENT SUMMARY

Figure 1: FP Technology Verticals

($'s in millions)

Technology Vertical	Number of Investments	% Based on Number of Investments	Invested Capital	% of Invested Capital
Communications & Security	12	14%	$1,238.2	15%
Financial Technology	8	9%	$648.5	8%
Healthcare Technology	17	19%	$1,196.4	14%
Other Services	10	11%	$1,006.3	12%
Software	23	26%	$2,464.1	29%
Systems & Hardware	18	20%	$1,851.5	22%
GRAND TOTAL	**88**	**100%**	**$8,405**	**100%**

Figure 2: Quartile Rankings IRR

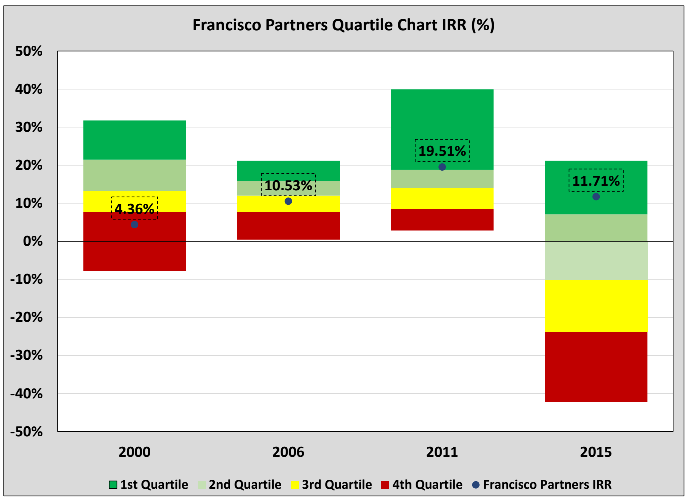
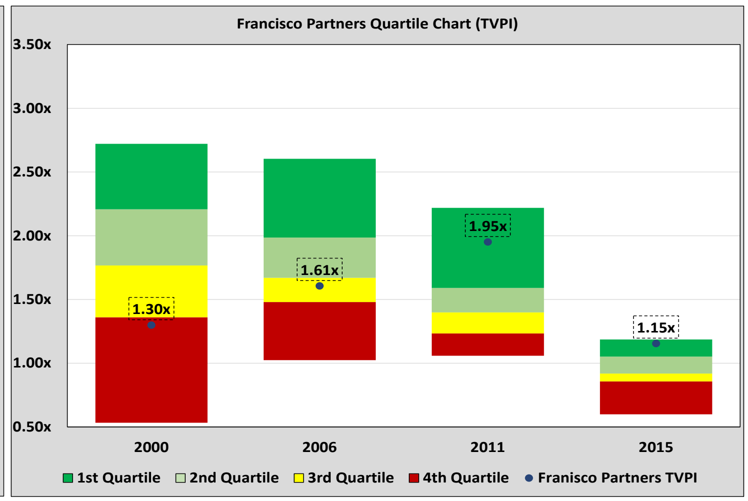


Figure 3: Quartile Rankings MOIC



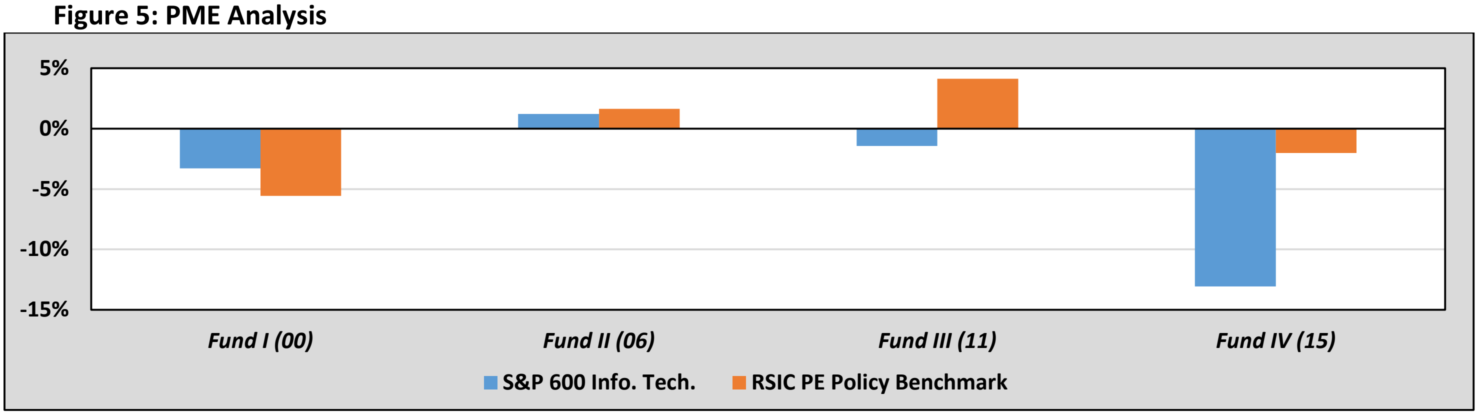
(Cambridge Associates U.S. Growth Equity and Buyout universe, as of 3/31/17)

Figure 4: FP Investment Returns

($'s in millions)

Investment	Vintage Year	Fund Size	Number of Investments	Invested Capital	Unrealized Value	Net IRR	Net MOIC
Francisco Partners I	2000	$2,400	22	$2,381.0	$30.8	4.4%	1.3x
Francisco Partners II	2006	$2,400	30	$2,362.0	$502.1	10.5%	1.6x
Francisco Partners III	2011	$2,000	22	$1,962.0	$2,998.4	19.5%	2.0x
Francisco Partners IV	2015	$2,875	14	$1,700.0	$1,590.9	11.7%	1.2x
GRAND TOTAL		**$9,675**	**88**	**$8,405**	**$5,122**		

Figure 5: PME Analysis



SC Due Diligence Team:
Derek Connor, CFA, CAIA David Haas Joshua Greene, CFA Alan Bevard Colin Bernier

Summary Terms Chart		
	Investment Officer Summary:	**Source Location:**
Manager Name:	Francisco Partners Management, L.P.	LPA Section 2.1
Fund/Investment Name:	Francisco Partners V, L.P.	LPA Section 1.1
Primary Custodian(s) or Safekeeping Agent(s) (together with point of contact information if other than BONY Mellon):	Bank of America Merrill Lynch and First Republic Bank Emmeline Swanson Merrill Lynch, Pierce, Fenner & Smith Inc. 212.415.0063 emmeline_swanson@ml.com	DDQ Section 13.7
RSIC Investment Size & Limitations (Commitment):	Up to $125 million commitment	Due Diligence Report
Management Fee:	1.5% of aggregate capital commitments during the Investment Period (six years); then 1.25% thereafter.	LPA Section 5.2
Performance Fees/Carried Interest:	20% carried interest	LPA Section 4.3(d)
Hurdle Rate/Preferred Return:	8% preferred return	LPA Section 2.1
Organizational Expenses:	Yes; up to $2.5 million for the Fund	LPA Section 5.3
Other Expenses/Fees:	Yes; 100% offset monitoring fees or transaction fees. FPC consulting fees and other compensation are retained by FPC and not offset against management fee.	DDQ Section 8.4
Manager Commitment:	The General Partner and its partners will commit to the Fund an aggregate of at least $100 million.	LPA Section 1.1(a)
Anticipated Investment Period:	Six years	LPA Section 2.1
Anticipated Investment/Fund Term:	Ten years, with ability to extend at the discretion of the General Partner for two one-year periods; thereafter for additional one-year periods with the approval of the Advisory Board or a majority in interest of the Limited Partners.	LPA Section 9.1
Withdrawal Rights:	None except as defined in the LPA	LPA Section 7.4
Placement Agent Used in Obtaining Investment by RSIC:	No	Placement Agent Compliance Letter

Investment Recommendation

South Carolina Retirement System Investment Commission
Francisco Partners V, L.P.

September 2017

ALBOURNE

Table of Contents

Recommendation

Albourne America LLC ("Albourne"), as the Private Equity consultant to the South Carolina Retirement System Investment Commission ("RSIC"), works with RSIC staff to assist them in their development and implementation of investment strategies suitable for their Private Equity portfolio. As part of our ongoing discussions with RSIC staff, Albourne has completed Investment Due Diligence on **Francisco Partners V, L.P.** (the "Fund") and **Francisco Partners Management, L.P.** ("Francisco Partners" or the "Manager") for potential inclusion in the RSIC portfolio. Albourne's Operational Due Diligence of the Fund and Manager is in process. Albourne supports RSIC's proposed commitment of up to $125 million to the Fund as part of RSIC's broader diversified portfolio.

RSIC staff have had full access to the Albourne research and due diligence reports underlying this recommendation.

Synopsis

Francisco Partners is a San Francisco and London based private equity firm that makes buy-out and growth equity investments in middle market technology companies primarily in the US and to a lesser extent in Europe and Israel. Founded in 1999, the firm went through a leadership change in 2005-2006 and has since developed into a cohesive partnership under the leadership of Dipanjan Deb, its co-founder.

The Manager's "barbell" approach of investing in both value and growth companies allows it to create a portfolio of both stable businesses and high growth opportunities with significant value-add potential. The Manager has the ability to buy companies with enough complexity to restrain acquisition multiples and leverage its operational expertise to institutionalize founder-owned businesses and accelerate value creation.

The Manager is in the process of raising the Fund with a $3.5bn target and no formal hard cap as of the date of this report, though it is anticipated that a hard cap in the region of $4.0bn will be set.

Summary detail

Manager	Francisco Partners Management	**Fund Target Size**	$3.5bn
Head Office Location	San Francisco, CA	**Hard Cap**	Likely $4.0bn
Assets Under Management	$6.7bn	**Liquidity**	Closed Ended
Inception	1999	**Fund Structure**	Cayman Islands Exempted LP
Investment Staff	42	**Inv Period/Fund Life**	6/10 years
Strategy	Middle-Market Buy Outs	**Target Investment Size**	$50-250m
Sector Focus	Technology	**Target Region**	Primarily USA

Ownership

Francisco Partners is an independent employee-owned investment firm.

Summary of portfolio fit

The Fund represents an attractive solution for certain investors seeking diversified exposure to both the fast growth and more stable and mature middle market technology companies. We believe it is well poised to continue to execute its strategy competently.

An investment in Francisco Partners offers the following strengths relative to peers:

- **Ambitious, well-adjusted and experienced investment team:** Since its formation in 1999 and following the leadership transition in 2005-2006, the Manager has built a capable 40-person investment team with a mixture of seasoned technology investors and younger partners, with healthy personnel dynamics and no succession issues.
- **Attractive and flexible technology sector focused strategy**: Over its entire history, the Manager has been singularly focused on investing in middle market companies across different subsectors of the technology sector and has accumulated deep domain expertise and experience. Its portfolio construction that combines value buy-outs with growth equity investments and purposefully avoids investing in fully priced operationally optimized stable companies should moderate the volatility inherent in the growth equity strategy and enhance the returns achievable from value buy-outs alone.
- **Measurably improved performance in Funds II and III:** Fund II (2006) and Fund III (2011) are solid to strong performers in both absolute and relative terms. Both funds have generated meaningful alpha compared to the public markets.

Qualifications to the Recommendation

Operational due diligence is not complete as at the date of this report, though it is anticipated to be complete in advance of the Commission meeting to be held on 28th September 2017. We have no reason to believe that any issue of materiality affecting this recommendation will arise from such due diligence.
Otherwise – none.

Due Diligence Check List:

This checklist represents a partial summary of the work undertaken by Albourne America LLC, in reviewing the Fund.

Investment due diligence:	**COMPLETE**
Onsite investment due diligence meeting:	**COMPLETE**
Compliance, litigation and media searches:	**COMPLETE**
Reference checks:	**COMPLETE**
Terms review*:	**COMPLETE**
Operational due diligence review:	**In process****
Onsite operational due diligence meeting:	**In process****
IT systems review:	**In process****

*Albourne does not provide legal or tax advice and the information is not intended to be a comprehensive review of all tax, legal or regulatory matters or developments thereto pertaining to the investment managers. None of the information is a substitute for seeking actual legal advice from a qualified attorney.
** These items are anticipated to be complete in advance of the Commission meeting to be held on 28th September 2017.

Placement Agents

Francisco Partners has not employed a placement agent for the Fund.

Important Notice

The information in this report does not contain all material information about the fund that is the subject of this report, its investment manager, any of their affiliates or any other related entity to which this report relates, including important disclosures and risk factors associated with an investment in the fund. As used herein, the term “Fund” refers to (i) the specific fund that is the subject of this report, (ii) collectively, the specific fund that is the subject of this report, its investment manager, any of their affiliates or any other related entity to which this report relates, or (iii) investment funds generally, as the context requires.

Before making an investment, RSIC should obtain and carefully review the relevant fund offering documents before investing in the Fund mentioned herein, as such documents may contain important information needed to evaluate the investment and may provide important disclosures regarding risks, fees and expenses. Funds are speculative, involve a high degree of risk, and are illiquid. Past performance is not indicative of future results and RSIC could lose all or a substantial amount of any investment it makes in such Funds. Furthermore, Funds may involve complex tax structures and delays in the distribution of important tax information, may have a limited operating history, may be highly volatile, and there may not be a secondary market for Fund interests. There may be restrictions on redemptions and transfers of Fund interests and such interests may otherwise be illiquid. Funds may also be highly leveraged and may have a fund manager with total investment and/or trading authority over the Fund. It should also be noted that, in the case of hedge funds, there may be a single adviser applying generally similar trading programs with the potential for a lack of diversification and corresponding higher risk; hedge funds may also effect a substantial portion of trades on foreign exchanges, which have higher trading costs.

This report, and the information contained herein, is for the sole use of RSIC and its Approved Persons.

South Carolina Retirement System Investment Commission

Chief Investment Officer/Investment Staff Delegation Report

Executive Summary

- Meketa Investment Group reviewed 45 large public retirement systems.
- Almost half (21 of 45) of these retirement systems delegate investment manager selection to staff[1].
- In an apparent effort to free up meeting agendas to focus more time on asset allocation analysis and other strategic decisions, many state retirement system's boards are granting more investment authority to internal investment staff (or contemplating doing so).
- Larger systems with larger investment staff are more likely to delegate.
  - 32 of the retirement systems reviewed were larger than South Carolina Retirement System Investment Commission ("RSIC"). 56% of those retirement systems delegate manager selection to staff.
  - 13 of the retirement systems reviewed were smaller than RSIC. Only 23% of those retirement systems delegate manager selection.
- The median investment staff[2] size at retirement systems that delegated manager selection to staff was 55 people.
- The median investment staff was only 13 for those systems that maintained board discretion over manager selection.

[1] Includes three retirement systems that appear to only delegate certain private markets discretion.
[2] Investment staff numbers are from National Association of State Retirement Administrators ("NASRA") 2016 Roll Call Report. Figures are self-reported to NASRA directly from state systems. Staff members are classified as either "Operations Functions" or "Investment Functions" on NASRA's survey and report.

Recommendations

- Delegation of investment authority to the Chief Investment Officer/investment staff would be consistent with the approach taken by other large retirement systems with substantial investment staff.
- The Commission should place commitment size limitations on discretionary private markets investments. We recommend implementing percentage of assets limits (rather than hard dollar limits) to avoid the need for administrative revisions as the total size of the Retirement System changes.
- Discretionary public market investments should be made consistent with the asset allocation targets/ranges approved by the Commission.
- We recommend granting CIO/staff the same authority currently afforded to the Commission to terminate a strategy if the circumstances are reflective of the conditions identified in the Statement of Investment Objectives and Policies.
- All investment decisions made by CIO/staff should be reported to the commissioners at the next regularly scheduled meeting. Included in such report should be the investment rationale and summary of investment terms.

Recommendations (continued)

- We recommend the Commission impose a maximum commitment size for discretionary private markets investments.
- Choosing a maximum within the suggested ranges below would be consistent with the other state plans we reviewed.

Investment Type	Suggested Range for Maximum Discretionary Commitment per Fund[1]
Private Equity Investment	0.50% - 0.75%
Venture Capital Investment	0.25% - 0.50%
Private Debt Investment	0.50% - 0.75%
Real Estate Investment	0.50% - 0.75%
Infrastructure Investment	0.50% - 0.75%

- To avoid the possibility of circumventing the discretionary limitations, all co-investments made alongside a limited partnership fund commitment shall be included in the calculation of the maximum commitment.

[1] As a percentage of the total Retirement System market value.

Scope

- Meketa Investment Group reviewed publicly available plan documents for each retirement system listed on the following pages.
- The most commonly reviewed documents for each system included:
  - Comprehensive Annual Financial Report
  - Investment Policy Statement
  - National Association of State Retirement Administrators (“NASRA”) Roll Call
- The focus of the research was on public pension systems with over $10 billion in assets.
- Nine retirement systems in the sample are Meketa Investment Group clients (either general consulting relationship or specialty consultant).
- Meketa Investment Group reviewed the South Carolina Retirement System Investment Commission’s Internal Investment Committee Charter.
- **Disclaimer**: The research was conducted on most current available public documents. The findings may be incomplete or may not represent the current situation if these documents are not comprehensive or up to date.

Retirement Systems – With Manager Selection Delegated to CIO/Staff[1]

Plan Name	Size ($bb)	Investment Staff[2] #	5 Year Performance[3]	10 Year Performance[3]
California Public Employees Retirement System	294	367	6.8%N	5.1% N
California State Teachers Retirement System	190	142	7.7% N	5.6% N
Florida Retirement System	177	207	6.8%	5.9%
Teachers Retirement System of Texas	133	145	6.8% N	5.9% N
New York State Teachers Retirement System	108	58	8.3% N	6.2% N
Wisconsin Retirement System	95	160	12/31 fiscal year end	12/31 fiscal year end
Ohio Public Employees Retirement System	90	55	12/31 fiscal year end	12/31 fiscal year end
State Teachers Retirement System of Ohio	72	100+	7.6% N	5.9% N
Virginia Retirement System	68	70	7.0%	5.6%
Michigan Public School Employees Ret. System	48	47	9/30 fiscal year end	9/30 fiscal year end
Maryland State Retirement and Pension System	48	23	5.7% N	4.9% N
Tennessee Consolidated Retirement System	43	31	7.5%	6.0%
Public School Retirement System of Missouri	38	16	7.4%	5.8%
Arizona State Retirement System	34	17	7.1% N	6.0% N
Indiana Public Retirement System	30	16	4.2% N	3.8% N
Employees Retirement System of Texas	26	71	8/31 fiscal year end	8/31 fiscal year end
Wyoming Retirement System	8	8	5.4%	4.8%
Missouri State Employees Retirement System	8	21	5.6% N	5.9% N
Oregon Public Employees' Retirement System[4]	71	Not disclosed	7.1%N	ND
Alaska Retirement Management Board[4]	31	Not disclosed	6.6%	ND
Iowa Public Employees Retirement System[4]	30	6	7.1% N	6.3% N
Average	**78**	**82**	**6.7%**	**5.6%**
Median	**48**	**55**	**7.0%**	**5.9%**

[1] The research was conducted on most current available public documents. The findings may be incomplete if a given retirement system's approach to investment staff delegation is not appropriately described in the most recent documents published on each retirement system's respective website.
[2] According to NASRA.
[3] All performance numbers as of June 30, 2016 from each retirement system's CAFR or other available performance report. Net of fees performance is marked with a "N".
[4] Partial private markets discretion.

Retirement Systems– With No CIO/Staff Discretion[1]

Plan Name	Size ($bb)	Investment Staff #	5 Year Performance[2]	10 Year Performance[3]
New York State Common Retirement Fund	192	60	3/31 fiscal year end	3/31 fiscal year end
North Carolina Retirement Systems	90	30	6.0% N	5.5% N
Minnesota State Board of Investment	85	13	7.7% N	6.5% N
Washington State Investment Board	80	50[3]	7.5% N	6.2% N
New Jersey Division of Pensions and Benefits	79	Not disclosed	6.6%	5.9%
Teachers Retirement System of Georgia	67	54	7.3%	6.3%
Massachusetts Pension Reserves Investment Management	65	14	7.1%	5.7%
Los Angeles County Employees Retirement Association	48	30	6.7%	6.0%
Colorado Public Employees' Retirement Association	44	55	12/31 fiscal year end	12/31 fiscal year end
Illinois Teachers' Retirement System	43	16	6.8%	5.4%
Retirement Systems of Alabama	38	18	9/30 fiscal year end	9/30 fiscal year end
Public Retirement System of Nevada	37	1	7.8%	6.3%
Illinois Municipal Retirement Fund ("IMRF")	36	14	6.9% N	6.3% N
State of Connecticut Retirement Plans and Trust Funds	30	4	5.7%	5.3%
Utah Retirement Systems	29	28	12/31 fiscal year end	12/31 fiscal year end
Public Employees' Retirement System of Mississippi	27	5	7.2%	5.9%
Texas Municipal Retirement System	26	5	5.6%	6.6%
Pennsylvania State Employees' Retirement System	26	12	ND	ND
Teachers Retirement System of Louisiana	19	8	7.5%	6.1%
Illinois State Board of Investment	16	7	6.9% N	5.0% N
Kentucky Retirement Systems	15	7	5.4% N	5.0% N
Teachers Retirement System of Oklahoma	14	2	ND	ND
Orange County Employees Retirement System	14	6	5.1%	5.3%
Arkansas Public Employees Retirement System	7	5	7.3%	ND
Average	**47**	**18**	**6.7%**	**5.8%**
Median	**37**	**13**	**6.9%**	**5.9%**

[1] The research was conducted on most current available public documents. The findings may be incomplete if a given retirement system's approach to investment staff delegation is not appropriately described in the most recent documents published on each retirement system's respective website.
[2] All performance numbers as of June 30, 2016 from each retirement system's CAFR or other available performance report. Net of fees performance is marked with a "N".
[3] Estimated based on size of total staff.

Analysis and Trends

- Delegation language is typically included in a retirement system's Investment Policy Statement.
- Some retirement systems had extensive parameters surrounding discretion while other systems had simple universal delegation granted in one sentence.
- In almost every case, the board of trustees retains control over asset allocation and investment policy approval.
- Nearly every retirement system delegated rebalancing decisions to staff (within predetermined ranges).
- For public markets manager selection, manager/strategy exposure limits were typically not explicitly stated.
- For private markets fund selection, most retirement systems had restrictions on maximum commitment size.
  - Where discretion was given to asset class heads in addition to the CIO, the latter is typically given more latitude with commitment size (e.g., the asset class head can commit up to $150 million, but the CIO can commit up to $300 million).
  - The limits were often explicit dollar amounts, not a percentage of plan assets.
  - When commitment size limits were explicitly listed, the limits were often increased for follow-on commitments (i.e. successor fund commitments).
- Reporting requirements were often generic, with typical language requesting staff to report to the board of trustees at each/next board meeting.

Analysis and Trends (continued)

- The average commitment size maximum for discretionary private market commitments was 0.46% for those retirement systems that explicitly stated a maximum in their policy documents. The average increased to 0.54% if you exclude retirement systems over $100 billion in assets.

Retirement System	Size ($ bb)	Size of Investment staff, if known	Private Markets Limits[1] (%)	Private Markets Limits[1] ($ mm)
California Public Employees Retirement System	294	367	*0.34%*	**1,000**
California State Teachers Retirement System	190	142	*0.21%*	**400**
Teachers Retirement System of Texas	133	145	**0.50%**	*665*
New York State Teachers Retirement System	108	58	*0.09%*	**100**
Wisconsin Retirement System	95	160	*0.32%*	**300**
Ohio Public Employees Retirement System	90	55	*0.44%*	**400**
Oregon Public Employees' Retirement Fund	71	not disclosed	*0.21%*	**150**
Michigan Public School Employees' Retirement System	48	47	**1.00%**	*480*
Arizona State Retirement System	34	16	*0.80%*	*272*
Alaska Public Employees Retirement System	31	unknown	*0.32%*	**100**
Indiana Public Retirement System	30	16	**0.75%**	*225*
Iowa Public Employees Retirement System	30	6	*0.27%*	**80**
Employees Retirement System of Texas	26	71	**0.75%**	*195*

All Retirement Systems		
Average	0.46%	$336
Median	0.34%	$272

Excluding Systems over $100 bb		
Average	0.54%	$245
Median	0.44%	$225

[1] The limits labeled in **bold** (in either the % or $ columns) are explicitly stated, the limits *italicized* (in either the % or $ columns) are implied calculations.

Comments on Performance Review

- No clear pattern emerges when comparing the trailing performance for those retirement systems that delegate investment decisions to those systems that retain board discretion.
  - For the trailing ten years, 47% of both groups surveyed had produced above-median returns[1].
  - Likewise, the median return for both groups was the same over the ten-year period.
- There are many caveats that should be considered when seeking to explain performance track records.
  - Most notable is asset allocation. In nearly all retirement systems surveyed, the board of trustees was responsible for the asset allocation policy.
  - Other factors that impact performance but are not easily discernable in this performance review include:
    - the start date when CIO/staff was delegated investment authority
    - the degree to which CIO/staff acts on that authority
    - end-point bias
    - the funded status of the system
    - the target return
    - the political environment in the state
    - the number of strategies in use by the retirement system
    - the liquidity profile of the system

[1] We compared performance to the InvestorForce Public Pension DB > $5 billion peer universe. Gross returns were compared against the gross peer group and net returns were compared against the net peer group.

Distribution of Returns for Sub-Set of Systems with CIO/Staff Discretion

	5 Year	10 Year
1st Quartile Peer Ranking	47%	20%
2nd Quartile Peer Ranking	18%	27%
3rd Quartile Peer Ranking	12%	20%
4th Quartile Peer Ranking	23%	33%

- For those plans with delegated investment authority, performance was stronger over the shorter five year time period. It is unknown if that is in response to CIO/staff delegation or other factors.

Distribution of Returns for Systems with Board Controlled Investment Authority

	5 Year	10 Year
1st Quartile Peer Ranking	17%	35%
2nd Quartile Peer Ranking	39%	12%
3rd Quartile Peer Ranking	22%	24%
4th Quartile Peer Ranking	22%	29%

- For those plans with board controlled investment authority, the proportion in the top quartile is much lower over the trailing five year period than the trailing ten year period.

Discretion Language

- The attached appendix provides excerpts from some of the retirement systems that have delegated investment authority to CIO/staff.

Appendix

Indiana Public Retirement System

Size	Investment Staff
$30 billion	16
Excerpt from Investment Policy Statement	
"Delegated Authority The Board has delegated the day-to-day investment operations to the Staff, though oversight of the System's assets remains with the Board. The Staff is responsible for performing such duties consistent with this Policy and as otherwise directed by the Board. Included in this, the ED is authorized by the Board, pursuant to a recommendation by the CIO, to retain, manage, and terminate Investment Managers within each asset class as required to achieve the investment objectives of the Retirement Funds within the following limitations: 1. The initial investment made in a Portfolio described in Section 9 (Public Investment Guidelines), Section 11 (Commodities Investment Guidelines), and Section 14 (Risk Parity Investment Guidelines), may not exceed 3.0% of the market value of the Retirement Fund's assets at the time of investment. Notification regarding the investment should be provided to the Board at its next regularly scheduled meeting. Any additional allocations to the same Portfolio that increase the Portfolio's total market value to a weight greater than 6.0% of the Retirement Fund's assets at the time of investment must receive prior authorization from the Board; 2. The initial investment made in a Portfolio described in Section 10 (Private Equity Investment Guidelines), Section 12 (Real Estate Investment Guidelines), and Section 13 (Absolute Return Investment Guidelines), may not exceed 0.75% of the market value of the Retirement Funds' assets at the time of investment. Notification regarding the investment should be provided to the Board at its next regularly scheduled meeting. Any additional allocations to the same Portfolio that increase the Portfolio's total market value to a weight greater than 1.5% of the Retirement Fund's assets at the time of investment must receive prior authorization from the Board."	

- Indiana Public Retirement System places limits on the percentage of fund assets for both public market and private market investments.

New York State Teachers

<table>
<tr><th>Size</th><th>Investment Staff</th></tr>
<tr><td>$108 billion</td><td>58</td></tr>
<tr><th colspan="2">Excerpt from Investment Policy Manual</th></tr>
<tr><td colspan="2">“Investment Discretion Delegated to the Executive Director and Chief Investment Officer

-The Executive Director and Chief Investment Officer, upon recommendation of the Internal Investment Committee, has authority to invest up to $100 million in any private equity fund, limited partnership or other collective investment vehicle and up to $75 million in secondary purchases of interests in any fund in which the System has previously invested

- The Executive Director and Chief Investment Officer, upon recommendation of the Internal Investment Committee, has authority to invest up to $100 million in any fund, limited partnership or other collective investment vehicle established for the purpose of making investments in real estate fixed income assets and/or equity real estate assets and up to $75 million in secondary purchases of interests in any fund in which the System has previously invested

(The Internal Investment Committee is an advisory committee to the Executive Director and Chief Investment Officer. The committee members include: the Executive Director and Chief Investment Officer; Managing Director of Private Equity; Managing Director of Fixed Income; Managing Director of Public Equities; and Managing Director of Real Estate)</td></tr>
</table>

- New York State Teachers grants investment staff the authority to commit up to $100 million for private equity or real estate fund partnerships.

Employees Retirement System of Texas

<table>
<tr><th>Size</th><th>Investment Staff</th></tr>
<tr><td>$26 billion</td><td>71</td></tr>
<tr><th colspan="2">Excerpt from Investment Policy Statement</th></tr>
<tr><td colspan="2">“External investment managers are approved by an Internal Investment Committee (IIC) that includes the Executive Director, the Chief Investment Officer (CIO), and at least one IAC (Investment Advisory Committee) member.”</td></tr>
<tr><th colspan="2">Excerpt from Private Equity Policy and Real Estate Policy</th></tr>
<tr><td colspan="2">“The Private Equity Investment Committee consists of the Executive Director, Chief Investment Officer and members of the ERS Investment Staff and is granted the following fiduciary responsibility: (i) approving Private Equity Portfolio investments recommended by Private Equity Staff up to the lesser of $200 million or 0.75% (combining limited partnership commitments and any associated co-investments) of the System’s assets in the case of partnerships that invest in companies, and (ii) approving Private Equity Portfolio investments recommended by Private Equity Staff up to the lesser of $300 million or 1.5% in the case of partnerships that invest in other partnerships (i.e. fund-of-funds vehicles) as determined at the time of the Private Equity Investment Committee meeting.”

“The Real Estate Investment Committee consists of the Executive Director, Chief Investment Officer and senior members of the ERS Investment Staff and is granted the fiduciary responsibility of approving Real Estate Portfolio investments recommended by Real Estate Staff up to the lesser of $200 million or 0.75% of the System’s assets as determined at the time of the Real Estate Investment Committee meeting. For co-investments with New Relationships, the Real Estate Investment Committee will approve the general partner, as well as approve the co-investment.”</td></tr>
</table>

- Employees Retirement System of Texas requires one member of the external Investment Advisory Committee to approve all investments.
- Explicit dollar and percentage limitations were listed for private equity and real estate.

Teachers Retirement System of Texas

Size	Investment Staff
$133 billion	145
Excerpt from Investment Policy Statement – Appendix B	
The Internal Investment Committee's (IIC) authority is limited by the size of the investments it can approve without also obtaining approval from the Board. The Chief Investment Officer (CIO) has Special Investment Opportunity authority of up to $1 billion. *Allocations to a single manager organization may only exceed the limits specified in this Appendix B with the prior authorization of the Board.*	

Portfolio	Initial Allocation or Commitment	Additional or Follow on Commitment	Total Manager Limitations
External Public Markets Managers	*0.5%*	*1%*	*3%*
Private Equity Portfolio	*0.5%*	*1%*	*3%*
Real Assets Portfolio	*0.5%*	*1%*	*3%*
Energy, Natural Resources and Infrastructure Portfolio	*0.5%*	*1%*	*3%*
Total Internal Investment Committee Approval, each Manager Organization			*6%*

- Teachers Retirement System of Texas places percentage of plan asset limitations on all asset classes.

Arizona State Retirement System

Size	Investment Staff
$34 billion	17

Excerpt from Board Governance Policy Handbook

- *"The Board views itself as being primarily an oversight and strategic policy-making body. The Board has delegated the leadership, management and administrative functions to the ASRS Director and staff subject to ongoing monitoring and oversight. The Board has also delegated the hiring and termination of investment managers to the (Director's) Asset Class Committees. The Board does not engage in regular day-to-day management functions of the ASRS.*
- *Asset class committees are designed to:*
- *1. Provide authority and responsibility to the Director, CIO, and IMD staff regarding the implementation of the ASRS Strategic Asset Allocation Policy (SAAP) and associated selection of investment managers.*
- *2. Improve the efficiency and effectiveness of the ASRS investment decision-making process.*
- *3. Provide consistency and uniformity in investment decision-making frameworks."*

- Arizona State Retirement System delegates discretion to asset class committees.
- No dollar size limitations are explicitly listed on private markets investments but concentration limits in a single fund or single manager are listed in the Private Equity Program Strategic Investment Plan.
- Commitments to a single fund are limited to 10% of the private equity target allocation, and total manager exposure is limited to 20% of the private equity target.

Virginia Retirement System

Size	Investment Staff
$68 billion	70
Excerpt from Investment Policy Statement	

*"**Decision Making:***

The Board is responsible for establishing broad policy guidelines and benchmarks that will enable the fund to achieve its investment objective. Board decisions are required in the following areas:

1. Asset Allocation Targets (Policy Risk/Reward Parameters)

2. Allowable Ranges around the Policy Targets

3. Total Fund and Program Level Benchmarks

4. Active Risk Limits Relative to Policy

Beyond these broad policy decisions, the Board delegates to the Chief Investment Officer (CIO) all other decision-making relating to the investment of VRS assets, subject to the guidelines presented in this document."

*"'**Investment Manager Selection and Termination:***

The CIO has full authority to hire and fire investment managers and negotiate or renegotiate fees at any time using processes deemed likely to achieve the best investment results for the fund. The CIO will report any hirings or terminations at the next Board meeting."

- Virginia Retirement System delegates full investment discretion to its CIO with no evidence of mandate size limitations.

California State Teachers Retirement System

Size	Investment Staff
$190 billion	142
Excerpt from Global Equity Investment Policy	
– *"The chief investment officer or designee has the authority to manage the Global Equity asset category and may use other investment personnel to implement these policies and the processes described in the Procedures"* – *"The Global Equity portfolio is managed by both internal staff and external investment managers. Within the boundaries established in the Procedures, approved by the CIO or designee, the decision to hire an external manager or utilize internal investment staff for an investment strategy is made by applying the board-approved decision criteria matrix (Exhibit 2) to evaluate a variety of decision factors including, but not limited to, cost effectiveness/control, market transparency and liquidity, market efficiency, active risk, and infrastructure/resource requirements. Within the boundaries and ranges established by this policy, staff is responsible for the selection, allocation, and oversight of internally and externally managed portfolios."*	

- CalSTRS staff has full discretion to hire/fire managers using a "board-approved decision criteria matrix." Above is an excerpt from the global equity guidelines. Similar guidelines are listed for other asset classes.
- Limitations are placed on trade activity (both in dollars and percentage of assets) but not on size of mandates.
- For private equity, commitment size is limited to $250 million per limited partnership (or 15% of the total Fund size, whichever is less).
- For follow-on limited partnerships ("re-ups"), the commitment size limit is doubled to $500 million but the percentage of Fund maximum remains at 15%.

California Public Employees Retirement System

Size	Investment Staff
$294 billion	367
Excerpt from Total Fund Investment Policy Appendix	
• *"Investment Office Staff: Responsibility:* – *All aspects of program portfolio management, including investment transactions, use of leverage, and monitoring, analyzing, and evaluating performance relative to the appropriate benchmark.* – *Manage CalPERS asset class allocations within policy ranges approved by the Committee, in accordance with policy guidelines"*	
Excerpt from Global Equity Investment Policy	
• *"Investment Selection:* • *Global Equity has internal committees to select desired strategies and allocate capital. The Global Equity committees review and approve internal and external strategies forming the pool of eligible investment strategy alternatives and allocate capital to and from those eligible strategies."* • *Investment Office Staff Responsibilities:* • *All aspects of portfolio management, including monitoring, trading, analyzing, evaluating performance relative to the appropriate benchmark, and selecting and contracting with managers."*	

- CalPERS has a structure similar to CalSTRS. A separate policy statement exists for each asset class.
- For private markets, there are limits on commitment size (as percentage of asset class for private equity but hard dollars for real estate/real assets). The level of discretion is based on staff title and type of fund.

Public School Retirement System of Missouri

Size	Investment Staff
$38 billion	16

Excerpt from Investment Policy Statement

"Delegation of Manager Hiring and Termination Decisions

The Board of Trustees has delegated to the Investment Staff, with the assistance of External Asset Consultants, all manager hiring and termination decisions. The Executive Director (Director), Chief Investment Officer (CIO) and at least one External Asset Consultant (either the General Consultant or an organization serving in a Specialty Consultant role) must unanimously agree upon all manager/partnership hiring and termination decisions in writing. The hiring process for external service providers, other than investment managers/partnerships, must be agreed upon by the Director and CIO. The specific details regarding the Systems' external hiring and termination procedures are described in Appendix III, Service Provider Hiring, Retention and Termination Policy."

Excerpt from Appendix III - Service Provider Hiring, Retention and Termination Policy

"The following table depicts the decision-making authority and the documentation timeframe required to hire or terminate an external service provider..."

Service Provider	Decision Making Authority	Documentation Timeframe
Master Custodian *General Consultant* *Specialty Consultants*	*Board of Trustees*	*Written material to the Board at least one week prior to the meeting*
Public Markets Managers	*CIO, Executive Director and General Consultant or Specialty Consultants in writing*	*At least one week prior to the execution of a contract for hiring decisions and within 72 hours of a termination decision*

Public School Retirement System of Missouri (Continued)

Service Provider	Decision Making Authority	Documentation Timeframe
Private Equity Partnership *Private Credit Partnership*	*CIO, Executive Director and Specialty Consultant in writing*	*Within one month after the execution or termination of a contract*
Real Estate Partnership *Hedge Funds*	*CIO, Executive Director and Specialty Consultant in writing*	*At least one week prior to the execution of a contract for hiring decisions and within 72 hours of a termination decision*
Fund of Funds	*CIO and Executive Director in writing*	*At least one week prior to the execution of a contract for hiring decisions and within 72 hours of a termination decision*

- *"Documentation materials prepared by the Staff, with the assistance of the External Asset Consultant(s), regarding action to hire or terminate a service provider(s) will include a full description of the reason for the action, the expected benefits resulting from the action and a full review of the decision-making process. The primary focus of the Staff when preparing the documentation will be on providing the Board with the level of information necessary to satisfy all parties that decisions were well-reasoned, carefully considered and prudent."*

"Proper Documentation and Full Disclosure"

- *"The primary focus of the Board when reviewing the documentation regarding the hiring or termination of an external investment service provider shall be on ensuring that the Board will be able to satisfy any interested party that decisions were well-reasoned and thoroughly considered, and that the resulting decisions were prudent. Toward this end, Board members will be provided with a written letter of notification within a prudent time period of the hiring decision."*

Ohio Public Employees' Retirement System

Size	Investment Staff
$90 billion	55
Excerpt from Public Equity Policy	
C. Investment Staff • *The Board delegates authority to the Chief Investment Officer ("CIO") to implement this Policy. Staff is responsible for monitoring the Policy and recommending changes to the Investment Committee. Staff is also responsible for managing Public Equity sub-asset classes within the framework of the Board approved Policies and within the goals and objectives adopted by the Board in the Annual Investment Plan.* • *Staff shall ensure that all investment manager guidelines for external and internal portfolios are set in accordance with OPERS' Policies.* • *All members of Staff are accountable to the CIO. The CIO is responsible for all Staff actions relative to the management of OPERS' investments. In this regard, it is the responsibility of the CIO to satisfy himself/herself that all Policies and directives of the Board are implemented*	

- The same language was contained in the System's fixed income policy, GTAA policy, commodities policy, hedge fund policy and opportunistic policy.
- In the public equity policy and the fixed income policies, allocations to a single active external manager are limited to 15% of the asset class.
- Detailed limitations on private markets investments are on the following page.

Ohio Public Employees' Retirement System (continued)

Size	Investment Staff
$90 billion	55
Excerpt from Private Equity Policy	

" Investment Staff

- *The Board delegates authority to the Chief Investment Officer ("CIO") to implement this Policy. Staff is responsible for monitoring the Policy and recommending changes to the Committee. Staff is also responsible for managing Private Equity assets within the framework of the Board approved Policies and within the goals and objectives adopted by the Board in the Annual Investment Plan. Staff will select managers in accordance with the General Partner Selection Procedures or through Requests for Proposals."*

"Manager Risk

- *The maximum commitment to a fund is limited to the lesser of 24.99% of Limited Partner commitments (excluding the GP and its affiliates), or $400 million. These limits do not apply to primary fund of funds, secondary fund of funds, or vehicles used solely for co-investments. Since manager concentration risk is not a primary concern with fund of funds, the dollar limit that applies is $800 million."*

"Firm Risk

- *Firm risk is the exposure to a private equity manager and is controlled by limiting the total exposure (defined as unfunded commitments plus market value) to investments operated by a manager and its affiliates. The maximum total exposure to a manager and its affiliates is limited to 20% of the total exposure of the Private Equity portfolio."*

- Size limits are placed on private market commitments ($400 million for direct funds and $800 million for FoF).
- Additional limitations are placed on co-investments. The maximum allowable co-investment or direct investment in any individual company is the greater of $75 million or 1% of the Private Equity portfolio's market value calculated at the time of the investment.

State Teachers Retirement System of Ohio

Size	Investment Staff
$72 billion	100+
Excerpt from 2016 CAFR	
"Investment Decisions Retained by the Board • *The Board approves the following investment policies…..* • *Before approving or amending policy decisions, the Board seeks advice, guidance and recommendations from STRS Ohio investment staff, Board-retained investment consultants, and other experts or sources as considered prudent but the Board."* *"Investment Decisions Delegated to Investment Staff* • *The Board, though the Executive Director, has delegated to qualified STRA Ohio investment staff the following investment management and implementation decisions:* • *buying, selling, managing and monitoring individual securities, real assets and/or other investment transactions to achieve the total fund and asset class investment objectives approved by the Board;* • *retaining, managing and terminating external investment managers within each asset class as required to achieve the total fund and asset class investment objectives approved by the Board"*	

- According to the State Teachers Retirement System of Ohio website, approximately 75% of the system's assets are managed internally.

State of Michigan Retirement Systems

Size	Investment Staff
$82 billion	47
Excerpt from Investment Policy Statement	
"Assignment of Responsibilities • *Pursuant to MCL 16.191 and P.A. 314, the State Treasurer delegates investment approval authority of publicly traded equities and fixed income securities to the BOI[1] and external managers. Absolute return, real return, and opportunistic investments made under the STARR[2] Division are delegated to the CIO or the BOI's external investment managers where applicable.* • *Approval from the State Treasurer is required for investments in real estate, infrastructure, private equity, venture capital, or similar private market funds made within the REID, PED or DCTA[3] divisions, in amounts greater than 1% of the State of Michigan Retirement Systems[4] most recent combined quarter-ending Assets under Management (AUM). If the State Treasurer position is vacant or if the State Treasurer is not readily available, the CIO may approve with notice to the State Treasurer as soon as reasonably practicable."*	

- In Michigan, investment related decisions appear to be delegated to the State Treasurer and its staff within the Michigan Department of Treasury's Bureau of Investments.
- Staff appears to have private markets discretion up to 1% of the combined Retirement System.
- No explicit limitations are placed on public markets asset classes.

[1] Staff employed by Michigan Department of Treasury's Bureau of Investments ("BOI").
[2] Short-Term, Absolute & Real Return Division (STARR).
[3] Real Estate & Infrastructure Division, Private Equity Division, Defined Contribution, Trusts & Agencies Division.
[4] State of Michigan Retirement System is made up of four systems that all appear to be managed collectively.

Wisconsin Retirement System (aka State of Wisconsin Investment Board)

Size	Investment Staff
$95 billion	160
Excerpt from Board of Trustees Investment Policy Statement	
• *"This WRS Investment Policy represents a delegation of standing authority to SWIB staff within the organization to promote efficient and cost effective operations of the two WRS trust funds......* • *Accordingly, the Trustees hereby delegate to the Executive Director and the investment staff of SWIB standing authority to make prudent investments pursuant to this WRS Investment Policy and to sections 15.02(4) and 25.15(2) of the Wisconsin Statutes and section IB 2.02 of the Wisconsin Administrative Code.* • *The Executive Director shall identify and delegate in writing the individual professional investment staff members who have authority to manage each of the specific asset classes and internal portfolios and who have authority to direct, hire, and terminate external managers."*	
Excerpt from Investment Committee Investment Guidelines	
• *"The Private Markets & Funds Alpha (PMFA) staff shall report to the Trustees all portfolio commitments to non-public investments"*	

- In Wisconsin, the Investment Committee Investment Guidelines contain detailed approval matrixes for private market commitments (as well as hedge funds).
- Commitment size limitations are based on sub-asset class and staff's seniority.
- The following page is an example of the private equity guidelines.

Wisconsin Retirement System (continued)
Private Equity Approval Guidelines

New Fund Manager			
	Managing Director	**Chief Investment Officer**	**Executive Director**
Buyout	<$100 million	$100 million - $300 million	Over $300 million
Strategic Partnerships	<$30 million	$30 million - $60 million	Over $60 million
Co-Investments	<$30 million	$30 million - $60 million	Over $60 million
Follow-On Commitments			
	Managing Director	**Chief Investment Officer**	**Executive Director**
Buyout	<$150 million	$100 million - $300 million	Over $300 million
Strategic Partnerships	<$50 million	$50 million - $75 million	Over $75 million
Co-Investments	<$50 million	$50 million - $75 million	Over $75 million

- Lower limits are explicitly listed for venture capital funds (not shown here).

Investment Authority Delegation Policy

I. Pursuant to Section 9-16-330(B) of the 1976 Code, the Commission delegates to the Chief Investment Officer ("CIO") the final authority to invest subject to the oversight of the Chief Executive Officer ("CEO") and the requirements and limitations of this policy. The size of any one investment made pursuant to this policy is limited to the percentage of total plan assets that applies to the particular asset class to which the investment pertains as provided in Section III of this policy and subject to any other limitation the Commission may place on this authority at any given time. The value of total plan assets to which the percentage limitations apply must be the estimated total value of plan assets included in the most recent quarterly investment performance report prepared pursuant to Section 9-16-90(A). For purposes of this policy, a co-investment is considered a separate and distinct investment from an investment in a commingled fund, fund of one structure, or an amount committed to a separately managed account and is separately subject to the limitations and requirements of this policy. Individual investments made in a separately managed account or a fund of one structure are not considered separate investments for purposes of this policy and are subject in aggregate to the limitations and requirements of this policy regardless of whether some degree of discretion is retained by staff regarding individual investments to be included in the applicable account.

II. The investment process for any investment made pursuant to this policy must be substantially similar to the investment process employed prior to the adoption of this policy, but for the requirement that the Commission approve the investment prior to closing the investment and must adhere to RSIC's Due Diligence Guidelines and Policies (INSERT LINK TO REVISED DD Policy). Notwithstanding the authority granted by this policy, an investment must be presented to the Commission for its approval if it meets any of the following criteria:
   a. The investment is the initial investment in a new asset class;
   b. The majority of the underlying assets comprising the investment have not been previously included in the investment portfolio; and
   c. The strategy to be employed by the investment manager is not substantially similar to an investment that has been previously subject to the Commission's investment due diligence process.

III. The size of an individual investment made pursuant this policy is subject to the following limitations provided for the asset class applicable to the investment:
   a. Public Markets - 2% of the total value of plan assets, unless it is reasonable to believe that due to the particulars of the investment strategy that liquidating the investment would ordinarily require longer than ninety days and, in such case, the limit is 1% of the total value of plan assets, for:
      i. Global Public Equity,
      ii. Equity Options,
      iii. Portable Alpha,
      iv. Global Asset Allocation,
      v. Mixed Credit,
      vi. Emerging Market Debt,
      vii. Other Opportunistic Strategies,

   viii. Core Fixed Income, and
   ix. Cash and Short Duration.
b. Publicly-Traded Real Estate - 1% of the total value of plan assets.
c. Private Markets - 75 bps of the total value of plan assets for:
   i. Private Equity,
   ii. Private Debt,
   iii. Private Real Estate,
   iv. Infrastructure, and
   v. Opportunistic Hedge Funds.

For purposes of this policy, the asset classes indicated in this section are as they are described in the Annual Investment Plan.

IV. Pursuant to Section 9-16-330(B)(2), the closing documentation of any investment made pursuant to this policy must include the CEO's certification that the investment conforms to the amount and extent of delegation provided by this policy.

V. The Commission must be informed of an investment made pursuant to this policy within 3 days of the closing of the investment and provided an executive summary of the investment which includes, but is not limited to:
a. the type of investment,
b. description of the investment rationale, strategy, term, and liquidity provisions,
c. amount of committed or allocated capital,
d. key information concerning the investment manager,
e. fee terms,
f. the recommendation of the Internal Investment Committee,
g. operational due diligence rating, and
h. key investment considerations and mitigants.

VI. An investment made pursuant to this policy must be reviewed with the Commission at the next regularly scheduled Commission meeting. As soon as practicable prior to the Commission meeting, the Commission must be provided with all applicable documentation and reports produced or relied upon by staff when making the investment including, but not limited to:
a. investment due diligence report,
b. operational due diligence report,
c. key terms sheet,
d. memorandum and/or reports from the general or specialty consultant,
e. Internal Investment Committee action summary,
f. Completeness check certification, and
g. Investment contract, limited partnership agreement, and/or other applicable closing documents and certifications.

VII. The delegation of the final authority to invest pursuant to this section includes the authority to terminate an investment manager if the investment was made pursuant to this policy or the amount of capital committed to the manager by the Commission would fall within the applicable limits provided in Section III. The CIO must approve any termination of a manager made pursuant to this policy, subject to the oversight of the CEO. The CIO must provide a memorandum to the Commission summarizing his justification for terminating the manager within three days of terminating the manager. The CIO must provide a review of the termination to the Commission at the next Commission meeting.

New Investment Due Diligence Policy

I. Purpose and Scope

The purpose of this Policy is to provide guidance and direction to South Carolina Retirement System Investment Commission ("RSIC") employees regarding the procedures around hiring investment managers.

II. Policy

It is the policy of the RSIC that:

- The members of the Investment Team are delegated responsibility for the hiring of new investment managers in their respective asset classes.

- The Investment Team shall use a structured and disciplined approach in the hiring of external investment managers and investment products, taking into account both qualitative and quantitative criteria to ensure that such decisions are made fairly with consistently applied criteria to help avoid untimely and haphazard actions that may adversely impact fund returns.

III. Implementation

A. Sourcing

i. Private Markets

Investment Staff will maintain a proactive sourcing approach to identify funds that may not be widely marketed or open for only limited periods of time. This approach requires developing and maintaining strong relationships and communication with market participants. Potential investment opportunities may be sourced by the Staff through any appropriate sourcing channel including, but not limited to: (i) current investment managers; (ii) Staff's industry knowledge, contacts, and resources; (iii) recommendations from the investment consultant; and (iv) solicitations from external investment managers.

The investment consultant receives and reviews an even broader array of offerings, many of which would not be appropriate in the scope of the RSIC's applicable Annual Investment Plan. The investment consultant will provide Investment Staff with periodic updates of their general fund log(s) or specific lists of funds for the RSIC's consideration.

Investment Staff will identify the most attractive offerings and dedicate additional due diligence resources based initially on the following factors:

i. The offering's fit within the asset class

ii. The RSIC's history with the firm
iii. Prior fund or other investments
iv. Co-investment opportunities
v. Consultant's disposition on the offering
vi. Value creation analysis
vii. Professional judgment of Investment Staff and supporting staff
viii. Reputation of the fund and the fund manager

ii. Public Markets

Investment Staff will utilize the Active/Passive screen to identify an attractive universe for active management. Universes that are conducive to active management will undergo a review of the consistency within that universe's top quartile managers. Once a universe has been identified as favorable to active management, the Investment Staff will use the manager universe database (currently eVestment) to develop a list of firms that meet the specific search criteria with respect to total assets under management, product size, experience, investment strategy, investment performance, and specific quantitative metrics. The resulting list may be supplemented with firms identified by Investment Staff though solicitations from external investment managers and the Investment Staff's industry knowledge and contacts. Managers interested in being considered for potential search activity are advised to create or update firm/strategy information in the manager universe database. For customized or specialized mandates, Investment Staff will request information in a format capable of being uploaded into manager universe database.

The purpose of this step is to eliminate managers early in the process that would not be seriously considered due to team turnover, size, experience, strategy mismatch or focus. In the event that screening on these elements results in a large number of managers to evaluate, additional screens may be added (e.g., risk-adjusted returns) to reduce the number of firms to a more manageable level.

B. <u>Underwriting Process</u>

Investment Staff will request the remaining investment managers to complete the RSIC's Due Diligence Questionnaire (DDQ), which includes comprehensive information regarding performance, portfolio composition, personnel, operations, organizational history and structure, proposed fees, and any other information deemed necessary to make an informed investment decision. Investment Staff will evaluate investment performance, investment processes and organizational issues among other issues to identify the candidate firms that will be interviewed for the assignment.

For private markets, the investment consultant may be used to enhance the due diligence process by reviewing and evaluating the candidate list, performing organizational reviews of the candidate firms, and producing performance and risk analysis reports.

Upon selecting the most attractive investment opportunities from the broad list of offerings in the market, Investment Staff will conduct a thorough due diligence process of the investment offering. At any point in the due diligence process, Investment Staff may choose to reject the offering. The result of the process will be the recommendation to commit/invest capital in opportunities deemed most attractive and prudent by Investment Staff. Investment Staff will utilize a collaborative Peer Review format in soliciting feedback from the IIC at various points along the due diligence process. This feedback will be used improve the quality of the due diligence and to further guide areas of additional analysis or follow-up.

The due diligence process will generally include the following:

- Review of the Fund offering materials, Private Placement Memorandum and/or other related documentation
- Operational due diligence
- Review of manager provided materials, such as marketing presentations
- Quantitative analysis of value creation by staff and/or consultant(s)
- Visit(s) to manager's office(s) by investment staff and/or consultant to meet with investment staff. Video conference may be substituted at the discretion of the CIO.
- Review of the Investment Consultant due diligence materials (for private markets)

C. Recommendation and Approval

Upon completing the due diligence process and before presentation to the IIC for consideration, Investment Staff will prepare a Due Diligence Report with a recommendation that the RSIC commit capital or otherwise invest in the selected fund/product. This recommendation will include relevant fund information such as historical performance, investment merits and risks, contractual terms and other relevant information.

In addition to the Due Diligence Report, the Investment Staff is required to have provided RSIC compliance with 1) a letter from the manager that adheres to the RSIC Placement Agent policy and 2) the Investment Manager Sourcing and Conflict Disclosure Form from all primary Investment Staff involved with the recommendation for investment management acquisition. Primary Investment Staff (which includes the CIO and all Investment Staff that directly worked on the investment management acquisition process) are required to promptly disclose any conflict of interest with a prospective investment management service provider, refrain from discussing any matters to which the conflict is related, and recuse themselves from acting in any matters associated with the acquisition of the prospective investment management service provider.

Investment recommendations will be submitted to the IIC for approval after the above due diligence requirements have been met. In accordance with the IIC Charter, the IIC may approve, refuse, or table a proposed investment.

Upon approval by the IIC and in accordance with IV. Compliance of this policy, RSIC compliance will perform the Completeness Review to ensure that the required due diligence documents have been gathered. The documents include: Limited Partnership Agreement (LPA)/Contract, Subscription Agreement, PPM or Offering Document, Standard DDQ, Valuation Policy, RSIC Due Diligence Questionnaire, Placement Agent Disclosure Letter, Consultant Report/Memo, Sourcing and Conflicts Disclosure form. The Investment Staff will note exceptions when a document is not applicable or not yet available.

The results of the Completeness Check are provided to the CIO. If there are no issues with the Completeness Check, the CIO will then execute through the Investment Authority Delegation Policy and work with the appropriate Legal and Investment Staff to negotiate and execute the contract. Note: the CIO may, in consultation with the Chief Legal Officer, and upon the approval of the CEO, request that Legal staff be assigned (and, where appropriate, that outside counsel be engaged) at an earlier point in the due diligence process to assist in negotiating contractual terms where the CIO deems it beneficial to the Plan. An approved investment with an executed contract then moves to the Ongoing Investment Manager Due Diligence Policy.

Note as to investments required to be presented to the Commission: The Commission's Investment Authority Delegation Policy provides guidance as to the types of investments which will continue to be required to be presented to the Commission. For all such investments, RSIC Staff will be expected to follow timetables and procedures consistent with current practice.

IV. Compliance

All RSIC Investment employees are responsible for compliance with this policy.

To promote compliance, the RSIC shall:

- Perform an independent Completeness Check by the RSIC compliance department to ensure that the required documents have been gathered.
- On at least an annual basis, review policy at Internal Investment Committee meeting to ensure policy is still currently meeting the needs of RSIC
- Adherence to this policy will be reviewed on an annual basis either through Agreed Upon Procedures review by independent auditor or by Director of Enterprise Risk Management & Compliance.
- Provide notice of material changes to this policy to the Commission.
- Review and update this policy as needed

POLICY HISTORY

Revision #	Author	Description of Change	Approval/ Effective Date	Approved By
1.0		Original issuance	11/6/2014	IIC
2.0	Bryan Moore	Major revisions - Converted to a stand-alone policy	9/21/2017	CIO

South Carolina Retirement System Investment Commission

Initial Fund Review

Presented

September 28, 2017

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Overview

Introduction

Meketa Investment Group's Initial Review of the South Carolina Retirement System Investment Commission is designed to achieve the following objectives:

- Identify the major components and characteristics essential to the long-term success of the Retirement System;
- Describe these components and provide their present status for the Retirement System;
- Develop an action plan for the Retirement System, including the priority level for each project.

With the initial review, we seek to identify areas of potential improvement for the Retirement System's structure, efficiency, and performance. This document serves as a platform from which we plan to address and discuss these issues.

We have assigned each action item with a priority of *one* through *three*, as detailed in the table below. Priorities can be adjusted based on feedback provided by the Commissioners.

Priority	Implementation Timeframe
One	Within 6 months
Two	Within 6 - 18 months
Three	Within 12 - 36 months

While we do not view these parameters as rigid, they do represent, based on our experience, a reasonable timeframe for the Commissioners to make thoughtful decisions on the future course of the Retirement System.

Recommendations Summary

The table below summarizes Meketa Investment Group's initial review of the South Carolina Retirement System Investment Commission, including our recommendations and their respective priorities. Each recommendation is discussed in detail in the remainder of this document.

Fund Governance	Priority	Page Number
Investment Policy Statement		
• Consider enhancements to Statement of Investment Objectives and Policies	2	10
Investment Manager Guidelines		
• Review all investment manager guidelines to ensure they are consistent with each manager's mandate	3	12
Other Internal Policies		
• Consider minor edits at next regularly scheduled revision date	3	13
Asset Allocation & Portfolio Construction	**Priority**	
Asset Allocation Policy		15
• Conduct a comprehensive asset allocation review, including comparison to several alternative portfolios and peers	1	
• Review the merits of each individual strategy in those asset classes with some overlap exposure	2	
• Consider increasing passive exposure in relatively efficient asset classes	2	
• Consider a factor-based approach for investing a portion of the equity portfolio	2	
Equity		24
• Reduce the small cap overweight to a close-to-neutral stance within total equity exposure	2	
• Ensure the active international equity strategies are complementary and likely to add value (net of fees)	3	
• Consider carving out a small portion of the emerging market allocation for dedicated small cap and frontier market stocks	3	
• Explore ways to reduce the costs of investing in private equity	2	
• Have a constructive dialogue on the pros and cons of equity options relative to traditional equity exposure	2	

Recommendations Summary (continued)

Asset Allocation & Portfolio Construction (continued)	Priority	Page Number
Conservative Fixed Income		
• Recommend adding a dedicated allocation to long-term Treasuries during the next asset allocation review	1	36
• Recommend adding a dedicated allocation to TIPS and remove TIPS from "other opportunistic strategies" group	1	
Diversified Credit		
• Agree with the use of active managers in high yield and bank loans.	NA	40
• Agree with the use of a mix of dedicated local currency and hard currency emerging market debt strategies.	NA	
• Explore ways to reduce the cost of investing in private debt	2	
Opportunistic Strategies		
• Recommend clarifying what role the opportunistic allocation should play	2	46
• Agree with the decision to liquidate the dedicated hedge fund allocation	NA	
• Recommend a review of what the ideal allocation to the risk parity strategy should be	2	
• Recommend slightly reducing GAA target	3	
Real Assets		
• Recommend reviewing the allocation to core vs. non-core real estate as part of the next asset allocation discussion.	1	51
• Focus infrastructure program on private market investments. Use an index fund for public markets exposure.	2	
Other Strategies		
• Continue to carefully execute the Overlay program while considering if there are more cost effective approaches.	3	54
• Recommend a thorough review of the portable alpha strategies.	2	

Recommendations Summary (continued)

Operations	Priority	Page Number
Custody Services • Conduct a full review of accounting and other services	3	58
Transition Management • Retain Russell as the transition manager and consider retaining a panel of transition managers	3	59
Securities Lending • Review oversight process and discuss the objectives of the securities lending program	3	60
Expenses • Conduct a thorough review of the Retirement System's investment costs, seeking opportunities for reductions.	2	61
Cash Sweep • No action needed. The current use of a government STIF vehicle is in line with industry standard	NA	66
Commission Recapture • No action needed. Only implement commission recapture if it is not restrictive on managers' ability to seek best execution	NA	67
Proxy Voting • Meketa Investment Group is prepared to assist the Retirement System in a review of third party proxy voting vendors	3	68

Meketa Investment Group's Investment Philosophy

- Focus on strategic advice (i.e., a long-term approach to investing)
- Treat asset allocation as the primary determinant of an investor's performance
- Diversify very broadly to protect against a wide variety of risks
- Avoid unnecessary risks
- Invest in primarily generative assets
- Be skeptical regarding new investment strategies or fads
- Create efficient, cost-effective portfolios
- Use best-in-class managers
- Minimize fees and other expenses

Fund Governance

Investment Policy Statement

An Investment Policy Statement ("IPS") represents one of the most important governance tools for an investment plan. It serves to identify and formalize the objectives and constraints governing the funds and to establish guidelines for the implementation of investment strategy.

A well-developed IPS thoughtfully merges client-specific goals with the realities of the capital markets. The IPS should be long-term and stable in nature, and should focus on core fund-level policy issues.

South Carolina Retirement System Investment Commission Status:

The Retirement System has a comprehensive Statement of Investment Objectives and Policies ("SIOP"). In accordance with state statutes, the last revision was adopted in June 2017. While an Investment Policy Statement should be customized to the needs of an individual retirement system, certain key sections and areas of focus should be included in all Investment Policy Statements. Some of these sections include, purpose, risk and return objectives, constraints to be considered in meeting those objectives, asset allocation, rebalancing guidelines, investment manager monitoring, and permissible asset classes. The existing policy contains many of these items and is comprehensive. While the existing IPS is sufficient, we would suggest some minor changes to a few sections to ensure the SIOP is designed for maximum benefit to the Retirement System.

Recommendation:

On the following page, we have highlighted a number of areas where we feel the existing SIOP is meeting industry best practices. In addition, we have identified a few potential areas for improvement. We encourage the Commissioners and Staff to consider these suggestions when reviewing and potentially amending the SIOP in the spring of 2018.

Priority: Two

Investment Policy Statement (Continued)

Initial assessment of the Statement of Investment Objectives and Policies amended and adopted on June 22, 2017

Consistent with Industry Best Practices	Potential areas for improvement
Page 3 – Inclusion of purpose of SIOP	Page 4 – Include sub-sections under the roles and responsibilities
Page 3 – "At least annual review"	Page 4 – Consultant, Investment Staff and managers should all be explicitly listed as fiduciaries
Page 4 – Inclusion of roles and responsibilities	Page 10 – Add a constraints section identifying what factors need to be considered while seeking to meet the investment objectives (e.g. statutory requirements, liquidity, time-horizon, etc.)
Page 7 – Acknowledgment that investment fees will evaluated	Page 12 – Move asset class return assumptions to appendix
Page 8 – Potential reasons for manager termination	Page 17 – Reduce the manager guidelines section from ten pages to one (just the introduction section). Manager guidelines are already included in each manager's IMA or other fund governing document
Page 9 – Investment objectives – "return greater than actuarially assumed rate" is better than including explicit number	Page 30 – the real estate benchmark is not one-quarter lagged like the other private market asset classes
Page 10 – Asset allocation – nice blend of long term focus with sufficient language for short term flexibility	
Page 13 – Inclusion of restricted investments and allowable investments along with explicit language on approved vehicle types	
Page 13 – Explicit language on allowable vehicle types	
Page 15 – Rebalancing policy	
Page 28 – Delegation of proxy voting to managers	
Page 28 – Discretion of overlay powers is clear and explicit	
Page 29 – Benchmark criteria and identification is clear and explicit	

Investment Manager Guidelines

Investment Manager Guidelines ("Guidelines") formally outline the roles, constraints and objectives of the Retirement System's investment managers. They ensure that the Commissioners and the managers understand the scopes of the assignments and the restrictions under which the managers are operating.

Investment Manager Guidelines should clearly define the role of each manager and the area(s) of the capital markets in which that manager is expected to operate. In addition, the Guidelines should provide a comprehensive list of constraints placed upon the portfolio, such as limitations on individual positions or industry sectors. The guidelines should state the performance benchmarks and time periods used for evaluation. Finally, the investment guidelines should include the required level of reporting and communication with the Commissioners of the Retirement System.

Investment Manager Guidelines should be reviewed regularly and updated as necessary, to reflect changes in manager roles or in the capital markets. The Retirement System should retain copies of all executed documents (in hard copy or electronic).

South Carolina Retirement System Investment Commission Status:

Each of the Retirement System's investment managers operates under formal investment guidelines. The guidelines adequately specify the mandate they have been hired for, the benchmark they are using, and the portfolio constraints. In addition, they instruct the investment manager to notify Staff if they are in violation of the guidelines with a plan of action to bring the portfolio back into compliance.

Recommendation:

Meketa Investment Group recommends a full review and update of all investment manager guidelines to ensure that they control relevant risks and are consistent with each manager's role.

Priority: Three

Other Internal Polices

It is customary for large retirement systems to have a variety of internal policies and procedures to guide the operations of a well-run retirement system. Outside of the standard Investment Policy Statement and Manager guidelines, state retirement plans often have some of the following policy documents: asset class guidelines, board governance policy, corporate governance policy, roles and responsibilities handbooks, investment fee policy, vendor policy, manager selection policy, code of ethics, statement of investment beliefs, compensation policy.

South Carolina Retirement System Investment Commission Status:

We have reviewed the following policies published by the Retirement System:

- **Annual Investment Plan** adopted April 27, 2017
- **Strategic Plan** adopted September 22, 2016
- **Internal Investment Committee Charter** amended August 1, 2016
- **Governance Policy Manual** amended June 22, 2017

Recommendation:

Overall the policies are well thought out and comprehensive. Some minor enhancements or edits to consider at the next regularly scheduled revision date include:

- **Annual Investment Plan** – In the text on page four, Portable Alpha is listed with a 10% target but this is not reflected in the strategic asset allocation. In addition the benchmark for private real estate should be lagged one quarter to match the other private market investments.
- **Strategic Plan** - Overall it is well reasoned and easy to understand. We appreciate the beliefs expressed in the Plan.
- **Internal Investment Committee** - The purpose, roles, responsibilities and procedural workings of the Internal Investment Committee are clearly defined and explained in the policy document.
- **Governance Policy Manual** - - The Governance Manual includes seven policies ranging from roles and responsibilities of various stakeholders to a communication policy and a service provider selection policy. Overall the policies are quite detailed and thorough. If applicable, Meketa Investment Group could provide input on any investment related items during each policy's next review.

Priority: Three

Asset Allocation & Portfolio Construction

Asset Allocation Policy

The primary determinant of the long-term return and risk for an investment plan is its asset allocation. Various asset classes (e.g., equity, fixed income, real estate) exhibit unique risk and return behavior, with varying levels of correlation to each other. By appropriately combining asset classes, an investor can moderate risk and create a multi-asset portfolio tailored to a unique set of objectives.

The Asset Allocation Policy ("Policy") should reflect the return and risk objectives of the plan, which is dictated by expectations for capital market behavior. An explicit Asset Allocation Policy ensures that the primary determinants of return and risk are identified and monitored at an aggregate level. The Policy is typically expressed as percentage allocation targets for each asset class, including the ranges around which the allocations may vary without requiring rebalancing.

Asset allocation should represent a coordinated approach between the plan, its consultant and investment managers. Typically, the Asset Allocation Policy is incorporated as an Appendix to an Investment Policy Statement.

South Carolina Retirement System Investment Commission Status:

The Retirement System's asset allocation targets, ranges and glide path to shift the current asset allocation to the long term targets are clearly listed within the SIOP and the Annual Investment Plan ("AIP"). We have included the long term asset allocation targets (Fiscal Year 2018-2019) on the following page.

A clear rebalancing policy is also listed within the SIOP. The Commission delegates to the CIO (or his designee) the authority to execute transactions to rebalance the Retirement System within its target ranges. The policy appropriately address the tradeoff between portfolio drift and transaction costs and only requires a transaction if an asset class is outside its approved range (or approval from the Commissioners for an exception).

Based on Meketa Investment Group's 2017 Asset Study, the long term asset allocation policy is projected to produce an annualized return of 7.5% over a twenty period with an expected risk of 13.1% (as measured by standard deviation). This exceeds the Retirement System's new actuarial assumed rate of return of 7.25%, and gives the Retirement System a 51.7% probability of exceeding its target return over a twenty year horizon.

Asset Allocation Policy (Continued)

The following table displays the Retirement System's current long-term Asset Allocation Policy, as defined in the Retirement System's Statement of Investment Objectives and Policies.

	Target Policy FY 18-19	Target Ranges
Equities	**49%**	**42-52%**
Global Equity	35	20-36
Private Equity	9	6-14
Equity Options Strategies	5	0-6
Conservative Fixed Income	**12%**	**10-16%**
Cash and Short Duration	2	0-7
Core Bonds	10	5-15
Diversified Credit	**18%**	**15-21%**
Mixed Credit	6	2-8
Private Debt	7	4-12
Emerging Market Debt	5	3-7
Opportunistic	**10%**	**9-19%**
GAA	8	3-12
Other Opportunistic Strategies	2	0-5
Real Assets	**11%**	**8-14%**
Real Estate (REITs)	1	0-3
Real Estate (Private)	7	4-12
World Infrastructure	3	0-5
Total	**100%**	**NA**
Expected Return	*7.5%*	*NA*
Expected Standard Deviation	*13.1%*	*NA*
Probability of Achieving 7.25% over 20 Years	*51.7%*	*NA*

[1] Statistics are calculated using mean-variance optimization (MVO) software, and are based on Meketa Investment Group's 2017 Asset Study.

Recommendation:

Meketa Investment Group plans to conduct a comprehensive asset allocation review for discussion at the December 2017 Commission meeting.

We intend to compare the current asset allocation policy with several alternative portfolios. We will examine each alternative using a variety of tools, including mean-variance optimization, risk budgeting, scenario analysis, stress testing, and liquidity analysis. In addition, to the extent the data is reliable, we will provide comparison to peer plans.

We recommend revising the policy ranges contained in the SIOP. The current ranges (relative to the fiscal year 2017-2018 policy) are in some cases skewed in one direction relative to their respective targets (e.g., global equity has a target of 33% but a range of 20-36%, private real estate has a floating target of 6% but a range of 4-12%).

Priority: One

Manager Structure

Once the plan's asset allocation targets are determined, the portfolio roster should be structured to provide the intended exposure to each asset class, to minimize overlap among managers, to provide broad diversification, and to capitalize on the expertise of management firms. Specialized managers should complement one another, as duplication of investment strategies may reduce efficiency and increase risk. A structure in which each manager fulfills a distinct and necessary role increases efficiency, as well as ensures that the Retirement System's policies are not reversed by the actions of individual managers. For a portfolio that utilizes active managers, the Commissioners should ensure that allocations are sized appropriately, and that the overall success of the plan is not disproportionately impacted by the outcome of a single manager.

Furthermore, it is essential to review manager roles regularly to ensure that they remain relevant and consistent with the Retirement System's objectives. All investment managers should be monitored continuously to ensure that each fulfills a specific mandate.

South Carolina Retirement System Investment Commission Status:

The Retirement System's investment managers each have well defined roles and objectives within the context of the overall portfolio. Each manager's guidelines state the mandate they have been hired for and the benchmark each strategy will be judged against.

Some overlap exists that could be minimized by consolidating strategies. Please see chart on the following page.

Public Markets Asset Classes

Asset Class	Number of Strategies	Comments
Global Equity	5	Some overlap. Two index strategies, three enhanced index strategies. All five exclude emerging markets.
US Equity	3	No overlap. One value strategy, one core strategy, one growth strategy. All are active small/mid cap managers.
International Developed (non-US) Equity	4	Some overlap. Three international small cap strategies with quant or factor-based approach. One concentrated all cap strategy.
Emerging Market Equity	4	Some overlap. Four active strategies. One bottom up fundamental with growth tilt, one diversified quant strategy with value tilt, one concentrated core strategy with mix of quant and fundamental, one bottom up benchmark agnostic strategy.
Equity Options Strategies	2	Minimal overlap. One systematic rules-based strategy and one active strategy.
Short Duration	3	No overlap. One internally managed strategy, one short maturity high yield strategy and one short maturity loan fund.
Core Bonds	3	Some overlap. One dedicated corporate strategy, one securitized (MBS, ABS, RMBS) strategy, and one broad “core-plus” strategy with large MBS exposure.
Mixed Credit	5	Some overlap. One high yield strategy, one bank loan strategy, one 50/50 mix, one unconstrained strategy, one global structured product strategy.
Emerging Market Debt	5	Some overlap. Two local currency strategies, two hard currency strategies, and one blended strategy.
Opportunistic/GAA	3	Minimal overlap. One risk parity strategy, one opportunistic co-investment strategy, one absolute return balanced FoF.
Real Estate (REITs)	1	No overlap. One active US REITs strategy.
World Infrastructure	1	No overlap. One active global listed infrastructure strategy.

Recommendation:

We typically recommend a specialist manager structure with each manager performing a well-defined role for the Retirement System. For the asset classes with some overlap, we recommend a review of the merits of each individual strategy and their role in the overall portfolio. The Retirement System should consider simplifying the manager roster. This would result in less complexity and may result in lower management fees as assets are consolidated and fee breakpoints are reached.

Priority: Two

Active & Passive Investment Management

The goal of active management is to add value through enhanced returns or reduced risk relative to a particular market sector or combination of market sectors. Generally, active managers seek to outperform by creating portfolios that differ from their benchmarks through investing in specific securities, strategies, or sectors. When these investments are successful, active management produces returns that are superior to a passive benchmark (i.e., a market index). The failure of these investments to achieve the objectives represents an active management risk.

A variety of other risks accompany active management. Firms that manage assets actively may take on large risks unintentionally, encounter significant personnel problems, attract too many assets to manage effectively, or accept large risks to compensate for lagging performance. A sound investment strategy acknowledges the risks associated with active management.

The amount of value that an active manager can add relative to a benchmark (i.e., a market index) varies by asset class. The following table presents the excess return (before fees) at the 25th percentile, median, and the 75th percentile for a variety of public market asset classes.

Excess Returns[2]

Asset Class	25th Percentile	Median	75th Percentile
Core Bonds	-63	13	94
Emerging Markets	-290	93	513
U.S. Large Cap	-339	1	382
Foreign Large Cap	-408	-30	378
High Yield	-214	6	219
U.S. Small Cap	-376	90	603

[2] The excess return is the difference between the performance of the manager (before fees) and the benchmark. Data is based on an analysis by Meketa Investment Group.

If one defines the "efficiency" of a market by how much value an active manager has historically added (or detracted), then some markets are clearly more efficient than others. Moreover, superior manager selection can add value, no matter the asset class. However, it would be unrealistic for investors to presume that all of their managers will achieve top-quartile returns.

In areas of the capital markets that are particularly "efficient" (e.g., high quality bonds), passive management has a relatively high probability of success. Passive investment strategies (i.e., index funds) attempt to replicate the returns of a particular market segment. In addition, they incur very low fees, which improves overall performance. Therefore, passive management is most appropriate when the objective is to provide broad diversification with low costs.

The spectrum of active versus passive investing has evolved in recent years with the adoption of rules-based strategies that invest with a focus on one or more factors (e.g., value, capitalization, momentum, quality, low volatility). While factor-based investing is in some ways passive, it invests in the same factors that are identifiable in (and often drive the returns of) actively managed portfolios.

South Carolina Retirement System Investment Commission Status:

The System receives its passive exposure in two ways: through the Russell overlay program and with traditional index fund strategies. The majority of the passive exposure is through the overlay program. The Retirement System only has two traditional index funds.

As of June 30, 2016 we estimate 25% of the total Retirement System was passively invested (inclusive of the overlay program).

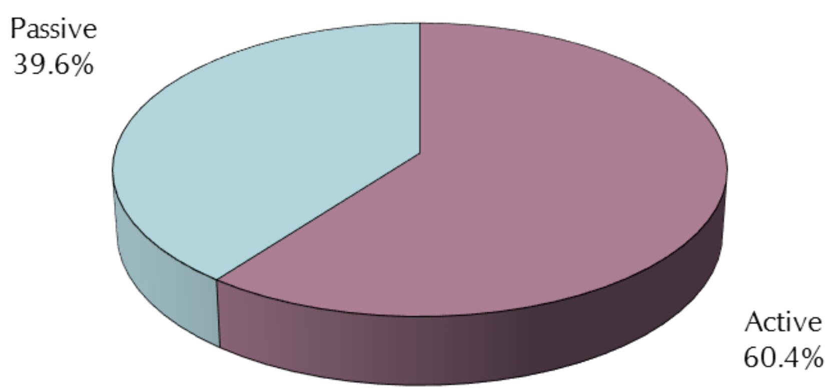
Passive Exposure as of June 30, 2017

Asset Class	Passive Exposure ($ bb)	Source
Global Equity	$2.9	Two index funds ($2.4 bb) and synthetic exposure ($0.5 bb)
International Developed (non-U.S.) Equity	$0.9	Synthetic exposure - overlay program
U.S. Equity	$1.2	Synthetic exposure - overlay program
U.S. Core Bonds	$1.8	Synthetic exposure - overlay program
Commodities[3]	$0.8	Synthetic exposure - overlay program
Total Passive	**$7.6 billion**	**Approximately 25% of the Retirement System as of June 30, 2017**

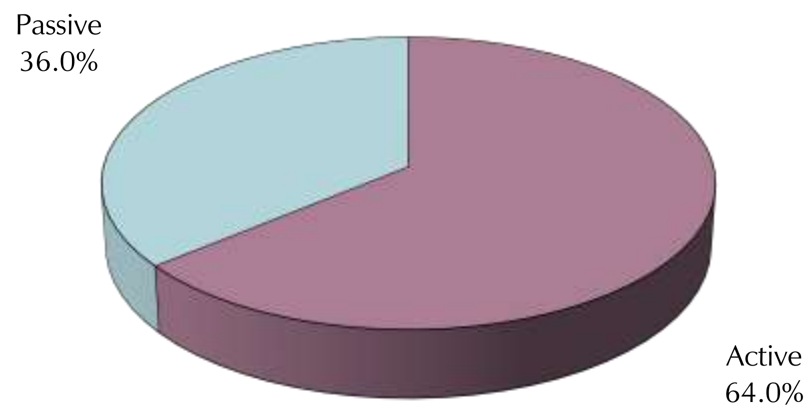
[3] Commodity exposure was neutralized in July 2017 with opposite direction swaps.

Active vs. Passive Breakdown[4] as of June 30, 2017

Total Public Equity Exposure



Total Public Fixed Income



[4] Inclusive of overlay.

Recommendation:

We recommend that the Retirement System refine its philosophy on the use of active versus passive management, and that it consider increasing its exposure to passive strategies in markets that are relatively efficient, such as large capitalization equities and high quality bonds. Allocations to index strategies in these areas could significantly reduce portfolio management fees while also reducing risks. We also recommend that the System consider a factor-based approach for a portion of the equity portfolio.

Priority: Two

Equities

Equity Capitalization

Capitalization is a stock market measure based solely on the total market value of a company's equity securities (the outstanding number of shares multiplied by the current stock price). Market capitalization does not reflect a company's revenues, the number of employees or the value of its assets. Definitions of capitalization size categories vary in the investment industry and by region.

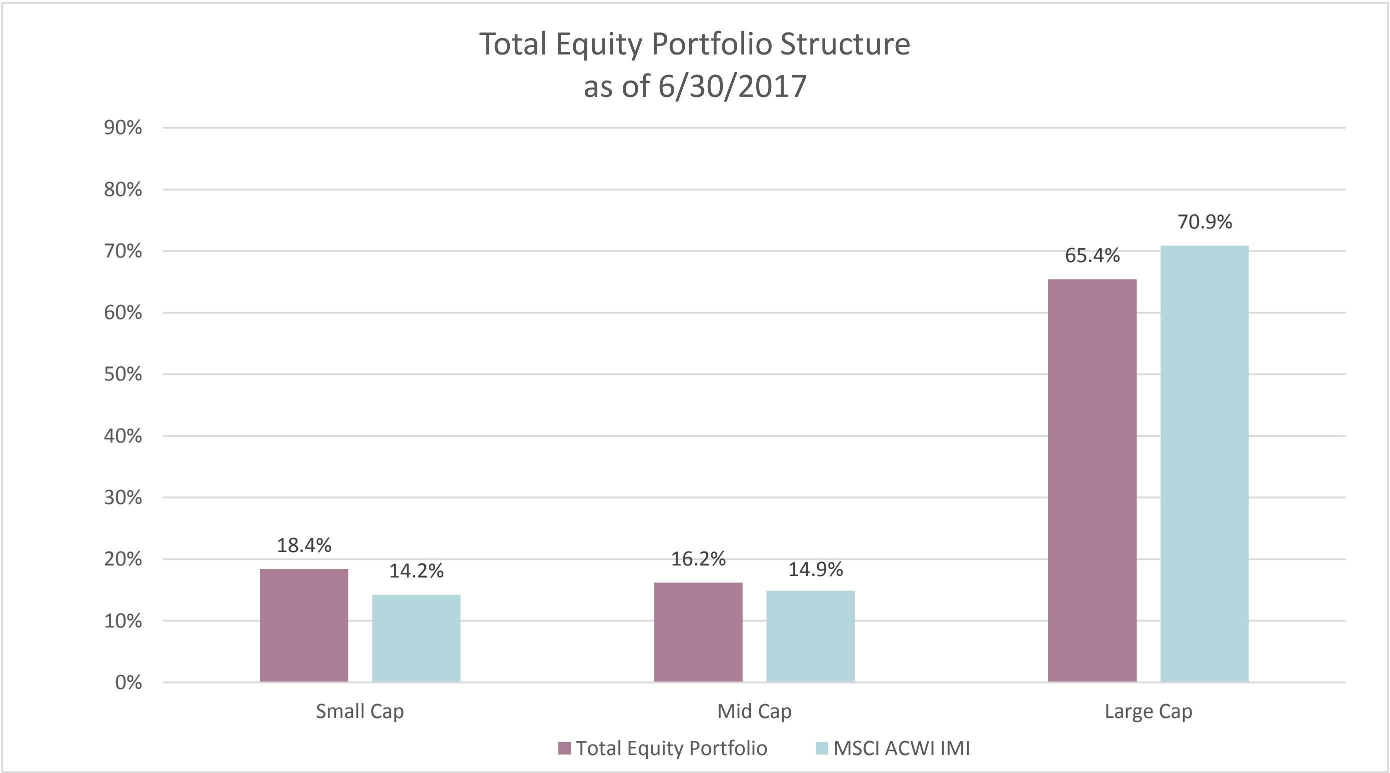
Some investors have further segmented the market, introducing the labels "microcap" and "megacap" for the very smallest and very largest companies. This further segmentation illuminates the arbitrary nature of precisely defining capitalization categories.

Historically, small capitalization stocks have provided higher average annual returns with higher volatility, compared to large capitalization equities. This is commonly referred to as "the small stock effect." Academic studies have sought to explain this effect, examining the greater inefficiency of the equity markets for smaller company stocks and the greater business risks of smaller companies.

South Carolina Retirement System Investment Commission Status:

The Retirement System takes a global approach to categorizing its public equity managers. The Retirement System is currently invested with eighteen equity investment managers, and gains additional equity exposure via the overlay manager, Russell. In aggregate, the total public equity exposure (including the overlay) has a modest overweight position relative to the benchmark for small cap companies.

Total Equity Portfolio Structure (Including Overlay)[5]



Recommendation:

We recommend the Retirement System reduce its small cap overweight such that it maintains a close-to-neutral weight across the market cap spectrum (inclusive of the overlay), both at the aggregate equity level and on a regional (US and non-US) basis.

Priority: Two

[5] The MSCI World Index is used as an assumption for the overlay equity exposure.

Growth & Value Disciplines

While there are numerous techniques and strategies used to manage equities actively, most can be categorized as growth-oriented or value-oriented management styles. Growth-oriented managers seek to identify companies with the best earnings growth prospects. Value-oriented managers seek to identify the most attractively priced stocks. Though many managers employ a combination of the two strategies, one strategy is nearly always predominant.

Growth and value strategies generally provide exposure to different industries and companies. In addition, the two strategies have historically displayed less-than-perfect correlations. Thus, a plan would benefit from investing in both strategies. This exposure may be achieved through the use of specific growth or value strategies, or through the use of broad market index funds. Market index funds cover the full style spectrum, and can therefore provide exposure to both style categories.

Strategies emphasizing either growth or value stocks tend to rotate in market leadership, producing alternating superior and inferior returns. However, over long time periods, value stocks have generated slightly stronger historical returns and experienced lower volatility, relative to growth strategies. Nevertheless, as noted above, the Retirement System can gain diversification benefits by investing in both growth and value strategies.

South Carolina Retirement System Investment Commission Status:

The Retirement System has growth, value and core strategies. In aggregate, the total equity portfolio would be classified as core (similar to the MSCI ACWI IMI index) with a slight growth tilt. The aggregate Price/Earnings Ratio and Price/Book ratio are slightly higher than the index signaling a more growth oriented portfolio. This is also evident in the higher earnings growth rate.

The Retirement System's style exposure is illustrated in the following table.

Fundamental Structure (Including Overlay) [6]

As of 6/30/2017

	Retirement System Aggregate	***MSCI ACWI IMI Net USD***
Price-Earnings Ratio	23.3	23.0
Price-Book Value Ratio	4.0	3.3
Dividend Yield	2.3%	2.3%
Historical Earnings Growth Rate	9.0%	7.6%
Beta	1.1	1.0

Recommendation:

Meketa Investment Group generally favors a neutral stance or slight value bias in equity portfolios. No immediate change is needed.

Priority: NA

6 The MSCI World Index is used as an assumption for the overlay equity exposure.

Global Equity

Global equity mandates allow domestic and international companies to directly compete for investor capital, much like they do in the business world. The potential benefits of a global equity mandate can only be realized if managers can be identified who have the experience, the skill set and the resources necessary to analyze and compare companies across the globe. Fortunately, advancements in the availability and flow of information in recent years have made it less important to have investors “on the ground” in each individual country. This has made it more feasible for one manager or investment team to effectively cover a global universe. This has significantly expanded the number of firms that have the ability to execute a true global equity portfolio.

In addition to the risks inherent in international equity investing, global mandates introduce their own unique considerations. For example, the plan would cede the asset allocation decision (the domestic/international equity weighting) within the global equity portfolio to the investment manager.

South Carolina Retirement System Investment Commission Status:

The Retirement System uses five global strategies for the core of its public equity exposure. The exposure is split approximately 50% passive and 50% enhanced index. All of the strategies are global developed market strategies (excluding emerging markets). The three enhanced index funds all have equal weights.

Recommendation:

The Retirement System has achieved broad diversification across a variety of regions, countries, and industries at relatively inexpensive fees. We encourage a review of the role of each strategy to ensure they are complementary and likely to add value (net of fees).

Priority: Three

Regional Overview (Including Overlay) [7]

As of 6/30/2017

All Equities Region Allocation vs MSCI ACWI IMI Net USD

As of 6/30/2017

Region	% of Total	% of Bench	% Diff
North America ex U.S.	2.90%	3.16%	-0.26%
United States	50.73%	52.09%	-1.36%
Europe Ex U.K.	15.48%	15.14%	0.34%
United Kingdom	5.64%	5.95%	-0.31%
Pacific Basin Ex Japan	5.05%	4.02%	1.03%
Japan	7.43%	8.17%	-0.74%
Emerging Markets	12.40%	11.10%	1.31%
Other	0.36%	0.37%	-0.01%
Total	**100.00%**	**100.00%**	

[7] The MSCI World Index is used as an assumption for the overlay equity exposure.

International Developed Market Equity

Foreign and domestic equity markets have produced alternating superior and inferior relative returns during various time periods. However, over long-term periods, developed foreign stock markets have provided cumulative returns similar to those of the U.S. market.

While the correlation between domestic and foreign equity market returns has risen steadily in the past decade, there is still a material diversification benefit to owning both U.S. and non-U.S. equities. As a result, investors generally experience materially lower overall equity volatility if their equity assets include a diversified investment in foreign equities. This volatility reduction has occurred despite the higher volatility of foreign equities. In the same manner that investors receive risk-reduction benefits from owning a variety of individual domestic stocks, they similarly benefit from owning investments representing a variety of international markets.

When investing in international equities, it is important to allocate assets among a variety of regions, countries, and industries, to ensure appropriate diversification.

South Carolina Retirement System Investment Commission Status:

In addition to the global equity strategies, the Retirement System is invested in four international developed (ex. U.S.) strategies. Three of the four are quant or factor-based small cap strategies. The fourth is a bottom-up fundamental core concentrated active all-cap strategy.

Recommendation:

We agree with the use of active management in small cap international developed equity to supplement the passive and enhanced index exposure gained through the global equity managers. We encourage a review of the role of each strategy to ensure they are complementary and likely to add value (net of fees).

Priority: Three

International Emerging and Frontier Market Equity

While international developed markets have come to represent a material portion of institutional public equity portfolios in recent years, many plans remain underexposed to the faster-growing emerging markets. Today, emerging markets comprise roughly 80% of the world's population and close to 40% of global economic output.[8] Thus, even assuming no future growth, emerging markets equities should hold a place in any diversified public equity allocation.

The future growth argument for emerging market equities is strong. These countries start from a lower base of economic activity. Therefore, even modest improvements may result in large percentage increases. Emerging economies also benefit from increased globalization, favorable demographics, and lower debt levels compared to the developed world. Taken together, these factors make a strong case for higher future economic growth in emerging economies.

This added growth potential comes with increased volatility (risk). In addition, investing in emerging markets does introduce a heightened level of event risk (political, currency, etc.) to consider in assessing the risk/reward trade-off of investments in this asset class. However, while emerging markets have historically been more volatile than developed markets on a standalone basis, their relatively low correlation with developed markets can have a dampening effect on overall portfolio volatility. That said, it is important that this investment be allocated among a variety of regions, countries, and industries, to ensure appropriate diversification.

Many of today's emerging markets would have been considered yesterday's frontier markets. Frontier markets can be defined as developing economies with underdeveloped equity markets, in the sense that they suffer from illiquidity, low transparency, low levels of foreign investment, high corruption, and a weak regulatory framework. Frontier markets are considered less economically and financially developed than emerging markets. Of the more than 115 stock markets worldwide, roughly 60 may be characterized as frontier markets.

[8] Source: IFC, World Bank.

International Emerging and Frontier Market Equity

South Carolina Retirement System Investment Commission Status:

The Retirement System has four dedicated emerging market equity managers. Each strategy appears fairly differentiated: one bottom up fundamental strategy with a growth tilt (William Blair), one diversified quant strategy with a value tilt (LSV), one concentrated core strategy (Schroder), and one bottom up benchmark agnostic strategy (Aberdeen).

Recommendation:

We agree with the Commissioners' decision to use active managers in emerging markets. The current mix of strategies seems well thought out. The Commissioners may also want to consider carving out a small portion of the emerging market allocation for frontier market stocks and/or a dedicated small cap allocation.

Priority: Three

Private Equity

Private equity investments are investments in privately held companies. They are generally structured in the form of partnerships that typically consist of ten to twenty equity investments in individual companies. Historically, top-tier private equity investors have tended to generate returns of 3% to 5% per year more than public equity indices, even after paying substantial management fees and carrying costs. Compounded over many years, this can lead to substantial increases in real wealth.

Like investments in publicly traded common stocks, investments in private equity funds provide investors with a stake in a generative asset. However, unlike publicly traded stocks, private equity funds are not priced daily by the market. Thus, the apparent price volatility and the interim return correlation to public equities are low.

Private equity investments come in many forms, including venture capital funds, leveraged buyout funds, growth equity funds, secondary interest funds, and international private equity funds. All of these strategies produce returns that differ meaningfully from traditional asset classes, and exhibit different fundamental characteristics. A program should be invested across a variety of types of private equity investments to moderate risk.

Private equity partnerships are self-liquidating, usually over periods of eight to ten years. Therefore, programs must continue to make new commitments over time in order to maintain their target allocations to the asset class. Typically, programs make new commitments at a steady pace each year in order to gain diversified exposure across business and market cycles.

South Carolina Retirement System Investment Commission Status:

The Retirement System has approximately 7.6% of its assets invested in private equity across a variety of different vintage years and strategy types. Approximately one-third of the exposure is invested through strategic partnerships with the balance invested directly in traditional limited partnerships.

Recommendation:

Meketa Investment Group recommends that long-term investors allocate a portion of their assets to private equity investments. We recommend the System continue to build a diversified portfolio by strategy, geography, fund type, and vintage year. We also recommend the System continue to explore ways to reduce the costs of investing in private equity.

Priority: Two

Equity Options (Short Vol Strategies)

Equity option strategies use call and put options in a variety of ways to reduce risk or enhance expected return (or both). Popular strategies include from those that buy put options, so as to reduce downside risk, to those that sell options to capture the income from what is effectively providing insurance.

The strategy of put writing is based on the existence of a volatility risk premium. This premium is supported by a behavioral bias known as loss aversion, referring to a tendency for individuals to prefer avoiding losses vs. acquiring equivalent gains. Loss aversion is expressed in financial markets by the tendency for investors to overpay for insurance which leads to the overpricing of put options. Given that options are priced in terms of implied volatility, "overpriced" puts means that implied volatilities tend to be higher than realized volatility.

While there is empirical and behavioral proof that a volatility risk premium exists, the current state of markets is a key factor when investing in an equity option strategy. Selling volatility has a payoff structure of consistent but relatively low positive returns, with exposure to very large negative events (negative skew).

South Carolina Retirement System Investment Commission Status:

The Retirement System recently initiated an allocation to equity option strategies with the intent to increase the Retirement System's overall equity exposure but with potentially less market risk than investing passively. As of June 30, 2017 the Retirement System had approximately 5.2% of its assets invested in two equity options strategies, managed by Russell and AQR. Based on our preliminary review, the strategies appear complementary. The Russell portfolio is a relatively inexpensive, systematic rules-based strategy run on the belief that a broad range of option tenor and diversification leads to a consistent return profile. All options sold are at-the-money at initiation. The AQR strategy is more expensive and takes an active approach to writing puts. The strategy sells out-of-the money puts on four equity indices. It seeks to only sell options when appropriately compensated for doing so.

Recommendation:

Meketa Investment Group recommends that the Commission clearly understand the equity option strategies in the System's portfolio. While a put-writing strategy is seemingly advantageous from a correlation (and income) perspective, compared to traditional long-only equity exposure, the key risk of equity option strategies is the occurrence of a large market correction. In the event of a significant and sudden market downturn, the strategy will struggle at the exact same time as traditional long-only equity exposure. Meketa Investment Group recommends a constructive dialogue on the pros and cons of such strategies relative to traditional equity exposure.

Priority: Two

Conservative Fixed Income

Investment Grade Fixed Income

Investment grade fixed income provides stability of income, capital preservation, and a source of liquidity for short-term funding needs. Investment grade bonds reduce overall risk of a plan. While expected returns of intermediate-term investment grade bonds are lower than those of equities, bonds also exhibit lower price volatility. In addition, historical correlation between bonds and equities has been low. Therefore, fixed income securities are typically included in an optimal portfolio asset allocation structure. The fact that bonds have a set maturity, ensuring a return of principal on a known date, means that investment grade bonds can be viewed as a source of stability during periods of extended equity market weakness.

Active fixed income managers typically employ one or more of four basic strategies: 1) interest rate forecasts, 2) yield curve strategies, 3) sector rotation, and 4) security selection. "Top down" managers emphasize interest rate forecasting, while "bottom-up" managers emphasize security selection. When considering fixed income strategies, it is important to recognize that return distributions for fixed income securities are limited on the upside, compared to equities. This is due to the fact that interest rates, the primary determinant of investment grade bond returns, cannot decline below zero, capping price appreciation.

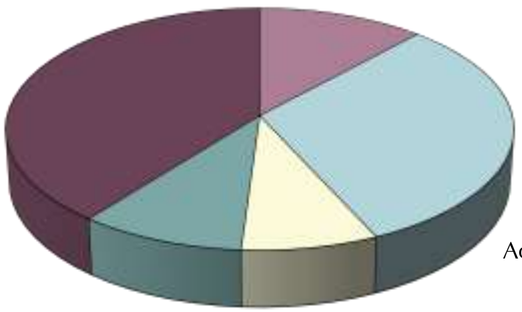
The three main sectors of the investment grade fixed income market are U.S. Treasury and agency securities, corporate debt, and mortgage-backed securities. Managers who focus on these sectors are called "core" managers. "Core plus" managers also invest in riskier sectors, such as high yield and non-U.S. dollar denominated bonds.

South Carolina Retirement System Investment Commission Status:

The Retirement System's core fixed income exposure is composed of a PIMCO Total Return strategy, two Loomis Sayles sector-focused strategies (corporate and securitized), broad passive exposure via the overlay program (Barclays Aggregate position), as well as a U.S. Treasuries position in the overlay program (as a complement to the two Loomis Sayles strategies). Each strategy has specific guidelines in place to manage credit quality, concentration, and duration (e.g., +/- 2 years from the benchmark).

Investment Grade Fixed Income (continued)

Core Bond Exposure – Inclusive of Overlay



Recommendation:

Meketa Investment Group prefers the use of specialist managers in the asset classes where they have demonstrated expertise, such as Loomis in corporate bonds. We are comfortable with a portion of the core bond exposure being in a “core plus” strategy, so long as the mandate is well defined and the fees are reasonable, which they are in this case. We view core bonds primarily as a risk mitigation tool intended to provide preservation of capital during an equity market correction. For this reason, we recommend the Commission consider adding a dedicated allocation to long-term Treasuries during the next asset allocation review.

Priority: One

Treasury Inflation Protected Securities (TIPS)

Unlike traditional bonds, inflation-linked bonds offer investors a guaranteed return over inflation if held to maturity. Investors receive an explicit annual coupon plus a variable adjustment based on the rate of inflation.

TIPS have risk and return patterns that differ from those of stocks or traditional bonds, and thus provide valuable diversification to both long- and short-term investment funds. An investment in TIPS would likely produce attractive gains in a rising inflation environment, offsetting losses in stocks and traditional bonds. Because the future is uncertain, owning an asset that may do well in an otherwise adverse environment could be valuable. In addition, TIPS are issued by the U.S. government, and provide protection in weak credit environments.

The main disadvantages of TIPS are that they may substantially underperform when inflation falls, and they will provide little protection against a rise in interest rates without a similar increase in inflation. However, the advantages of TIPS outweigh the disadvantages.

Most investors have at least a portion of their liabilities exposed to inflation. For investors with inflation-sensitive liabilities, TIPS represent the lowest risk asset available. Defined benefit plans that offer a COLA (cost of living adjustment) possess liabilities explicitly linked to inflation. By holding TIPS, plans can more closely match their assets to their liabilities.

South Carolina Retirement System Investment Commission Status:

The Retirement System has no dedicated TIPS exposure. TIPS are currently included in the “Other Opportunistic Strategies” category.

Recommendation:

Because of their potential inflationary hedge and high quality, we believe TIPS should have a role in most plan sponsors portfolios. For this reason, we recommend the Commission consider adding a dedicated allocation to TIPS during the next asset allocation review.

Priority: One

Diversified Credit

High Yield Bonds

High yield bonds are also known as “below investment grade” or “junk” bonds. As the name implies, these bonds are rated less than investment grade by the credit rating agencies (i.e., Moody's, Standard & Poor's, and Fitch). Because the companies issuing them are more likely to experience defaults than those issuing investment grade-rated bonds, investors demand a premium in the form of a higher yield. The high yield fixed income asset class covers a wide range of bonds, from just below investment grade, “BB”-rated issues to much riskier securities that have lost their credit ratings entirely.

Active managers have different characteristics (i.e., conservative versus aggressive, bond-only versus multi-sector, etc.). Some active managers will invest in other higher yielding securities, such as emerging market debt and convertible bonds.

South Carolina Retirement System Investment Commission Status:

The Retirement System is invested in one dedicated high yield portfolio (Barings) and gains additional high yield exposure through other “mixed credit” strategies that have the flexibility to invest in high yield securities (Caspian, Guggenheim, and GoldenTree). The exposure gained with Barings is primarily corporate high yield. Roughly half of the Caspian strategy is also corporate high yield, while GoldenTree provides high yield exposure through structured credit, primarily CLOs (Collateralized Loan Obligations). Guggenheim manages an “unconstrained” strategy with significant flexibly to invest in high yield securities, but had less than 5% exposure as of June 30, 2017.

Recommendation:

Meketa Investment Group agrees with the Commission’s decision to use active managers in high yield, and often utilizes managers that have the discretion to rotate between high yield bonds and bank loans (i.e., strategies similar to Caspian). While many of the diversified credit strategies have wide latitude in allocation decisions, each appears distinct in its principal mandate. We do not recommend any changes at this time.

Priority: NA

Bank Loans

Bank loans, also known as syndicated loans, are corporate loans that represent the most senior security in the corporate capital structure, and have floating interest rates. Bank loans are similar to high yield bonds but have a more senior claim on company assets and slightly lower interest rate risk. The bank loan market has existed for several decades, but has grown rapidly, due primarily to their popularity as a source of leveraged buy-outs financing.

The bank loan market is roughly the size of the high yield bond market. Further, there is a fair amount of company overlap (many companies have both bank loans and high yield bonds). Because of this, many high yield bond managers also started managing bank loans, either in high yield portfolios or as separate mandates, as the bank loan market evolved. Bank loan investment vehicles vary based on the level of liquidity and leverage. We recommend accessing the bank loan market in unlevered vehicles, where accounts and funds own the underlying loans.

South Carolina Retirement System Investment Commission Status:

The Retirement System is invested in one dedicated bank loan portfolio (PineBridge) and gains additional bank loan exposure through other mixed credit strategies. The Caspian strategy is roughly half bank loans. As previously noted, Guggenheim manages an “unconstrained” strategy with significant flexibly. The Guggenheim strategy currently has 15% exposure to bank loans. Roughly 80% of the GoldenTree Structured Products Value strategy is in floating rate securities, primarily CLOs.

Recommendation:

As previously noted, Meketa Investment Group often uses strategies that have the flexibility to invest both in high yield and bank loans. We do not recommend any changes at this time.

Priority: NA

Emerging Market Debt

Emerging market debt refers to bonds issued by entities based in emerging market countries. Most commonly, these are sovereign bonds issued by the government of an emerging market country. Emerging markets debt can be divided into two broad categories based on the currency in which the bond is issued: external and local. External currency debt is issued in a currency other than the country's home currency (usually in U.S. dollars or euros). Local currency debt is issued in the currency of the issuing country or company. Another way of segmenting emerging market debt is into sovereign debt (debt issued by governments) and corporate debt (issued by companies). Historically, sovereign debt has been the primary investment option for investors.

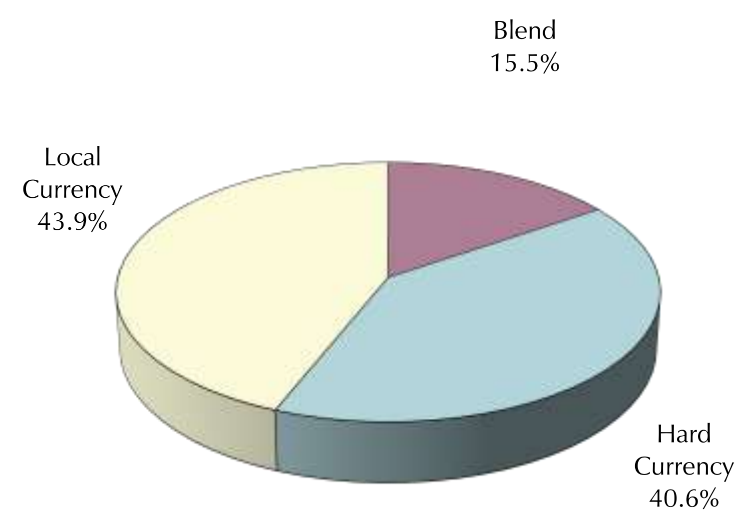
Over the past decade, emerging market country governments increasingly turned to local currency debt, motivated by a desire to alleviate the currency mismatch of borrowing in external debt markets and receiving tax revenues in local currency. Furthermore, emerging market debt has also been improving in credit quality. The majority of emerging markets debt is now rated as investment grade, indicating that on the basis of credit quality, emerging market debt should be less risky than high yield bonds.

Emerging markets debt appears to offer meaningful diversification benefits, as historical correlations between emerging markets debt — both in external and local currencies — and typical institutional asset classes have been moderate. Furthermore, emerging markets debt should continue to offer a higher yield, and hence command a long-term risk premium, relative to higher quality developed markets debt.

South Carolina Retirement System Investment Commission Status:

The Retirement System is currently invested with five dedicated emerging market debt managers. Two strategies have hard currency mandates, two have local currency mandates, and one is allowed to tactically invest in both hard and local currency (benchmarked against an equal 50/50 split). As the following chart shows, the overall exposure is well balanced between hard and local currency.

Emerging Market Debt Strategy Type



Recommendation:

Meketa Investment Group believes that emerging market debt investing is appropriate for long term portfolios as a tool for overall portfolio diversification. We agree with the Retirement System's decision to use a mix of dedicated local currency and hard currency strategies. We do not recommend any changes at this time.

Priority: NA

Private Debt

Private debt represents loans made primarily to privately held companies. It can take the form of mezzanine debt, distressed debt, direct loans, real estate debt, etc. These investments are generally structured as illiquid partnerships.

Private lending transactions typically take place with smaller or middle market borrowers. This lending will look very similar to that which occurs with larger companies in the bank loan and high yield markets, with the major difference being that the private loans will be bilateral and not freely traded. Further, traditional bank lending and private lending are not mutually exclusive, as many middle market companies utilize both sources of capital financing.

South Carolina Retirement System Investment Commission Status:

The Retirement System has a seven percent target allocation to private debt strategies. More than half of the current exposure is invested through strategic partnerships (primarily GSO and Apollo), with the balance invested directly in traditional limited partnerships.

Recommendation:

Meketa Investment Group recommends that long-term investors allocate a portion of their assets to private debt investments. We recommend the System continue to build a diversified portfolio by strategy, geography, fund type, and vintage year. We also recommend the System continue to explore ways to reduce the costs of investing in private debt.

Priority: Two

Opportunistic Strategies

Opportunistic - Other

The South Carolina Retirement System's Annual Investment Plan identifies "other opportunistic strategies" as compelling investments that may not fit into other easily defined asset classes. These investments may offer either high returns, diversifying returns, or both. South Carolina identifies potential investments as commodities, CTAs, TIPS, alternative beta and insurance strategies.

Some institutional investors use similar "other opportunistic" buckets. While some set a dedicated target allocation to this bucket, others have a range that starts at zero percent to allow for the possibility of no investments in the asset class if no compelling opportunities exist.

South Carolina Retirement System Investment Commission Status:

The Retirement System is currently invested in an EnTrust co-investment strategy. The EnTrust strategy is an illiquid call-down structure that seeks to make concentrated investments in unique opportunities, either debt or equity, often the result of a market dislocation.

Recommendation:

Meketa Investment Group recommends that the Commission clarify what role the opportunistic allocation should play and what kinds of strategies it considers to be truly opportunistic.

Priority: Two

Hedge Funds (Non Portable Alpha)

A hedge fund is an investment strategy which maintains significant degrees of freedom. A hedge fund can buy and sell short securities, use arbitrage, trade derivatives, and invest in almost any opportunity in any market where it foresees the potential for profit. It is important to understand that investment returns, volatility, and risk vary enormously among the many different hedge fund strategies.

While hedge funds are termed an "alternative investment," hedge funds are not as much a separate asset class as a portfolio construction and management method. Hedge funds are usually structured as private, commingled investment funds and pursue an array of investment and trading strategies that may or may not be directional in nature. Certain hedge fund strategies have the potential to add value and provide meaningful diversification to a plan sponsor.

Investments in hedge funds involve many risks similar to those involved in making equity and fixed income investments. Also, hedge fund investing exposes investors to additional risks, including complexity, leverage, illiquidity, and lack of transparency. Investors should also be aware that investment fees in hedge funds are far above those of traditional investment strategies. Using fund of funds introduces an additional layer of fees.

When considering hedge funds in an overall portfolio, the Commissioners should carefully consider what role the allocation should play to ensure it effectively achieves the goals of the Retirement System.

South Carolina Retirement System Investment Commission Status:

The Retirement System is currently invested in approximately ten hedge funds (not including those in the portable alpha strategies) and is in the process of liquidating those strategies. The target weight to dedicated hedge funds is currently two percent and is scheduled to decrease to zero percent by fiscal year 2018-2019.

Recommendation:

Meketa Investment Group agrees with the decision to liquidate the asset class. We encourage staff to continue to monitor the managers to ensure a timely and complete wind-down.

Priority: NA

Risk Parity

As broadly defined, risk parity strategies aim to spread portfolio risk equally across asset classes — or, in some cases, risk factors — resulting in portfolios that generally have greater expected risk-adjusted returns than a typical institutional portfolio. In most cases, risk parity managers define risk as volatility. A typical risk parity portfolio may be allocated to equities, government bonds (i.e., interest rates), corporate bonds (i.e., credit spreads), currencies, and commodities.

Risk parity portfolios are generally expected to return less than a typical institutional portfolio (e.g., a 60% stock / 40% bond portfolio). Therefore, they are usually leveraged to meet return requirements or pre-specified risk targets. Essentially, risk parity portfolios seek to spread out the risk that most institutional investors take, by reducing equity risk but adding (and leveraging) other risks such as rising interest rates, widening spreads, etc. Therefore, risk parity strategies will tend to outperform when equities lag, and underperform when equities do well.

South Carolina Retirement System Investment Commission Status:

The Retirement System is invested in one risk parity strategy, Bridgewater All Weather Portfolio Limited. The strategy seeks to balance its risk exposure equally across four buckets: 25% into risk-adjusted assets that will do well when growth is faster than expected, 25% that will do well when growth disappoints, 25% that will do well when inflation is higher than expected, 25% that will do well when inflation is lower than expected.

Recommendation:

Meketa Investment Group believes a dedicated allocation to risk parity strategies is generally not necessary in a well-diversified portfolio. A thoughtful approach to asset allocation should protect the Retirement System from a variety of different adverse economic environments while still taking on enough risk to participate in growth environments to meet the actuarial return target over the long term. Because risk parity strategies utilize leverage to achieve a risk-balanced portfolio, they introduce risks (e.g., counter-party risk) that the System may not appreciate or be adequately compensated for.

We are comfortable retaining risk parity managers who have exhibited a strong track record of managing liquidity and counter-party risk, and who charge low relative fees. We recommend a review of what the ideal allocation to the risk parity strategy should be.

Priority: Two

Global Asset Allocation

Global Asset Allocation ("GAA") or Tactical Asset Allocation ("TAA") broadly refers to investment strategies that alter a portfolio's asset allocation mix in response to changing market conditions, usually on a time scale that is less than one year. Global Asset Allocation may be directly contrasted with *strategic* asset allocation, which generally refers to longer-term allocation decisions.

There are two types of GAA managers. In the "traditional" approach, the manager can either go long a given asset class or not own it at all. In contrast, the "Core Global Macro" approach more closely resembles a hedge fund strategy, in that the manager usually invests via derivatives, may use leverage, and may assume both long and short positions.

There is no industry-standard *passive* approach to GAA; active management is the only option. To merit the fees charged by GAA managers, it is important to ensure that the allocation is truly tactical and not simply replicating the plan sponsor's strategic portfolio.

South Carolina Retirement System Investment Commission Status:

The Retirement System currently has an 8% target to GAA strategies. The one GAA strategy currently in use is managed by GMO. It is structured as an internal fund of funds vehicle with the latitude to invest across the world in a variety of asset classes. The strategy's benchmark is common for the asset class: 50% MSCI World Index/50% Barclays Aggregate Index. One downside of this benchmark is that it is not consistent with the System's overall asset allocation. Moreover, the tactical decisions made by the manager have the potential to move the System away from the risk and return objectives agreed upon by the Commission.

Recommendation:

We understand the Commission is considering making some changes to the GAA asset class (e.g., reducing the target weight, potentially hiring new managers, implementing performance based fees, and converting the managers' benchmark to match the weighted benchmarks of the Retirement System's public markets allocation). We understand one objective of the asset class will be to give transparency on these managers' tactical positioning to Staff so as to assist in their decision making process. Given this objective and the changes that Staff is proposing (e.g., adoption of a benchmark that is consistent with the Retirement System's intended allocations), we are comfortable with an allocation to the asset class. We note that this objective could be achieved with a smaller position size (potentially reducing overall fees), and we suggest a reduced allocation be discussed.

Priority: Three

Real Assets

Real Estate

Real estate is a separate asset class, providing unique return and risk characteristics. Real estate investments can be made in public or private vehicles and be structured as equity or debt and have varying degrees of liquidity options depending on the investment. In addition, real estate can offer various benefits to investors, including diversification, inflation hedging, current income, and asset appreciation. The expected returns from real estate will depend on the specific strategy being deployed and the degree of risk or leverage used. However, over long-term periods, real estate returns are expected to rank between the returns of stocks and bonds.

Real estate is not a liquid asset. Prices are set infrequently and often only through appraisal. Institutional investors have typically utilized commingled real estate pools that offer a limited degree of liquidity, depending upon the cash flows from underlying investments and other investors. However, this liquidity is not guaranteed, and investors may receive withdrawal funds only gradually. Much of the liquidity constraint stems from the absence of a public market for real estate. Real estate investment trusts (REITs), entities that trade publicly but invest in real estate, offer liquidity to investors seeking easily tradable, daily-priced real estate exposure.

South Carolina Retirement System Investment Commission Status:

The Retirement System currently has a floating target of six percent to private real estate and a two percent target to public real estate (REITs). Currently the public exposure consists of one U.S. active REIT strategy and is roughly one percent below target weight. The private real estate exposure consists of over 25 fund investments (predominantly direct allocations with some exposure through strategic partnerships) and has a tilt towards non-core strategies.

Recommendation:

Meketa Investment Group recommends a combination of core and non-core real estate investments, with the specific allocation dependent on what the Retirement System is hoping to get out of their real estate allocation (i.e., a preference for current income or enhanced returns). We recommend reviewing this sub-allocation as part of the next asset allocation discussion.

Priority: One

Infrastructure

Infrastructure assets are organized to provide a stable, predictable, long-term cash flow stream to investors. Infrastructure investment may take the form of a sale or lease of an asset by the public sector to the private sector, or between two private entities. "Core" infrastructure has traditionally included essential assets such as roads, tunnels and bridges; seaports and airports; railroads; water and wastewater treatment plants, waste collection and treatment facilities; gas pipelines, electrical transmission and generation facilities; broadcast and cell phone towers; schools and hospitals. In addition to core infrastructure, there are opportunities to invest in "value-added" strategies (those which provide opportunities for enhancing returns through operational improvement, business expansion, or other strategies) and "opportunistic" strategies (those which have exposure to developing markets, development and construction risks, or market and business risks).

Most of the current universe of infrastructure funds is structured similarly to private equity partnerships. They are closed-end private funds, with a pre-determined term and investment period, as well as management and incentive fees. Though most private equity funds have a ten year term, many infrastructure funds have terms as long as twelve or fifteen years, along with the customary extension periods (e.g., two one year extensions). There is also a small number of open-ended infrastructure funds that offer a perpetual term, and that may offer a fit with investors seeking predictable, long-term cash flows over the long-term.

South Carolina Retirement System Investment Commission Status:

The Retirement System has a three percent target to infrastructure. As of June 30, 2017, infrastructure represented 1.4% of the Retirement System. One investment has been made in an active, publicly-listed global infrastructure strategy managed by Deutsche Bank. We understand that the Retirement System has been proactively searching to make investments in private infrastructure funds.

Recommendation:

Meketa Investment Group typically recommends that long-term investors focus their infrastructure program on private market investments through a combination of diversified "core" and "value-added" funds. This approach would include investments in high-quality assets across multiple sectors and geographies, and complement this allocation with selective commitments to opportunistic strategies that require increased specialization, such as energy. Since we believe public market infrastructure does not offer the same benefits, we typically recommend only a modest allocation, often as a "place holder" for capital that will eventually be invested in private market strategies. Further, we would recommend the use of a low cost index fund that replicates one of the broadly available infrastructure benchmarks, such as the DJ Brookfield index.

Priority: Two

Other Strategies

Overlay Program

Overlay programs can be used in two primary ways. The most common is a strategic rules based overlay programs. These programs are often used by retirement systems to “fill the gaps” to reach a plan’s target asset allocation exposure. The overlay program manager will typically coordinate with a retirement system’s staff and custodian bank to provide synthetic market exposure (through a variety of derivatives like futures, forwards, options, swaps, and ETFs) to increase underweight asset class exposure and synthetically reduce overweight asset exposure. The most common programs focus on equitizing cash or hedging currency exposure.

Tactical overlay programs also use derivative positions to synthetically increase or decrease asset class exposure, but do so in an active manner, implementing positions in asset classes that the retirement system expects will outperform, and tactically reducing exposure in other areas.

South Carolina Retirement System Investment Commission Status:

Since 2007 the Retirement System has utilized an overlay account with Russell Investments. As of June 30, 2017 the program had $5.2 billion in notional value, representing 17% of the Retirement System. The majority of the exposure was in synthetic global equity positions and U.S. investment grade fixed income positions.

Authorized investment staff at RSIC notifies Russell of all changes on a monthly basis, executing a rules-based overlay strategy. While the role (and notional exposure) of the overlay program has fluctuated over time, the program has recently been used to equitize cash (and equitize portable alpha collateral) while also rebalance the portfolio. Russell sends a variety of exposure reports to RSIC weekly.

The fees on the program are fairly low. RSIC is subject to a minimum fee of $200,000 per year plus 1.5 basis points on the first $2.5 billion in notional value, and 1.0 basis points on notional value above $2.5 billion. Based on the June 30 notional value, this resulted in an average fee of 1.6 bp (or .016%).

Recommendation:

When executed with the proper controls, these programs can be an effective and inexpensive way for retirement systems to efficiently achieve their target allocations among public markets and to rebalance as needed. We recommend considering other approaches that might be still more cost effective (e.g., separate accounts or in-house management) over the long term.

Priority: Three

Portable Alpha

Most portable alpha strategies are intended to be uncorrelated to market risks. These strategies seek to generate returns by "porting" one strategy on top of another. This is, in effect, a form of leverage. Commonly, they combine passive exposure to a public markets asset class, such as US equities or bonds, with a hedge fund portfolio that should not be highly correlated with the markets. The passive "beta" exposure is usually achieved cheaply and efficiently via derivatives, and the "alpha" component is usually invested in hedge funds, which are much more expensive.

While the intent of portable alpha was to combine uncorrelated strategies, the reality is that most strategies have found this object to be elusive, especially during periods of market stress. In effect, most portable alpha strategies represented a very expensive and disappointing form of leverage.

South Carolina Retirement System Investment Commission Status:

The Retirement System is invested in four portable alpha strategies, collectively representing approximately 7.7% of the Retirement System as of June 30, 2017. Two strategies are managed by Bridgewater (the Pure Alpha Fund II and Pure Alpha Major Markets Fund II), one by D.E. Shaw, and one by Lighthouse. At current asset levels and fee schedules, the estimated annual management fee for the four strategies is approximately $29 million, or an effective fee of 1.25% (but this excludes performance based fees and fees to underlying managers, both of which can significantly increase the total effective fee for this exposure).

Recommendation:

We recommend a thorough review of the portable alpha strategies to determine if the underlying strategies are providing the intended exposure.

Priority: Two

Operations

Custody Services

The primary role of a custody bank is to provide accurate, reliable, efficient, and useful accounting and safekeeping services. It is crucial that the custody bank act as the independent confirmation of asset values and account activity, to protect investment assets, and to reduce the possibility of missed income, or manipulation or errors that could lead to financial loss. In addition, the custody bank should be able to provide its data in electronic form, and should offer up-to-date on-line access to information.

Because custodian banks track investment activity as part of their accounting responsibilities, it has become the industry standard to rely upon the custodian to calculate investment performance. Fees for this service are generally minimal as the custodian already performs much of the work entailed in calculating performance. By retaining the custodian bank to calculate performance, the Retirement System improves the likelihood of accurate and impartial performance numbers.

In addition to accounting, safekeeping, and performance calculation services, custody banks often offer investment products that can serve client needs. For example, most custodians offer automatic overnight cash pools to allow clients to invest excess cash on a daily basis. Index fund products also are usually available from the custodian. The advantages of utilizing investment products of the custodian stem from the relationship pricing that can occur and the administrative ease of transitions to and from these products.

Custody fees should be monitored and negotiated, as appropriate. Custody fees should be examined in the context of the entire fee stream to the custodian.

South Carolina Retirement System Investment Commission Status:

The Retirement System uses Bank of New York Mellon for custody services. The list of services in use is comprehensive.

Recommendation:

While we recommend no changes at this time, it is a “best practice” to regularly conduct a full review of accounting and other services provided by System’s custodian to ensure that the Retirement System receives only those services that are necessary and does not pay for services that are not needed.

Priority: Three

Transition Management

When a plan sponsor adds a new asset class, changes its asset allocation targets, or replaces a manager, assets will need to be moved from one (or more than one) portfolio to another portfolio(s). These assets may stay within the same asset class (e.g., when one small cap stock manager is replaced with another) or they may move across asset classes (e.g., when a new allocation to TIPS is funded from equities).

Transition management often entails selling marketable securities from a legacy portfolio, where a manager has been terminated, to a target portfolio, where the new manager will take over. The outmoded model for handling this type of transition was to instruct the legacy manager to sell all the securities and give the new manager the resulting cash to invest. The main shortcomings of this method are that costs (commissions, opportunity costs, trade execution) may be high, as a firm with no incentive to maximize receipts is responsible for executing the trades.

Using a third-party transition manager can reduce or eliminate these costs. For example, the transition manager typically transfers as many assets "in-kind" as possible. Assets in the legacy portfolio which are needed by the new manager can be transferred directly to the new portfolio. Because they are not traded on the open market, commission costs are eliminated. Further, the transition manager seeks to maintain market exposure throughout the transition, thus ensuring that opportunity costs are minimized. Finally, a transition manager is measured on their performance, and therefore more likely to search for the best execution.

South Carolina Retirement System Investment Commission Status:

Since 2008, the Retirement System has used Russell exclusively for transition management services. Prior to 2008, the Retirement System used BNY Mellon.

Recommendation:

Given the extent of the overlay program with Russell, we are comfortable retaining Russell as a transition manager. Meketa Investment Group typically recommends retaining a "panel" of transition managers (three to four) with a contract in place for each. When a transition is necessary, bids can be requested from the panel. Once bids are received, the most appropriate manager can be selected.

Priority: Three

Securities Lending

Securities lending programs have the ability to generate modest incremental revenue for investors. During most periods, risk of loss is minimal. However, during periods of market disruption, the potential for significant loss exists. Investors may find that controlled exposure to securities lending can provide added income with an acceptable risk level. The amount of income, and risk, in any securities lending program is determined largely by how the borrowing collateral is invested.

Individual programs vary according to several factors, including the degree of risk accepted and the percentage of gains accruing to the investor. The collateral requirements for loaned securities, the indemnification of investors, the likely volume of lending available, and the revenue split vary from one program to another and should be carefully reviewed before a decision to participate is finalized.

South Carolina Retirement System Investment Commission Status:

The Retirement System participates in a securities lending program managed by Bank of New York Mellon. The revenue split (90% to RSIC, 10% Bank of New York Mellon) is more favorable than industry norms, though common for a plan of this size. The collateral requirements (102% of initial market value for U.S. loaned securities, 105% for foreign securities, and 107%+ when receiving non-cash collateral) are in line with industry standards. Importantly, the collateral is invested in a separate account with the guidelines determined by the Retirement System.

Less than one million in revenue was earned from securities lending in fiscal year 2016. The market value of the collateral pool was approximately $55.7 million on June 30, 2016.

Recommendation:

In an environment of low interest rates and tight credit spreads, the income that can be earned from a securities lending program is reduced. The risks do not diminish, however. We recommend the Commission review the oversight process for the securities lending program and diligently monitor its market risk. In addition, we encourage the Commissioners and Staff to discuss whether the additional income of the securities lending program is worth the added risk.

Priority: Three

Expenses

One of the surest ways to increase the Retirement System's return is to reduce its expenses. Expenses can be explicit (e.g., portfolio management, custody, and brokerage fees) or implicit (trading execution costs). In most cases, opportunities exist to reduce expenses outright.

Investment management fees typically represent the largest component of a plan's expenses, and should be negotiated aggressively and monitored closely. For example, while a manager's fees may be low when measured as a percentage of assets, the dollar fee may have increased substantially through market appreciation. Much of the accompanying fee appreciation does not represent additional management responsibility, and a fee re-negotiation is appropriate.

Custody fees should also be monitored and negotiated, as appropriate. Custody fees should be examined in the context of the entire fee stream to the custodian. For example, a custodian's fees may be a fixed dollar amount, based on asset values or transactions, or a combination. Custodians may also earn revenue from cash management and securities lending.

Trading costs consist of explicit costs (commissions) and implicit costs (execution and market impact), and can be difficult to monitor precisely. While influenced by an investment manager's particular strategy, trading costs indicate the care an investment manager takes in implementing strategy. Participation in commission recapture programs may help control trading costs and limit the exposure of client assets to soft dollar arrangements.

South Carolina Retirement System Investment Commission Status:

The Commission is very transparent in reporting its investment management expenses in the annual reports. The following table is an excerpt from the 2015-2016 Annual Investment Report. The Retirement System has done a good job negotiating fee schedules for its public markets managers. Not surprisingly, private market investments and hedge funds exhibited the highest fees. For fiscal year 2016, hedge funds represented 9% of the Retirement System but contributed 29% of the annual total investment management fee[9].

[9] According to page 16 of the 2015-2016 Annual Investment Report, Hedge Funds (Low Beta) had a market value of $2.6 billion out of the total Retirement System market value of $28.0 billion. Annual management fees for Hedge Funds (Low Beta) where $48.1 million out of $165.8 million total investment management fee for the Retirement System. Numbers exclude performance based fees.

Investment Management Fees and Expenses By Asset Class

Asset Class	Plan NAV[5,6]	Fiscal Year Performance[4]	Management Fee[2]	Performance Fee[2]	Other Fees[2]	Total Fees[2,5]
			Expressed in Percentages (%)			
Cash and Short Duration[1]	$587,951	0.81%	0.41%	0.00%	0.15%	0.56%
Core Fixed Income	2,314,358	5.47%	0.14%	0.01%	0.00%	0.15%
Global Fixed Income[3]	-	N/A	N/A	N/A	N/A	N/A
Mixed Credit	1,812,841	-2.67%	0.65%	-0.14%	0.09%	0.60%
EM Debt	1,566,743	7.74%	0.24%	0.00%	0.04%	0.28%
Global Public Equity	8,874,581	-4.85%	0.29%	-0.02%	0.01%	0.28%
HF (Low Beta)	2,592,382	-4.94%	1.85%	0.72%	0.21%	2.78%
Private Debt	1,702,726	-1.23%	0.97%	0.08%	0.73%	1.78%
Private Equity	2,630,788	3.64%	0.99%	0.24%	0.26%	1.48%
Real Estate	1,976,692	14.21%	0.84%	1.05%	0.29%	2.18%
GTAA	2,755,538	0.74%	0.42%	0.07%	0.07%	0.56%
Commodity	885,891	-10.66%	0.02%	0.00%	0.00%	0.02%
Infrastructure	279,162	N/A	0.01%	0.00%	0.00%	0.01%
Total	**$27,979,653**	**-0.39%**	**0.59%**	**0.16%**	**0.13%**	**0.88%**

[1] Cash and Short Duration are net of the notional exposure of the beta overlay program.

[2] Fees expressed as a percentage of the ending Asset Class NAV.

[3] Includes fees for fund(s) closed prior to the end of the fiscal year.

[4] Plan Returns are time-weighted, total return calculations, net of fees and expenses. All returns are expressed in U.S. Dollars. Returns generated from synthetic exposure through the Beta Overlay Program are reflected in the total Plan return and asset class segment returns.

[5] Overlay and top level strategic partnership fees are allocated to asset classes proportionately by NAV.

[6] Asset Class NAV includes Notional Exposure of the Beta Overlay program.

Public Markets Manager Fees Peer Rankings

	Market Value (6/30/17) (mm)	Estimated Effective Fee (%)	Estimated Annual Fee ($)	Peer Ranking Percentile
Global Public Equities				
SSgA MSCI World Index Non-Lending Strategy	$1,234.3	0.01%	173,434	1
BlackRock MSCI World Index Non-Lendable Strategy	$1,186.6	0.02%	277,989	1
INTECH Global Enhanced Plus	$818.7	0.21%	1,688,036	5
AQR Global Enhanced Equity	$805.2	0.24%	1,931,011	6
D.E. Shaw World Enhanced Plus Strategy	$804.9	0.40%	3,259,237	21
Equity Options				
Russell Investments Enhanced Put Writing Strategy	$813.7	0.14%	1,113,699	NA
AQR AERO Fund	$762.0	0.43%	3,273,037	NA
U.S. Equity				
TimesSquare Small/Mid Cap Growth	$431.5	0.76%	3,150,963	66
Integrity Small Cap Value	$334.6	0.55%	1,848,149	9
Fidelity (Pyramis) Small Cap Core Strategy	$332.0	0.59%	1,960,070	21
International Developed (Non-U.S) Equity				
EARNEST Partners International	$520.9	0.57%	2,989,750	44
Algert International Small Cap	$160.1	0.65%	1,040,588	12
Numeric International Small Cap Strategy	$153.0	0.68%	1,038,992	12
Russell Investments Information Ratio Strategic Portfolio	$150.2	0.20%	300,323	1
Emerging Market Equity				
LSV Emerging Markets Equity Fund	$415.2	0.85%	3,529,425	56
William Blair Emerging Markets Growth	$335.0	0.58%	1,955,133	18
Schroder Global Emerging Markets (GEM) Core Equity	$284.6	0.73%	2,065,503	31
Aberdeen Emerging Markets Equity	$274.8	0.80%	2,186,052	44

Core Fixed Income				
PIMCO Total Return Strategy	$931.8	0.23%	2,163,552	50
Loomis Sayles Investment Grade Corporate	$282.8	0.22%	615,522	20
Loomis Sayles Investment Grade Securitized	$233.2	0.22%	516,433	18
Short Duration Fixed Income				
Apollo/Palmetto Short-Maturity Loan Portfolio	$239.7	0.36%	862,969	4
Penn Capital High Yield - Ultra Short Duration	$228.7	0.35%	800,471	9
Diversified Credit Fixed Income				
Guggenheim Multi-Credit Fixed Income Strategy	$631.1	0.40%	2,509,016	37
PineBridge U.S. Senior Secured Loans	$490.1	0.35%	1,715,361	8
GoldenTree Structured Products Value Strategy	$393.6	0.60%	2,365,055	NA
Barings Mixed Credit U.S. High Yield Bond Portfolio	$268.8	0.30%	806,382	3
Caspian SC Holdings, L.P	$236.4	0.45%	1,070,585	23
Emerging Market Debt				
WTC - CTF Emerging Local Debt	$451.2	0.55%	2,481,387	41
GMO Emerging Country Debt	$330.5	0.49%	1,619,467	2
Ashmore EM External Debt	$307.3	0.38%	1,175,481	14
Goldman Sachs EMD Blend	$242.9	0.42%	1,019,998	4
Mondrian Local Currency Emerging Managers Debt Fund	$237.9	0.50%	1,192,432	24
Public Infrastructure and REITs				
Deutsche Bank Global Infrastructure Securities	$418.4	0.50%	2,107,885	13
CenterSquare U.S. Real Estate Securities Strategy	$380.2	0.35%	1,340,542	8

Custodian Fees

Provider	Fee
Bank of New York Mellon	Approximately $1 million per year

Recommendation:

Meketa Investment Group recommends a thorough review of the Retirement System's expenses, and will recommend opportunities for expense reduction following our review. We will compare fees to those our other clients pay for similar mandates, evaluate the potential for combined assets to reduce marginal fees due to scale, and note any other opportunities for reductions.

Priority: Two

Cash Sweep

At a client's direction, a custodian will invest excess cash from separate accounts in a short-term vehicle, typically a STIF account (Short-Term Investment Fund). Currently, interest rates are at historical lows, resulting in little return for investors in STIF accounts. In an effort to increase the yield, many short-term cash vehicles are increasing exposure to riskier segments of the fixed income market where yields are higher.

Although the risk of capital loss in money market and short-term investment funds is relatively small, it does exist. That risk would be sharply reduced by holding Treasuries, rather than the Euro-denominated time deposits and commercial paper investments held in the STIF. If the markets experience a similar credit crisis as in 2008, these corporate debts face the risk of a "Lehman Brothers" effect of a sudden, unexpected total loss.

South Carolina Retirement System Investment Commission Status:

The Retirement System utilizes a government STIF vehicle with an expense ratio of 0.22%.

Recommendation:

No action is necessary. Meketa Investment Group recommends all clients use a STIF vehicle that only invests in government securities. The Retirement System currently utilizes a government STIF vehicle.

Priority: NA

Commission Recapture

When an investment manager conducts a trade, the broker charges a commission. The commission is often "bundled," meaning that it includes the cost of both trade execution (explicit) and research services (implicit). This "bundling" of commissions allows a broker to post a standard price structure. The term "commission recapture" refers to a brokerage house setting aside, as a refund to the Plan, the implicit portion of the total commission paid.

Once a commission recapture program is in place, the plan sponsor informs its investment managers of this relationship and can ask them to trade a portion of their trading volume through the recapture broker. Commission recapture brokerage is most useful for plans utilizing active U.S. equity managers with high turnover.

Investment managers should be encouraged to balance trading through a commission recapture broker with best execution. Ensuring that managers are given the freedom to perform their fiduciary duty is essential in any recapture agreement.

South Carolina Retirement System Investment Commission Status:

The Retirement System does not have commission recapture program in place.

Recommendation:

No action is needed. Meketa Investment Group believes that commission recapture programs should only be used if the investment managers have a broad choice of brokers through which to trade, and they are not required to execute an explicit portion of trades through any specific broker(s).

Priority: NA

Proxy Voting

The voting of proxies is important to the overall performance of a plan, and doing so is the fiduciary duty of the Commissioners. However, the Commissioners have the ability to delegate that responsibility, either to a third-party proxy voting service or to the investment managers. In any case, the Commissioners should receive a full accounting of all proxy votes, and upon request, a written explanation of individual voting decisions.

South Carolina Retirement System Investment Commission Status:

Historically separate account managers were authorized and directed to vote all proxies. This delegation is appropriately outlined in the Statement of Investment Objectives and Policies as well as in each applicable investment management agreement. The separate account managers that vote proxies are required to provide a written annual summary to RSIC of votes cast and highlight any votes cast not in the best interest of the Retirement System's plan participants.

Effective July 1, 2017, revised state statutes may require the staff at RSIC to assume responsibility of all proxy voting.

Recommendation:

As the Retirement System assumes the responsibility of casting proxy votes in house (or contemplates doing so), Meketa Investment Group is prepared to assist the Retirement System in a review of third party proxy voting vendors that are available to help the Retirement System with proxy voting policy development and operational infrastructure.

Priority: Three